REPUBLIC OF CAMEROON
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MINISTRY OF WATER RESOURCES AND ENERGY

MINEE

REPUBLIQUE DU CAMEROUN
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Paix – Travail – Patrie
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MINISTERE DE l'EAU ET DE L'ENERGIE

FIRST NATIONAL SURVEY ON ACCESS TO ENERGY (ENACE-1), WATER AND SANITATION IN CAMEROON IN 2021

Key Findings Report

-Household component-

Study carried out by the National Institute of Statistics (NIS)

December 2022

CONTENT

FOREWORD

Cameroon has been implementing since 2020, the National Development Strategy 2020-2030 (NDS30) which is the second phase of the **Vision for Development by 2035 (Vision 2035) driven by the President of the Republic, His Excellency Paul BIYA**.

In this context, the Ministry of Water Resources and Energy (MINEE) is responsible for the development and implementation of the policy in the area of production, transportation and distribution of water and energy, with the overall objective of increasing the supply of water and energy in sufficient quality and quantity, while ensuring regular access to populations and economic operators all over the national territory.

To assess the level of accessibility, my Ministry relied on the National Institute of Statistics (NIS), through a Technical Assistance Agreement to conduct the first National Survey on Access to Energy (ENACE-1) during the year 2021. Realization of this survey is a response to the need for reliable and updated indicators on the access of households and enterprises to energy, water and sanitation.

The indicators obtained at the end of ENACE-1 will make it possible to determine Cameroon's level of progress in relation to its national objectives recorded in the NDS30, in particular *"ensuring access for all to electrical energy at an affordable cost"* and *"ensuring universal and equitable access to drinking water at an affordable cost to all households"*. These indicators will also make it possible to measure progress towards achieving the Sustainable Development Goals (SDGs), in particular Goal 6, which aims to "*ensure availability and sustainable management of water and sanitation for all*"; and Goal 7, which aims to "*ensure access to affordable, reliable, sustainable and modern energy for all*".

Key results of ENACE-1 show that significant efforts have been made in recent years in terms of access to energy and sanitation. Indeed, the rate of household access to electricity increased from 62% in 2018 to 68% in 2021. Regarding sanitation, two thirds of households (66%) use improved sanitation facilities in 2021 as against 61% in 2018. In contrast, the proportion of households that are supplied by an improved source of drinking water has rather decreased slightly over this same period, from 79% to 77% (of which only 29% from the public water supply network).

The challenge of expanding access to energy and water remains. The survey's results will enable the Government and its partners to better target the actions to be implemented, in addition to the ongoing projects; while preserving the environment and fostering sustainable sanitation.

ENACE-1 was successfully conducted thanks to the close collaboration between MINEE and the NIS, at all stages, up to the publication of this report. I take up this opportunity to extend mu gratitute to the teams of these two administrations that conducted this study and to encourage them to deepen this collaborative frameworkfor subsequent activities.

I also extend my appreciation to all the Technical and Financial Partners that support the Government in the implementation of its policy as set out above, through the financing of projects undertaken in recent years to continue strengthening energy supply in its various forms, as well as water and sanitation. /-

MINISTER OF WATER RESOURCES AND ENERGY

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

BUCREP	:	**Central Bureau of the Census and Population Studies**
CAPI	:	Computer Assisted Personal Interviewing
CDHS-V	:	Fifth Cameroon Demographic and Health Survey
CEMAC	:	Economic and Monetary Community of Central Africa
EA	:	Enumeration Area
ECCAS	:	Economic Community of Central African States
EESI	:	Employment and Informal Sector Survey
EIN	:	East Isolated Network
ENACE-1	:	FirstNational Survey on Access to Energy in Cameroon
ENEO	:	Energy of Cameroon
ESDP 2030	:	Electricity Sector Long-Term Development Plan 2030
HYSACAM	:	Hygiene and Sanitation of Cameroon
IPU	:	Informal Production Unit
JMP	:	Joint Monitoring Programme
kWh	:	Kilowatt-hours
LEDs	:	Light-Emitting Diode
LPG	:	Liquefied Petroleum gas
MINEE	:	Ministry of Water Resources and Energy
NDS30	:	National Development Strategy 2020-2030
NIN	:	North Interconnected Network
NIS	:	National Institute of Statistics
RGPH	:	General Population and Housing Census
SDG7	:	Sustainable Development Goal 7
SDGs	:	Sustainable Development Goals
SIN	:	South Interconnected Network
UNICEF	:	UNICEF
WASH	:	Water, Sanitation and Hygiene
WC	:	Water Closets
WHO	:	World Health Organization

LIST OF KEY INDICATORS

N0	Indicator title	Total	Urban	Rural environment
1.	Household access rate to at least one source of electricity: networkinterconnected, on-grid and off-grid (%)	68	91	40
2.	Household access rate tointerconnected electricity network (%)	59	85	29
3.	Average monthly amount of electricity consumed per household user of an interconnected network (kWh)	108	121	52
4.	Average monthly electricity bill per household user of an interconnected network (CFA francs)	4902	5283	3206
5.	Average monthly electricity bill per household user of a thermal power plant (CFA francs)	2969	3077	1677
6.	Average monthly electricity bill per household using a solar power plant (CFA francs)	3231	3115	3236
7.	Average monthly electricity bill per household using generators (CFA francs)	5572	6945	4815
8.	Frequency of power cuts over the past 3 months according to users of the interconnected network or a thermal power plant: very often (%)	45	54	41
9.	Frequency of power cuts over the past 3 months according to users of the interconnected network or a thermal power plant: often (%)	39	40	34
10.	Proportion (as a %) of households able to pay 70,000 CFA francs to have a connection to the public electricity distribution network	41	26	44
11.	Household access ratefirewood as fuel(%)	71	54	90
12.	Household access ratedomestic gas as fuel(%)	38	60	11
13.	Household access ratewith kerosene as fuel(%)	19	20	17
14.	Household access rategasoline or diesel as fuel(%)	9	10	8
15.	Average monthly fuelwood consumption bill per user household (CFA francs)	10,609	9,114	11,848
16.	Average monthly domestic gas consumption bill per user household (CFA francs)	6,289	6265	6289
17.	Average monthly super consumption bill per user household (CFA francs)	56,011	72,414	30,934
18.	Average monthly diesel consumption bill per user household (CFA francs)	71,340	77,615	58 141
19.	Proportion of households that mainly use clean fuels (electricity, domestic gas or biogas) for cooking(%)	30	47	7
20.	Proportion of households that use the public water distribution network (%)	29	47	8
21.	Proportion of households that mainly use an improved source of drinking water (%)	77	92	60
22.	Proportion of households that have access to a basic drinking water supply service (%)	66	82	48
23.	Proportion of households with a subscription to the public water distribution network (%)	13	21	3
24.	Proportion of the population whose drinking water was available in sufficient quantity during the 30 days (%) preceding the survey	82	90	86
25.	Proportion of population using safely managed drinking water services (%)	8.5	13.6	3.5
26.	Proportion of households ready to pay an amount of 95,000 CFA francs for a connection to the public water distribution network (%)	29	25	33
27.	Proportion of household population thatuse improved sanitation facilities (toilets) (%)	66	89	40
28.	Proportion of households that use basic sanitation facilities, i.e. improved facilities not shared with other households (%)	49	66	32
29.	Proportion of households whose garbage is collected directly by HYSACAM company trucks or deposited in its garbage bins (%)	28	35	2

1 PRESENTATION OF THE SURVEY AND METHODOLOGY

Following the implementation of the Millennium Development Goals (MDGs), the United Nations member countries undertook to implement the Sustainable Development Goals (SDGs) from 2015, which constitute a wonderful ambition for convergence, rallying and a call to action by all countries whether poor, rich or middle-income, to promote prosperity while protecting the planet. Target number 7 of these SDGs is to ensure affordable, reliable, sustainable and modern energy for all by 2030.

According to the 2021 SDG 7 monitoring report published by the International Renewable Energy Agency (IRENA), in cooperation with the International Energy Agency (IEA), the United Nations Statistics Division, the World Bank and the World Health Organization (WHO), the rate of access to electricity in the world, although slowly changing, had reached 90% in 2019 (as against 83% in 2010 and 89% in 2017). This development still left around 759 million people without access, down from almost one billion in 2016 and 1.2 billion in 2010. Almost three-quarters of people (570 million) without access to electricity in 2019 were in sub-Saharan Africa. Moreover, the same report shows that 2.6 billion people in the world in 2019 depended on polluting and unhealthy fuels for cooking.

According to the 2020 Sustainable Development Goals report, 2.2 billion people worldwide did not have access to a safely managed drinking water source in 2017. Similarly, 4.2 billion people in 2017, lacked safely managed sanitation services and 3 billion people lacked basic handwashing facilities at home.

All of these shortcomings are a serious impediment to progress for a significant proportion of the world's population, with tangible consequences on a wide range of development indicators, including health, education, food security, gender equality, livelihoods and poverty reduction.
Based on its robust and dense potential in energy resources, Cameroon has set itself the objective in its National Development Strategy 2020-2030 (NDS30), to produce energy in large quantity to improve the living environment of its population, to ensure its industrialization, and to become an energy exporting country. To this end, three orientations have been adopted: (i) developing the significant national hydroelectric potential; (ii) developing alternative energies to better meet specific needs such as cooking food, transport, particularly urban transport, urban electrification, manufacturing industries, etc.; (iii) strengthening and optimizing the use of biomass.

With regard to hydraulic and sanitation infrastructure, the NDS30 has set itself the objective of

significantly improving the population's access rate to drinking water and achieving a sanitation rate of 60% by 2035.

These overall objectives are specified in sector strategy documents. In the energy field, to meet the growing demand for electrical energy, the Government of Cameroon developed in 2006 an Electricity Sector Development Plan for 2030 (ESDP-2030). The process to update this plan, which began in 2014, took into account changes that had a direct impact on this sector.

In the area of sanitation, the objectives of the Liquid Sanitation Strategy are mainly: (i) to increase the access of urban and rural populations to improved sanitation facilities; and (ii) ensure reliability and efficiency, financial and environmental sustainability, and acceptability to household and government budgets, of the service.

With a view to enriching its statistical information system in order to have reliable and up-to-date indicators making it possible to control domestic demand for energy, water and sanitation services, the Ministry of Water Resources and Energy (MINEE) undertook to conduct with the technical support of the National Institute of Statistics (NIS), the first National Survey on Access to Energy in Cameroon (ENACE-1) taking into account the " Water and sanitation " component. This survey covers both households and enterprises.

This report, which is mainly descriptive, presents several indicators calculated from data collected from March 6 to June 10, 2021 for the Household component of this survey. It has been developed to provide decision-makers with information on the level of some of the most important indicators.

I.1 OBJECTIVES OF THE STUDY

The main objective of ENACE-1, taking into account the "Water and sanitation" component, is to provide reliable and up-to-date estimates of indicators on access to and use by households of different forms of energy, water and sanitation.

Specifically, the survey aims to:

- determine the rate of access of households to different forms of fuel (LPG, wood, coal, oil, etc.);
- determine the rate of household access to electricity;
- quantify average and total energy consumption by households and their uses;
- make an inventory of the main household energy-consuming equipment;
- present the modes of acquisition of the various forms of energy as well as related costs;
- characterize changes in household energy consumption habits.
- determine the household access rate to drinking water;
- determine the main sources of water supply by households;

- determine specific water consumption by households;
- determine the share of monthly household expenditure devoted to the use of water supply services;
- determine the average expenditure per household devoted to the subscription to a water supply service;
- assess the ability of households to pay for water service;
- assess the readiness of households to pay for the water service;
- assess the mode of conservation of drinking water;
- estimate the prevalence rate of waterborne diseases in the population;
- estimate the share of household expenditure devoted to waterborne diseases.
- determine the rate of household access to improved latrines;
- determine the proportion of households using safely managed sanitation services;
- determine the proportion of households with a handwashing facility at home;
- determine the rate of open defecation;
- determining the share of household expenditure devoted to household sanitation;
- assess the ability of households to finance domestic sanitation.

I.2 SAMPLE DESIGN

ENACE-1 targets the population of people residing in ordinary households throughout the country. A national sample of 10,786 households (5,350 households in 429 clusters in urban areas, 1,214 households in 101 clusters in semi-urban areas and 4,224 households in 352 clusters in rural areas) was planned for the survey. The sample is distributed in such a way as to guarantee an adequate representation of urban and rural areas as well as the following 12 areas of study: Adamawa, Centre (excluding Yaounde), Douala, East, Far-North, Littoral (excluding Douala), North, North-West, West, South, South-West and Yaounde. In each area of study (except the cities of Yaounde and Douala which are considered as not having a rural part), three strata were created: the stratum of the urban environment (large cities, with at least 50,000 inhabitants),the semi-urban stratum of small cities with 10,000 to less than 50,000 inhabitants) and that of the rural environment (small cities with less than 10,000 inhabitants).

A stratified, two-stage random sampling was implemented. At the first level, 882 Enumeration Areas (EAs) or clusters were systematically selected with a probability proportional to their size in households, from the list of EAs resulting from the mapping of the fourth General Population and Housing Census (RGPH4) conducted from 2017 to 2018 by BUCREP. A tablet update operation for the mapping and enumeration of households in the clusters initially drawn for the purposes of the third Employment and Informal Sector Survey (EESI 3) was conducted in 2018 by the NIS to draw up the list of households in each EA to be used as the basis for the

second stagedrawing. Then, at the second stage, a sample of 14 households on average was selected per EA in Douala and 12 households on average per EA in the other strata with a systematic drawing with equal probability.

Table 1.1: Distribution of enumeration areas and households by region and stratum of residence

	Number of EAsplanned				Number of householdsplanned			
	Urban	Semi-urban	Rural	Total	Urban	Semi-urban	Rural	Total
Survey region								
Adamawa	17	9	26	52	204	108	312	624
Centre	12	13	36	61	144	156	432	732
Douala	101	-	-	101	1,414	-	-	1414
East	14	8	28	50	168	98	336	600
Far-North	23	12	63	98	276	144	756	1176
Littoral	22	15	14	51	264	180	168	612
North	24	7	43	74	288	84	516	888
North-West	27	13	39	79	324	156	468	948
West	35	11	41	87	420	132	492	1044
South	16	6	26	48	192	72	312	576
South-West	36	7	36	79	432	84	432	948
Yaounde	102	-	-	102	1,224	-	-	1224
Total	429	101	352	882	5350	1212	4224	10786

Household list update

All of the 882 EAs selected for EESI 3 were also retained as primary units as part of ENACE 1. The mapping and enumeration update in these EAs was therefore conducted as part of the EESI 3. This activity consisted of visiting each of the 882 sampled EAs by recording on the enumeration form posted on the tablet a description of all the structures or constructions as well as the names of the heads of households present in the structure, and drawing a site plan of the EA as well as a detailed sketch showing all structures in the EA.

These forms and sketches later enabled enumerators to trace selected households for interviews and field supervisors to perform quality control during data collection. The mapping and enumerationupdate operation was conducted on tablets from September 4 to November 4, 2018 by eighty cartographers recruited for this purpose and trained for four days using the enumeration and mapping manual. After updating the household lists and maps of each selected EA, the updated lists were forwarded to the NIS head office and served as a sampling frame for the selection of households to be surveyed. The selected households were then uploaded into the tablets. Of the 882 EAs expected, 781 were fully covered,82 were not covered as a result of insecurity, one EA was not covered due to the very high cost of accessing it and 18 EAs were empty.

Table 1.2: Distribution of EA-samples by area of studybyresult of enumeration

Count result					
Region	Enumerated	Not enumerated due to insecurity	Not enumeratted for high cost	Empty	Total
Adamawa	49	0	0	3	52
Centreexcluding Yaounde	61	0	0	0	61
Douala	100	0	1	0	101
East	49	0	0	1	50
Far-North	90	3	0	5	98
Littoralexcluding Douala	51	0	0	0	51
North	73	0	0	1	74
North-West	25	54	0	0	79
West	87	0	0	0	87
South	47	0	0	1	48
South-West	47	25	0	7	79
Yaounde	102	0	0	0	102
Total	781	82	1	18	882

I.3 QUESTIONNAIRES

For this part of the survey, two questionnaires were designed to collect data from households: a questionnaire for the "Energy" component and a questionnaire for the "Water and sanitation" component. Each of the questionnaires is administered to the head of household or another adult member of the household. These questionnaires were designed following a participatory process and consultations during several meetings that brought together the stakeholders in this survey.

The questionnaire for the "Energy" component is comprised of the following sections:

- general Information ;
- characteristics of household members;
- economic activity and non-employment income of household members;
- housing characteristics;
- household energy habits and practices;
- electrical and renewable energy;
- household energy equipment;
- other household equipment and assets;
- household consumption expenditure.

For the "Water and sanitation" component, the different sections of the questionnaire are:

- access to water;
- access to sanitation;
- water quality test.

I.4 TESTING DRINKING WATER QUALITY IN HOUSEHOLDS

To assess the quality of drinking water consumed in households, two rapid diagnostic tests were conducted on a sample taken from the main source of drinking water in each household. The first test conducted in all the households of the sample made it possible to evaluate the contents of water chemical parameters (Free chlorine, Total chlorine, Iron, Copper, PH, Lead, Nitrate, Nitrite, Bromine, Fluoride, Hardness, Cyanuric acid, carbon and alkalinity). The second test, involving a sub-sample of one in three households, made it possible to assess the presence of E. coli or coliforms in the water.

I.5 PRE-TEST

The purpose of the pre-test was to identify questions that would be poorly worded, difficult to understand or irrelevant, to check the quality of the translation and the programmes, and to test the organization of collection and management of data. All data collection procedures have been pre-tested. About ten agents were recruited and trained for 8 days (from October 22 to 29, 2020) on filling out questionnaires and using tablets for data collection. The pre-test field activities took place from October 30 to November 5, 2021, simultaneously in two clusters not selected for the survey, one in the Yaounde IV sub-division (localities of Mimboman 2 in urban areas) and another in the Mfou sub-division (localities of Awae IV, Koumou 1 and Koumou 2 in rural areas), with questionnaires in English and French. Pre-test data collection was conducted on a sample of 100 households. Lessons learned from this pre-test were used during the finalization survey's collection tools and logistics.

I.6 TRAINING OF COLLECTION STAFF

To maintain uniform survey procedures, two manuals have been developed: the Interviewer's Manual and the CAPI Manual. The interviewer's manual includes interview techniques, field data collection procedures, and methods for asking questions. The CAPI manual is a guide to using tablets for data collection. These documents were therefore used to train collection staff.

For this training, the NIS shortlisted 105 candidates for the positions of interviewers or controllers, with at least the GCE-AL/*Baccalaureat*, who all received complete training in three Centres on all aspects of the survey, from February 19 to March 03, 2021. This training covered the following aspects: the fundamentals of interviewing for data collection, including ethical aspects; rationale, objective and methodology of the survey, procedures for ensuring data quality during collection; content of the questionnaires (description and objective of each question, specific guidelines and instructions, categories of answers and procedure for completing the questionnaires); use of tablets to conduct computer-assisted interviews (Computer Assisted Personal Interviewing, abbreviated as CAPI); and conducting the drinking

water quality test in households.

The training led by NIS experts with the support of those from MINEE, was conducted using various methods including, among others: (i) concurrent reading of instruction manuals and questionnaires, followed by explanations and demonstrations; (ii) indoor role-playing between trainees, followed by discussions; iii) field practices in real households followed by classroom discussions; and iv) regular organization of learning assessments followed by classroom discussions.

For field practice, each candidate had identified in theirquarter of residence, a household in which they conducted an entire interview on the paper questionnaires. These were collected later and corrected by trainers. The inconsistencies and errors recorded were discussed between the trainers and the candidates in the training room with experience sharing.

After the main training session, 96 field agents were selected to form 19 teams of four or five persons each. Each team consisted of a controller and 3 or 4 interviewers. Controllers were further trained, particularly on data quality control, work organization and logistics management, contact with the authorities and populations.

I.7 DATA COLLECTION

Each of the 19 teams formed was placed under the responsibility of a supervisor with experience in data collection. The supervisor himself was placed under the responsibility of a coordinator of field activities. A team consisted of a controller, interviewers and a driver. In each team, two pairs of interviewers were formed by each controller to cover together the EAs assigned to them. The criteria of region of origin and/or residence (mother tongue spoken) of the interviewers, experience in surveys organized by the NIS and gender were taken into account when composing the teams and pairs. A balanced distribution of the workload to each team was conducted to cover the 882 EAs sampled throughout the national territory. On average, 41 EAs were assigned to the teams. Data collection took place from March 06 to June 10, 2021.

Field activity coordinators were responsible for logistics as well as data quality in their respective areas. Supervisors technical capacities were strengthened by the central IT specialist to play the role of IT specialists at the regional level. They were responsible for distributing work between the teams. In addition, each supervisor was responsible for running the computer quality control programme to detect any possible inconsistencies in the data, and ensure that they were corrected by the teams. They were also responsible for conducting spot checks (resuming interviews) and ensuring that the data were transferred from the tablets to the server every day.

Controllers were responsible for the organization of work and quality control of data in their teams. They were also responsible for assigning households to enumerators and conducting some interviews.

Enumerators were responsible for electronic data collection in households assigned to them by their supervisor.

Data collection started in the cites that hosted the training Centres where each team covered at least one cluster before being deployed to other regions or rural areas. This approach made it possible to ensure close monitoring of the teams before they were deployed elsewhere for data collection simultaneously in all regions of the country.

I.8 DATA PROCESSING AND MANAGEMENT

During the interviews, answers were directly recorded in the tablets thanks to an appropriate computer application, developed using the CSPro software. This application has several menus and includes internal data quality checks. The data collected in the field were subsequently uploaded to the central server via the Internet. This made it possible almost instantaneously, with the help of a quality control programme, to detect for each team and even, if necessary, for each field agent, the main data collection errors. This information was immediately passed on to supervisors and field teams to improve the quality of the data, including returning to the households for the necessary verifications. The regular missions of the central supervision were mainly oriented towards the teams whose data presented specific or particular concerns with regard to the quality tables. When all the field data were uploaded to the server, the survey data file was checked, edited, and weighting coefficients were applied before proceeding to the tabulation.

I.9 DATA ANALYSIS AND REPORT WRITING

The complex design survey data analysis method was used to obtain population estimates and their 95% confidence intervals. Sampling weights were developed for each respondent following the procedures set out in the survey sampling and weighting plan. Details on the sample weighting process and estimation of sampling errors are described in Appendix C of this report. The final weights were used in all analyzes to produce the estimates and their confidence intervals.

Tabulation programmes were written to edit the tables whose models were provided by the analysis team. During tabulation, the values of more particularly indicators led to the continuation of the checks and clearance of some variables and to the production of the tables again. A preliminary report was drafted to provide the key indicators of ENACE 1.

I.10 RESPONSE RATE

Table 1.3 summarizes the survey coverage results. Instead of the 10,786 households initially planned to be surveyed, 9,768 households were actually selected, the rest not being possible, mainly for security reasons. Of these 9,768 households selected for the survey, 929 were identified at the time of the survey. Of these, 7,870 were successfully surveyed, i.e.a response rate of 87.2%.

Table 1.3: Results of household interviews

Number (unweighted) of households, number of interviews and response rate by area of residence

Results	Area of residence				Total
	Yaounde/ Douala	Other urban	Urban set	Rural	
Household interviews					
Selected households	2565	4131	6696	3072	9768
Occupied/identified households (OH)	2345	3829	6174	2855	9029
Households successfully interviewed (R)	1712	3464	5176	2694	7870
Household response rate (HRR)	**73.0**	**90.5**	**83.8**	**94.4**	**87.2**

2 CHARACTERISTICS OF HOUSING AND POPULATION

This chapter aims to present data on household living conditions, household population and its composition, level of education and school enrolment. The information collected during ENACE-1 on the background characteristics of the households and populations surveyed is useful for interpreting and analyzing the indicators. In addition, they may be helpful in assessing the representativeness of the survey sample.

II.1 HOUSEHOLD LIVING CONDITIONS

The households living conditions are evaluated here by the level of their wealth. It is an indicator of the economic situation of households calculated from detailed information collected on housing and its characteristics, and on the access of households to a variety of consumer goods and services, in the absence household income and consumption data.

Table 2.1 shows that 23% of respondents belong to households in the lowest wealth quintile, including 23% women and 24% men. In households belonging to the highest quintile, there are almost as many women as men (20%).

II.2 POPULATION STRUCTURE AND COMPOSITION OF HOUSEHOLDS

- **Population structure**

Table 2.1 shows the distribution by age, sex and area of residence of the de facto household population. The population of Cameroon is comprised of 49% men and 51% women. This population structure by sex is similar to that obtained in Cameroon following the last General Census of Population and Housing (RGPH) of 2005.

- **Household size and composition**

Overall, results in **Table 2.2** show that 27% of households are headed by women. Households headed by women are slightly more frequent in urban areas (29%) than in rural areas (25%).

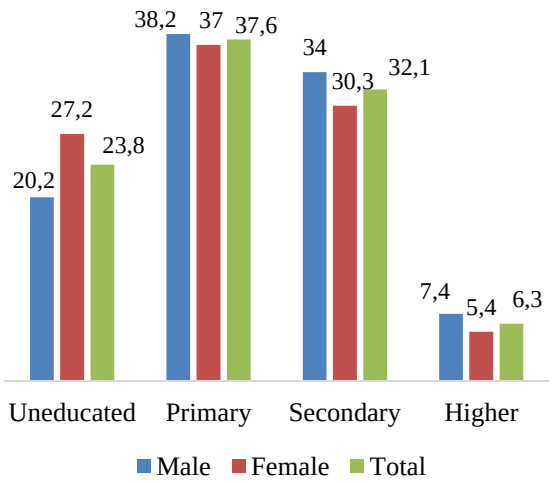
The average household size is five persons. In other words, a household has an average of 5.0 persons. This average size ranges from 5.5 persons in rural areas to 4.7 persons in urban areas. Overall, 14% of households are one-person, that is, comprised of a single person; 19% of households have at least 8 persons and they are the most numerous (24%) in rural areas compared to urban areas (15%).

It should be noted that these results are close to those from the Fifth Demographic and Health Survey of Cameroon (CDHS5 2018).

- **Level of education**

Overall, men are relatively better educated than women. Indeed, 20% of men as against 27% of women are uneducated. At the primary level, there is no difference between men and women (38% and 37% respectively). However, at the secondary level, the proportions are 34% for men and 30% for women. The percentages of persons having reached higher education are still low (7% among men and 5% among women).

Figure 2. 1: Percentage of population aged 3 or more identified in households by level of education



- **Marital status**

By marital status, 32% of respondents aged 10 or more said they were married. It should be specified that as part ofENACE 1 survey, the marital status is determined according to the declaration of the respondent. It can only be court marriage, religious marriage, customary marriage or combination of two forms or all forms. Living together or common-law/concensual relationshipis the case of any person who lives in a marital relationship with their partner, without any court, customary or religious marriage having been celebrated. According to these definitions, about one in two women (48%) was unmarried at the time of the survey, 34% were married and 8% were living in a consensual union, and 11% were in a broken union(divorced, separated or widowed). Three in five men (60%) were unmarried,30% were married and 8% lived common law with their partners.

LIST OF TABLES

Table 2.1: Distribution of the population surveyed by selectedbackground characteristics

Background characteristics		Sex		
		Male	Female	Total
Marital status	Unmarried	59.8	48.0	53.8
	Married	30.2	33.5	31.9
	Divorced/separated	1.2	9.1	5.2
	Widower	1.0	1.8	1.4
	Living together	7.8	7.6	7.7
	Total	**100.0**	**100.0**	**100.0**
Education level of the individual	Uneducated	20.2	27.2	23.8
	Primary	38.2	37.0	37.6
	Secondary	34.0	30.3	32.1
	Higher	7.4	5.4	6.3
	Does not know	,2	,2	,2
	Total	**100.0**	**100.0**	**100.0**
Wealth quintile	Lowest quintile	23.5	22.9	23.2
	Second	22.2	22.2	22.2
	AVERAGE	16.7	16.9	16.8
	Fourth	17.9	17.7	17.8
	Highest quintile	19.8	20.3	20.1
	Total	**100.0**	**100.0**	**100.0**

Table 2.2: Distribution of households by sex of the head of the household and size of the household, average size of the households by area of residence and survey region

Background characteristics		Sex of head of household			Household size						Average household size
		Male	Female	Total	01 person	2-3 persons	4-5 persons	6-7 persons	8 persons& +	Total	
Area of residence	Urban	70.7	29.3	100	14.6	24.4	27.3	18.4	15.3	100	4.7
	Rural	74.8	25.2	100	13.4	21.3	22.2	19.2	24.0	100	5.5
Survey region	Adamawa	81.0	19.0	100	11.1	18.4	19.3	18.2	32.9	100	6.3
	Centre	73.4	26.6	100	11.8	29.1	24.4	16.2	18.5	100	4.8
	Douala	73.0	27.0	100	11.2	26.4	29.1	19.4	13.9	100	4.6
	East	80.0	20.0	100	9.7	21.2	19.9	20.5	28.6	100	6.3
	Far-North	74.4	25.6	100	8.7	11.9	21.0	23.9	34.4	100	6.6
	Littoral	73.5	26.5	100	20.1	23.6	26.0	18.3	12.0	100	4.3
	North	84.4	15.6	100	11.1	18.0	21.9	20.1	29.0	100	6.0
	North-West	61.9	38.1	100	20.0	29.9	22.5	13.7	13.8	100	4.2
	West	63.9	36.1	100	16.1	22.3	25.5	20.8	15.3	100	4.9
	South	76.1	23.9	100	17.3	26.5	22.9	17.9	15.4	100	4.5
	South-West	64.9	35.1	100	25.9	24.4	27.1	14.4	8.2	100	3.7
	Yaounde	71.1	28.9	100	12.3	26.4	31.7	17.9	11.7	1000	4.6
	Total	**72.6**	**27.4**	100	**14.0**	**23.0**	**24.9**	**18.8**	**19.3**	1000	**5.1**

3 HOUSEHOLD ACCESS TO ELECTRIC POWER

One household is considered to have access to electricity when it uses electrical energy from the interconnected grid, a local grid, or an off-grid device.

The interconnected network refers to the South Interconnected Network (SIN) or the North Interconnected Network (NIN). At the time of the data collection launched in March 2021, the SIN covered six regions, namely the Centre, South, Littoral, West, North-West regions and the NIN covered three regions, in particular Adamawa, North and Far-North.

As far as the local network is concerned, it refers to isolated solar or thermal power stations that produce electricity to meet the energy needs of a very specific geographical area not connected to the interconnected network.

It should be noted that the East region was peculiar in that it only had isolated thermal and solar power plants which constituted the East Isolated Network (EIN) before its connection to the SIN in November 2022.

As for off-grid devices, they refer to solar home systems, generators, solar lanterns and other sources of electricity such as biomass, biogas or rechargeable battery. It should be noted that small solar panels were not considered in this category.

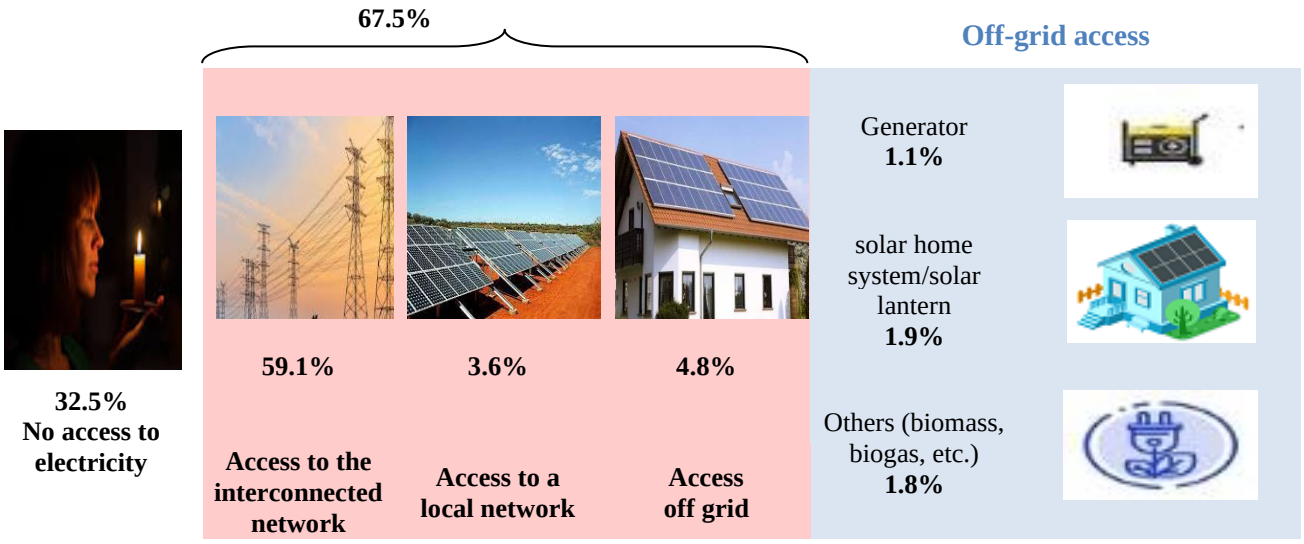
III.1 ACCESS TO ELECTRICITY

Nationally, about seven in ten households (67.5%) have access to at least one source of electrical energy.

By source of production, 59.1% of households are connected to the interconnected network, 3.6% to a local network (with 2.7% for a thermal power station and 0.9% for a solar power station) and 4.8 % to an off-network device.

Regarding off-grid electricity, 1.1% of households use a generator; 1.9% a solar home system or solar lanterns and 1.8% use other sources of electricity such as biomass, biogas or rechargeable battery.

Figure 3.1: Electricity access rate at the national level by technology used



- ***Access to electricity by type of technology by survey region***

Electricity access rate by region

Percentages of households with access to at least one source of electricity are the lowest in the Far-North (21%) and North (28%) regions (Figure 3.1). The cities of Douala (97%) and Yaounde (96%) have the highest percentages of households with access to at least one source of electricity.

Type of electricity generation technology by region

Douala (97%) and Yaounde (96%) are the regions where the percentages of households connected to the interconnected network are the highest (Figure 3.2). Households in the East region, formerly connected to an isolated network consisting of thermal power plants (35%) and solar power plants (1%) (Table 3.1).

Figure 3.1: Percentage of households with access to at least one source of electricity by survey region

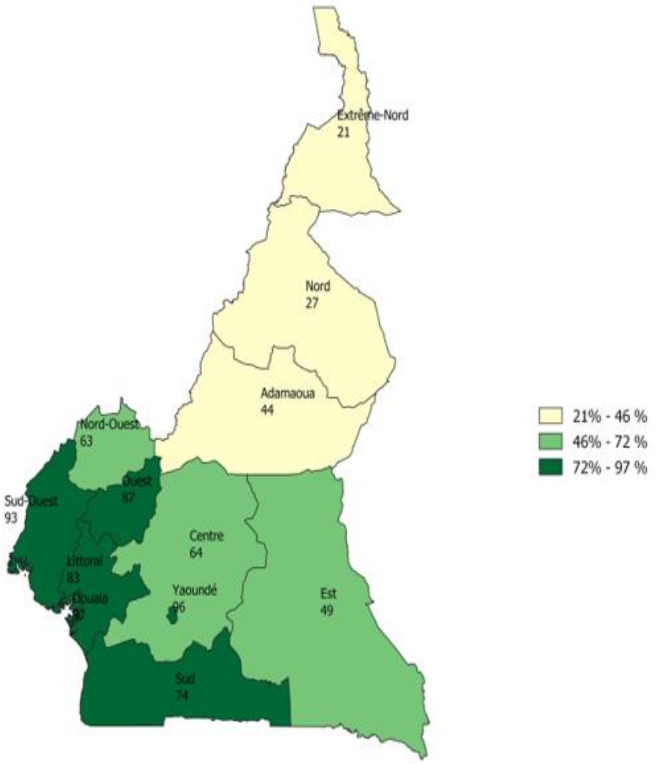
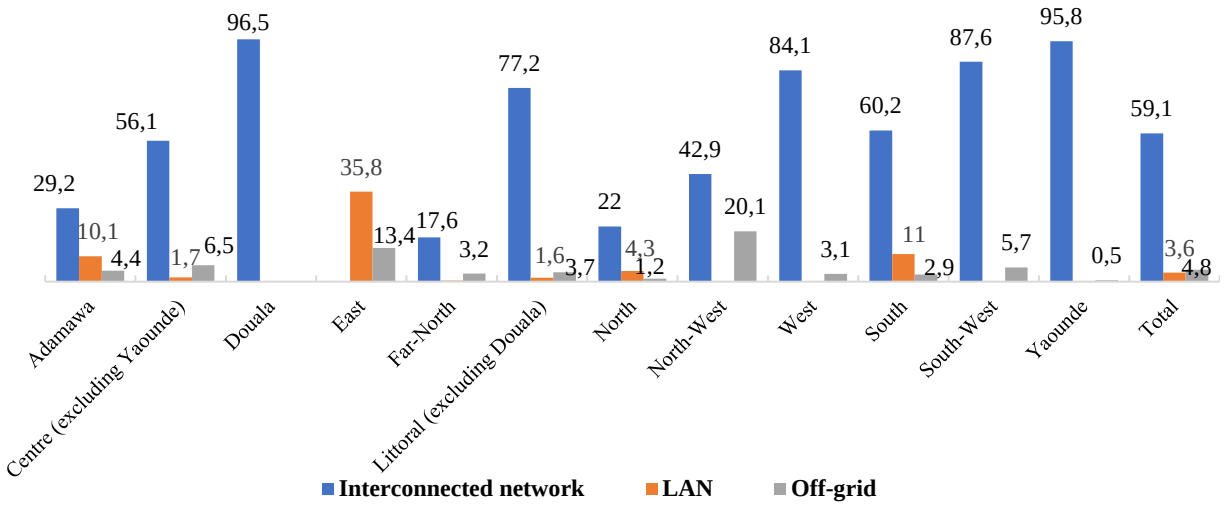


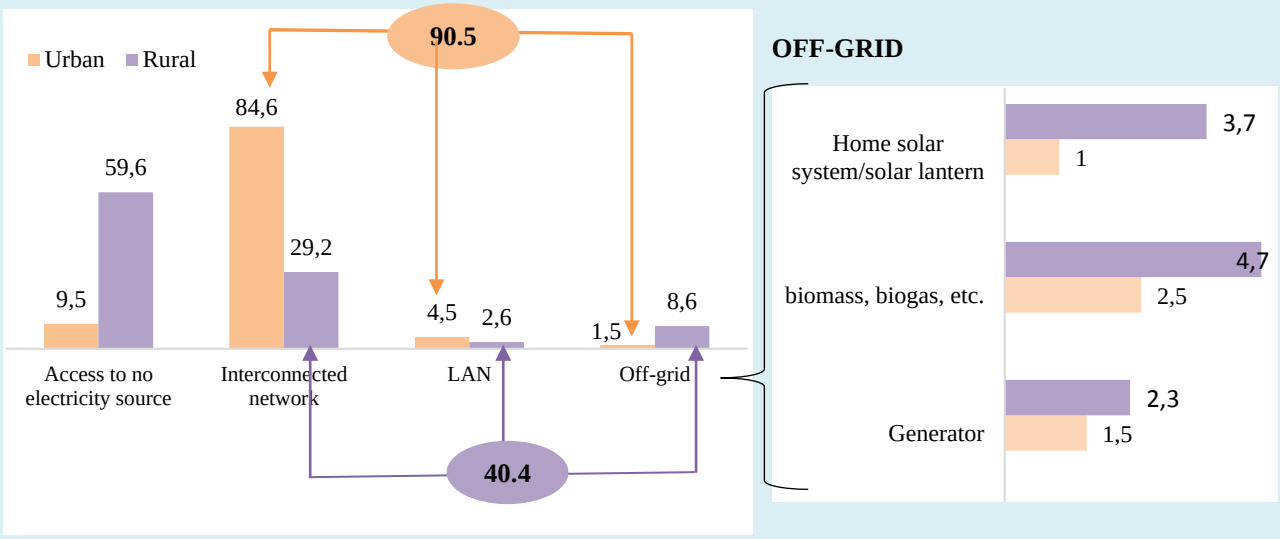
Figure 3.2: Percentage of households with access to electricity by region and type of technology



- ***Access to electricity byarea of residence***

There is a strong disparity in access to electricity byarea of residence: nine in ten households (90.5%) in urban areas have access to at least one source of electricity as against only 40% in rural areas. By technology, over eight in ten households (84.6%) in urban areas are connected to the interconnected electricity distribution networks as against 29.2% in rural areas (Figure 3.3). Similarly, there are relatively more households in urban areas that use a local network (4.4%) compared to rural areas (2.6%). In contrast, the percentage of households that use an off-grid energy source in rural areas (8.6%) is higher than that observed in urban areas (1.5%).

Figure 3.3: Rate of access to electricity by area of residenceby technology used (%)



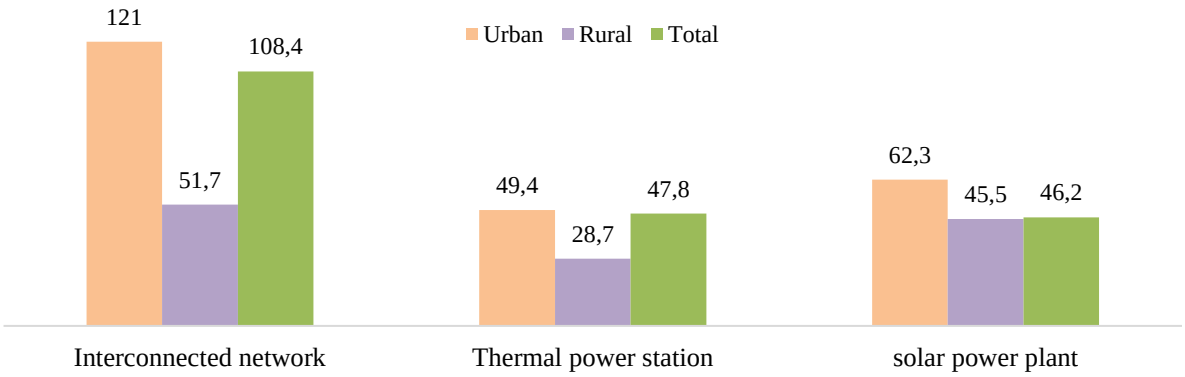
III.2 QUANTITY OF ELECTRICITY CONSUMED IN HOUSEHOLDS

A household connected to the interconnected network consumes an average of 108.4 kWh per month (Figure 3.4).

For households connected to a thermal or gas plant, the average monthly consumption is 47.8 kWh per household. This consumption amounts to 46.2 kWh for households using energy from solar power plants.

Whatever the type of technology, the average monthly consumption per household is high in urban areas compared to rural areas. For the interconnected network, the average amount consumed per household is 121.0 kWh in urban areas compared to 51.7 kWh in rural areas; for thermal power plants, it is 49.4 kWh in urban areas as against 28.7 kWh in rural areas and for solar power plants, it is 62.3 kWh in urban areas as against 45.5 kWh in rural areas.

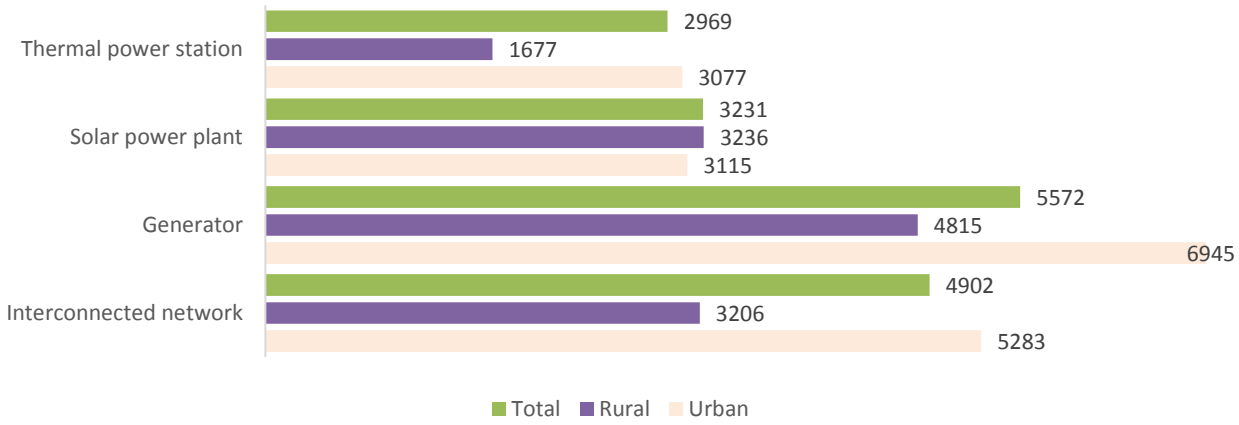
Figure 3.4: Average monthly amount (in kWh) of electrical energy consumed per household by type of technology and byarea of residence



III.3 ELECTRICITY CONSUMPTION EXPENDITURE IN HOUSEHOLDS

- With regard to expenditure relating to electricity consumption, it may be observed that households with a generator to produce electricity spend on average 5,572 CFA francs per month exclusively for this technology, i.e. 6,945 CFA francs for households in urban areas and 4,815 CFA francs for those in rural areas (Figure 3.5).
- Regarding household expenditure relating to electrical energy from the interconnected network, the monthly average is 4,902 CFA francs at the national level, ie 5,283 CFA francs for urban areas and 3,206 CFA francs for rural areas.
- Overall, a household using the energy produced by thermal power plants pays an average of 2,969 CFA francs each month for its electricity consumption, i.e. 3,077 CFA francs for households in urban areas and 1,677 CFA francs for rural areas.

Figure 3.5: Average amount (in CFA francs) of monthly electricity expenses paid per household by type of electricity and area of residence



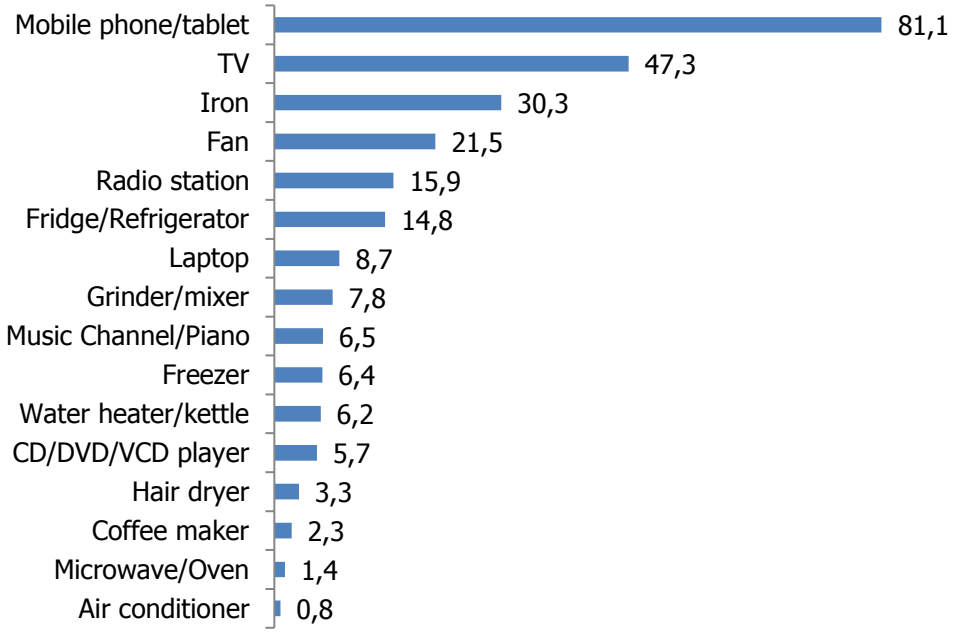
III.4 MAIN ELECTRICAL EQUIPMENT USED IN HOUSEHOLDS

Analysis was made of the electrical equipment used by households with access to electricity.

- Overall, the most used electrical equipment[1]is the mobile phone followed by the television with respectively 81% and 47.3% of households with access to electricity actually using these devices. The other electrical appliances most used in households are irons (30%), fans (22%), radios (16%), fridges/refrigerators (15%) and laptops (9 %). For each of the other energy appliances, less than 10% of households use them (Figure 3.6).
- Air conditioners are only used in 1% of households.

[1]Light bulbs have been excluded from energy equipment

Figure 3.6: Percentage of households with access to electricity and using selected energy equipment



III.5 SOBRIETY AND ENERGY EFFICIENCY

Types of lamps used

During the survey, households were asked to declare the types of lamps they mainly use. It shows that seven in ten households (71%) mainly use compact fluorescent bulbs/LED bulbs.

Incandescent bulbs are used as main bulbs in 15% of households. Fluorescent or neon tubes are mainly used in 14% of households (Table 3.5 and Figure 3.7).

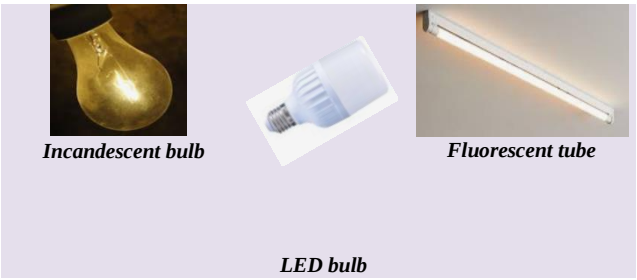
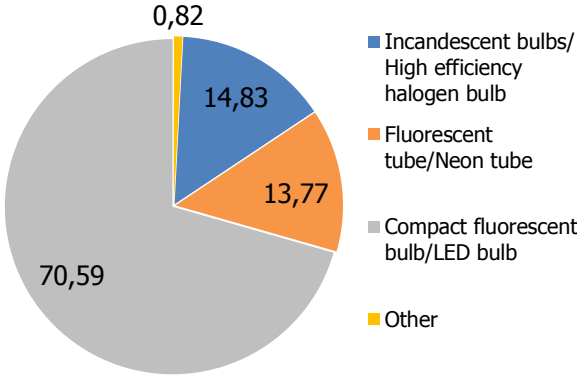
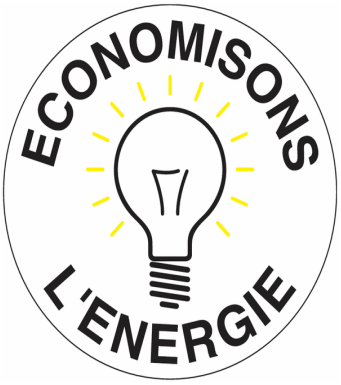


Figure 3.7: Distribution (as a %) of households by main type of lamp used

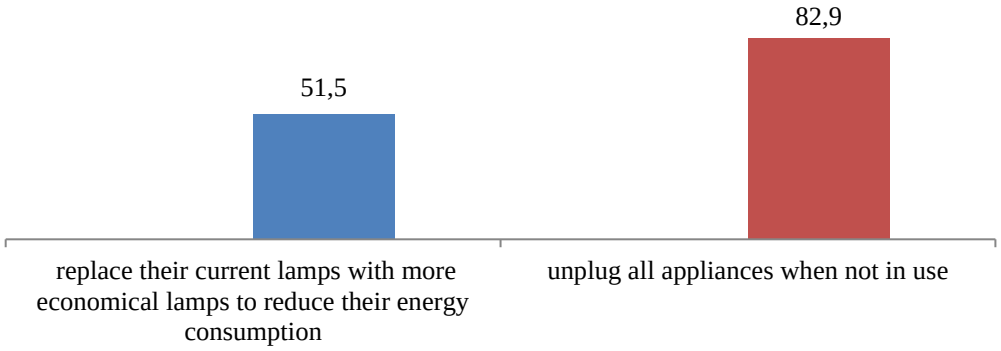


Behaviours of electrical energy users



- To reduce their energy consumption, over half of households (52%) plan to replace their current lamps with more energy-efficient lamps (Figure 3.8);
- For a little more than eight in ten households (83%), all electrical appliances, except refrigerators and freezers, are systematically unplugged when not in use (Figure 3.8);
- In addition, over three in four households (78%) say they always turn off the lights in the unoccupied rooms of the dwelling. Only 1.7% of households never turn off lights in unoccupied spaces. (Table 3.6).

Figure 3.8: Proportion (%) of households by their behaviour of using their electrical appliances

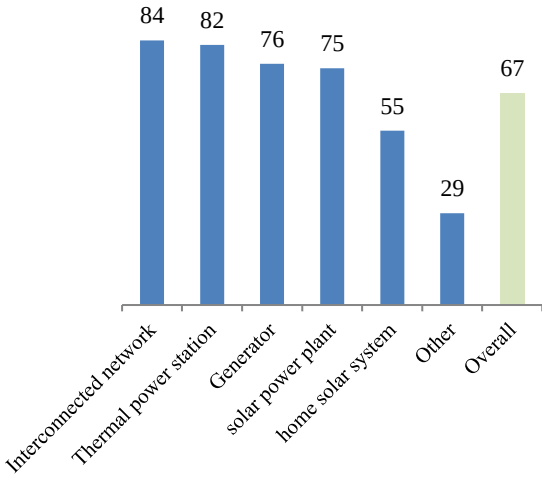


III.6 QUALITY OF ELECTRICAL ENERGY

Quality of electricity available for consumption

- Two in three households (67%) believe that the electrical energy they use can normally power their appliances (Figure 3.9).
- The percentage of households who believe that there is no energy to power their appliances varies by energy source. It is 16% for households using energy from the interconnected network and 18% for those using energy from thermal power stations. This percentage is 24% for households using generators, 25% for those using solar power plants and 45% for those using solar home systems.

Figure 3.9: Percentage (as a %) of households considerin electrical energy supplied can normally supply their v equipment

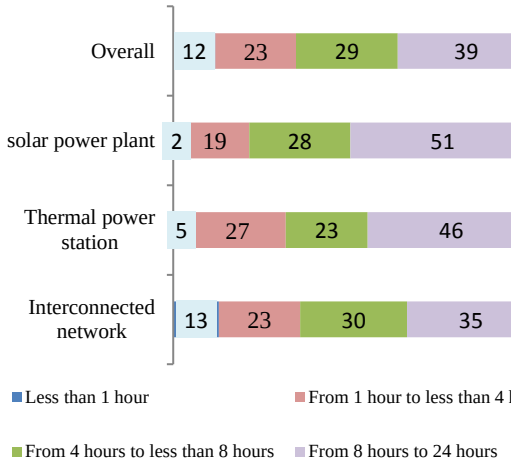


Duration of power outages

Duration of power outages by source of electricity

- During the survey, households that have experienced power cuts or interruptions over the past seven days were asked the average duration of these cuts during a day. It appears that :
- The average daily duration of power cuts or interruptions is longer for households connected to thermal power stations (8.6 hours). It is 8.4 hours for households connected to solar power plants and 6.9 hours for those using energy from the interconnected network (Table 3.8).
- Overall, approximately one in ten households (12%) considers that the average daily duration of power outages is less than one hour. For 23% of households, this duration varies between one and four hours. Nearly one in three households records an average daily duration of power cuts of between 04 and 08 hours. For 36% of households, this duration is at least eight hours (Figure 3.10).
- By energy source, the longest outages (over 8 hours) are more frequent in households connected to solar (51%) or thermal (46%) power stations.

Figure 3.10: Distribution (as a %) of households by average duration of power cuts or interruptions by type of technology

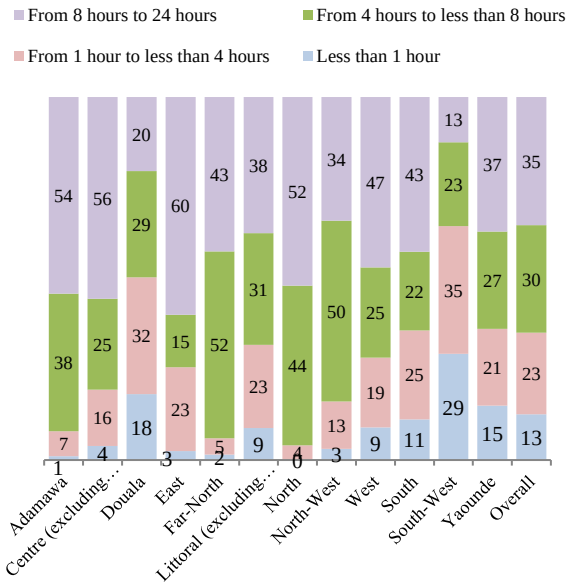


Duration of power cuts in the interconnected network by region

During the seven days preceding the survey, over half of the households using energy from the interconnected network and living in the survey regions of Adamawa (54%), Centreexcluding Yaounde (56%) or North (52%), say they have suffered interruptions in the supply of electricity for at least eight hours a day. This proportion is lower in the South-West (12%) and in Douala (20%) (Figure 3.11).

The proportion of households that considers that the duration of these interruptions is less than one hour per day is low in most regions and virtually nil in the three northern regions, in the North-West and in the Centre excluding Yaounde.

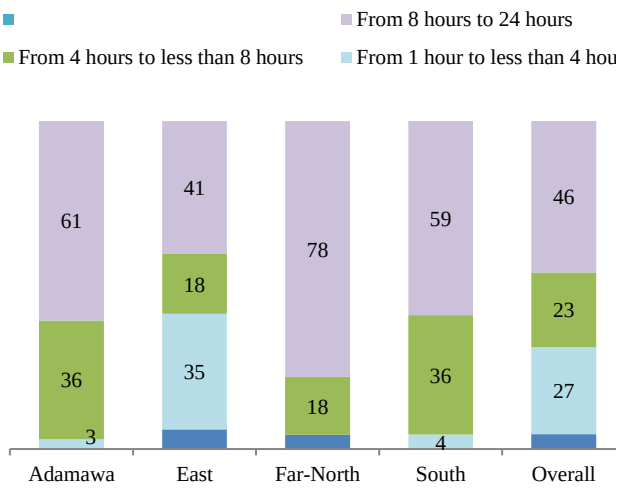
Figure3.11: Distribution (as a %) of households by average duration of power cuts or interruptions from the interconnected network by region



Duration of power cuts of isolated power plants by region

- In most regions, power outages in households using power from solar power plants usually last longer than four hours. This is the case for the South, North, Far-North and Adamawa regions. The Centre Region excluding Yaounde is an exception. Indeed, all of the outages recorded have a duration of between one and four hours (Figure 3.12).
- The previous observation is also true for households using energy from thermal power stations. The proportion of households having recorded cuts of less than one hour is marginal in most regions.

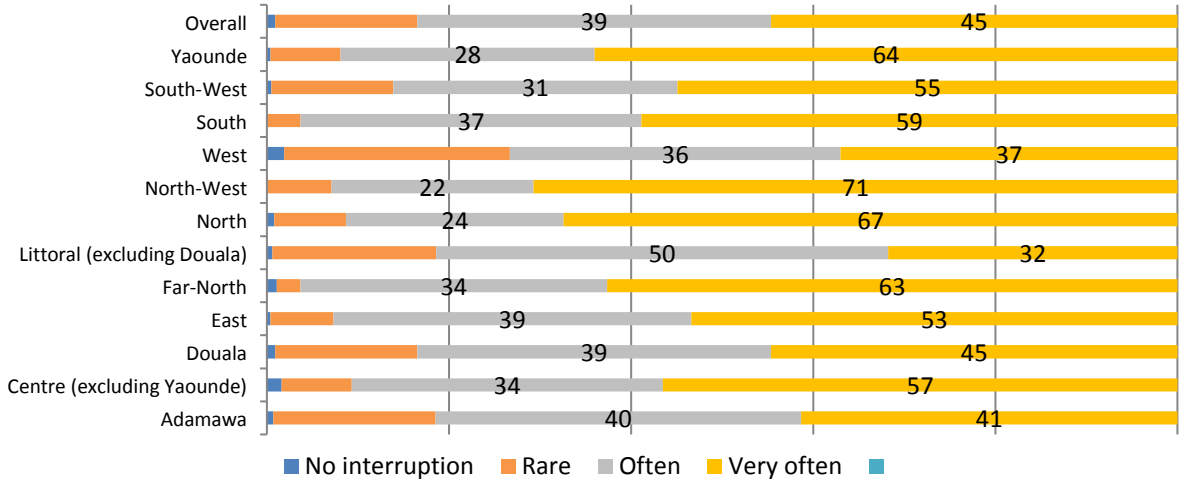
Figure 3.12: Distribution (as a %) of households by average duration of power cuts or interruptions from isolated power stations by region



Frequency of power cuts from the interconnected network or a thermal power plant

- Overall, nearly half (45%) of households using the interconnected network or a thermal power station say they have suffered power cuts very often over the past 3 months preceding the survey. About two in five households (39%) claim to have often suffered power cuts, meanwhile 16% of households find that power cuts have been rare over this reference period.
- In contrast, only 2% of households reported that they had not experienced any power cuts during the three months preceding the survey (Figure 3.13).
- The most high percentages of households considering that there were very often power cuts during the reference periodare observed in the regions of the Far-North (71%), East (66%), West (64%) and Centre excluding Yaounde (58%).

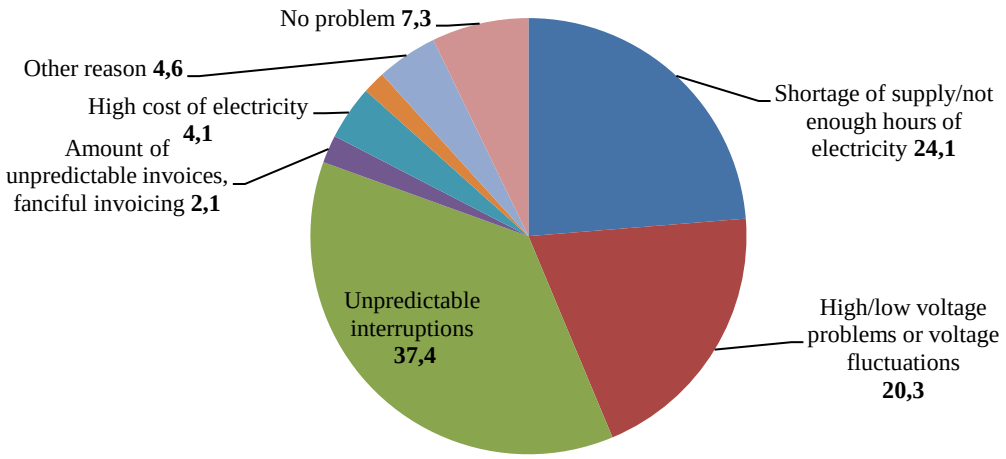
Figure 3.13: Distribution (as a %) of households by frequency of power cuts from the interconnected network or from a thermal power plant, by region



III.7 PROBLEMS ENCOUNTERED IN THE USE OF ELECTRICITY FROM THE INTERCONNECTED NETWORK

During this survey, households were asked to give the main problems they encountered over the past twelve months preceding the survey, in the use of electricity from the interconnected network or from a thermal power station. The main problems most mentioned are: unpredictable interruptions (37%), shortage of supply (24%), voltage fluctuation problems (20%) and high cost of electricity (4%). In addition, 7% of households claim to have encountered no problems when using electricity during the reference period (Figure 3.14).

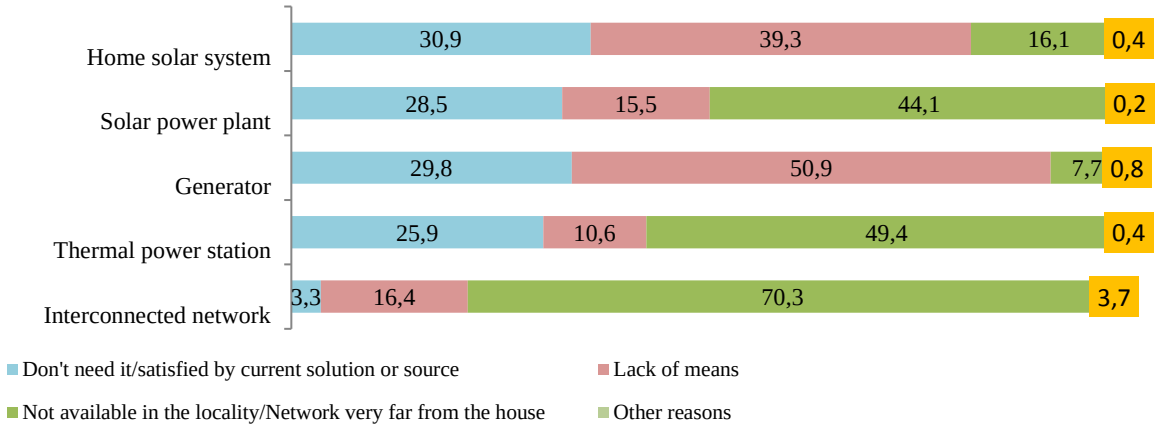
Figure 3.14: Distribution (as a %) of households by main problems encountered when using electricity



III.8 REASONS FOR NON-USE OF ELECTRICAL ENERGY

Reasons for not using different sources of electricity vary. With regard to the interconnected network, 70% of households that are not connected to it justify it by its non-availability in their locality of residence; 16% mention the lack of financial means and 3% say they are already satisfied with the alternative network they use (Figure 3.15).

Figure 3.15: Distribution (as a %) of households by main reason for not using electricity by energy source

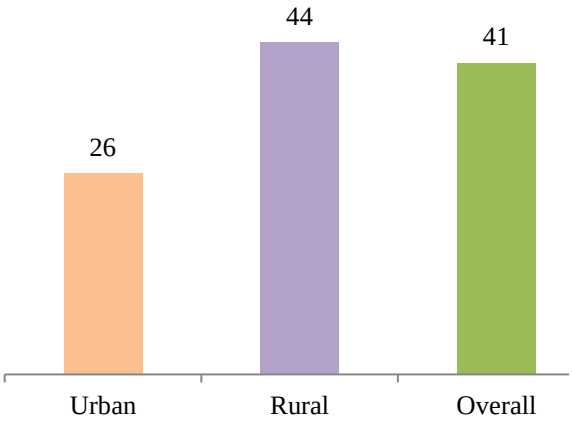


III.9 ABILITY TO PAY FOR ELECTRICITY SERVICE

During the survey, households not subscribed to the public electricity distribution network (interconnected network or a thermal power plant) were asked if they could pay the sum of 70,000 CFA francs to have a connection. It appears that :

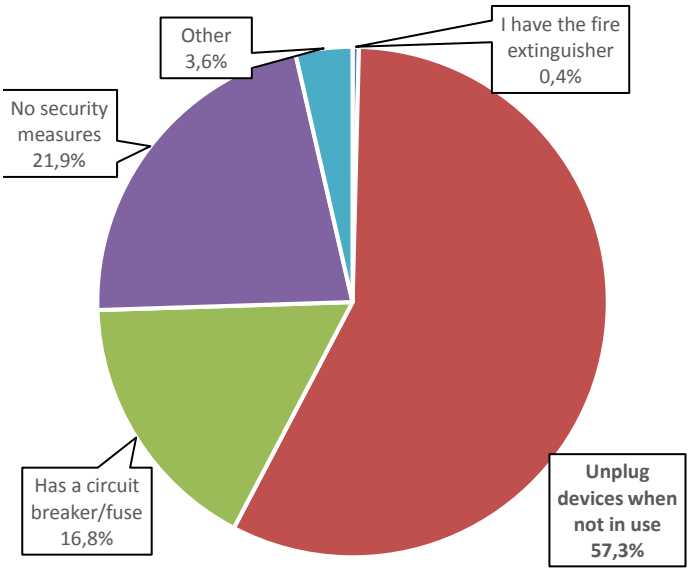
- Overall, less than half of households (41%) that do not have a subscription to the public electricity distribution network, believe that they can pay this amount to have a connection (Figure 3.16);
- This proportion is 44% in rural areas and 26% in urban areas.

Figure 3.16: Proportion (as a %) of households able to pay 70,000 CFA francs to have a connection to the public electricity distribution network, byarea of residence



III.10 SAFETY MEASURES TAKEN BY ELECTRICITY USERS

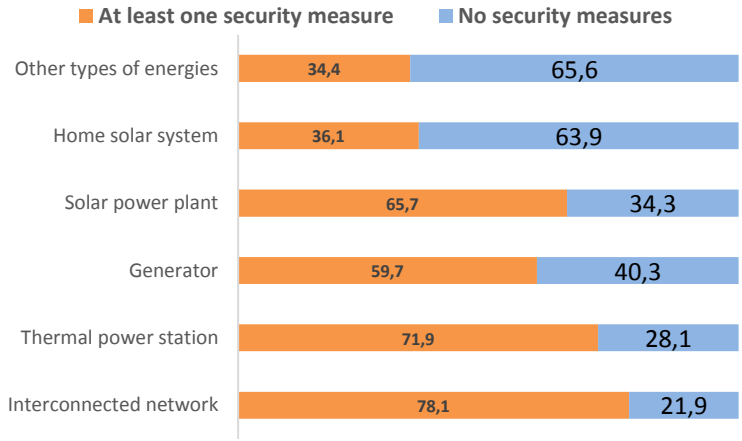
Figure 3.17: Distribution (%) of households using electricity from the interconnected network by main security measure taken



- Overall, one in five households connected to the interconnected network (22%) say they do not take any security measures in the use of electricity;
- The main safety measures observed in households relate to unplugging appliances when not in use (57%), and the use of circuit breakers and fuses (17%).

By type of electricity used, Figure 3.18 shows that households connected to the interconnected network (78%) and those using energy from thermal power stations (70%) are those who make the most use of security measures.

Figure 3.18: Proportion (%) of households using a safety measure in the use of electrical energy, by source

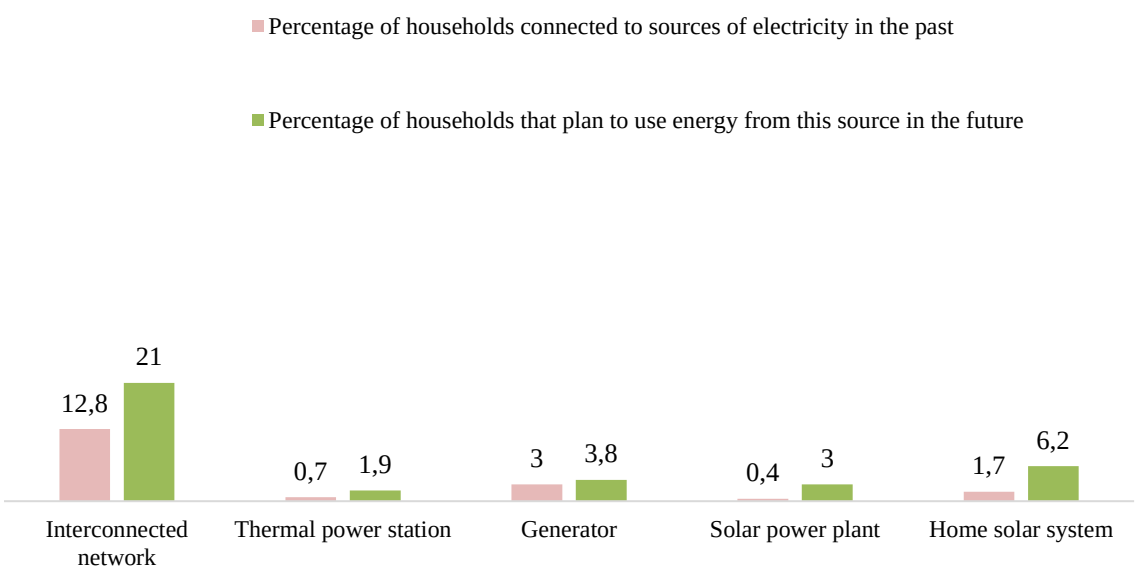


- With regard to the interconnected electricity network, the main safety measure taken by households that use it is to unplug appliances when not in use (57%). However, this practice varies by region. The South (69%), Far-North (68%), Adamawa and Yaounde (61%) are the regions where households unplug their electrical appliances the most when they are not using them. Conversely, the North-West (42%) and Douala (47%) are the regions where this practice is the least widespread among the users of the energy of the interconnected system (Table 3.13).
- As for solar home systems, it is observed that two thirds (64%) of households that use them do not take any security measures.

III.11 CHANGES IN ELECTRICAL ENERGY CONSUMPTION HABITS

- Of the 41% of households that do not use electricity from the interconnected network, almost 13% claim to have used this source in the past and 21% plan to use it in the next 12 months (Figure 3.19).
- With regard to the generator, of the 98% of households which reported that they did not use this type of electricity at the time of the survey, 3% had used it in the past and almost 4% plan to use it in the future.

Figure 3.19: Percentage of households not connected to each electricity source, percentage of households that used the energy source in the past and no longer use it, and percentage of households not using the electrical energy source and who plan to use it in the future



LIST OF TABLES

Table 3.1: Access to different sources of electricity

Percentage of households using electricity by source, by selected characteristics

Features	Access to no electricity source	Access to at least one electricity source	Interconnected network	Thermal power station	Solar power plant	LAN	Generator	Home solar system/ solar lantern	Others (biomass, biogas, etc.)	Off-grid
Area of residence										
Urban	9.5	90.5	84.6	4.4	0.1	4.5	1.5	1.0	2.5	1.5
Rural	59.6	40.4	29.2	0.6	2.0	2.6	2.3	3.7	4.7	8.6
Survey region										
Adamawa	56.3	43.7	29.2	5.8	4.3	10.1	1.3	1.9	2.0	4.4
Centre (excluding Yaounde)	35.7	64.3	56.1	0.0	1.7	1.7	2.2	4.0	2.4	6.5
Douala	3.5	96.5	96.5	0.0	0.0	0.0	0.4	0.2	0.0	0.1
East	50.7	49.3	0.0	35.0	0.8	35.8	5.9	6.2	3.1	13.4
Far-North	78.9	21.1	17.6	0.4	0.0	0.4	2.1	1.8	0.4	3.2
Littoral (excluding Douala)	17.4	82.6	77.2	0.0	1.6	1.6	0.2	3.6	1.2	3.7
North	72.5	27.5	22.0	0.0	4.3	4.3	0.6	0.6	0.4	1.2
North-West	37.1	62.9	42.9	0.0	0.0	0.0	2.1	6.8	14.6	20.1
West	12.8	87.2	84.1	0.0	0.0	0.0	1.9	1.1	8.7	3.1
South	26.4	73.6	60.2	8.5	2.5	11.0	2.3	1.3	2.8	2.9
South-West	6.7	93.3	87.6	0.0	0.0	0.0	3.9	,8	3.9	5.7
Yaounde	3.7	96.3	95.8	0.0	0.0	0.0	1.2	1.1	5.3	0.5
Wealth quintile										
Lower	92.0	8.0	1.6	0.1	0.6	0.7	,7	1.5	3.5	5.7
Second	59.3	40.7	26.9	1.4	2.1	3.5	2.3	4.8	5.0	10.3
AVERAGE	14.0	86.0	74.0	6.1	1.7	7.7	2.1	1.9	3.8	4.3
Fourth	2.0	98.0	91.3	4.2	0.3	4.4	1.6	1.5	2.2	2.2
Higher	1.8	98.2	94.8	2.0	0.1	2.2	2.3	1.4	2.9	1.4
Total	**32.5**	**67.5**	**59.1**	**2.7**	**0.9**	**3.6**	**1.9**	**2.2**	**3.5**	**4.8**

Table 3.2: Quantity (in kWh) of electricity consumed:

Average monthly amount (in kWh) of electricity consumed per household by different forms of energy and by area of residence

Sources of electricity	Residence		
	Urban	Rural	Total
Interconnected network	121.0	51.7	108.4
Thermal power station	49.4	28.7	47.8
Solar power plant	62.3	45.5	46.2
Home solar system	209.1	132.5	154.4

Table 3.3: Monthly electricity bill:

Average monthly amount (in CFA francs) of electricity expenditure per household by different forms of energy and byarea of residence

Sources of electricity	Area of residence		
	Urban	Rural	Total
Interconnected network	5,282.5	3,206.0	4,901.9
Thermal power station	3,077.1	1,676.7	2,968.7
Generator	6,944.8	4,814.7	5,571.7
Solar power plant	3,115.4	3,236.4	3,231.3

Table 3.4: Electrical equipment of households with at least one source of electricity

Percentage of households with at least one source of electricity and owning selected electrical goods by area of residence

Equipment	Area of residence		Survey region												
	Urban	Rural	Adamawa	Centre (excluding Yaounde)	Douala	East	Far-North	Littoral (excluding Douala)	North	North-West	West	South	South-West	Yaounde	**Total**
Radio station	15.1	16.8	9.0	23.8	13.7	10.9	8.6	15.7	9.8	22.8	24.0	21.1	9.7	21.0	**15.9**
TV	70.9	19.6	24.7	40.5	85.0	26.8	10.1	51.7	15.3	31.7	52.4	47.6	71.3	82.9	**47.3**
CD/DVD/VCD player	8.0	2.9	5.1	3.6	6.5	5.0	1.3	4.8	2.2	6.5	8.5	5.6	4.3	13.5	**5.7**
Music Channel/Piano	9.5	3.0	2.4	5.2	10.8	4.6	0.8	11.2	1.4	4.9	4.6	15.9	7.1	11.1	**6.5**
Microwave/Oven	2.6	0.1	0.2	0.3	3.8	0.0	0.3	0.4	0.1	0.0	0.6	2.9	1.0	5.4	**1.4**
Hotplate	0.6	0.0	0.3	0.0	0.3	0.6	0.1	0.1	0.1	0.0	0.3	0.7	0.1	1.4	**0.3**
Water heater/kettle	10.8	0.8	3.4	3.6	12.9	1.6	0.6	3.4	1.3	2.1	7.4	5.5	4.5	19.2	**6.2**
Coffee maker	3.8	0.5	1.5	1.9	4.5	1.3	0.9	0.8	0.9	0.2	1.4	3.4	0.9	7.0	**2.3**
Fan	34.5	6.2	3.2	4.3	78.6	6.7	8.2	20.9	15.4	0.7	1.6	23.5	38.7	23.2	**21.5**
Air conditioner	1.5	0.0	0.0	0.1	3.8	0.2	0.4	0.3	0.7	0.0	0.0	0.4	0.1	1.2	**0.8**
Fridge/Refrigerator	24.4	3.6	3.9	8.4	38.8	4.4	1.8	9.0	3.0	5.1	10.7	12.5	23.8	34.4	**14.8**
Freezer	10.4	1.7	2.0	8.0	12.4	2.1	1.5	4.9	1.7	0.6	3.1	9.6	1.8	20.5	**6.4**
Mobile phone/tablet	88.7	72.1	84.8	78.1	96.3	78.3	68.3	65.5	66.2	74.7	93.6	82.6	92.7	88.2	**81.1**
Landline telephone	0.6	0.0	0.1	0.0	0.9	0.0	0.0	0.2	0.0	0.1	0.2	0.3	0.3	1.2	**0.3**
Desktop computer	3.9	0.7	1.4	2.7	4.1	1.9	0.5	1.5	0.6	0.4	3.6	1.5	0.0	7.6	**2.4**
Laptop	14.4	2.1	9.4	8.0	17.5	4.3	2.6	3.2	1.9	5.9	6.8	5.9	6.1	23.2	**8.7**
Internet dongle/modem	4.6	0.5	2.0	0.9	4.8	1.2	1.6	0.6	2.2	0.8	1.6	3.3	0.6	9.3	**2.7**
Printer/Copier	0.4	0.0	0.1	0.3	0.2	0.2	0.1	0.3	0.1	0.1	0.2	0.0	0.0	0.7	**0.2**
Fax / Fax machine	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Electric sports device	0.2	0.0	0.0	0.1	0.3	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	**0.1**
Grinder/mixer	13.1	1.7	2.7	7.6	15.7	2.1	0.5	3.5	1.3	0.8	8.1	7.9	9.0	23.5	**7.8**
Iron	46.5	11.3	17.9	24.7	59.6	15.7	6.5	25.1	10.2	13.5	29.8	34.6	38.4	63.8	**30.3**
Water suppressor/pump	0.3	0.2	0.0	0.3	0.3	0.6	0.1	0.0	0.1	0.0	0.6	0.5	0.2	0.4	**0.2**
Torch	20.1	55.1	57.6	17.5	6.1	48.3	84.2	16.7	80.2	52.6	24.8	32.6	13.4	13.2	**36.2**
Sewing machine	14.6	23.1	30.3	33.2	9.9	34.7	2.4	22.5	1.6	17.6	39.4	43.4	6.7	13.9	**18.5**
Power bank	2.5	0.9	3.4	0.8	1.1	2.1	2.5	1.3	1.4	0.4	1.8	1.1	1.0	3.8	**1.7**
Hair dryer	5.3	0.9	1.4	2.5	3.8	2.2	1.0	1.7	0.9	2.2	1.9	6.6	3.3	10.4	**3.3**
Incandescent bulb	3.7	0.1	0.4	0.8	4.5	0.7	0.1	0.8	0.0	0.2	1.4	2.0	2.0	7.8	**2.0**
Fluorescent tube / Neon	15.1	16.8	9.0	23.8	13.7	10.9	8.6	15.7	9.8	22.8	24.0	21.1	9.7	21.0	**15.9**
Compact fluorescent bulbs	70.9	19.6	24.7	40.5	85.0	26.8	10.1	51.7	15.3	31.7	52.4	47.6	71.3	82.9	**47.3**
LED bulb	8.0	2.9	5.1	3.6	6.5	5.0	1.3	4.8	2.2	6.5	8.5	5.6	4.3	13.5	**5.7**
Other energy equipment	9.5	3.0	2.4	5.2	10.8	4.6	0.8	11.2	1.4	4.9	4.6	15.9	7.1	11.1	**6.5**

Table 3.5: Types of lamps used

Distribution (%) of households by type of lamps used by selected characteristics.

	Incandescent bulbs/ High efficiency halogen bulb	Fluorescent tube/Neon tube	Compact fluorescent bulb/LED bulb	Other	Total
Area of residence					
Urban	13.9	14.8	70.5	0.8	100.0
Rural	18.0	10.3	70.8	0.9	100.0
Survey region					
Adamawa	2.9	22.9	74.2	0.0	100.0
Centre (excluding Yaounde)	34.2	9.5	55.3	1.0	100.0
Douala	14.4	12.5	72.7	0.4	100.0
East	11.5	4.4	82.3	1.9	100.0
Far-North	2.5	19.9	77.6	0.0	100.0
Littoral (excluding Douala)	6.5	11.8	79.1	2.6	100.0
North	7.5	10.6	81.9	0.0	100.0
North-West	21.7	12.8	65.5	0.0	100.0
West	14.3	4.6	81.1	0.0	100.0
South	15.4	29.6	54.2	0.7	100.0
South-West	11.0	17.2	71.5	0.3	100.0
Yaounde	16.3	18.5	63.6	1.6	100.0
Wealth quintile					
Lower	7.1	9.5	72.2	11.1	100.0
Second	21.1	9.9	68.6	0.4	100.0
AVERAGE	17.2	11.4	70.7	0.7	100.0
Fourth	14.2	12.8	72.2	0.8	100.0
Higher	12.4	17.1	69.7	0.9	100.0
Total	**14.8**	**13.8**	**70.6**	**0.8**	**100.0**

Table 3.6: Behavior of electricity users

Percentage of households by electricity saving strategy by selectedbackground characteristics

Background characteristics	Percentage of households considering to replace their current lamps with more economical lamps to reduce their energy consumption	Percentage of households that consistently unplug all appliances when not in use	Distribution of households according to whether or not they turn off the light bulbs in the unoccupied spaces of their dwelling					
			Never	Rarely	Often	Always	Not concerned	Total
Area of residence								
Urban	50.1	84.3	1.7	2.6	15.6	76.5	3.6	100
Rural	56.6	77.2	1.8	2.0	8.7	81.1	6.3	100
Survey region								
Adamawa	20.9	94.6	3.3	2.3	19.8	65.3	9.3	100
Centre (excluding Yaounde)	78.0	91.6	1.1	1.3	12.1	79.2	6.3	100
Douala	50.7	86.7	0.4	1.9	18.7	77.0	2.0	100
East	70.2	89.6	4.0	7.3	17.9	67.3	3.6	100
Far-North	50.9	86.0	0.5	4.8	16.7	76.6	1.3	100
Littoral (excluding Douala)	49.6	68.7	4.6	2.4	9.3	80.5	3.2	100
North	31.0	50.4	1.2	1.1	27.2	70.0	0.5	100
North-West	53.9	91.7	2.1	5.0	13.4	73.9	5.6	100
West	87.8	84.5	2.0	2.3	11.6	83.6	0.4	100
South	52.3	90.4	0.5	2.0	25.3	70.0	2.1	100
South-West	7.0	69.8	0.7	1.4	7.5	74.2	16.2	100
Yaounde	47.2	86.0	2.2	2.9	11.4	81.5	2.0	100
Wealth quintile								
Very poor	54.0	69.4	0.0	4.6	5.4	78.9	11.1	100
Second	70.1	81.2	1.1	2.6	12.1	79.5	4.7	100
AVERAGE	52.3	80.4	1.8	2.2	14.9	75.7	5.4	100
Fourth	49.4	83.6	2.5	2.3	14.8	75.1	5.3	100
Very rich	46.1	83.8	1.2	2.7	13.7	80.1	2.3	100
Total	**51.5**	**82.9**	**1.7**	**2.5**	**14.1**	**77.5**	**4.2**	**100**

Table 3.7: Quality of electricity available for consumption

Percentage of households that considers that the electrical energy used can normally supply their various electrical equipment, by source and by selected characteristics

	Interconnected network	Thermal power station	Generator	solar power plant	home solar system
Area of residence					
Urban	85.2	84.0	68.7	49.8	61.7
Rural	78.8	63.5	82.0	76.0	53.2
Survey region					
Adamawa	93.9	91.5	100.0	43.0	52.0
Centre (excluding Yaounde)	91.7	100.0	96.7	84.8	64.9
Douala	90.7	n/a	41.1	ND.	69.9
East	82.6	77.8	72.6	33.3	79.5
Far-North	n/a	58.6	69.2	0.0	30.7
Littoral (excluding Douala)	95.0	n/a	100.0	100.0	77.8
North	86.3	n/a	25.4	89.6	53.9
North-West	49.4	n/a	79.0	n/a	15.5
West	74.7	n/a	64.5	n/a	48.7
South	94.5	100.0	77.2	61.5	85.1
South-West	67.3	n/a	81.2	100.0	100.0
Yaounde	87.3	n/a	91.1	n/a	42.8
Wealth quintile					
Lower	87.4	100.0	74.3	92.0	39.8
Second	77.4	71.1	75.4	73.8	54.1
AVERAGE	84.4	81.0	89.4	79.8	68.0
Fourth	83.7	85.2	79.1	67.3	62.3
Higher	85.0	86.3	67.8	0.0	52.1
Total	**83.7**	**82.3**	**76.3**	**74.9**	**55.1**

NA: not available

Table 3.8: Duration of power cuts or interruptions

Average duration (in hours) of power cuts or interruptions over the past 03 months preceding the survey; Distribution (%) of households by average duration of power cuts or interruptions over the past 03 months preceding the survey byarea of residence

Source of electricity	Characteristic	Average duration (in hours) power cuts or interruptions	Distribution (%) of households by average duration of power cuts or interruptions				
			Less than 1 hour	From 1 hour to less than 4 hours	From 4 hours to less than 8 hours	From 8 hours to 24 hours	Total
Interconnected network	**Area of residence**						
	Urban	6.3	13.9	23.2	31.3	31.5	100
	Rural	8.8	8.3	20.1	23.7	48.0	100
	Survey region						
	Adamawa	9.2	1.1	6.8	37.9	54.1	100
	Centre (excluding Yaounde)	9.6	3.9	15.5	25.0	55.6	100
	Douala	4.8	18.2	32.1	29.3	20.4	100
	East	12.7	2.5	23.1	14.5	60.0	100
	Far-North	8.3	1.5	4.5	51.5	42.5	100
	Littoral (excluding Douala)	7.8	8.8	22.9	30.8	37.5	100
	North	8.0	0.0	4.1	44.0	52.0	100
	North-West	9.1	3.1	13.0	49.8	34.1	100
	West	7.7	9.0	19.2	24.9	47.0	100
	South	7.6	11.2	24.5	21.6	42.6	100
	South-West	3.7	29.3	35.1	23.1	12.5	100
	Yaounde	6.7	15.0	21.1	26.8	37.1	100
	Total	6.9	12.6	22.5	29.6	35.3	100
Thermal power station	**Area of residence**						
	Urban	8.1	4.1	28.5	24.7	42.6	100
	Rural	13.8	8.1	7.7	2.6	81.6	100
	Survey region						
	Adamawa	7.8	0.0	3.0	36.2	60.8	100
	East	8.4	6.0	35.2	18.2	40.5	100
	Far-North	10.4	4.3	0.0	17.7	78.0	100
	South	9.3	0.0	4.4	36.4	59.2	100
	Total	**8.6**	**4.5**	**26.6**	**22.7**	**46.2**	**100**

Table 3.9: Frequency of power outages from the interconnected network or from a thermal power plant

Distribution (%) of households using electricity from the interconnected network or from a thermal power station by frequency of outages over the past three months preceding the survey, by area of residence

Area of residence	Frequency of interruptions				
	No interruption	Rare	Often	Very often	Total
Area of residence					
Urban	3.3	18.4	58.1	20.2	100
Rural	0.4	24.4	31.4	43.8	100
Survey region					
Adamawa	0.7	17.8	40.1	41.3	100
Centre (excluding Yaounde)	1.6	7.7	34.2	56.5	100
Douala	0.9	15.6	38.8	44.6	100
East	0.4	6.9	39.3	53.4	100
Far-North	1.1	2.6	33.7	62.7	100
Littoral (excluding Douala)	0.6	18.0	49.7	31.8	100
North	0.8	7.9	23.9	67.4	100
North-West	0.0	7.1	22.2	70.7	100
West	1.9	24.8	36.3	37.0	100
South	0.0	3.7	37.4	58.8	100
South-West	0.5	13.4	31.2	54.9	100
Yaounde	0.4	7.7	27.9	64.0	100
Total	**0.9**	**15.6**	**38.8**	**44.6**	**100**

Table 3.10: Problems encountered by users of electrical energy

Distribution (%) of households by main problem encountered over the past twelve months preceding the survey, in the use of electricity from the interconnected network or from a thermal power station, by selected characteristics

Characteristic	Shortage of supply/not enough hours of electricity	High/low voltage problems or voltage fluctuations	Unpredictable interruptions	Amount of unpredictable invoices, fanciful invoicing	High cost of electricity	Non-issuance of consumption invoices	Other reason	No problem	Total
Area of residence									
Urban	23.4	19.9	37.8	2.5	4.9	1.6	4.2	7.3	100
Rural	26.4	21.6	35.8	1.0	1.6	1.9	6.1	7.5	100
Survey region									
Adamawa	30.4	6.5	44.4	1.5	1.0	1.5	9.4	6.8	100
Centre (excluding Yaounde)	35.9	19.9	32.0	1.4	0.6	0.6	6.2	4.0	100
Douala	18.9	20.1	40.2	2.7	9.0	1.5	3.6	5.7	100
East	30.0	18.1	28.9	2.4	3.0	0.3	4.1	13.5	100
Far-North	42.5	13.1	36.3	1.7	2.0	0.4	2.0	2.4	100
Littoral (excluding Douala)	34.5	13.8	35.6	1.5	0.9	4.5	6.3	7.4	100
North	25.5	6.6	32.2	0.7	5.3	0.5	1.8	27.9	100
North-West	42.4	19.7	20.1	0.9	2.2	3.9	13.1	1.5	100
West	20.8	30.6	36.4	1.8	1.7	0.6	1.3	7.3	100
South	25.5	19.0	41.3	0.8	4.1	1.8	3.7	5.7	100
South-West	13.1	33.3	37.6	0.0	7.5	1.7	2.5	6.0	100
Yaounde	14.9	16.6	44.2	5.0	3.2	1.6	5.9	10.2	100
Total	**24.1**	**20.3**	**37.4**	**2.1**	**4.1**	**1.7**	**4.6**	**7.3**	**100**

Table 3.11: Reasons for not using energy from each source

Distribution (%) of households by main reason for not using electricity, by source of electricity used

Sources of electricity	Main reasons									
	Lack of means	Not available in the locality/Network very far from the house	High installation/connection cost	Cost very high monthly consumption	Don't need it/ satisfied by current solution or source	Overcharging	Difficult to maintain	Defective equipment	Other reasons	Total
Interconnected network	16.4	70.3	1.3	0.4	3.3	0.6	0.2	1.8	3.7	100
Thermal power station	10.6	49.4	0.9	0.3	25.9	0.1	1.1	0.1	0.4	100
Generator	50.9	7.7	2.7	1.2	29.8	0.2	2.5	1.2	0.8	100
Solar power plant	15.5	44.1	1.3	0.5	28.5	0.1	1.5	0.0	0.2	100
Home solar system	39.3	16.1	3.7	0.6	30.9	0.4	1.7	0.2	0.4	100

Table 3.12: Ability to pay for electricity

Distribution (as a %) of households able to pay 70,000 CFA francs for the interconnected network byarea of residence and survey region

Features		Are you able to pay 70,000 for a subscription/connection to the interconnected network?		
		Yes	No	Total
Area of residence	Urban	26.4	73.6	100
	Rural	43.6	56.4	100
	Total	40.9	59.1	100
Survey region	Adamawa	41.7	58.3	100
	Centre	78.0	22.0	100
	Douala	31.1	68.9	100
	East	69.5	30.5	100
	Far-North	21.9	78.1	100
	Littoral	47.3	52.7	100
	North	35.7	64.3	100
	North-West	27.1	72.9	100
	West	50.2	49.8	100
	South	53.8	46.2	100
	South-West	41.0	59.0	100
	Yaounde	18.6	81.4	100

Table 3.13: Security measures taken by electricity users

Distribution (%) of households by security measures used, Percentage of households by security measures used by selected characteristics

Sources of electricity	Safety measure you take in your household to avoid or limit incidents relating to the use of electrical energy in your household						
	I have the fire extinguisher	Unplug devices when not in use	Has a circuit breaker/fuse	No security measures	Other	Total	At least one security measure
Interconnected network	0.4	57.3	16.8	21.9	3.6	100.0	78.1
Thermal power station	0.0	57.8	9.5	28.1	4.5	100.0	71.9
Generator	1.8	42.3	7.8	40.3	7.7	100.0	59.7
Solar power plant	0.0	57.1	6.6	34.3	2.0	100.0	65.7
Home solar system	0.0	28.7	5.0	63.9	2.4	100.0	36.1
Other types of energies	0.0	17.6	0.3	65.6	16.4	100.0	34.4
Total	0.3	43.8	11.5	40.0	4.4	100.0	60.0

Table 3.14: Changes in electrical energy consumption habits

Percentage of households not connected to each electricity source but connected in the past and percentage of households not connected and planning to connect in the future

Sources of electricity	Percentage of households not connected to the source of electricity?	Percentage of households connected to sources of electricity in the past	Percentage of households that plan to use energy from this source in the future
Interconnected network	40.5	12.8	21.0
Thermal power station	97.7	0.7	1.9
Generator	98.1	3.0	3.8
Micro hydroelectric plant	100.0	0.5	1.6
Solar power plant	99.1	0.4	3.0
Home solar system	98.0	1.7	6.2
Small plate/ Solar lamp	79.2	8.1	13.5
Solar lantern	99.7	1.3	3.7
Wind power	100.0	0.4	1.2
Other types of energies	96.5	0.7	1.7

4 HOUSEHOLD ACCESS TO FUELS

SDG number 7 aims to ensure access for all to reliable, sustainable and modern energy services at an affordable cost. This objective is at the Centre of the major challenges and opportunities of tomorrow. Access to sustainable energy for all is essential.

Members of the Economic Community of Central African States (ECCAS) and the Economic and Monetary Community of Central Africa (CEMAC) adopted in 2014 a regional policy to guarantee universal access to modern energy services and economic and social development by 2030. This police enshrined in the "White Paper" aims to promote sustainable development in Central Africa through good regional and local governance of energy potential. The ideais also to ensureenergy security of the sub-region and development of renewable energies.

At the national level, the National Development Strategy (NDS30) is part of the same orientation of increasing the national supply of clean energy by creating new LPG production infrastructure.

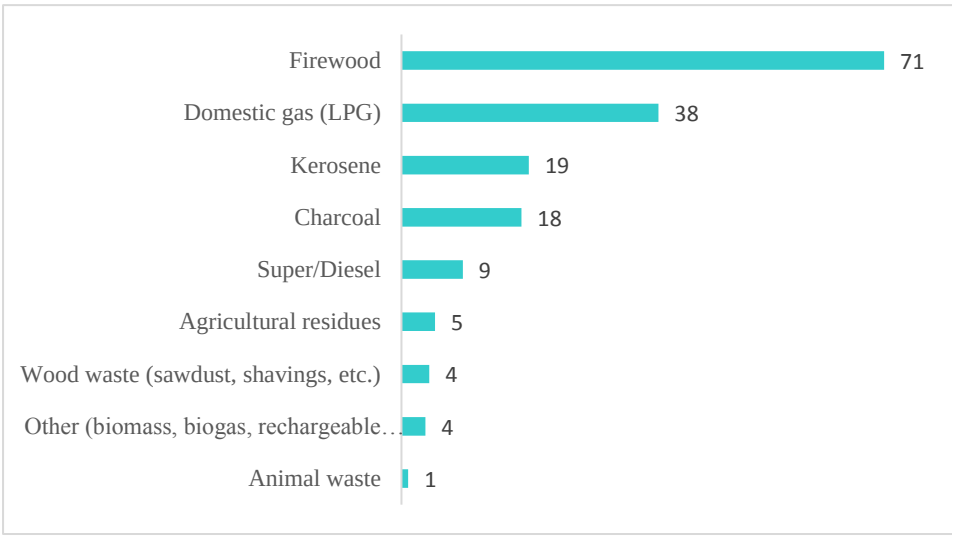
During this study, access to different forms of fuels was assessed and represents the use of these fuels in households. This chapter presents in turn the rate of access of households to different forms of fuel, their consumption by use, the place of supply as well as the time taken to acquire it, modern cooking solutions, household energy equipment, changes in fuel consumption habits, safety measures and damage or accidents suffered by fuel users.

IV.1 HOUSEHOLD ACCESS TO DIFFERENT FORMS OF FUEL

Access to different forms of fuel at the national level

In Cameroon, firewood is the fuel most frequently used by households. In fact, about seven in ten households (71%) have access to this fuel. It is followed in order of importance by domestic gas (LPG), whose access rate is estimated at 38%, kerosene (19%) and charcoal (18%). In addition, the use of other types of fuels, in particular diesel or super fuel, agricultural residues, wood waste (sawdust, shavings, etc.) and animal waste, is marginal (at most 9%).

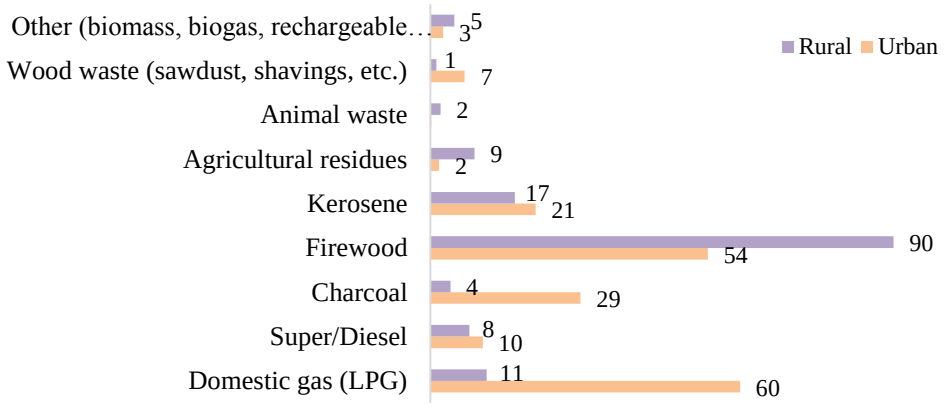
Figure 4.1: Access to different forms of fuels:
Proportion (%) of households using each type of fuel



Access to different forms of fuel byarea of residence

Some fuels are used more in rural areas than in urban areas; these include firewood (90% of households in rural areas and 54% in urban areas), other fuels, including kerosene and agricultural residues. Domestic gas (LPG), fuel (super and diesel), charcoal and wood waste are mainly used in urban areas.

Figure 4.2: Access to different types of fuels:
Proportion (%) of households using each type of fuel byarea of residence



IV.2 FUEL CONSUMPTION IN HOUSEHOLDS BY USES

Use of different fuels by uses

During the survey, questions were asked to households to find out the types of fuels they used and the related uses. Overall, domestic gas (LPG) is mainly used for cooking meals (81%) and heating water and meals (19%) (Table 4.3).

Super and diesel are mainly used as fuel (90% and 75% respectively). Diesel is used at 22% for the production of electricity.

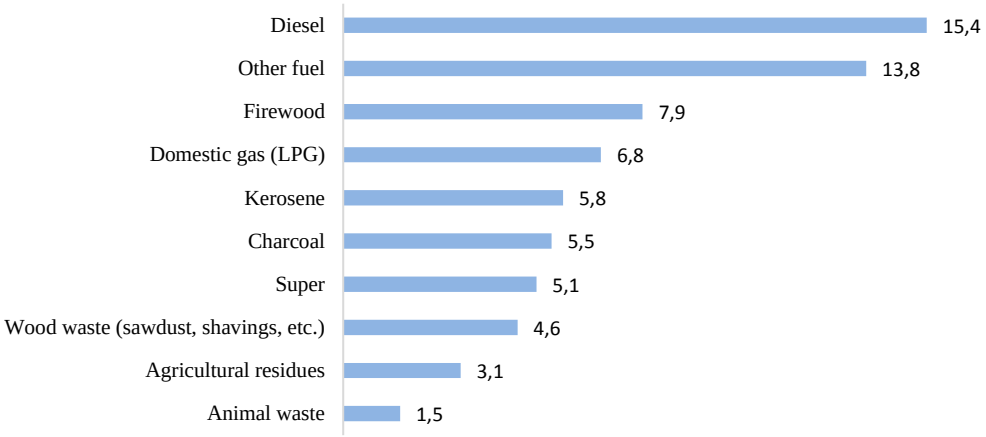
Charcoal (94%), firewood (99%) and wood waste (sawdust, shavings, etc.) (97%) are mainly used for cooking meals. Kerosene is mainly used for lighting (60%), cooking meals (29%) and heating water and meals (9%).

Agricultural residues and animal waste are used in over 78% of cases for cooking meals and heating water and meals.

Average distance traveled by households to acquire the different fuels

Households travel an average of about 8 km to acquire firewood, which is the most widely used fuel. This average distance is approximately 15 km for diesel, 7 km for domestic gas (LPG), 6 km for charcoal, 5 km for super and 5 km for wood waste. (Figure 4.3).

Figure 4.3: Average distance (in km) traveled by households to acquire each fuel



Fuel supply locations

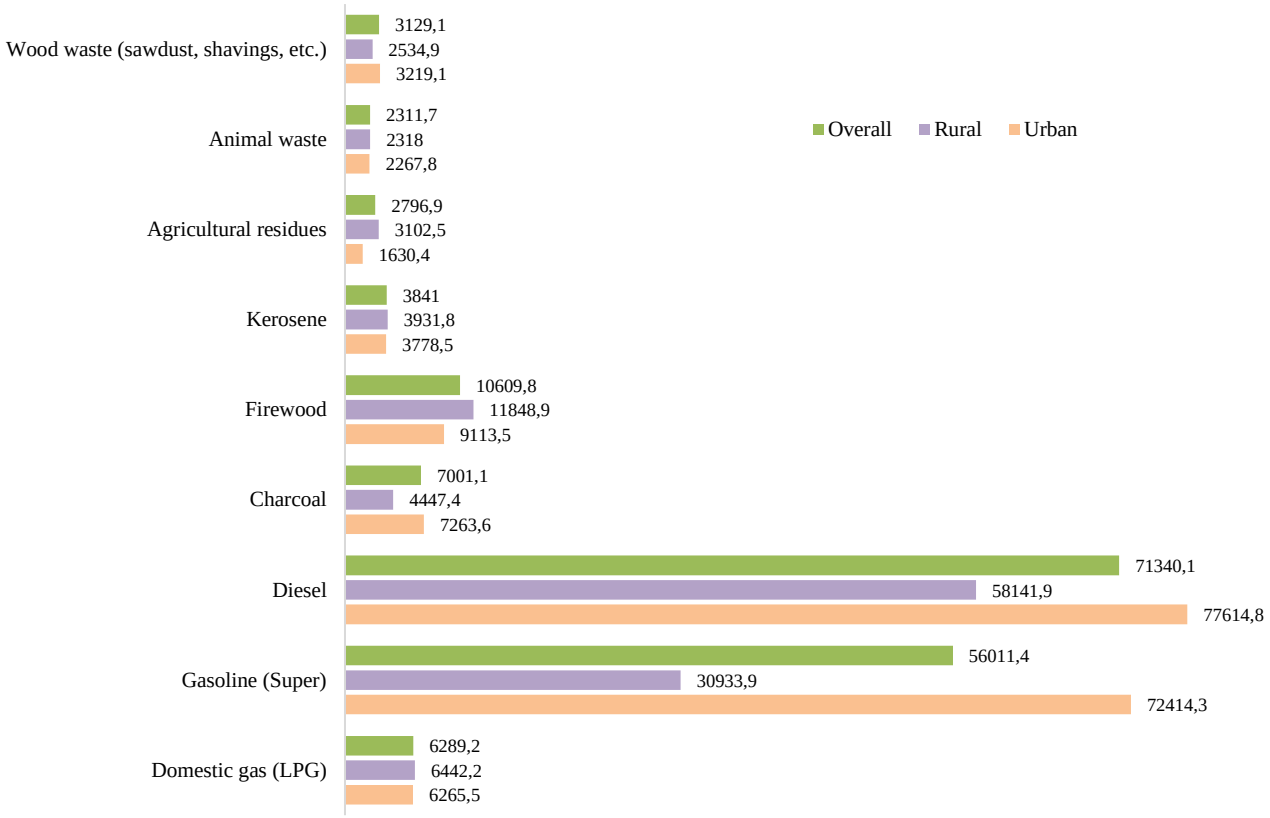
Analysis of accessibility to fuels by place of supply shows that households mainly obtain their supplies of LPG from warehouses/depots (37%), service stations (33%) and shops (22%). However, there is a large number of households that get their supplies from the market (5%).

As far as fuels are concerned, super is the one that is obtained the most in unauthorized places (21% from itinerant or street vendors and 6% at the market). In addition, 5% of households reported refueling on the sly and 7% at the market (Table 4.2).

Average monthly consumption expenditure of each form of fuel by user households

Figure 4.4 below shows the average monthly consumption expenditure of each form of fuel by households that use it mainly for domestic purposes. It is noted that overall, households that use diesel spend an average of 71,340 CFA francs per month to obtain this fuel. For super, the average monthly consumption expenditure per household is estimated at 56,011 CFA francs. For domestic gas, user households pay an average of 6,289 CFA francs per month. For other fuels, the average monthly expenditure per household is 10,610 CFA francs for firewood, 7,001 CFA francs for charcoal, 3,841 CFA francs for kerosene and 3,129 CFA francs for wood waste.

Figure 4.4: Average monthly consumption expenditure of each form of fuel per user household (in CFA francs)



IV.3. ACCESS TO MODERN OR CLEAN COOKING SOLUTIONS

SDG 7 a calls for universal access to clean and safe technologies and fuels for cooking, increased use of renewable energy, reliable, sustainable and modern energy services at an affordable cost.

Table 4.4 presents results on the main fuel used by households for cooking. This table presents clean fuels and those that are not clean or solid. Clean fuels include electricity, liquefied petroleum gas (LPG) and biogas. Non-clean fuels include: charcoal, firewood, straw/twigs/grass, animal dung/waste, agricultural residues, sawdust/chips and kerosene.

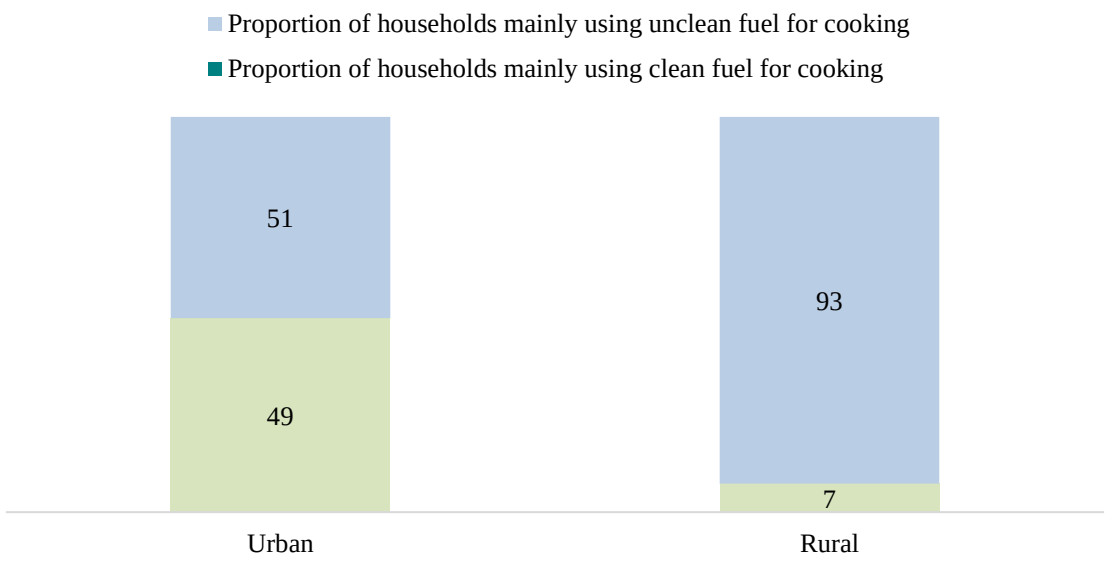
At the national level, 30% of households mainly use clean fuels for cooking. This mainly includes liquefied petroleum gas (LPG) which is used as the main fuel by 29% of households and marginally electricity (less than 1%).

Proportion (%) of households by type of fuel used for cooking

Variations by characteristics

Byarea of residence, 49% of households in urban areas mainly use clean fuels for cooking compared to 7% in rural areas (Figure 4.5). Here, the type of fuel most used mainly for cooking is wood (89% of households); meanwhile in urban areas, LPG is mainly used more by households (48%) (Table 4.4).

Figure 4.5: Proportion (%) of households by type of fuel mainly used for cooking, by area of residence



- About 71% of households mainly use clean fuel in Yaounde, 63% in Douala, 60% in the South-West and 35% in the South. In contrast, the proportion of households using mainly clean fuels for cooking is lower in the northern regions. It is 3% in the Far-North, 4% in the North and 12% in Adamawa.
- By the level of wealth, the use of clean fuels for cooking as a whole increases from the lowest quintile to the highest quintile. For the first two wealth quintiles, percentages are

close to zero. In contrast, 41% of households in the highest quintile use clean fuels (Table 4.4).

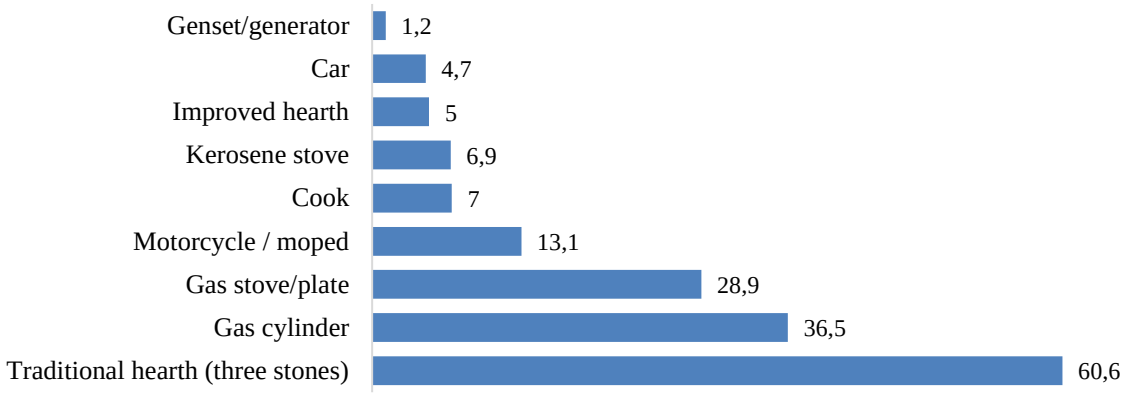
Figure 4.6: Proportion of households using clean energy by survey region

IV.4 FUEL-BURNING EQUIPMENT IN HOUSEHOLDS

During the survey, an inventory of domestic fuel-powered equipment was conducted. Results show that nearly three in five households have a traditional fireplace (61%) and nearly three in ten households use a stove or a gas hob. Very few households own an improved stove (5%), a car (5%) and a generator (1%) (Figure 4.7).

Figure 4.7: Inventory of domestic fuel-powered equipment:

Proportion of households with fuel-powered equipment



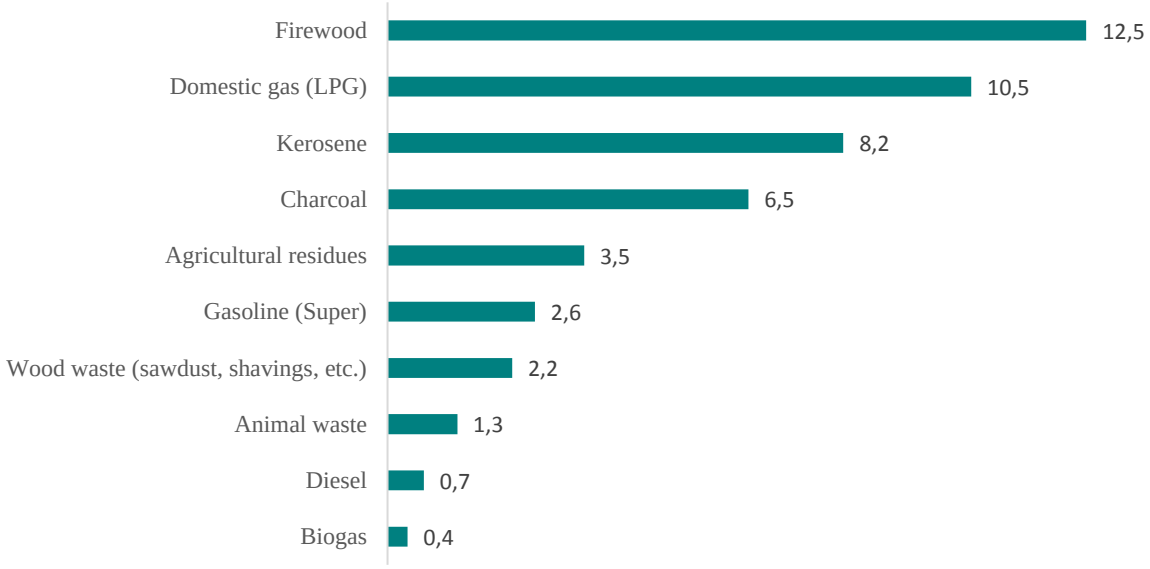
IV.5 CHANGE IN FUEL CONSUMPTION HABITS

This section reports on the change in fuel consumption habits within households. The change here refers, on the one hand, to the cases of households which, during data collection, do not use a given fuel and who reported having had to use it in the past, and on the other hand, to the case of households that do not use a fuel and intend to use it in the next 12 months.

Change in fuel consumption habit: households that do not use a given fuel but plan to use it in the next 12 months.

Overall, among households that do not use firewood, 13% plan to use it in the next 12 months. For households that do not use domestic gas, 10% plan to use it in the next 12 months. Similarly, 8% of households that do not use kerosene plan to use it in the future (Figure 4.8).

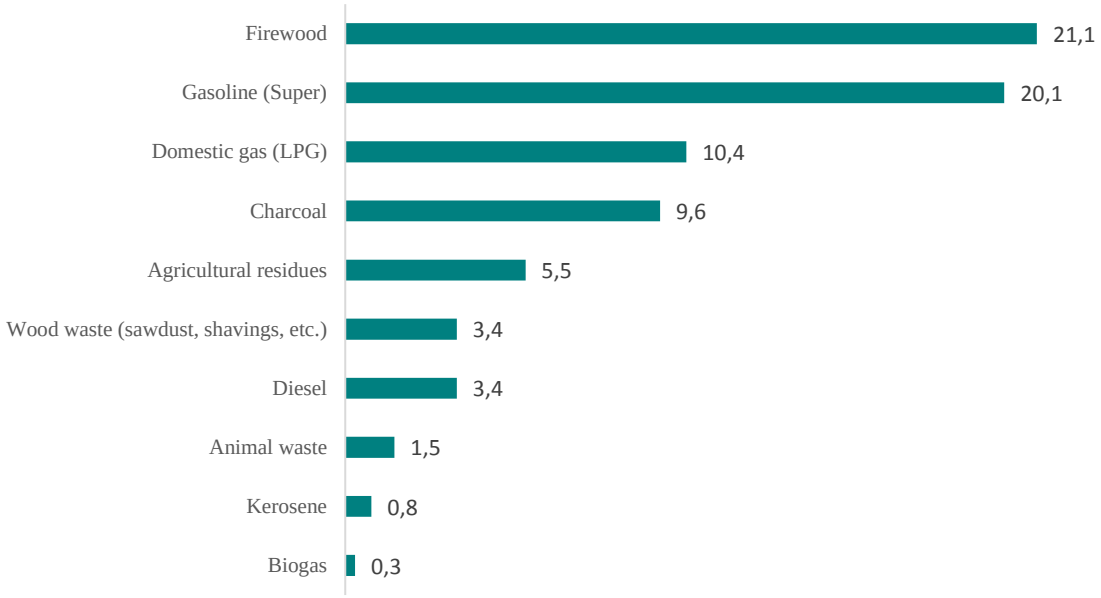
Figure 4.8: Percentage of households not using a given fuel and planning to use it in the next 12 months



Change in fuel consumption habits: households having used a given fuel in the past and no longer using it.

Overall, the percentage of households that did not use firewood at the time of data collection and who reported having used it in the past is 21%. This percentage is 20% for kerosene, 10% for domestic gas and 9% for charcoal. It is less than 5% for the other fuels (Figure 4.9).

Figure 4.9: Percentage of households that do not currently use a given fuel but have used it in the past



Reasons for non-use of selected fuels by households

For each fuel not used by a household, the main reason for non-use was asked. Table 4.8 shows that households that no longer use firewood and that have used it in the past mention as the main reasons for giving up: not necessary or not needed (24%), no reason mentioned (17 %) and not suitable (15%).

LIST TABLES

Table 4.1: Access to different forms of energy

Distribution (as a %) of households using each form of fuel byarea of residence

	Area of residence		Survey region												Total
	Urban	Rural	Adamawa	Centre (excluding Yaounde)	Douala	East	Far-North	Littoral (excluding Douala)	North	North-West	West	South	South-West	Yaounde	
Domestic gas (LPG)	60.4	11.0	15.9	27.9	79.2	15.7	2.9	31.3	3.9	21.3	32.9	43.4	65.7	80.6	**37.7**
Super/Diesel	10.2	7.6	12.1	7.0	11.7	12.2	9.6	10.4	10.0	2.5	6.7	10.0	3.9	11.7	**9.0**
Charcoal	29.3	3.9	10.3	6.7	57.2	6.8	7.5	15.0	12.5	1.8	9.5	14.9	5.1	34.2	**17.6**
Firewood	54.1	90.3	84.5	84.3	28.9	89.7	89.3	76.4	87.2	84.8	86.5	69.8	52.5	46.1	**70.8**
Kerosene	20.5	16.5	16.0	26.2	13.7	10.4	1.7	24.5	3.3	10.1	42.4	35.2	10.6	36.6	**18.7**
Agricultural residues	1.7	8.6	1.4	3.3	0.1	0.0	17.3	5.7	12.8	0.0	5.9	1.9	0.0	1.2	**4.9**
Animal waste	0.2	2.0	0.0	0.3	0.1	0.4	5.6	0.2	1.5	0.0	0.5	0.4	0.0	0.3	**1.0**
Wood waste (sawdust, shavings, etc.)	6.7	1.2	0.7	1.6	7.4	2.0	0.5	5.2	0.1	2.0	4.0	8.9	1.2	13.1	**4.1**
Other (biomass, biogas, rechargeable battery, etc.)	2.5	4.7	2.0	2.4	0.0	3.1	0.4	1.2	0.4	14.6	8.7	2.8	3.9	5.3	**3.5**

Table 4.2: Fuel supply

Distribution (as a %) of households by main place of supply for each fuel used; average distance (in km) from home to place of supply of each fuel used

	Fuel supply location									Average distance (in km) from the place of supply
	Market	Shop	Warehouse/depot	Gas station	Itinerant or street vendor	Collected/Picked up	Self produced	Other	Total	
Domestic gas (LPG)	5.4	22.1	37.0	33.1	0.3	0.0	0.0	2.1	100.0	6.8
Super	6.3	3.3	8.2	56.6	20.6	0.0	0.0	4.9	100.0	5.1
Diesel	7.3	0.0	4.6	81.4	4.8	0.0	0.0	1.9	100.0	15.4
Charcoal	61.7	14.3	3.3	0.0	7.3	0.0	8.0	5.4	100.0	5.5
Firewood	12.9	5.0	3.9	0.0	8.2	62.0	3.1	5.0	100.0	7.9
Kerosene	16.1	51.1	1.2	28.3	0.8	0.0	0.0	2.5	100.0	5.8
Agricultural residues	2.9	0.2	0.4	0.0	1.0	77.0	15.8	2.8	100.0	3.1
Animal waste	1.9	0.7	0.0	0.0	6.0	79.3	7.8	4.3	100.0	1.5
Wood waste (sawdust, shavings, etc.)	6.4	1.8	68.0	0.0	4.4	17.7	1.7	0.0	100.0	4.6
Other fuel	60.7	12.2	0.0	12.5	5.1	0.0	6.4	3.3	100.0	13.8

Table 4.3: Uses of fuels by area of residence

Repair (%) of households using each type of fuel by main use

	Cooking meals	Water/meal heating	Lighting	Fuel	Space heating	Power supply of electrical devices	Electricity production	Other	Total
Domestic gas (LPG)	80.7	19.2	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Gasoline (Super)	0.0	0.0	0.0	90.0	0.0	0.0	6.5	3.5	100.0
Diesel	0.0	0.0	0.0	75.2	0.0	0.0	21.6	3.3	100.0
Biogas	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Charcoal	93.7	2.7	0.0	0.0	0.8	0.1	0.0	2.7	100.0
Firewood	98.4	1.3	0.1	0.0	0.1	0.0	0.0	0.2	100.0
Kerosene	29.3	8.6	60.2	0.0	0.0	0.0	0.0	1.9	100.0
Agricultural residues	65.3	13.0	0.0	0.0	0.8	0.0	0.0	20.9	100.0
Animal waste	72.8	7.3	0.0	0.0	0.9	0.0	0.0	19.0	100.0
Wood waste (sawdust, shavings, etc.)	97.3	1.7	0.0	0.0	0.2	0.0	0.0	0.9	100.0
Other fuel	12.2	1.3	76.0	2.5	0.0	0.0	4.9	3.1	100.0

Table 4.4: Use of energy types by households for cooking

Distribution (%) of households by main fuel used for cooking; Proportion (%) of households mainly using clean fuel for cooking

		Main fuel used by the household for cooking										
Characteristics		Electricity	Liquefied Petroleum Gas (LPG)	Kerosene/paraffin	Charcoal	Firewood	Straw/branches/grass	Animal dung/waste	Agricultural residues	Sawdust/chip	Total	Proportion (%) of households mainly using clean fuel for cooking
Area of residence	Urban	1.2	47.8	3.6	7.9	37.0	0.0	0.0	0.1	2.3	100.0	49.1
	Rural	0.4	6.8	1.0	1.5	89.2	0.0	0.3	0.8	0.0	100.0	7.2
Survey region	Adamawa	0.1	12.1	1.6	3.0	83.1	0.0	0.0	0.0	0.1	100.0	12.2
	Centre (excluding Yaounde)	0.1	18.4	3.7	2.2	75.1	0.0	0.0	0.0	0.5	100.0	18.5
	Douala	1.6	61.5	2.4	18.3	12.1	0.0	0.0	0.0	4.1	100.0	63.1
	East	0.3	8.3	1.6	3.0	86.2	0.0	0.0	0.0	0.6	100.0	8.6
	Far-North	0.1	2.9	0.5	2.4	90.3	0.1	0.9	2.9	0.0	100.0	3.0
	Littoral (excluding Douala)	2.0	19.8	1.6	6.6	69.4	0.0	0.0	0.0	0.6	100.0	21.9
	North	0.6	3.1	0.4	6.7	89.2	0.0	0.0	0.0	0.0	100.0	3.7
	North-West	0.7	15.3	2.3	0.6	80.8	0.0	0.0	0.0	0.3	100.0	16.0
	West	0.3	16.5	0.9	2.6	79.3	0.0	0.0	0.0	0.4	100.0	16.8
	South	0.2	35.2	2.5	2.2	57.0	0.0	0.0	0.0	3.0	100.0	35.4
	South-West	3.6	56.4	2.8	1.0	36.0	0.0	0.0	0.0	0.2	100.0	60.1
	Yaounde	0.3	70.2	6.9	3.1	15.7	0.0	0.0	0.0	3.8	100.0	70.6
Wealth quintile	Lower	0.0	0.1	0.1	0.4	97.0	0.0	0.5	1.8	0.0	100.0	0.1
	Second	0.0	0.2	0.1	1.7	97.6	0.0	0.1	0.3	0.0	100.0	0.2
	AVERAGE	0.6	2.3	5.4	7.0	82.6	0.0	0.0	0.0	2.0	100.0	3.0
	Fourth	1.0	40.4	7.2	11.7	36.0	0.0	0.0	0.0	3.6	100.0	41.4
	Higher	2.2	84.9	0.3	4.5	7.0	0.0	0.0	0.0	1.1	100.0	87.1

Total	**0.8**	**28.9**	**2.4**	**5.0**	**61.1**	**0.0**	**0.1**	**0.4**	**1.3**	**100.0**	**29.7**				

Table 4.5: Average monthly expenditure (in CFA francs) for consumption of each form of fuel per household

	Area of residence		Survey region												
	Urban	Rural	Adamawa	Centre (excluding Yaounde)	Douala	East	Far-North	Littoral (excluding Douala)	North	North-West	West	South	South-West	Yaounde	Total
Domestic gas (LPG)	6265.5	6442.2	6762.4	6588.7	5925.1	5163.5	6662.1	6675.5	7320.4	8034.2	5898.6	6412.9	6814.1	6050.6	6289.2
Gasoline (Super)	72414.3	30933.9	33951.5	32717.9	52544.3	24344.9	30364.8	48496.8	32532.3	9190.0	32971.6	35300.3	64636.1	169982.0	56011.4
Diesel	77614.8	58141.9	113975.0	92995.4	46666.1	11408.7	75773.9	104465.3	16029.9	86000.0	64763.2	12299.0	56493.8	114628.8	71340.1
Charcoal	7263.6	4447.4	3734.1	3668.3	7683.1	5668.4	6243.3	9021.9	9741.5	4384.7	5993.1	7468.0	4175.9	6220.2	7001.1
Firewood	9113.5	11848.9	9741.2	14095.9	6785.0	10091.2	12547.3	8620.5	11414.1	9197.1	12224.2	10855.7	8743.1	7380.7	10609.8
Kerosene	3778.5	3931.8	3131.2	4582.3	2857.0	4028.9	8843.6	4246.4	11998.5	4919.5	2719.4	3980.5	3768.3	3692.4	3841.0
Agricultural residues	1630.4	3102.5	3034.2	999.2	n/a	n/a	3290.2	1156.1	4490.3	n/a	1256.3	3557.5	n/a	1275.4	2796.9
Animal waste	2267.8	2318.0	n/a	833.3	2150.0	n/a	2282.4	n/a	5466.9	n/a	2361.3	6450.0	n/a	531.3	2311.7
Wood waste (sawdust, shavings, etc.)	3219.1	2534.9	9129.9	884.2	3018.5	2305.1	3583.7	2884.5	3354.0	2585.9	2254.3	2792.3	1835.2	3735.5	3129.1

n/a*means not available*

Table 4.6: Household energy equipment:

Percentage of households with some fuel-powered equipment

Equipment owned	Area of residence		Survey region												**Total**
	Urban	Rural	Adamawa	Centre*	Douala	East	Far-North	Littoral*	North	North-West	West	South	South-West	Yaounde	
Car	7.4	1.6	3.2	4.7	7.2	2.7	1.2	2.6	1.6	2.2	4.0	3.4	6.7	12.8	**4.7**
Motorcycle / moped	12.2	14.1	18.9	9.8	11.4	23.8	19.6	18.9	16.0	9.4	13.0	10.0	4.4	6.0	**13.1**
Cook	11.6	1.6	2.9	6.2	17.2	2.1	0.3	2.6	0.2	3.9	4.2	4.8	5.5	21.7	**7.0**
Kerosene stove	10.4	2.8	7.9	6.2	6.1	3.6	1.7	3.0	1.0	4.3	8.2	5.2	7.3	23.5	**6.9**
Gas stove/plate	45.8	9.0	13.0	17.9	59.5	13.4	2.3	23.4	3.0	15.4	26.7	39.1	55.7	59.1	**28.9**
Improved hearth	7.9	1.5	0.9	0.4	16.4	0.7	3.0	3.8	2.8	1.1	4.2	2.9	5.5	7.8	**5.0**
Traditional hearth (three stones)	42.8	81.5	81.2	62.2	16.5	78.4	85.4	61.8	84.1	68.0	80.3	66.6	48.1	32.7	**60.6**
Gas cylinder	58.1	11.1	16.1	27.7	77.0	15.1	2.7	28.8	3.6	20.3	30.5	43.5	64.6	78.2	**36.5**
Genset/generator	1.1	1.4	1.1	1.4	0.8	2.2	0.8	1.1	0.5	1.7	1.8	0.8	2.3	0.9	**1.2**
Other Energy Equipment	1.4	0.6	0.9	0.4	3.0	3.6	0.1	0.8	0.3	0.0	0.6	3.5	0.2	0.7	**1.0**

Table 4.7: Damage suffered by fuel users

Percentage of households that have already suffered damage as a result of fuel use by type of fuel

	Area of residence						
	Urban	Rural	Total	fire	Burns	Death	Other
Domestic gas (LPG)	1.5	0.1	1.4	0.5	0.5	0.1	0.3
Great	1.0	2.8	1.7	0.3	0.6	0.0	0.9
Diesel	3.1	0.0	2.1	0.0	0.0	0.0	2.1
Charcoal	1.6	4.7	1.9	-	-	-	-
Firewood	3.2	5.7	4.6	-	-	-	-
Kerosene	1.1	0.2	0.7	-	-	-	-
Agricultural residues	1.5	3.7	3.3	-	-	-	-
Wood waste (sawdust, shavings, etc.)	3.4	0.0	2.9	-	-	-	-
Total	**1.8**	**3.2**	**2.4**	-	-	-	-

Table 4.8: Change in fuel use behaviour

Percentage of households that do not use a fuel and do or do not plan to use it in the next 12 months

	Plan to use the fuel in the next 12 months	Do not plan to use the fuel in the next 12 months	Percentage of households that do not currently use a given fuel but have used it in the past
Domestic gas (LPG)	10.45	14.41	10.4
Gasoline (Super)	2.64	23.04	20.1
Diesel	0.65	9.84	3.4
Biogas	0.36	43.21	0.3
Charcoal	6.46	15.74	9.6
Firewood	12.51	14.70	21.1
Kerosene	8.16	14.64	0.8
Agricultural residues	3.52	26.93	5.5
Animal waste	1.25	62.78	1.5
Wood waste (sawdust, shavings, etc.)	2.23	16.30	3.4

5 HOUSEHOLD ACCESS TO WATER

In Africa, access to water is a major concern, especially since the acquisition of good quality water in sufficient quantity remains a key challenge for households. Difficulties in accessing water are alsoone of the main causes of mortality, especially since the consumption of non-drinking water can be responsible for waterborneillnesses such as cholera, diarrhoea, typhoid fever, etc.To address this problem, Cameroon has resolved, through the first phase of its long-term development vision (Vision 2035), to increase the rate of access todrinking water to 75%.

This chapter proposes to provide indicators on topics relating to access to water such as the identification of household water supply sources, degree of use of each of these sources, quality of the drinking water consumed in households, amounts of water consumed as well as household water expenditure, different treatments of water used in households, methods of storage of drinking water by households and finally, prevalence of water-related diseases.

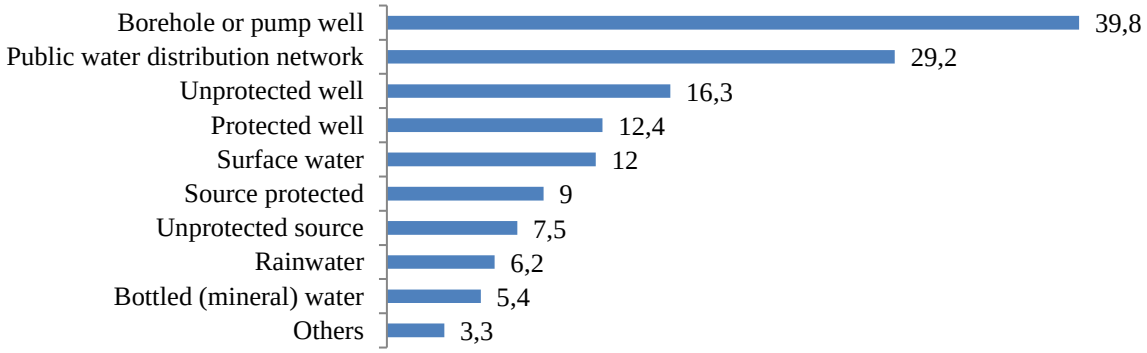
V.1. HOUSEHOLD WATER SUPPLY

Household water sources

Overall, boreholes or pump wells (40%) are the source of water most used by households, followed by the public water supply network (29%), unprotected wells (16%), protected wells (12%) and surface water[2](12%) **(Figure 5.1)**.

[2]*Surface water includes water from rivers, streams, dams, lakes, irrigation canals, etc.*

Figure 5.1: Percentage of households by source of water used by its members

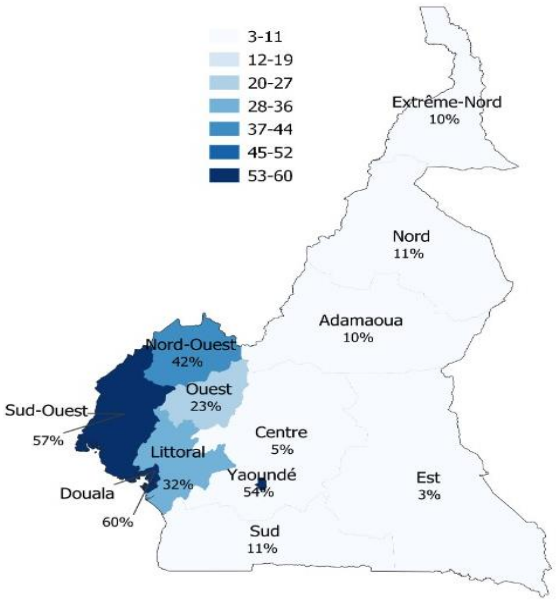


Water supply by selected characteristics

In urban areas, the water sources most used by households are, in order of importance: the public drinking water distribution network (47%), boreholes or pump wells (39%), protected wells (17%), unprotected wells (14%) and protected springs (10%). In rural areas, it is rather boreholes or protected wells (41%), surface water (22%), unprotected wells (19%) and unprotected springs (12%) which are the sources most used water sources **(Table 5.1)**. It can also be noted that in rural areas only 8% of households use water from the public distribution network.

- By survey region, it was noted that the use of water from the public distribution network is relatively low in the East (3%), Centre (excluding Yaounde) (5%), Adamawa (10%), Far-North (10%), North (11%) and South (11%) regions.
- In addition, the percentage of households whose members use water from the public distribution network increases significantly with the wealth quintile of the household, rising from less than 1% for households in the lowest quintile to 59% for households in the highest quintile **(Table 5.1)**.

Figure 5.2: Percentage of households using the public drinking water distribution network by region



Degree of use of different water sources by households

For each source of water used by the household, it was asked whether the use of this source was exclusive, main or back-up.

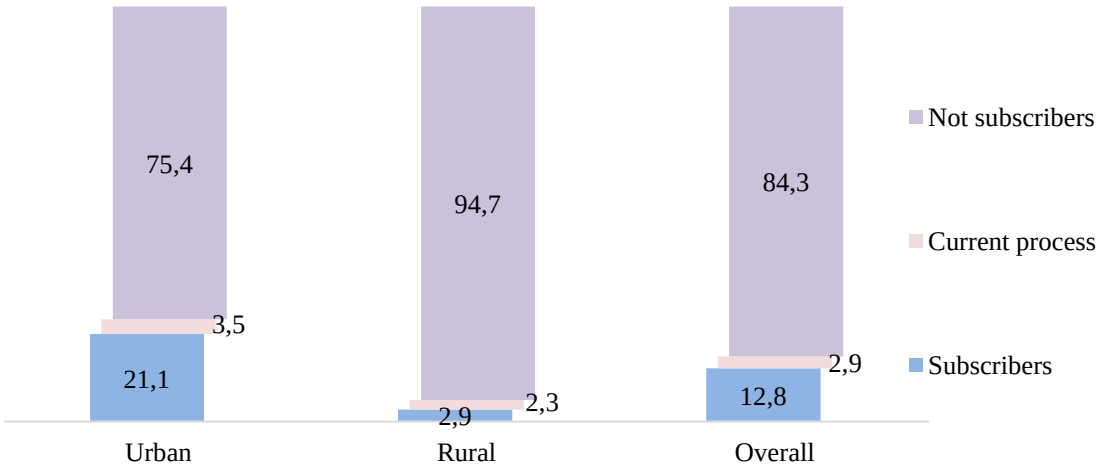
Overall, it was observed that 29% of households use water from the public drinking water distribution network, i.e. 13% who use it exclusively (as the only source), 12% as their main source, i.e. the most used source among many others, and 4% of households who use it as a supplement to another source of water considered to be the main one **(Table 5.2)**.

Unprotected wells, ranked as the third most used source of water in households, are the only sources in 5% of households, the main sources in 7% and supplement other sources in 4% of households.

Subscription to the public water distribution network

In Cameroon, nearly 13% of households subscribe to the public drinking water distribution service. This percentage is much lower in rural areas.[3](3%) than in urban areas (21%). The subscription procedure is underway for 3% of households **(Figure 5.3)**.

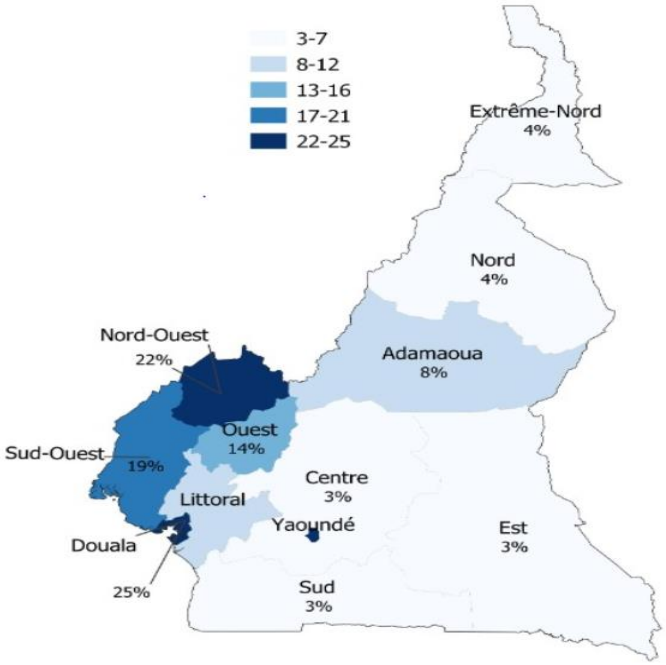
Figure 5.3: Distribution (%) of households by their status of subscription to the public water distribution service by area of residence



[3]The area of residence (urban and rural) used in this survey corresponds to the division of the enumeration areas resulting from the mapping of the fourth general population census. This division does not coincide with that of dealer (CAMWATER) responsible for the distribution of drinking water.

Table 5.3 shows that the lowest subscription rates are recorded in the survey regions of the South (3%), Centre excluding Yaounde (3%), East (3%), North (4 %) and Far-North (4%). The highest rates are observed in Douala (25%) and Yaounde (25%).

Figure 5.4: Percentage of households subscribed to the public water distribution network



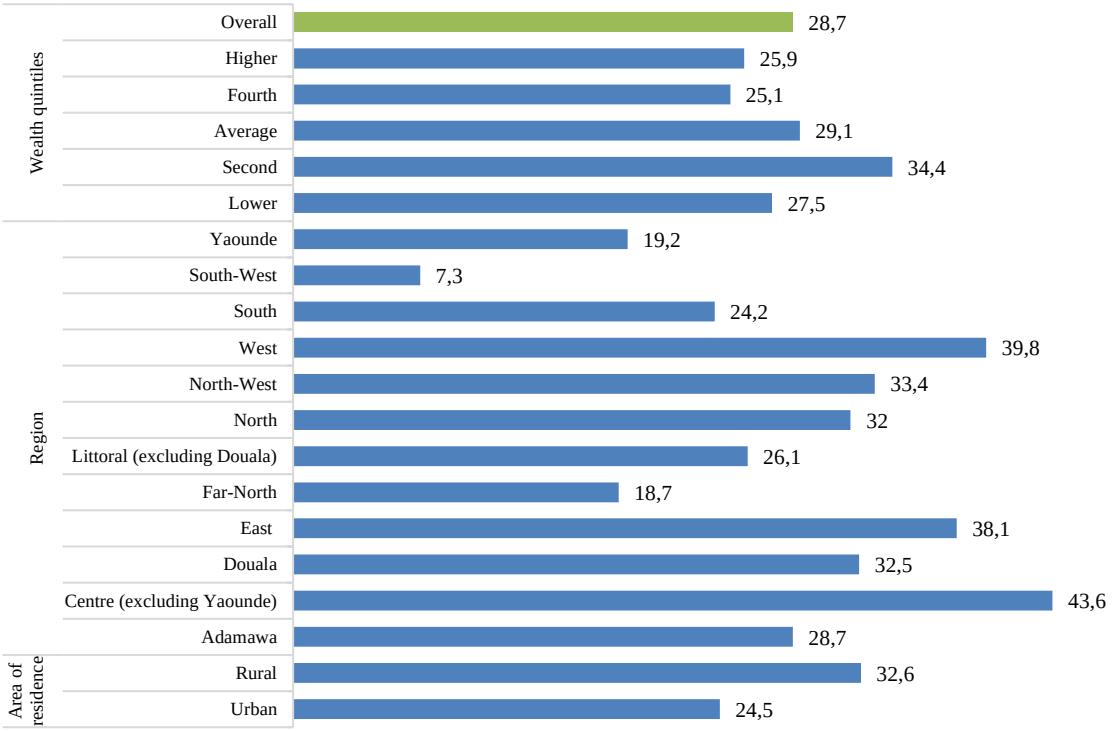
V.2 READINESS AND ABILITY OF HOUSEHOLDS TO PAY FOR WATER SERVICE

Readiness of households to pay for the public drinking water distribution service

The readiness of households to pay for the water service corresponds to the rate of acceptability of the price of the service. During ENACE 1 survey, households not subscribed to the public drinking water distribution network were asked if they were ready to pay an amount of 95,000 CFA francs for the acquisition of a connection to this network. Results of Figure 5.5 show that 29% of households reported they are ready to pay this amount to have a connection to the network. This percentage is higher in rural areas (33%) than in urban areas (25%).

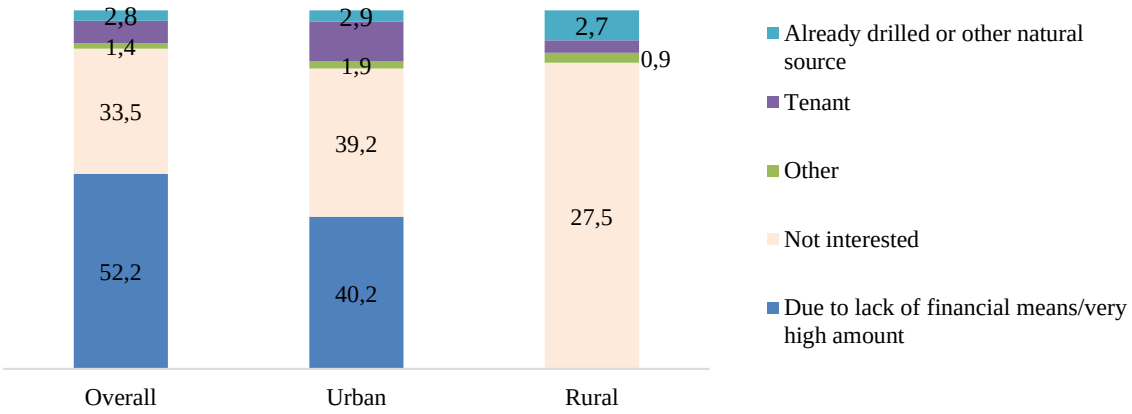
By survey region, the percentage of households that do not subscribe but are ready to pay 95,000 CFA francs to be connected to the public drinking water distribution network is lower in the survey regions of the South-West (7%), Far-North (19%) and Yaounde (19%). In contrast, households in the survey regions of the Centre (excluding Yaounde) (44%), West (40%), andEast (38%) are more ready than those in the other regions to pay this amount **(Figure 5.5)**.

Figure 5.5: Percentage of households ready to pay an amount of 95,000 CFA francs for the acquisition of a connection to the public water distribution network



For households not ready to pay the amount of 95,000 CFA francs to connect to the public water distribution network, they were asked the main reason for this lack of will. It was observed that a little more than half of respondents (52%) mentionned the lack of financial means as the main reason or consider this amount to be very high **(Figure 5.6)**. One third of these households (34%) consider that they are not at all interested in connecting to the public drinking water distribution network, i.e. 39% in urban areas and 28% in rural areas.

Figure 5.6: Distribution of householdsnot ready to pay 95,000 CFA francs to connect to the public water distribution service by main reason given, byarea of residence



Ability to pay for the public drinking water distribution service

For non-subscriber households who reported not being able to pay the sum of 95,000 CFA francs to connect to the publ drinking water distribution network, they were asked the

maximum amount they are able to pay to subscribe. Overall, it shows that the average amount reported by these households is23,878 CFA francs. Moreover, half of these households reported that they are ready to pay a maximum of 20,000 CFA francs to subscribe.

The average maximum amount that subscriber households consider themselves able to pay for a subscription is higher in urban areas (26,431 CFA francs) than in rural areas (22,230 CFA francs) **(Table 5.4)**.

Considering the survey region, it was observed that households in the Far-North (18,681 CFA francs) and South (20,550 CFA francs) offer the lowest amounts to connect to the public distribution network. In contrast, the highest average maximum amounts are observed in the survey regions of Douala (35,772 CFA francs) and Littoral (excluding Douala) (35,888 CFA francs) (**Table 5.4**).

V.3 WATER CONSUMPTION BY HOUSEHOLDS

Sources of drinking water in households

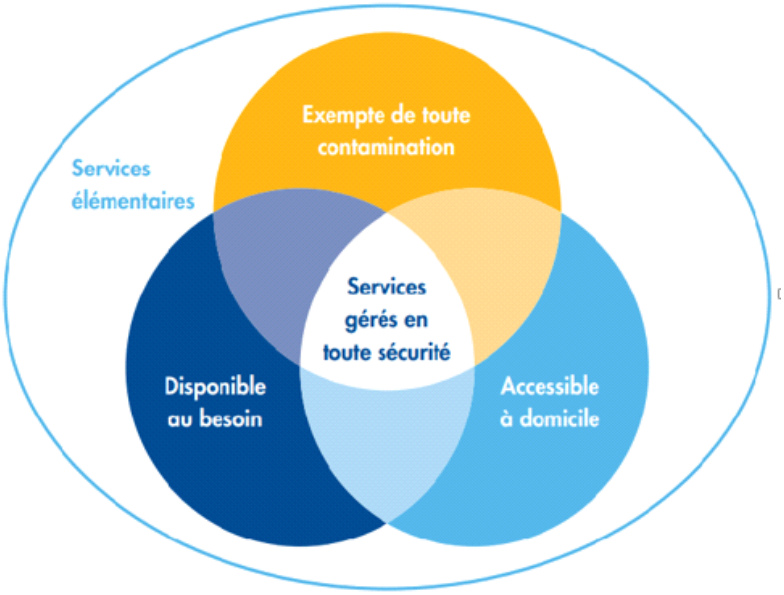
Target 6.1 of the Sustainable Development Goals (SDGs) aims "*by2030, achieve universal and equitable access to safe and affordable drinking water for all*". The indicator proposed by the Group of United Nations and External Experts in charge of SDG indicators and which is adopted at the international level to monitor this target is the **percentage of the population using safely managed drinking water supply services (SDG 6.1.1)**. This more ambitious indicator for monitoring the SDGs takes into account the accessibility, availability and quality of drinking water. "**Safely managed drinking water supply services**" is synonymous with a better level of service and forms the top rung of the drinking water access ladder used by the Joint Monitoring Programme (JMP)[4]for global monitoring.

In this report, a safely managed drinking water service is defined as any source of improved drinking water that meets the following three criteria:

- ***the source must be accessible at home (in the dwelling, yard or plot);***
- ***water must be available when needed; and***
- ***the water supplied must be free of contamination with feces (E. Coli) or coliforms.***

[4]The JMP is a joint programme of UNICEF and WHO established in 1990, responsible for global monitoring of water supply and sanitation (JMP).

Figure 5.7: Criteria for a safely managed drinking water service, Joint Monitoring Programme WHO/UNICEF, 2017



The table below presents the definitions of drinking water supply services by level of service according to the JMP programme (Joint Monitoring Programme)

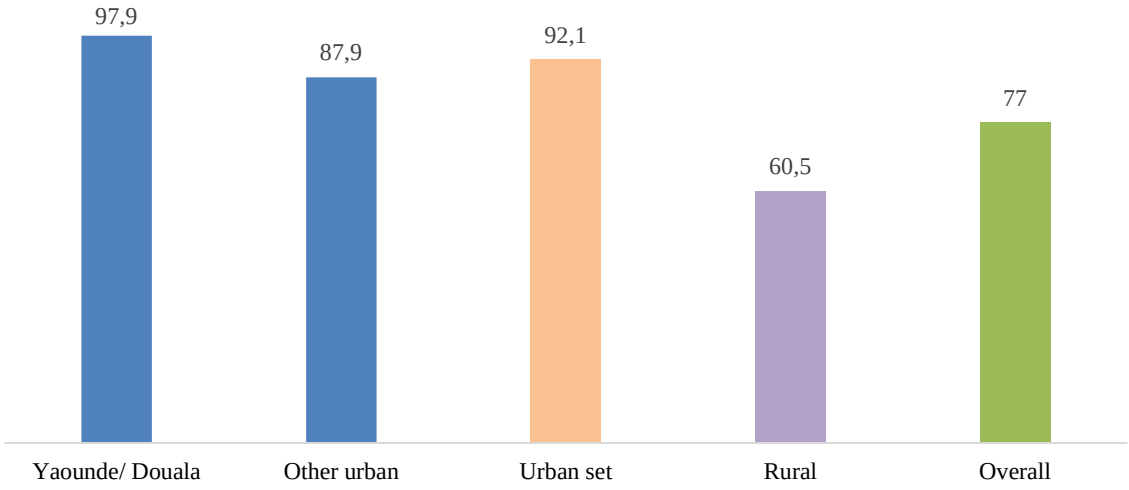
Box: Concepts and definitions of drinking water supply services

CONCEPT	DEFINITION
Improved source of drinking water	These are tap water (public water supply system), pump or borehole wells, protected dug wells, bottled/bag water, protected spring water and water rain.
Basic drinking water supply service	**It is an improved source of drinking water**that is on site or that is located in such a place that the round trip supply time is 30 minutes or less.
Limited drinking water service	**It is an improved source of drinking water**which is located in such a place that the round trip supply time is over 30 minutes.
Source of supply free from contamination	**Drinking water from an improved drinking water supply**free of faeces. Drinking water is free from contamination if this water is tested negative for the presence of E. coli or coliforms.
Safely managed drinking water supply service	Drinking water from an improved drinking water source located in the home, available when needed and free of faeces.

Improved source of drinking water

Results show that in 2021, over three quarters of households (77%) mainly consume water from an improved source **(Figure 5.7)**. This percentage is 92% in urban areas and 60% in rural areas. It is much higher in Yaounde or Douala (97%) than in other urban Centres (88%).

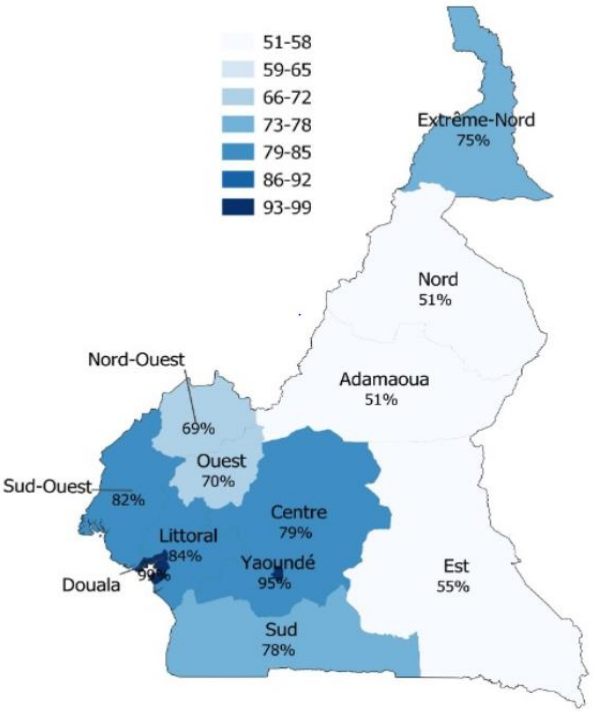
Figure 5.7: Percentage of households using an improved source of drinking water byarea of residence



Variations by characteristics

- Considering the survey region, it may be observed that the regions of Adamawa (51%), North (51%) and East (55%) have the lowest percentages of households that consume drinking water from an improved supply source.
- By the wealth quintile, results show that nearly half (49%) of households with the lowest level of wealth have access to an improved source of drinking water. This percentage increases with the improvement in the wealth of households **(Table 5.5)**.

Figure 5.8: Percentage of households using an improved drinking water source by region



Basic drinking water supply service

- One household in five (21%) has drinking water on site, i.e. inside or in the courtyard of the dwelling. For 62% of households, the time to supply drinking water is 30 minutes or less, and for 16% of households, it takes over 30 minutes to fetch water, collect it and bring it back.
- Overall, 66% of households have access to a basic drinking water service, i.e. they use drinking water from an improved source, which is located on site or whose round-trip supply time is 30 minutes or less **(Table 5.5)**.

By area of residence, it was observed that the percentage of households with access to a basic drinking water supply service is higher in urban areas (82%) than in rural areas (48%).

Limited drinking water service

Overall, one in ten households has access to a limited drinking water supply service, i.e. they use drinking water from an improved source and whose supply time round trip exceeds 30 minutes **(Table 5.5)**.

Contamination of drinking water by bacteria of E. coli or coliforms

DuringENACE-1, a rapid diagnostic test was conducted on a sample of water from the main source of drinking water supply in a sub-sample of 2,823 households selected for the survey. The purpose of this test was to look for the presence of bacteria of E. coli or coliforms in the water. It should be noted that the water tested here was not necessarily taken directly from the source. For example, it could come from household storage containers. As specified, this is drinking water from the main source used by the household, which may be the protected or unprotected well, protected or unprotected source, surface water, public distribution, etc.

Box: Operational procedure for testing the quality of drinking water in households

The device used to perform the test for the presence of bacteria of E. coli or coliforms in household drinking water consisted of an AquaVial brand rapid test kit and sterile protective gloves. This kit was a graduated test tube containing a yellow reagent which turns red gradually if water containing the bacteria of E. coli or coliforms is added.

The test procedure was conducted by following the steps in an orderly fashion:

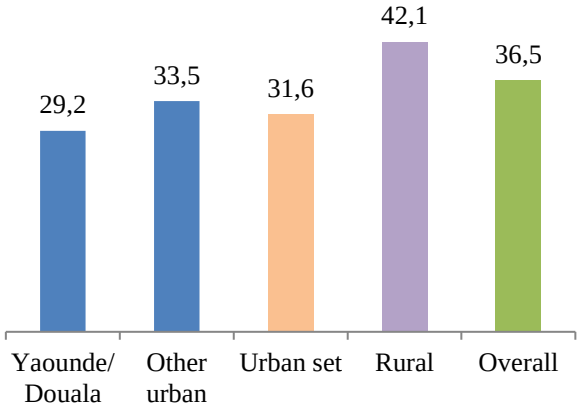
1) Put on sterile gloves
2) Stick the adhesive tape (label) vertically on the non-graduated side of the tube;
3) Paste a suitable label on the tube. This label has the
    a. Sample ID
    b. Date of collection
    c. Pickup time
4) Take the glass of water from the main source of household drinking water and introduce it into the test tube up to the 5 ml line, close it tightly and shake sideways before depositing;
5) Once at the base, place the samples upright following the previous ones in a dry place (room temperature) to allow incubation; thermoses were used in the northern and South-West regions to preserve these samples given the particular temperature of these regions.
6) After an incubation period of 42h to 54h, observe the tube to note the results: Red for positive (the water contains bacteria) and Yellow for negative.
7) Record in the water bioassay section of the questionnaire, identifier noted on the tube label, dates of collection and reading of the result, time of collection and reading of the result, and result " Positive negative ".

Collect the water sample

Shake

Check the result

Figure 5.9: Percentage of households using drinking water supply services contaminated with E. coli or coliforms byarea of residence

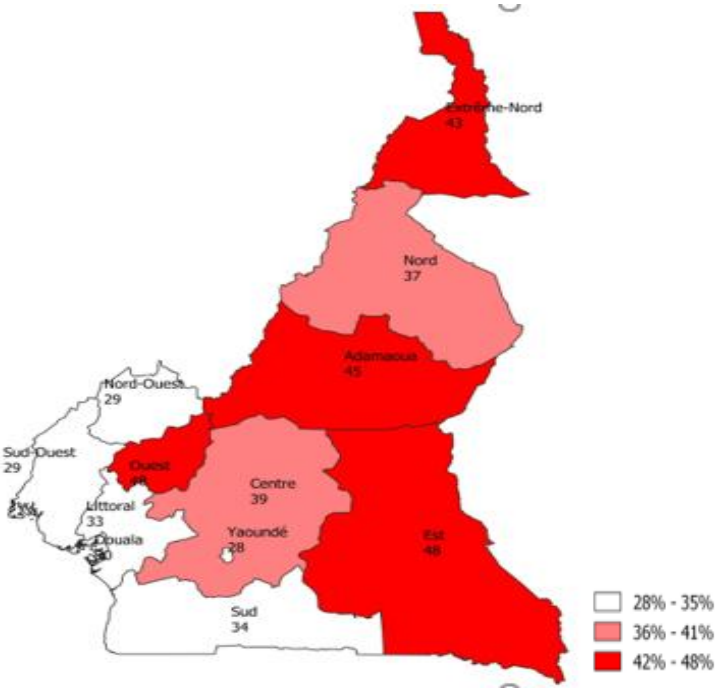


Results in Figure 5.9 show that overall drinking water is contaminated i.e. contains E. coli or coliforms in over one in three households (37%). This percentage is higher in rural areas (42%) than in urban areas (32%).

- ***By survey region***

Figure 5.10 shows that the highest percentages of households whose drinking water tested positive for E. coli or coliforms, are observed in the East (48%), West (48%), Adamawa (45%) and Far-North (43%) regions. The lowest percentage is observed in Yaounde (28%).

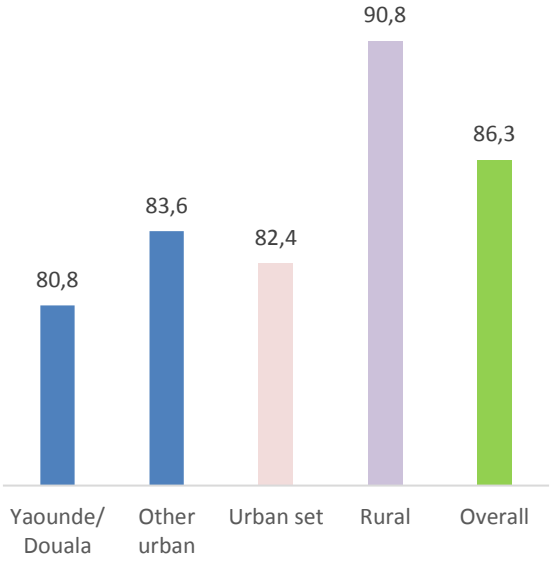
Figure 5.10: Percentage of households whose drinking water from the main source contains E. coli or coliforms, by survey region



Availability of drinking water in households.

To assess the availability of water used by the population, respondents were asked during data collection if over the past 30 days preceding the survey, the drinking water from their main source of supply was available at all times and in sufficient quantity when they needed it in their household. Overall, it appears that the availability of water under these conditions is guaranteed for 86% of households. This percentage is higher in rural areas (91%) than in urban areas (82%) (**Figure 5.11**).

Figure 5.11: Proportion of population whose drinking water was available in sufficient amount during the 30 days preceding the survey

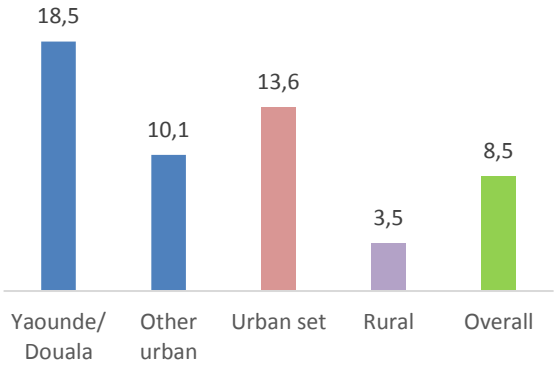


Safely managed drinking water supply service

The safe drinking water supply service was retained as a direct indicator of access to drinking water.

In Cameroon, only nearly 9% of the population has access to a safely managed drinking water supply service, i.e. water from an improved source located at home, available as needed and free from bacterial contamination of E. coli or coliforms.

Figure 5.12: Percentage of population with access to a safely managed drinking water supply service



This percentage is about 14% in urban areas and almost 4% in rural areas. Moreover, it is 19% for the two major cities of Yaounde and Douala, and 10% for the other urban Centres (**Figure 5.12**).

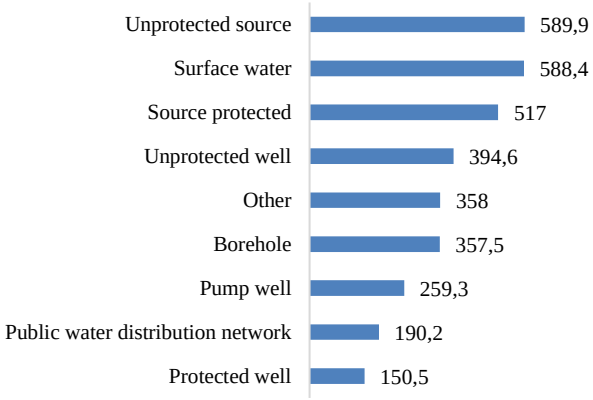
V.4 ACCESSIBILITY TO THE WATER SUPPLY PLACE

The distance and time taken to go to and return from a source of water supply make it possible to assess the accessibility of households to this source. The time taken to fetch water from the source and return is considered by means of transport most used by the household.

Distance to water source

For households whose source of water supply they use is not on site, the average distance between this source and household dwellings varies depending on the source. This average distance is shorter for protected wells (150 m), public water distribution network (190 m), pump wells (259 m). Unprotected springs (590 m), surface water (588 m) and protected springs have the furthest supply points from dwellings. (**Figure 5.13**).

Figure 5.13: Average distance (in meters) between each source of water used by households and household dwellings

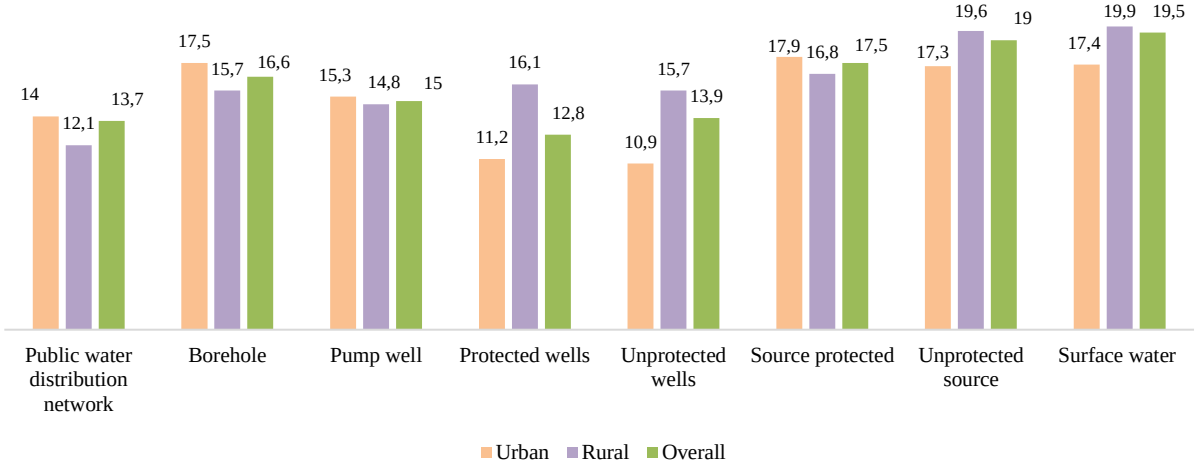


By survey region, the longest average distances from the point of supply to the public water distribution network in relation to the dwelling are in the West (294 m) and South-West (281 m).

Time taken to get to the water source

The average time taken by persons to fetch water from their source of supply and return, varies by source and survey region. For households using the public drinking water distribution network, this time is around 14 minutes on average. It is higher for surface water users (20 minutes), unprotected springs (19 minutes) and protected springs (18 minutes) (**Figure 5.14**).

Figure 5.14: Average time taken (in minutes) to obtain water by source and area of residence



V.5 AMOUNT OF WATER USED BY TYPE OF USE

Amount of water used by source and by use

The amount of water consumed in households varies with the source used and also with the use:

- ***Public drinking water distribution network***

For households using water from the public drinking water distribution network, the average monthly consumption per household is estimated at 4,555 litres (**Figure 5.15**). Furthermore, it was observed that among households with access to this water source, 86% use it as drinking water and the average monthly consumption per household for this use is 88 litres. The largest amount used in households is for personal hygiene, an average of 1,750 litres per household per month.

Figure 5.15 Average monthly amount (in litres) of water from the public drinking water distribution network consumed by use

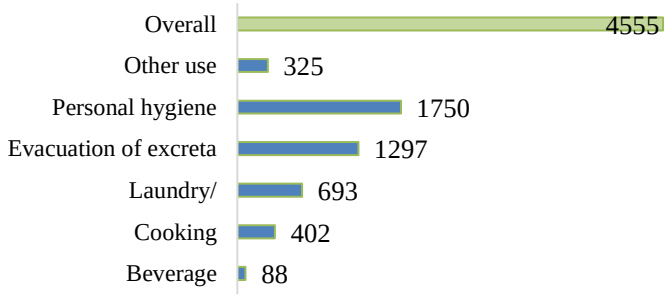
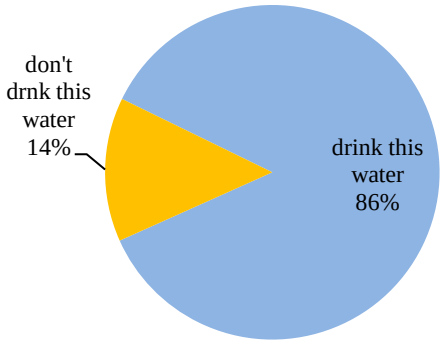


Figure 5.15.a: Percentage of households that drink water from the public drinking water distribution network among those who use this source



In addition, the percentage of households that drink water from the public drinking water distribution network decreases with the household's level of wealth, dropping from 100% for households in the lowest quintile to 78% for those in the highest quintile (**Table 5.9**).

- ***Borehole***

With regard to borehole water, the average monthly amount used per household is 4,339 litres, ie 4,381 litres in urban areas and 3,033 litres in rural areas (Table 5.8). Here, 93% of households using this water source use it as drinking water, i.e. 87% in urban areas and almost all (98%) in rural areas (**Table 5.9**).

- ***Pump well***

A household with access to water from a pump well uses about 4278 litres per month, an average of 4357 litres for households in urban areas and 4357 to 4173 litres for those in rural areas (**Table 5.8**). It should also be noted that 85% of households using pump well water use

it as drinking water. This percentage is 74% for households in urban areas and 96% for households in rural areas (**Table 5.9**).

- ***Protected wells and unprotected wells***

Table 5.11 shows that 44% of households using water from unprotected wells use it as drinking water. This percentage is 30% for protected well water users. By area of residence, it was observed that in rural areas, nearly three in four households (72%) using water from wells (protected or not) use it as drinking water. In urban areas, In contrast, 15.6% (respectively 11.7%) of households using water from protected wells (respectively unprotected) use this water as drinking water (**Table 5.9**).

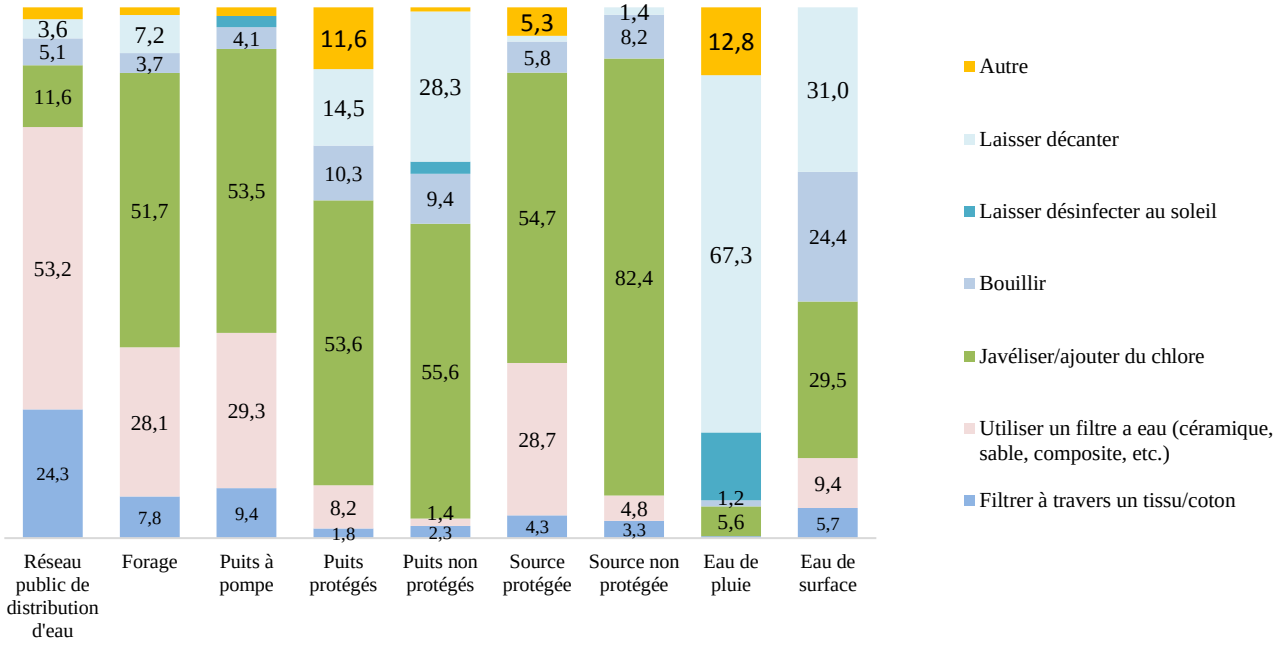
V.6 HOME DRINKING WATER TREATMENT

Households were asked to indicate whether the water from each source of drinking water they use was treated before consumption and to give their mode of treatment where appropriate.

Overall, 29% of households using water from protected wells as drinking water treat it before consuming it. This percentage is 14% both for unprotected wells and for the public drinking water distribution network (**Table 5.10**).

Methods used by households to treat drinking water vary depending on the source used. The main technique used by most households is chlorination or the addition of chlorine to water from boreholes (52%), pump wells (54%), protected wells (54%), unprotected wells (56%), protected sources (55%) and unprotected sources (82%). For households drinking water from the public distribution network, the main pre-drinking treatment method practised by the majority is the use of a water filter (53%). For rainwater and surface water, most households simply let it settle before drinking it (**Figure 5.16**).

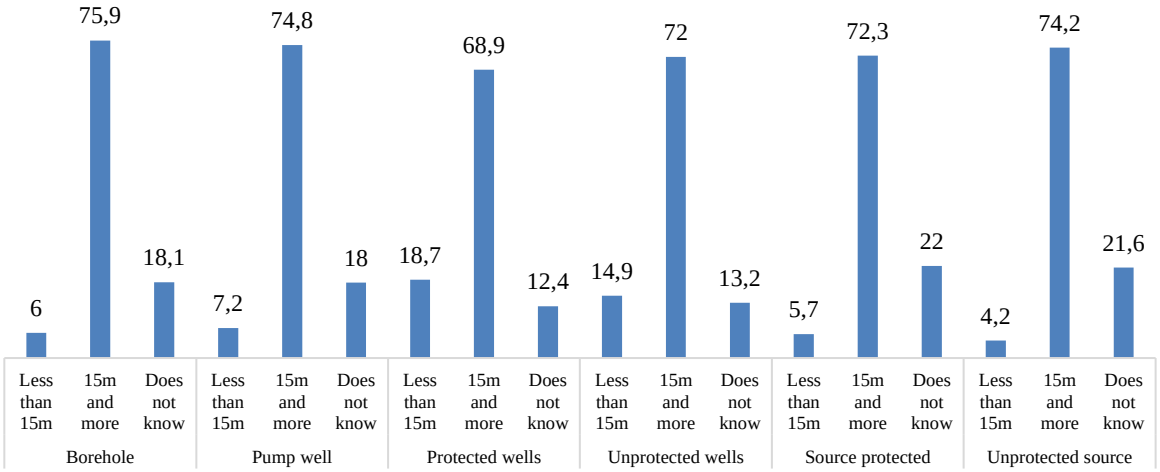
Figure 5.16: Distribution of households that treat water before drinking by technique mainly used and by source of water used



V.7 DISTANCE BETWEEN TOILETS AND SUPPLY SOURCE

The recommended minimum distance between a sanitation facility and a drinking water supply point is 15 metres. Results presented in **Figure 5.17** show that the percentage of households whose water supply point and the nearest sanitation facility are located less than 15 meters away from each other varies with the water source. It is higher for households using protected wells (19%) or unprotected wells (14%). Moreover, regardless of the source of water considered, this percentage is higher for households residing in urban areas than for those in rural areas (**Table 5.11**).

Figure 5.17: Distribution of households by distance between their water supply point and the nearest sanitation facility, by water source.



DNK= Does Not know

V.8 STORAGE OF DRINKING WATER IN HOUSEHOLDS

Overall, over nine in ten households (95%) store drinking water mainly in closed containers. Nearly 3% store it mainly in open containers and 1% draw water directly from the source for drinking (**Table 5.12**).

Byarea of residence, the distribution observed at the national level is identical in both urban and rural areas.

In addition, it was observed that the survey regions which record the highest percentages of households which keep drinking water in open containers are the North-West (9%), East (8%), North (7%) and Adamawa (6%) (**Table 5.12**).

V.9 PREVALENCE AND EXPENDITURE OF WATER-RELATED (WATERBORNE) DISEASES IN HOUSEHOLDS

Prevalence

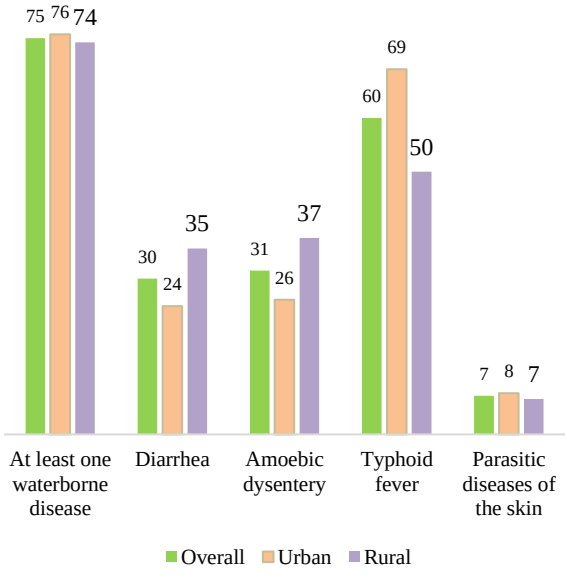
During the last six months preceding the survey, three-quarters of households (75%) recorded at least one case of waterborne disease according to respondents' declarations. This percentage is almost identical in urban areas (76%) than in rural areas (74%) (**Figure 5.18**).

Among the cases of diseases recorded in households over the reference period (the last six months preceding the survey), typhoid fever is the most prevalent (60%), followed by amoebic dysentery (31%) and diarrhea (30%).

Byarea of residence, Figure 5.18 shows that the percentage of households having recorded at least one episode of diarrhea or amoebic dysentery is higher in rural areas than in urban areas (**Table 5.13**).

For typhoid fever, this percentage is higher in urban areas.

Figure 5.18: Percentage of household in which one of the members suffered from a waterborne disease over the past 6 months preceding the survey, byarea of residence.



The Figures below present the percentage of households having recorded at least one case of one of the three waterborne diseases (typhoid fever, amoebic dysentery and diarrhoea) by region.

Figure 5.19: Prevalence of different waterborne diseases by region

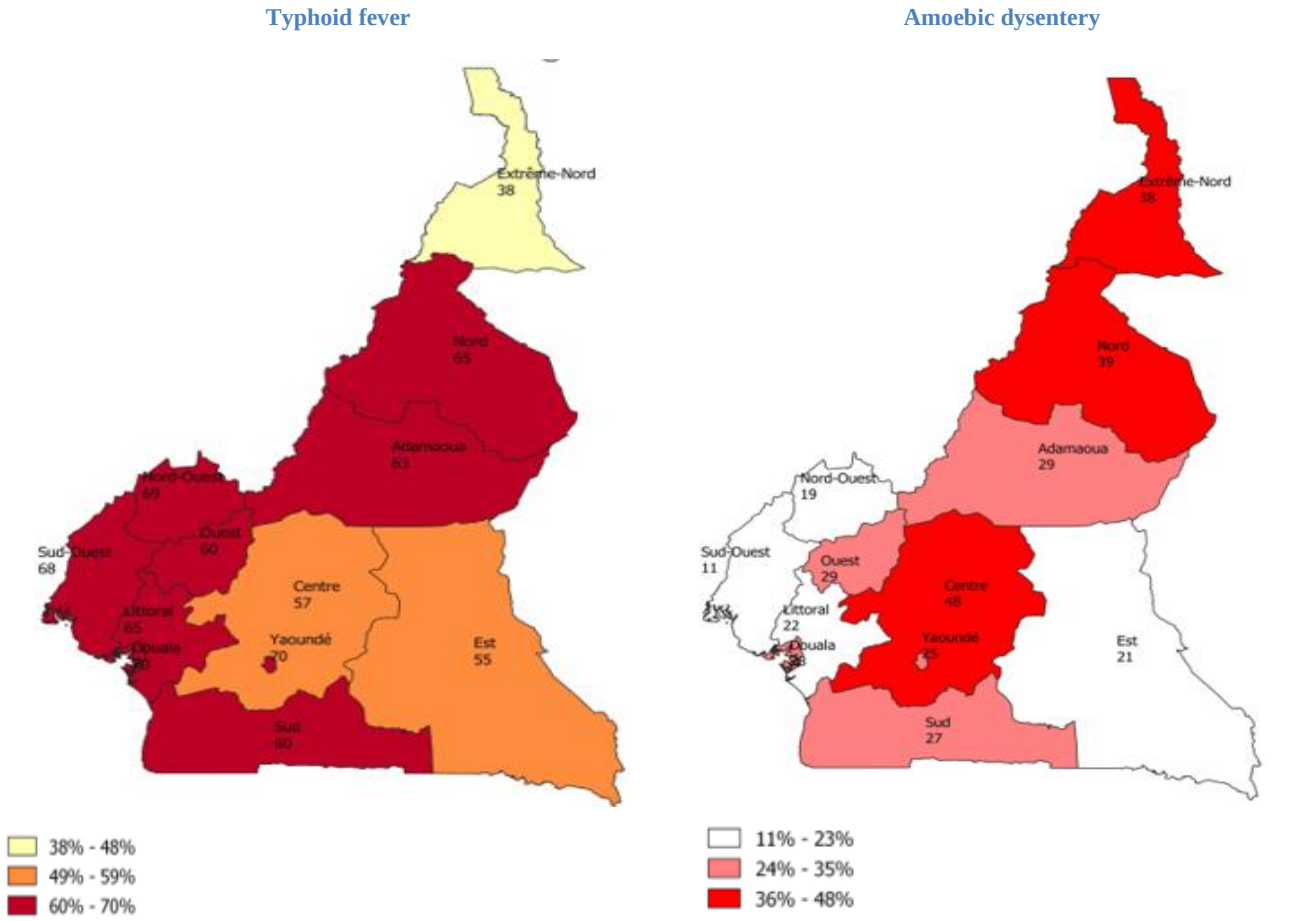
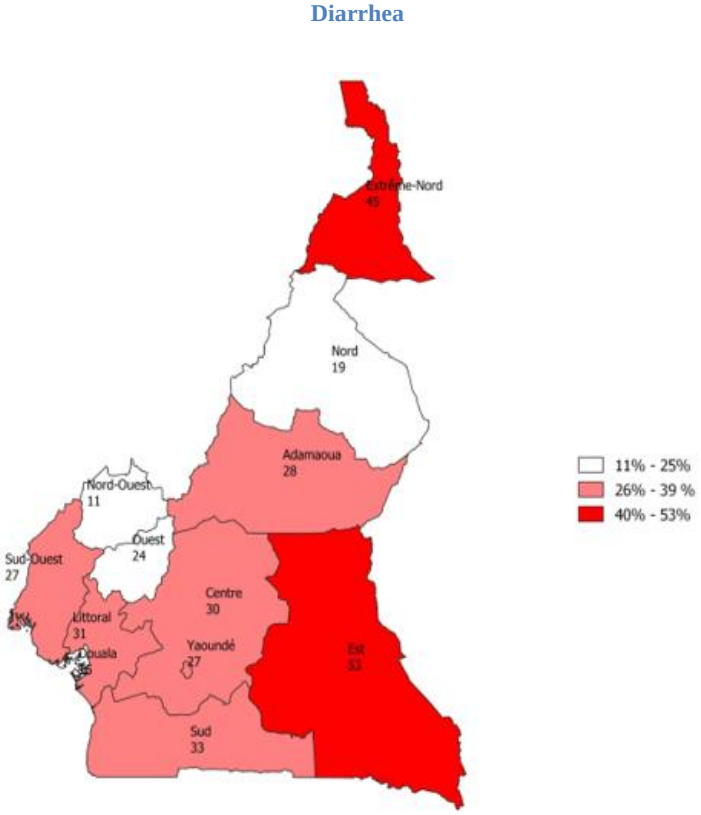


Figure 5.19 shows that typhoid fever is mainly prevalent in the Yaounde (70%), Douala (70%), North-West (69%) and South-West (69%) survey regions.

As regards amoebic dysentery, this disease is mostly prevalent in the Centre (48%), North (39%) and Far-North (38%) regions.

With regard to diarrheal diseases, the regions with the highest mobility rates are the North-West (69%), South-West (68%), North (65%) and Adamawa (63%).



Health expenditure relating to waterborne diseases

Figure 5.20 presents the amounts spent by households to treat the various waterborne diseases that have been identified therein over the past six months. It was observed that typhoid fever is the disease for which the various items of expenditure are the highest. On average, a household in which at least one member suffered from this disease over the past six months preceding the survey, spent during this period: 17,726 CFA francs as hospitalization costs, 15,325 CFA francs for treatment, 2,272 CFA francs for consultation and 17,259 CFA francs for other expenses relating to typhoid fever. That is a total of 62,264 CFA francs. This amount is 54,935 CFA francs for cholera and 34,591 CFA francs for amoebic dysentery.

Figure 5.20: Average health expenditure by type of disease and by item of expenditure and by household

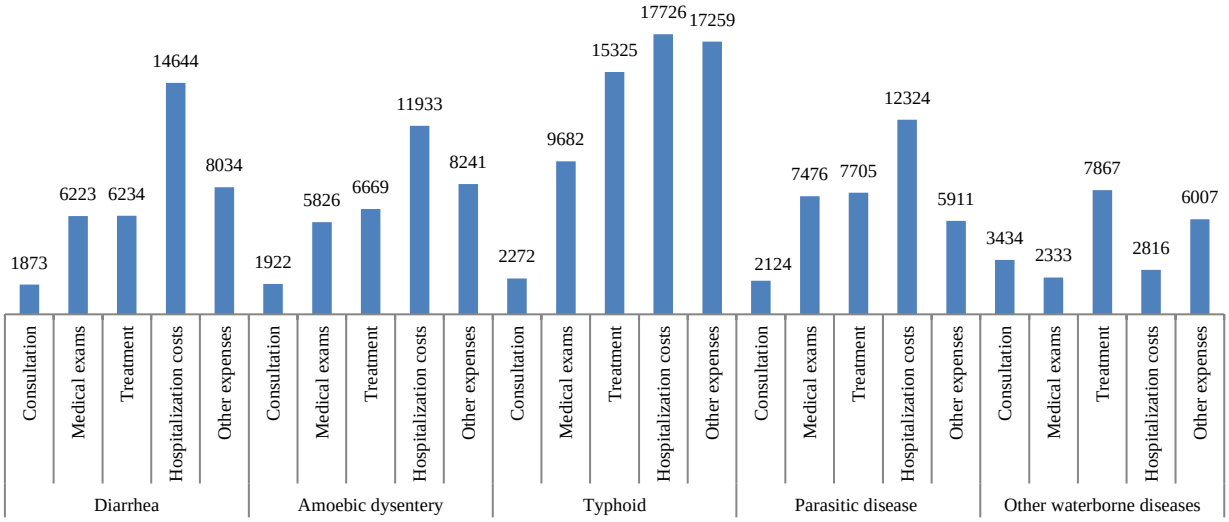


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Table 5.1: Source of water supply used in households

Percentage of households by source of water used by its members and by selected characteristics

Features	Public water distribution network	Borehole or pump well	Protected well	Unprotected well	Source protected	Unprotected source	Rainwater	Surface water	Bottled (mineral) water	Others
Area of residence										
Urban	47.4	38.5	17.1	14.2	10.5	3.8	5.1	3.6	9.4	3.5
Rural	7.7	41.3	7.0	18.8	7.2	11.9	7.6	21.9	0.6	3.0
Region										
Adamawa	9.8	35.9	19.4	30.0	1.6	5.8	8.1	32.3	2.1	2.4
Centre (excluding Yaounde)	5.2	56.4	14.1	17.0	12.0	15.5	7.5	6.6	3.3	2.1
Douala	59.8	44.9	16.6	12.3	1.8	1.1	5.8	0.1	8.2	1.9
East	3.0	41.0	10.4	28.1	7.9	19.8	20.6	25.6	2.8	2.7
Far-North	10.2	65.7	2.5	22.9	0.4	1.9	3.5	9.7	0.5	1.4
Littoral (excluding Douala)	31.9	38.5	8.7	8.7	15.8	10.2	3.1	10.0	3.0	4.9
North	10.6	41.0	4.1	37.9	0.2	3.3	1.7	17.9	0.3	1.3
North-West	41.8	8.7	6.0	2.0	17.9	4.3	2.3	36.5	1.1	2.1
West	22.5	27.8	17.6	13.3	19.6	18.9	12.4	18.9	2.7	2.5
South	11.3	50.1	21.4	14.7	11.0	17.4	8.0	10.6	8.8	,8
South-West	57.2	13.4	16.1	2.7	4.4	1.0	1.6	4.2	4.3	16.5
Yaounde	54.4	34.5	19.1	13.2	17.8	4.3	6.3	0.8	21.6	0.6
Wealth quintile										
Lower	0.5	45.5	3.3	31.4	1.1	7.3	5.6	24.8	0.0	,8
Second	8.7	37.0	9.6	14.8	11.2	16.4	9.9	23.2	0.4	2.2
Average	27.2	41.8	15.2	13.8	14.0	7.7	5.3	9.8	1.5	3.0
Fourth	43.9	39.8	17.3	15.8	11.9	4.3	5.7	3.4	4.4	4.8
Higher	58.7	36.8	15.8	8.6	6.8	2.2	4.5	0.8	17.5	4.9
Total	**29.2**	39.8	**12.4**	**16.3**	**9.0**	**7.5**	**6.2**	**12.0**	**5.4**	**3.3**

Table 5.2:Degree of use of different water sources in households

Distribution (%) of households by their degree of use of each water source, by survey region

	Degree of use	Public water distribution network	Borehole	Pump well	Protected wells	Unprotected wells	Source protected	Unprotected source	Rainwater	Surface water
ADAMAWA	Exclusive	3.0	11.5	0.5	8.5	13.7	0.7	3.8	0.0	18.0
	Major	5.6	10.2	0.6	9.1	13.8	0.7	1.5	0.0	5.0
	In addition	1.2	12.8	0.9	1.7	2.5	0.3	0.6	8.1	9.3
	Not used	90.2	65.4	98.0	80.6	70.0	98.4	94.2	91.9	67.7
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
CENTRE (excluding Yaounde)	Exclusive	1.2	26.1	0.7	6.6	2.8	6.4	7.2	0.6	1.3
	Major	3.4	19.3	1.9	5.6	6.6	2.7	2.4	0.0	1.0
	In addition	0.6	9.7	0.5	2.0	7.6	3.0	5.8	7.0	4.3
	Not used	94.8	45.0	96.9	85.9	83.0	87.9	84.5	92.5	93.4
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
DOUALA	Exclusive	28.6	19.0	0.3	1.0	0.1	0.5	0.5	0.0	0.0
	Major	23.6	14.5	0.8	9.5	6.3	1.1	0.3	0.4	0.0
	In addition	7.6	10.5	0.6	6.1	5.8	0.2	0.2	5.4	0.1
	Not used	40.2	56.0	98.4	83.4	87.7	98.2	98.9	94.2	99.9
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
EAST	Exclusive	0.8	16.4	0.8	4.8	8.7	3.5	8.5	0.0	11.1
	Major	2.1	15.5	1.2	4.1	16.0	2.5	9.0	0.2	4.9
	In addition	0.1	7.8	0.3	1.5	3.4	1.9	2.4	20.4	9.7
	Not used	97.0	60.3	97.7	89.6	71.9	92.1	80.2	79.4	74.4
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
FAR-NORTH	Exclusive	5.2	45.2	2.0	1.9	12.5	0.4	0.7	0.0	3.4
	Major	4.8	14.6	0.5	0.3	6.7	0.0	0.5	0.3	0.6
	In addition	0.2	4.9	0.2	0.4	3.7	0.0	0.8	3.3	5.6
	Not used	89.8	35.2	97.2	97.4	77.1	99.6	98.1	96.5	90.3
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
LITTORAL (excluding Douala)	Exclusive	15.6	17.8	0.0	3.2	1.4	9.6	4.3	0.0	4.0
	Major	10.2	9.9	0.1	3.4	2.8	3.3	2.5	0.1	1.7
	In addition	6.0	10.7	0.0	2.1	4.5	2.8	3.4	3.0	4.3
	Not used	68.1	61.6	99.9	91.3	91.3	84.2	89.8	96.9	90.0
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
NORTH	Exclusive	5.6	22.9	4.3	3.2	25.9	0.0	2.6	0.0	11.2

	Major	4.8	11.2	1.4	0.6	8.0	0.1	0.5	0.0	3.3
	In addition	0.2	3.4	0.2	0.3	4.0	0.0	0.2	1.7	3.4
	Not used	89.4	62.5	94.2	95.9	62.1	99.8	96.7	98.3	82.1
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
NORTH-WEST	Exclusive	23.6	3.3	2.6	0.0	0.7	8.2	1.1	0.0	22.4
	Major	12.7	1.2	1.1	3.8	0.6	8.2	1.0	0.0	8.6
	In addition	5.5	0.7	0.1	2.2	0.7	1.5	2.2	2.3	5.5
	Not used	58.2	94.8	96.2	94.0	98.0	82.1	95.7	97.7	63.5
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
WEST	Exclusive	7.2	7.2	3.1	2.9	1.3	5.7	9.3	0.2	7.7
	Major	11.0	7.8	4.5	11.7	10.4	6.9	5.8	1.3	6.5
	In addition	4.4	6.3	1.3	2.9	1.7	7.0	3.8	11.0	4.7
	Not used	77.5	78.6	91.0	82.4	86.6	80.4	81.1	87.6	81.1
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
SOUTH	Exclusive	2.6	19.4	2.1	3.4	1.5	4.5	8.9	0.0	4.8
	Major	5.6	13.7	1.5	10.9	10.1	1.4	7.1	0.1	2.7
	In addition	3.1	14.4	1.7	7.1	3.1	5.0	1.5	7.9	3.0
	Not used	88.7	52.5	94.7	78.6	85.3	89.0	82.6	92.0	89.4
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
SOUTH-WEST	Exclusive	37.9	0.9	6.8	6.3	0.7	2.2	0.0	0.0	0.8
	Major	9.1	1.5	3.8	7.6	1.7	0.8	0.5	0.0	1.3
	In addition	10.1	0.5	1.4	2.1	0.3	1.4	0.5	1.6	2.0
	Not used	42.8	97.1	87.9	83.9	97.3	95.6	99.0	98.4	95.8
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
YAOUNDE	Exclusive	17.5	4.8	1.2	0.8	0.1	5.1	1.2	0.0	0.0
	Major	32.6	10.4	3.2	12.2	9.4	4.1	1.2	0.1	0.0
	In addition	4.4	15.6	1.2	6.1	3.8	8.7	1.9	6.2	0.8
	Not used	45.6	69.2	94.3	80.9	86.8	82.2	95.7	93.7	99.2
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total	Exclusive	13.5	17.9	2.0	3.1	5.4	3.7	3.4	0.1	5.7
	Major	11.9	11.3	1.8	6.4	7.2	2.6	2.2	0.2	2.4
	In addition	3.7	8.0	0.7	2.9	3.7	2.7	2.0	5.9	3.9
	Not used	70.8	62.8	95.6	87.6	83.7	91.0	92.5	93.8	88.0
	Total	100	100	100	100	100	100	100	100	100

Table 5.3: Rate of connection to the public water distribution network

Distribution (%) of households by their subscription status to the public water distribution network

Background characteristics	Subscribers	Current process	Not subscribers	Total
Area of residence				
Urban	21.1	3.5	75.4	100
Rural	2.9	2.3	94.7	100
Region				
Adamawa	7.6	0.4	92.0	100
Centre (excluding Yaounde)	3.3	1.1	95.5	100
Douala	24.6	2.9	72.5	100
East	3.2	1.8	95.0	100
Far-North	4.0	3.1	92.9	100
Littoral (excluding Douala)	11.1	3.3	85.6	100
North	3.7	1.5	94.8	100
North-West	21.5	7.9	70.6	100
West	14.2	1.8	84.0	100
South	3.1	1.9	95.0	100
South-West	19.1	5.8	75.1	100
Yaounde	24.8	2.7	72.5	100
Total	**12.8**	**2.9**	**84.3**	**100**

Table 5. 4: Willingness and ability of households to pay for water service

Readiness and ability of households to pay for public water service

Characteristics	Percentage of households ready to connect to the public water distribution network for an amount of 95,000 CFA francs	Maximum amount (in CFA francs) that the household is ready to pay to connect to the public water distribution network		Distribution (%) of non-subscriber households by main reasons for which they are not ready to connect to the public water distribution network for an amount of 95,000 CFA francs							
		Mean	Median	Due to lack of financial means/very high amount	Due to administrative hassle	Due to untimely power outages/cuts	Not interested	Other	Tenant	Already drilled or other natural source	Total
Area of residence											
Urban	24.5	26,431	25000.0	40.2	2.2	2.9	39.2	1.9	10.6	2.9	100.0
Rural	32.6	22,230	20000.0	64.8	1.9	1.2	27.5	0.9	1.1	2.7	100.0
Region											
Adamawa	28.7	22,086	20000.0	65.7	1.2	2.8	13.3	2.7	6.4	8.0	100.0
Centre (excluding Yaounde)	43.6	30,455	30000.0	46.0	1.5	1.5	43.0	2.0	3.4	2.6	100.0
Douala	32.5	35,772	30000.0	25.7	3.9	2.2	49.4	2.1	13.2	3.4	100.0
East	38.1	27,040	20000.0	44.1	2.8	1.6	47.5	2.1	1.7	0.2	100.0
Far-North	18.7	18,681	15000.0	79.6	0.9	1.1	14.4	0.2	1.3	2.4	100.0
Littoral (excluding Douala)	26.1	35,888	25000.0	50.7	2.2	3.1	34.4	0.2	5.2	4.2	100.0
North	32.0	24,072	20000.0	80.3	0.5	1.1	14.5	0.2	1.0	2.3	100.0
North-West	33.4	23,000	20000.0	66.9	0.0	1.9	23.3	3.7	2.9	1.4	100.0
West	39.8	22,036	20000.0	49.3	2.7	4.6	33.4	0.7	8.1	1.3	100.0
South	24.2	20,550	15000.0	49.3	1.9	,6	39.2	1.3	3.8	3.8	100.0
South-West	7.3	23,520	10000.0	27.0	4.9	3.8	52.9	3.1	7.4	0.8	100.0
Yaounde	19.2	25,237	25000.0	35.0	1.9	1.1	42.1	1.1	14.7	4.0	100.0
Wealth quintiles											
Lower	27.5	19,050	15000.0	81.2	0.5	0.3	14.4	0.3	0.2	3.1	100.0
Second	34.4	22,656	20000.0	64.8	1.4	0.8	27.3	1.1	1.3	3.2	100.0
Average	29.1	27,273	20000.0	55.0	1.9	2.7	30.9	1.6	6.1	1.8	100.0
Fourth	25.1	30,576	30000.0	36.1	3.6	2.9	42.0	2.0	10.6	2.7	100.0
Higher	25.9	30,700	30000.0	18.2	3.3	3.8	56.5	2.2	13.1	2.9	100.0
Total	**28.7**	**23,878**	20000.0	**52.2**	**2.1**	**2.0**	**33.5**	**1.4**	**6.0**	**2.8**	**100.0**

Table 5. 5: Drinking water quality

Characteristics	Proportion (%) of household using an improved drinking water source	Proportion (%) of population using an improved drinking water source	Proportion (%) of households with a basic drinking water supply service	Proportion (%) of households with a limited drinking water supply service	Distribution of households by time taken to get drinking water and return to the household					Proportion (%) of households whose water from the main source of supply is contaminated with bacteria OF. Coli or coliforms	Proportion (%) of households whose drinking water was available in sufficient quantity during the 30 days preceding the survey	Proportion (%) of households using safely managed drinking water services	Proportion (%) of population using safely managed drinking water services
					Water on site	30 minutes or less	More than 30 minutes	Missing/ Does not know	Total				
Area of residence													
Yaounde/ Douala	97.9	97.7	90.6	7.0	36.5	56.0	7.4	0.2	100.0	29.2	80.8	18.4	18.5
Other urban	87.9	86.7	75.1	11.9	27.1	57.4	14.2	1.3	100.0	33.5	83.6	11.1	10.1
Urban set	92.1	91.3	81.7	9.8	31.1	56.8	11.3	0.8	100.0	31.6	82.4	14.3	13.6
Rural	60.5	59.6	48.1	10.8	9.1	67.0	21.9	2.1	100.0	42.1	90.8	3.7	3.5
Survey region													
Adamawa	52.2	50.1	46.0	6.2	14.2	72.9	12.9	0.0	100.0	44.6	85.6	5.5	6.1
Centre (excluding Yaounde)	81.6	82.8	68.1	13.1	10.1	71.6	17.9	0.4	100.0	38.9	92.0	3.7	4.0
Douala	98.3	98.4	93.3	4.7	40.5	54.4	4.8	0.2	100.0	30.2	79.5	20.8	20.8
East	54.2	53.7	44.4	9.0	8.9	71.8	18.4	0.9	100.0	48.4	93.3	2.0	2.2
Far-North	76.1	76.7	62.0	14.1	8.0	70.8	21.2	0.1	100.0	42.7	84.0	3.5	3.0
Littoral (excluding Douala)	82.6	81.9	68.3	14.2	16.4	63.2	20.4	0.1	100.0	32.6	89.1	10.3	13.4
North	52.0	49.7	29.7	16.7	10.3	46.3	34.4	9.0	100.0	36.6	91.1	3.1	4.2
North-West	66.9	62.5	58.8	1.7	21.4	60.0	11.5	7.0	100.0	29.5	94.6	8.8	8.3
West	69.1	68.6	56.1	12.9	21.7	55.9	22.4	0.0	100.0	48.1	80.0	8.0	8.2
South	77.9	76.8	70.8	7.0	10.2	78.2	11.7	0.0	100.0	34.4	85.1	8.4	5.8
South-West	80.4	79.1	71.4	8.7	41.9	48.0	9.8	0.4	100.0	29.2	87.3	14.6	11.0
Yaounde	97.2	96.5	86.9	10.1	31.2	58.0	10.7	0.2	100.0	28.3	82.4	15.6	15.8
Wealth quintile													
Lower	48.5	51.0	35.2	12.4	4.1	66.2	27.5	2.2	100.0	46.9	88.9	1.0	2.0
Second	63.4	63.3	51.2	10.6	8.8	69.0	20.3	1.9	100.0	41.5	90.9	3.7	2.6
Average	86.1	85.3	71.4	12.7	14.6	66.9	16.5	2.1	100.0	33.6	89.0	7.6	7.7
Fourth	91.8	91.3	80.6	10.5	23.9	63.3	12.1	0.7	100.0	34.7	82.2	11.2	10.7
Higher	95.0	95.6	88.4	6.1	48.0	45.0	6.5	0.5	100.0	26.9	81.4	21.3	22.2
Total	**77.0**	**75.0**	**65.7**	**10.3**	**20.6**	**61.6**	**16.3**	**1.4**	**100.0**	36.5	86.3	9.3	8.5

Table 5.6: Average time taken by households (in minutes) to go to the source, get water and return, by area of residence

	Public water distribution network	Borehole	Pump well	Protected wells	Unprotected wells	Source protected	Unprotected source	Surface water (river, stream, dam, lake, pond, irrigation channel)
Area of residence								
Urban	14.0	17.5	15.3	11.2	10.9	17.9	17.3	17.4
Rural	12.1	15.7	14.8	16.1	15.7	16.8	19.6	19.9
Survey region								
Adamawa	14.8	18.3	11.5	12.8	14.1	12.3	13.2	17.1
Centre (excluding Yaounde)	10.3	16.9	8.0	12.3	13.6	15.0	17.7	18.7
Douala	12.9	15.6	11.4	9.6	8.6	16.0	16.4	20.0
East	25.4	18.2	15.2	15.8	12.9	20.8	23.2	22.4
Far-North	17.7	13.9	15.8	16.6	17.2	8.3	23.6	21.3
Littoral (excluding Douala)	14.8	19.1	.	17.0	14.4	17.9	18.6	23.7
North	18.4	17.8	13.6	15.4	15.0	40.0	17.4	18.5
North-West	11.5	20.7	9.4	13.6	13.9	11.5	18.3	18.4
West	12.4	19.8	17.3	16.4	12.0	19.0	18.4	20.3
South	12.1	17.8	13.4	13.4	9.7	23.3	20.7	17.7
South-West	14.7	11.1	18.0	10.0	10.0	20.3	20.6	13.2
Yaounde	12.8	16.9	14.8	10.6	9.3	17.6	14.1	17.5
Total	**13.7**	**16.6**	**15.0**	**12.8**	**13.9**	**17.5**	**19.0**	**19.5**

Table 5. 7: Distance to get water

Average distance (in meters) from the household to the place of water supply, by source of supply used by the household

Characteristics	Public water distribution network	Borehole	Pump well	Protected well	Unprotected well	Source protected	Unprotected source	Surface water	Other
Area of residence									
Urban	286.0	339.7	258.2	88.8	107.3	543.2	775.6	659.2	372.9
Rural	155.2	374.4	260.3	275.0	556.6	470.1	524.1	575.9	345.4
Survey region									
Adamawa	258.0	277.1	289.0	180.4	174.7	210.0	258.5	406.8	233.6
Centre (excluding Yaounde)	149.6	292.9	176.2	209.2	221.8	225.9	331.3	906.2	664.2
Douala	97.9	197.6	118.1	45.1	49.6	314.2	116.1	80.0	953.1
East	314.8	243.3	96.9	181.0	112.8	432.7	422.0	433.5	204.5
Far-North	264.1	450.5	254.3	392.0	810.0	100.0	658.8	905.7	396.5
Littoral (excluding Douala)	121.3	249.8	.	195.1	161.3	462.3	823.2	767.2	302.8
North	235.6	457.1	377.8	319.5	529.6	750.0	328.0	401.4	136.7
North-West	193.6	1011.8	93.0	138.0	75.7	332.7	228.7	481.5	162.5
West	294.4	403.3	223.2	158.6	100.0	773.6	851.4	761.1	591.6
South	178.9	455.4	191.1	147.5	124.3	1120.2	564.3	379.2	300.0
South-West	281.2	52.5	426.2	115.9	8.0	1146.5	575.4	1015.7	225.3
Yaounde	214.8	392.9	174.8	74.3	83.6	411.8	1311.1	38.2	31.9
Total	190.2	357.5	259.3	150.5	394.6	517.0	589.9	588.4	358.0

Table 5.8: Amount of water used by use

Average monthly amount (in litres) of water used by households byarea of residence and type of use by water supply source

	Water use	Water source											
		Public water distribution network	**Borehole**	**Pump well**	**Protected well**	**Unprotected well**	**Source protected**	**Unprotected source**	**Rainwater**	**Surface water**	**Bottled water (mineral)**	**Sachet water**	**Tanker/cart**
Urban	Beverage	85.1	140.6	68	80.1	37.2	162.8	47.9	162.9	18.5	158.2	115.8	102.9
	Cooking	398.7	424.5	422.3	452.7	445.1	430	445.1	388.7	516.7	56	n / A	301.9
	Laundry/cleaning	703.7	655.6	607.7	696.7	719.1	627.7	588	718.6	794.6	n / A	n / A	620.6
	Evacuation of excreta	1299.5	1067.6	1267.7	1274	1085.3	940.5	661.2	987.3	1082.5	n / A	n / A	430.3
	Personal hygiene	1801.5	1705.3	1765.4	1633.1	1845.5	1507	1487	1384.8	1714.1	n / A	n / A	1500.3
	Other use	322	387.9	226.3	465.4	456.4	355.7	510.1	657.5	506.2	65.3	n / A	449.9
	Mean	**4610.5**	**4381.5**	**4357.4**	**4602**	**4588.6**	**4023.7**	**3739.3**	**4299.8**	**4632.6**	**279.5**	**115.8**	**3405.9**
Rural	Beverage	107.5	55.2	57.6	30.5	40.3	63.3	45	77.5	31.1	79.5	19.6	n / A
	Cooking	420.6	472.2	411.5	460.6	490.3	540.7	451.7	398.8	490.4	n / A	n / A	n / A
	Laundry/	625.4	689.4	599.4	688.3	738.5	666.6	598.5	485.1	759.5	n / A	n / A	n / A
	Evacuation of excreta	1273.3	458.2	930.9	815	492	342.8	463.1	450.7	325.5	n / A	n / A	n / A
	Personal hygiene	1426.8	1556	1484.8	1618.1	1777	1239.8	1212.8	1023.1	1282.9	n / A	n / A	n / A
	Other use	363.4	802.3	688.4	558.7	824.6	565.2	651.1	377.2	563.5	n / A	n / A	n / A
	Mean	**4217**	**4033.3**	**4172.6**	**4171.2**	**4362.7**	**3418.4**	**3422.2**	**2812.4**	**3452.9**	**79.5**	**19.6**	
Total	Beverage	88.2	97.2	62.1	48.4	39.9	124.7	45.6	93.2	29.7	154.4	93.2	102.9
	Cooking	401.8	451	416.4	455	471	474.6	450.1	395.9	493.6	56	n / A	301.9
	Laundry/	692.8	673.8	602.9	694.6	729.3	643.2	595.6	587.4	764.4	n / A	n / A	620.6
	Evacuation of excreta	1297.1	819.7	1147.4	1203	778.2	845.2	545.3	863.2	456.8	n / A	n / A	430.3
	Personal hygiene	1749.9	1623.9	1604.4	1629.2	1808.8	1398.8	1281.9	1146.6	1339.1	n / A	n / A	1500.3
	Other use	325.2	673.6	445.1	488.4	697.8	410	625.6	492.6	559.2	65.3	n / A	449.9
	Mean	**4555**	**4339.2**	**4278.3**	**4518.6**	**4525**	**3896.5**	**3544.1**	**3578.9**	**3642.8**	**275.7**	**93.2**	**3405.9**

Na= not applicable

Table 5.9: Origin of drinking water

Percentage of households drinking water from a specific source, by source of water used by the household and by selected characteristics

	Public water distribution network	Borehole	Pump well	Protected wells	Unprotected wells	Source protected	Unprotected source	Rainwater	Surface water	Bottled water (mineral)	Sachet water	Tanker/cart	Other
Area of residence													
Urban	84.5	87.4	73.6	15.6	11.7	87.0	63.7	12.1	47.0	97.7	94.1	74.2	83.6
Rural	97.6	98.1	96.3	72.4	72.7	95.0	83.6	43.4	68.6	100.0	100.0	.	95.0
Survey region													
Adamawa	66.4	97.0	78.3	58.9	66.4	78.3	83.3	50.2	62.2	100.0	81.4	100.0	67.9
Centre (excluding Yaounde)	56.6	96.7	71.8	57.5	24.9	88.2	74.8	20.9	23.7	100.0	92.5	.	100.0
Douala	86.3	81.3	24.6	0.9	0.0	41.4	51.7	0.0	0.0	99.2	100.0	100.0	86.0
East	46.2	93.6	82.7	36.0	32.9	95.7	87.0	48.4	64.3	100.0	100.0	.	100.0
Far-North	99.4	95.5	94.5	90.7	82.8	100.0	68.8	64.2	64.1	100.0	100.0	100.0	77.5
Littoral (excluding Douala)	96.5	95.3	0.0	49.8	20.5	92.4	76.9	0.0	44.9	100.0	100.0	.	95.0
North	94.9	96.6	95.4	82.9	82.2	74.2	94.7	16.3	89.3	100.0	100.0	.	100.0
North-West	98.5	78.3	96.4	11.5	43.0	97.7	44.7	37.7	79.0	100.0	.	23.4	94.2
West	89.7	94.5	98.0	20.4	15.0	91.4	86.4	37.2	65.9	100.0	.	.	68.1
South	74.0	94.3	100.0	29.6	11.8	91.6	77.3	9.8	54.6	100.0	50.0	.	56.1
South-West	96.4	26.9	79.6	44.6	26.6	97.0	66.6	49.2	27.5	100.0	100.0	38.5	89.9
Yaounde	68.7	92.3	81.5	8.4	,4	86.3	68.4	8.1	19.6	95.4	100.0	100.0	100.0
Wealth quintile													
Lower	100.0	99.2	92.0	85.5	87.2	100.0	89.5	67.2	81.7	.	100.0	.	100.0
Second	100.0	96.4	99.6	76.1	54.7	94.1	85.9	38.9	61.2	100.0	94.6	.	86.9
Average	94.0	92.6	92.3	39.1	15.6	95.7	76.5	19.1	46.5	100.0	100.0	100.0	85.6
Fourth	90.9	90.5	77.9	9.4	4.6	87.1	58.8	12.8	37.0	98.4	92.0	67.2	94.3
Higher	78.4	84.1	70.4	8.7	1.7	78.0	33.4	1.2	47.4	97.5	100.0	73.1	85.4
Total	**86.1**	**92.5**	**84.8**	**30.2**	**44.1**	**89.9**	**78.2**	**29.5**	**65.1**	**97.8**	**96.0**	**74.2**	**88.8**

Table 5.1: Treatment of drinking water in households

Percentage (%) of households treating water before drinking it, by source byarea of residence, region and wealth quintile,

Characteristics	Public water distribution network	Borehole	Pump well	Protected well	Unprotected well	Source protected	Unprotected source	Surface water	Other
Area of residence									
Urban	15.3	10.9	15.0	32.3	10.7	13.9	16.7	9.0	9.8
Rural	3.8	5.3	4.6	26.0	14.9	4.8	10.4	8.4	19.4
Region									
Adamawa	27.7	18.5	37.2	67.8	34.6	33.6	5.3	19.4	11.7
Centre (Except Yaounde)	16.7	8.3	8.0	22.2	16.7	13.9	22.8	23.9	0.0
Douala	16.9	10.5	12.4	15.3	5.4	23.3	48.6	.	15.7
East	12.1	5.0	18.2	8.0	9.5	13.3	1.3	0.0	13.8
Far-North	3.1	4.5	0.0	0.0	3.7	0.0	0.0	2.5	13.0
Littoral (excluding Douala)	7.3	5.9	.	29.4	36.3	3.0	14.8	0.0	3.2
North	5.9	3.8	6.9	9.0	14.7	0.0	19.1	18.9	0.0
North-West	11.0	3.7	12.6	0.0	45.8	2.0	21.8	5.4	26.0
West	12.3	10.2	7.0	37.3	30.5	6.1	10.0	7.5	0.0
South	7.9	6.5	0.0	26.5	15.2	12.4	7.0	4.9	100.0
South-West	2.9	0.0	10.1	37.3	0.0	18.2	0.0	16.4	19.0
Yaounde	28.9	17.1	17.2	37.7	0.0	18.7	11.1	0.0	0.0
Wealth quintile									
Lower	0.0	4.2	6.7	22.1	9.8	10.8	7.2	8.5	14.0
Second	3.4	3.5	2.6	25.3	22.1	1.4	11.0	7.9	2.8
Average	3.7	6.8	4.7	39.1	14.2	13.8	19.0	7.0	19.6
Fourth	9.8	9.7	12.1	19.0	17.7	8.1	9.1	6.5	20.4
Higher	22.3	16.9	19.1	37.3	24.8	24.1	22.2	60.1	12.2
Total	**13.7**	**8.1**	**9.3**	**29.1**	**14.0**	**10.4**	**11.8**	**8.5**	**14.3**

Table 5.2: Distance between water source and toilets/WCs/septic tanks

Distribution (%) of households by distance between the water supply point and the nearest sanitation facility, byarea of residence, region and wealth quintile

	Borehole			Pump well			Protected wells			Unprotected wells			Source protected			Unprotected source		
	Distance between toilet and source			Distance between toilet and source			Distance between toilet and source			Distance between toilet and source			Distance between toilet and source			Distance between toilet and source		
	Less than 15m	15m and more	Does not know	Less than 15m	15m and more	Does not know	Less than 15m	15m and more	Does not know	Less than 15m	15m and more	Does not know	Less than 15m	15m and more	Does not know	Less than 15m	15m and more	Does not know
Area of residence																		
Urban	9.2	68.9	21.9	9.4	64.7	26.0	23.1	66.3	10.6	25.1	63.7	11.2	8.1	67.4	24.5	7.3	68.1	24.6
Rural	2.5	83.7	13.9	4.9	85.2	9.9	6.1	76.2	17.7	5.8	79.3	14.9	1.5	80.8	17.7	3.0	76.6	20.4
Survey region																		
Adamawa	1.8	87.5	10.7	0.0	100.0	0.0	14.4	77.1	8.5	12.3	85.8	1.9	.0	90.4	9.6	6.2	82.3	11.5
Centre (excluding Yaounde)	3.7	70.0	26.4	0.0	74.9	25.1	7.5	75.1	17.4	9.1	60.8	30.1	2.4	61.8	35.7	4.5	52.5	43.0
Douala	15.3	58.5	26.1	18.3	61.6	20.1	26.9	56.6	16.5	32.6	54.9	12.5	41.3	43.9	14.8	11.6	53.5	34.8
East	5.2	78.0	16.8	10.8	83.2	5.9	19.7	72.7	7.6	23.5	66.4	10.1	0.0	70.5	29.5	0.5	86.9	12.6
Far-North	1.7	85.2	13.2	7.0	83.4	9.6	.0	82.9	17.1	2.4	75.8	21.8	0.0	25.3	74.7	0.0	93.0	7.0
Littoral (excluding Douala)	8.5	77.4	14.2	0.0	100.0	0.0	29.6	60.5	9.9	23.3	68.0	8.7	4.4	86.3	9.3	5.1	79.3	15.6
North	1.1	85.1	13.8	.0	90.1	9.9	1.2	83.9	14.9	4.2	88.4	7.4	0.0	25.8	74.2	3.5	63.3	33.2
North-West	1.7	87.1	11.2	24.7	73.9	1.4	17.0	76.2	6.9	15.0	49.4	35.6	6.5	83.2	10.4	0.0	60.0	40.0
West	9.4	78.3	12.3	7.7	83.5	8.8	16.0	75.9	8.1	19.3	75.3	5.5	5.6	83.1	11.2	6.1	78.8	15.1
South	3.3	93.8	2.8	9.3	84.8	5.9	21.7	70.5	7.8	27.4	71.5	1.1	0.0	95.4	4.6	2.4	94.8	2.8
South-West	0.0	88.5	11.5	3.5	79.7	16.8	5.1	75.5	19.4	26.6	69.4	4.0	0.0	68.5	31.5	0.0	86.3	13.7
Yaounde	10.1	62.2	27.6	9.0	37.0	54.0	30.3	60.0	9.7	28.1	60.0	11.9	7.7	54.4	37.9	9.4	65.9	24.7
Wealth quintile																		
Lower	0.8	86.1	13.1	0.0	96.3	3.7	1.7	75.8	22.5	2.8	81.3	15.9	0.0	50.9	49.1	1.2	83.6	15.2
Second	3.1	83.7	13.2	6.8	84.0	9.2	7.1	74.4	18.5	12.4	78.6	9.0	1.7	83.1	15.2	0.8	78.0	21.2
Average	5.5	78.5	15.9	5.2	80.6	14.2	18.1	75.3	6.6	23.8	64.4	11.8	3.4	80.6	16.0	10.2	61.8	28.1
Fourth	10.1	68.4	21.5	15.8	64.1	20.1	24.6	64.9	10.5	24.3	62.8	12.9	12.9	63.0	24.1	5.3	81.8	12.9
Higher	10.4	63.3	26.2	5.0	63.9	31.1	22.8	64.0	13.2	27.2	58.5	14.3	5.4	59.8	34.8	17.8	44.0	38.2
Total	**6.0**	**75.9**	**18.1**	**7.2**	**74.8**	**18.0**	**18.7**	**68.9**	**12.4**	**14.9**	**72.0**	**13.2**	**5.7**	**72.3**	**22.0**	**4.2**	**74.2**	**21.6**

Table 5.3: Mode of conservation of drinking water in households

Distribution (%) of households by main method of storing drinking water in the household

Characteristics	Store in open containers	Store in closed containers	Draw directly from the source to drink	Other	Total
Area of residence					
Urban	2.5	94.7	2.1	0.7	100
Rural	4.1	95.2	0.6	0.1	100
Region					
Adamawa	5.5	92.7	0.3	1.5	100
Centre (excluding Yaounde)	2.3	97.6	0.2	0.0	100
Douala	2.5	95.4	2.0	0.1	100
East	7.9	90.3	1.4	0.5	100
Far-North	1.2	97.8	0.9	0.2	100
Littoral (excluding Douala)	1.4	98.3	0.1	0.1	100
North	7.4	91.8	0.6	0.2	100
North-West	8.5	89.7	1.0	0.9	100
West	2.7	96.1	0.7	0.5	100
South	3.2	96.1	0.5	0.2	100
South-West	0.1	95.2	4.7	0.0	100
Yaounde	2.4	92.9	3.2	1.5	100
Total	**3.3**	**95.0**	**1.3**	**0.4**	**100**

Table 5.4: Prevalence rate of waterborne diseases

Percentage of households with at least one member who suffered from a waterborne disease over the past 6 months

Characteristics	At least one waterborne disease	Cholera	Diarrhea	Amoebic dysentery	Typhoid fever	Parasitic diseases of the skin	Other
Area of residence							
Urban	75.7	,4	24.3	25.5	69.1	7.8	,6
Rural	74.2	,4	35.2	37.2	49.7	6.7	.5
Region							
Adamawa	64.2	,8	28.0	28.9	63.2	6.7	.0
Centre (excluding Yaounde)	65.1	1.0	29.9	47.6	57.2	6.9	.0
Douala	78.4	.5	15.4	28.0	69.8	11.2	,7
East	70.7	,7	52.5	21.1	55.4	8.8	.0
Far-North	72.2	.0	44.7	38.0	37.9	6.0	1.0
Littoral (excluding Douala)	79.9	1.8	30.6	22.4	65.2	3.1	.0
North	72.0	.0	19.3	38.6	64.8	.5	.0
North-West	87.3	1.2	10.9	19.1	68.9	3.7	,7
West	75.1	.0	24.1	28.9	60.1	7.9	2.1
South	76.6	.0	33.2	27.2	60.2	10.9	.0
South-West	85.7	.0	27.0	10.6	68.4	17.3	1.8
Yaounde	72.2	.0	26.5	25.3	70.2	8.1	,3
Total	75.0	,4	29.5	31.0	59.9	7.3	.5

Table 5.5: Health expenditure by type of disease and by item of expenditure

Average amount of expenditure related to waterborne diseases by type of disease and expenditure

Type of diseases	Type of expense	Amount
Cholera	Consultation	3251
	Medical exams	22016
	Treatment	23908
	Hospitalization costs	.
	Other expenses	5760
Diarrhea	Consultation	1873
	Medical exams	6223
	Treatment	6234
	Hospitalization costs	14644
	Other expenses	8034
Amoebic dysentery (amoebas, stomach ache, etc.)	Consultation	1922
	Medical exams	5826
	Treatment	6669
	Hospitalization costs	11933
	Other expenses	8241
Typhoid	Consultation	2272
	Medical exams	9682
	Treatment	15325
	Hospitalization costs	17726
	Other expenses	17259
Parasitic disease (scabies, ringworm, parasitosis, onchocerciasis, etc.)	Consultation	2124
	Medical exams	7476
	Treatment	7705
	Hospitalization costs	12324
	Other expenses	5911
Other waterborne diseases	Consultation	3434
	Medical exams	2333
	Treatment	7867
	Hospitalization costs	2816
	Other expenses	6007

ACCESS OF HOUSEHOLDS TO SANITATION 6

Promoting the universal access of populations to adequate sanitation facilities and best hygienic practices are major challenges for the achievement of the Sustainable Development Goals (SDGs). Target 6.2 of SDG number 6 aims by 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.

VI.1. ACCESS TO SANITATION FACILITIES

Types of sanitation facilities

Improved sanitation facilities consist of toilets with automatic or manual flushing; improved ventilated latrines; pit latrines with slabs or composting toilets.

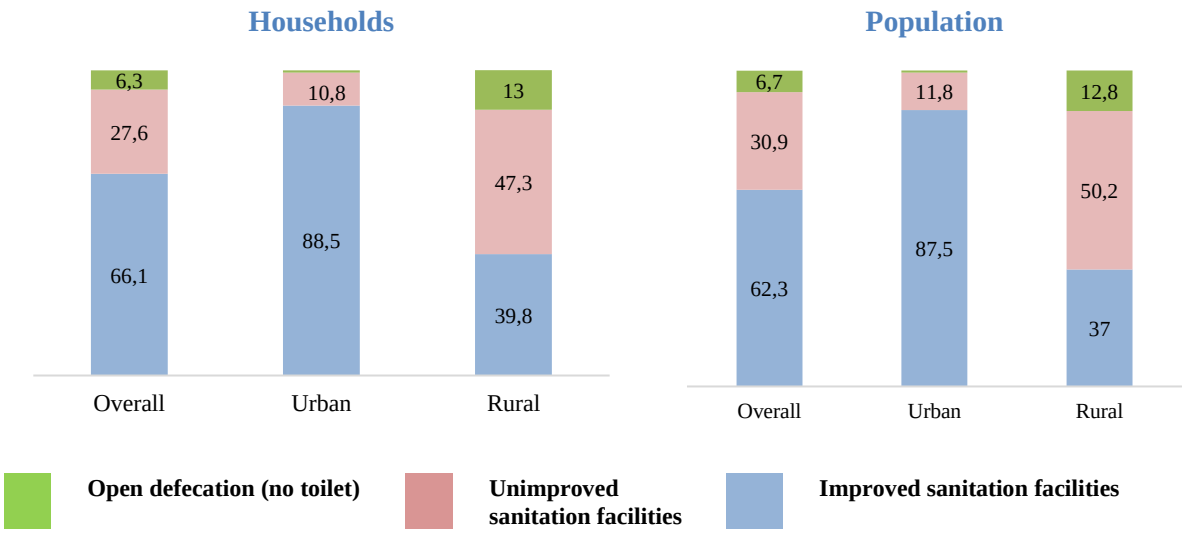
Overall, two in three households (66%) use improved sanitation facilities. This percentage drops from 89% in urban areas to 40% in rural areas.

Pit latrines with slabs are used by 44% of households. They are the type of improved sanitation facilities most frequently used in households. They are followed by flush toilets with or without a water tank and connected to a septic tank (18%).

Overall, a little less than one in three households (28%) do not use improved sanitation facilities. These are mainly those who use pit latrines without an open hole slab (25%).

In addition, 6% of households do not use a sanitation facility at all, and therefore defecate in the open or in nature (**Table 6.1**).

Figure 6.1: Distribution of households and populations by type of sanitation facility used, by area of residence



In addition, nearly one in two households (48%) use basic sanitation facilities, i.e. improved facilities not shared with other households, meanwhile 16% use limited sanitation facilities, i.e. that is, improved and shared by two or more households (**Table 6.1**).

Open defecation

An important aspect of SDG target 6.2 is to end open defecation by 2030. This means[5] that at this time, excreta of adults or children must not be:

- deposited (directly or after being covered by a layer of soil) in bushes, fields, beaches, or in any other open area;
- discharged directly into a drainage channel, river, sea, or any other body of water;
- wrapped in temporary material and discarded.

Table 6.1 show that at the national level, 7% of the population practices open defecation. This proportion hides huge disparities byarea of residence and survey region.

Analysis by area of residence shows that this phenomenon is mainly practised in rural areas. Indeed, as shown in the Figure below, 13% of the population in rural areas resort to this practice as against less than one percent in urban areas.

By survey region, the phenomenon is more prevalent in two regions, namely those of the Far-North (26%) and North (11%).

Figure 6.2: Percentage of population practising open defecation by area of residence

Safely managed sanitation facilities

Indicators selected by the United Nations to monitor the SDGs in the field of sanitation and hygiene include:

[5]*Source: Water Solidarity Programme, water and sanitation services in the SDGs, October 2016.*

- the proportion of the population using safely managed sanitation services (SDG 6.2.1a);
- the proportion of population with handwashing facilities with soap and water at home (SDG 6.2.1b).

To meet the new SDG criteria for safely managed sanitation services, households must use an improved sanitation facility not shared with other households and the excreta produced must either be safely treated in situ or transported and processed off-site.

Safely Managed Sanitation Services

These are improved sanitation facilities that are not shared by other households, and have an adequate excreta disposal system (via a pipe connected to a sewage system, sump or septic tank).

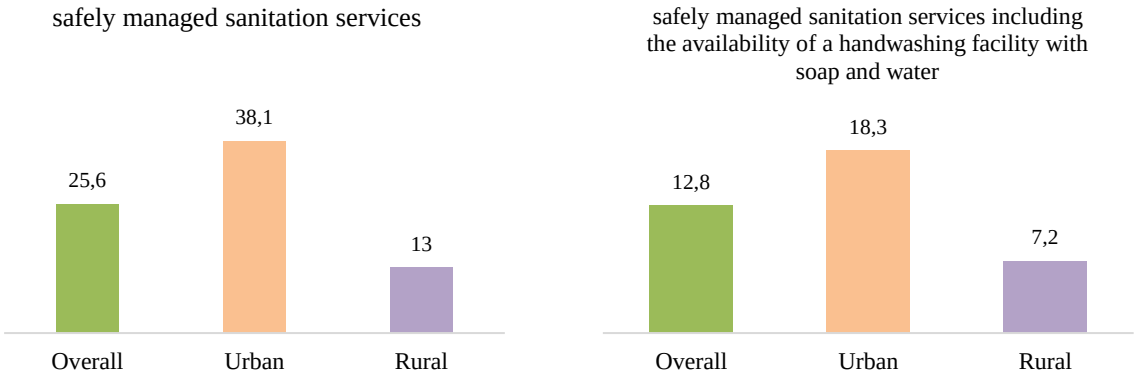
For safely managed sanitation services, the proportion of the population mainly using this type of sanitation facility (**SDG6.2.1a**) is 26% overall, 38% in urban areas and 13% in rural areas.

Considering regional disparities, in three survey regions, over two in five persons mainly use a safely managed sanitation service; these are Yaounde (45%), Douala (45%) and Littoral (49%). In contrast, less than 20% of persons use this type of service in the North-West (19%), South (18%), East (11%), North (11%) and Far-North (2%).

Another indicator that takes into account the availability of more amenities in sanitation facilities is **SDG6.2.1b**, relating to the proportion of the population using safely managed sanitation services including a facility for washing hands with soap and water at home. This survey shows that at the national level, only 13% of the population mainly use this service.

- This percentage is 18% in urban areas as against 7% in rural areas.
- Analysis at the regional level shows that the lowest rates are observed in the North (8%), East (3%) and Far-North (1%) regions. In contrast, the highest rates are observed in Yaounde (21%), in Douala (23%) and in the South-West region (23%), where over two in ten persons have access to this type of amenity.

Figure 6.3: Proportion (%) of population using safely managed sanitation services and proportion (%) of population using safely managed sanitation services including a handwashing facility with water and soap at home



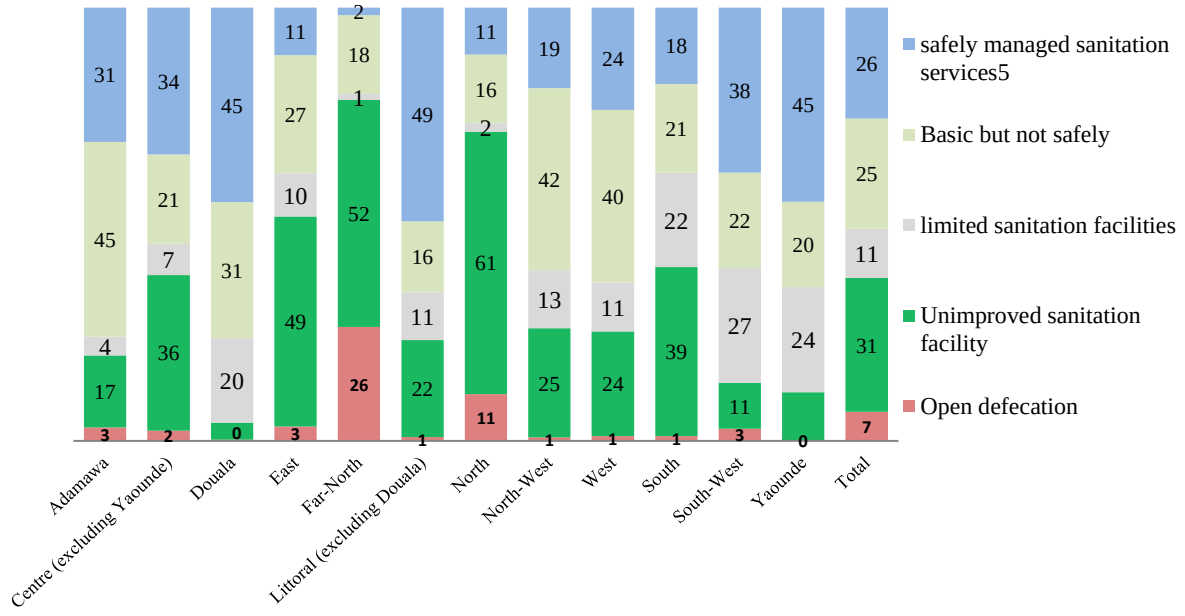
Scale of sanitation services

- The Joint Monitoring Programme (JMP)[6]distinguishes five categories of the population in terms of access to sanitation services. On a scale ranging from the least good to the most good, there are:
- populations of households practicing open defecation, which are households that do not have toilets at all and most often use nature as a place of ease;
- populations of households with unimproved toilets consisting mainly of pit latrines without slabs, open pits, portable potty toilets and suspended latrines;
- populations of households with limited toilets that are improved toilets but shared with other households;
- populations of households with basic but unsafe toilets which are improved and not shared toilets, but whose mode of evacuation of these toilets is inadequate;
- household populations with safely managed toilets, i.e. improved non-shared toilets with adequate excreta disposal.

Analysis of ENACE-1 data makes it possible to classify populations according to this scale of use of health services. Figure 6.4 below presents the distribution of the population by this scale and by survey region.

[6]The JMP is a joint programme of UNICEF and WHO established in 1990, responsible for global monitoring of water supply and sanitation

Figure 6.4: Scale of sanitation services: Distribution (%) of the population by type of sanitation facility at home



VI.2 DISPOSAL OF WASTEWATER FROM HOUSEHOLDS

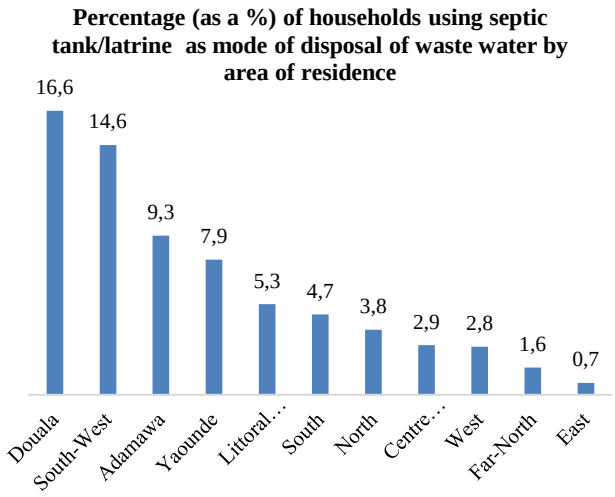
The lack of centralized wastewater collection in many urban centres results in disorganized practices.

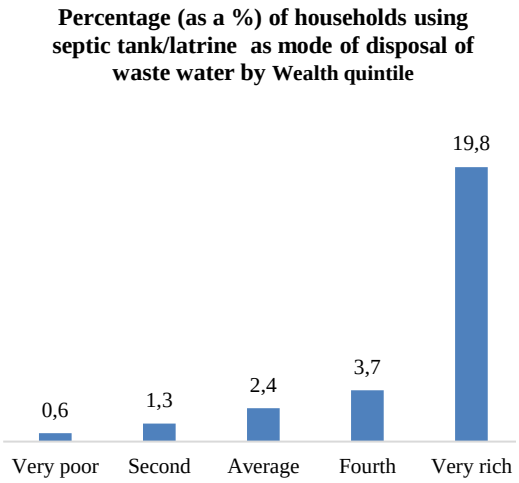
The survey shows that almost all households (93%) improperly dispose of household wastewater. These are spills in the yard/road (38%), in nature/field (31%), in the channel/gutter (23%) and in the river/stream (2%). These inconvenient discharges in the vicinity of households most often cause environmental problems such as proliferation of stagnant water around dwellings, thus creating immediate health risks for the surrounding populations.

Conversely, appropriate practices for safely managing household wastewater consist of discharges into piped sewer networks, into cesspools or into septic tanks or latrines. This last practice is the most widespread among the three but is still rarely observed in households. Indeed, in Cameroon, only 6% of households use septic tanks or latrines as a means of disposing of wastewater **(Table 6.3)**.

- By area of residence, the proportion of households using this mode of wastewater disposal is higher in urban households (10%) than in rural households (2%).
- By survey region, the highest proportions are observed in Douala (17%), in the South-West (15%) and in Adamawa (9%). In contrast, the lowest proportions are those of the Far-North (2%), East (1%) and North-West (0%) regions.
- The proportion of households using a septic tank/latrine for sewage disposal increases with the standard of living rising from less than 1% among households in the lowest wealth quintile to nearly 20% among households in the fifth quintile (**Figure 6.5**).

Figure 6.5: Proportion (%) of households using the septic tank/latrine for waste water disposal by survey region and level of welfare





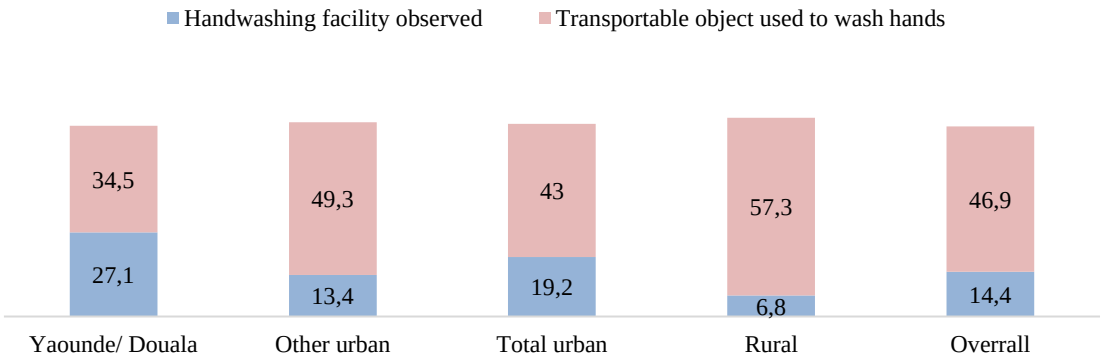
VI.3. AVAILABILITY OF A HANDWASHING FACILITY IN HOUSEHOLDS

Handwashing is an important step in fighting infection and the spread of disease in general. It is also one of the barrier measures most recommended by the World Health Organization (WHO) and by governments to fight against the spread of COVID 19.

During field data collection, interviewers asked to see where household members wash their hands most often. Interviewers also had to check whether water and more particularly cleaning products, more particularly (lump, liquid or powder) were available at this location.

- From the results presented in Figure 6.6, it was observed that overall, 63% of persons live in households where a handwashing facility was observed. For 13% of persons, it is a fixed place that has been observed and for half of the population (50%), the handwashing facility observed is rather a transportable object (kettle, bucket, basin, container, etc).
- In contrast, the percentage of the population living in a household with a basic handwashing facility, i.e. with observed soap and water, is 38%.
- In contrast, 25% of the population live in a household with a limited handwashing facility, i.e. without soap and/or without water observed by the interviewers (**Table 6.4**).

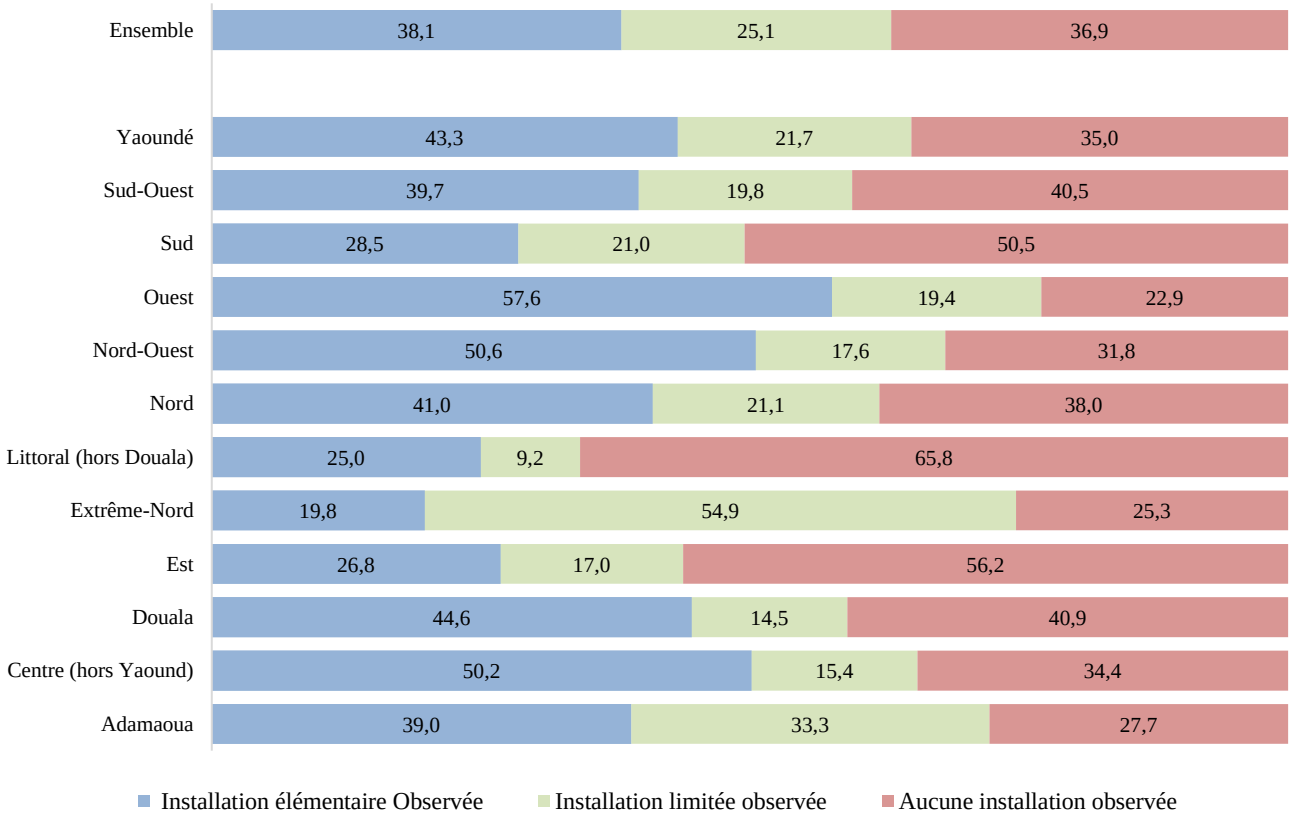
Figure 6.6: Percentage of population living in households where fixed or mobile handwashing facilities were observed



- Geographically, the proportion of persons who live in households where a fixed handwashing facility has been observed is higher in the survey regions of Yaounde (29%), Sud-Ouest (29%), Douala (25%) and Littoral excluding Douala (20%). The East region records the lowest value with less than 2%.
- By area of residence, it was observed that this proportion is about 3 times higher in urban areas (19%) than in rural areas (7%) (**Table 6.4**).

Furthermore, the proportion of the population living in a household where a basic handwashing facility was observed varies from 20% in the Far-North to 58% in the West (**Figure 6.7**). It increases with the level of wealth, rising from 30% for households in the lowest quintile to 51% for those in the highest quintile.

Figure 6.7: Distribution (%) of the population by availability of a handwashing facility



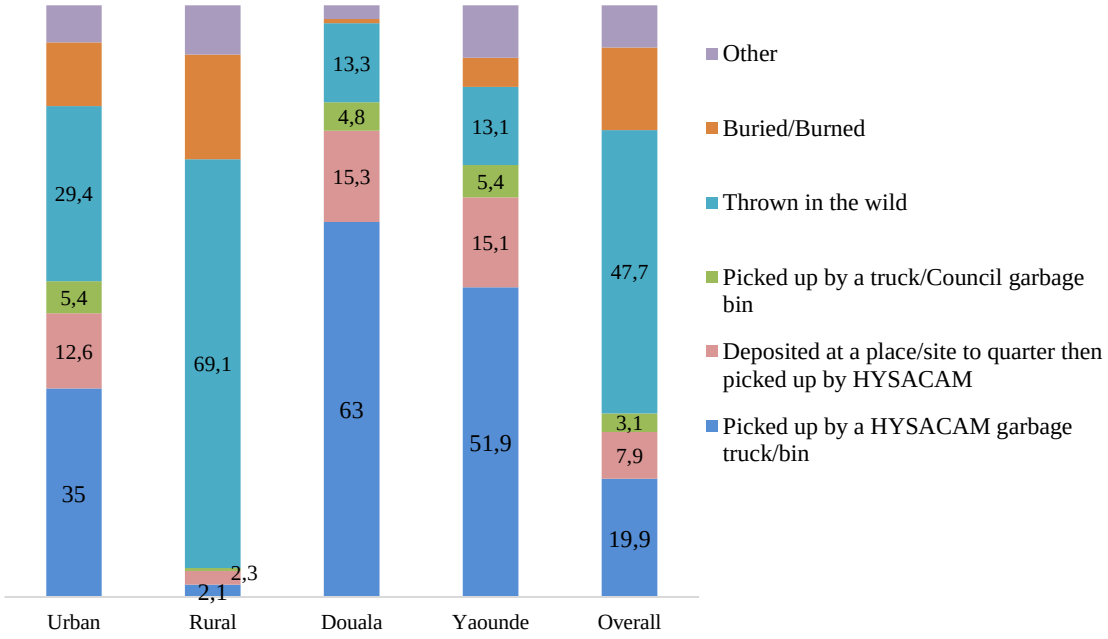
VI.4. SOLID SANITATION

Main mode of disposal of household waste

The sanitation of the immediate environment of the populations not only improves their living environment, but also spares them diseases such as typhoid fever, diarrhea, malaria whose vector develops in unhealthy environments and many other diseases caused by water contaminated by solid waste from households and surrounding economic activities.

ENACE-1 survey made it possible to capture the behaviour of households in relation to the management of their household waste. It shows that 28% of households dispose of their household waste through HYSACAM.[7], i.e. 20% who deposit it directly in the garbage bins or in the collection trucks of this enterprise, and 8% of households who deposit their garbage at a place in the quarter before collection by HYSACAM. Overall, the proportion of households that dispose of their garbage properly is 24%. Conversely, nearly half of households (48%) throw their garbage directly into the wild (**Table 6.8**).

Figure 6.8: Distribution (%) of households by main mode of disposal of household waste



- There is a strong disparity in the management of household waste byarea of residence: In rural areas, households mainly dispose of their waste either in nature (69%), or by burying it or burning it (17%). In contrast, over half of households in urban areas mainly dispose of household waste by collection either by HYSACAM or by the Council (**Figure 6.8**).
- With regard to the survey regions, after Yaounde and Douala which are better served by the enterprise in charge of household waste management HYSACAM (78% and 67% respectively), the South-West (40%), South (32%) and to a lesser extent the Littoral excluding Douala (16%), are the regions where households benefit the most from these

[7]HYSACAM is a national company responsible for public sanitation

services. The Far-North (6%), North (10%) and East (7%) regions are those where households use the services of this enterprise the least. It is also in these latter regions that the proportion of households that dispose of their waste in nature is high. This proportion is 82% in the East region, 76% in the North and 73% in the Far-North.

Regarding the wealth quintile, the richer the household, the more it tends to dispose of its household waste through the HYSACAM. Table 6.8 shows that the proportions of households in the first two quintiles that use these services are almost negligible.

LIST OF TABLES

Table 6.1: Types of sanitation facilities used by households

Distribution (as a %) of households and of the legal population by type of sanitation facilities and by area of residence

	Households					Population				
Type of sanitation facilities and where they are located	Yaounde/ Douala	Other urban	Total urban	Rural	**Total**	Yaounde/ Douala	Other urban	Total urban	Rural	**Total**
Improved sanitation facilities	93.7	84.5	88.5	39.8	**66.1**	93.0	83.5	87.5	37.0	**62.3**
Toilet flush with or without a water tank connected to a sewage system	1.9	0.6	1.1	0.0	**0.6**	1.7	0.6	1.0	0.0	**0.5**
Flush with or without a water tank connected to a septic tank	37.5	22.8	29.3	4.9	**18.1**	36.8	19.8	27.0	3.7	**15.4**
Flush with or without water tank connected to latrines	2.0	1.9	1.9	0.4	**1.2**	2.5	1.5	1.9	0.5	**1.2**
Toilet flush with or without a water tank connected to something else	0.6	0.5	0.5	0.0	**0.3**	0.5	0.4	0.4	0.0	**0.2**
Toilet flush with or without water tank connected to unknown location/not sure/Does not know where	0.3	0.4	0.4	0.0	**0.2**	0.2	0.4	0.3	0.0	**0.2**
Improved ventilated latrines	1.4	1.3	1.4	0.5	**1.0**	1.6	1.2	1.4	0.4	**0.9**
Pit latrines with slab	48.9	57.0	53.4	33.9	**44.4**	48.7	59.7	55.0	32.2	**43.7**
Composting toilets	1.2	0.0	0.5	0.1	**0.3**	1.2	0.0	0.5	0.1	**0.3**
Unimproved sanitation facilities	**6.1**	**14.5**	**10.8**	**47.3**	**27.6**	**6.7**	**15.5**	**11.8**	**50.2**	**30.9**
Pit latrines without slab/open pit	4.7	13.0	9.4	43.5	**25.1**	5.1	14.4	10.4	46.5	**28.4**
Buckets	0.1	0.1	0.1	0.4	**0.2**	0.1	0.0	0.1	0.5	**0.3**
Hanging toilets/latrines	1.0	0.8	0.9	2.2	**1.5**	1.2	0.7	0.9	2.3	**1.6**
Other	0.3	0.6	0.4	1.2	**0.8**	0.3	0.5	0.4	1.0	**0.7**
Open defecation (no toilet/nature)	**0.2**	**1.1**	**0.7**	**13.0**	**6.3**	**0.2**	**1.0**	**0.7**	**12.8**	**6.7**
Total	100	100	100	100	100	100	100	100	100	100
Percentage with basic sanitation facilities1	63.0	59.3	60.9	32.6	**47.9**	68.3	63.7	65.6	31.6	**48.7**
Percentage with limited sanitation facilities2	28.0	20.6	23.8	6.0	**15.6**	21.9	15.6	18.3	4.5	**11.4**

[1]Defined as the use of improved sanitation facilities that are not shared by other households.
[2]Defined as the use of improved sanitation facilities shared by two or more households.

Table 6.2: Types of sanitation facilities used by persons

Distribution (as a %) of the legal population by type of sanitation facilities used and by area of residence,Proportion of population using safely managed sanitation services (SDG 6.2.1)

Background characteristics		Type of sanitation facility				Percentage with basic sanitation facilities3	Percentage with limited sanitation facilities4	Proportion of population using safely managed sanitation services5 (SDG 6.2.1a)	Proportion of population using safely managed sanitation services including the availability of a handwashing facility with soap and water6 (SDG 6.2.1b)
		Improved sanitation facility1	Unimproved sanitation facility2	Open defecation	Total				
Area of residence	Yaounde/ Douala	93.0	6.7	0.2	100.0	68.3	21.9	45.1	21.9
	Other urban	83.5	15.5	1.0	100.0	63.7	15.6	32.9	15.7
	Total urban	87.5	11.8	0.7	100.0	65.6	18.3	38.1	18.3
	Rural	37.0	50.2	12.8	100.0	31.6	4.5	13.0	7.2
Wealth quintile	Lower	9.5	66.4	24.1	100.0	8.4	0.8	1.4	1.4
	Second	48.3	48.2	3.5	100.0	43.3	3.8	14.4	6.2
	Average	81.9	16.7	1.5	100.0	59.3	18.0	20.9	7.8
	Fourth	91.1	8.5	0.4	100.0	61.4	25.9	28.7	12.6
	Higher	97.2	2.7	0.1	100.0	81.2	13.8	67.0	37.6
Survey region	Adamawa	80.3	16.6	3.1	100.0	75.2	4.4	31.0	16.0
	Centre (excluding Yaounde)	61.7	35.9	2.4	100.0	52.5	7.2	33.9	19.1
	Douala	95.8	3.9	0.3	100.0	72.5	19.5	44.9	22.8
	East	48.1	48.5	3.3	100.0	37.2	10.0	11.0	2.6
	Far-North	21.3	52.4	26.3	100.0	19.0	1.4	1.7	0.6
	Littoral (excluding Douala)	76.8	22.4	0.9	100.0	61.2	11.0	49.3	14.2
	North	28.6	60.6	10.8	100.0	26.1	1.9	10.8	7.7
	North-West	74.0	25.2	0.8	100.0	60.0	13.4	18.6	14.0
	West	74.7	24.2	1.1	100.0	56.9	11.3	23.6	12.6
	South	59.9	39.0	1.1	100.0	35.4	21.8	17.6	10.3
	South-West	86.6	10.6	2.8	100.0	57.7	26.5	38.1	23.0
	Yaounde	88.8	11.1	0.1	100.0	62.6	24.3	44.8	20.8
	Cameroon	**62.3**	**30.9**	**6.7**	100.0	**48.7**	**11.4**	**25.6**	**12.8**

Table 6.3: Mode of evacuation of household sanitation facilities:

Percentage (as a %) of households by mode of disposal of waste water by area of residence

Background characteristics	Poured into the yard/roadway	Poured into the channel/gutters	Poured into the septic tank/latrine	Poured into the river/stream	Poured into nature	Other	Total	Proportion of population with access to an adequate sewage disposal system
Yaounde/ Douala	16.6	53.6	12.7	3.1	12.7	1.2	100.0	12.7
Other urban	39.8	22.0	8.3	1.5	27.9	0.6	100.0	8.3
Urban set	29.7	35.8	10.2	2.2	21.2	0.9	100.0	10.2
Rural	46.7	7.4	1.5	0.6	43.2	0.6	100.0	1.5
Adamawa	56.2	7.5	9.3	1.8	24.5	0.7	100.0	9.3
Centre (excluding Yaounde)	70.3	14.4	2.9	0.0	11.9	0.5	100.0	2.9
Douala	18.2	47.8	16.6	3.4	13.1	0.9	100.0	16.6
East	79.7	4.8	0.7	0.0	14.5	0.3	100.0	0.7
Far-North	44.8	2.3	1.6	1.5	49.2	0.6	100.0	1.6
Littoral (excluding Douala)	23.2	25.5	5.3	2.6	43.1	0.4	100.0	5.3
North	17.3	3.9	3.8	0.5	74.4	0.0	100.0	3.8
North-West	19.8	30.8	0.2	1.6	47.3	0.3	100.0	0.2
West	53.9	19.2	2.8	0.7	23.0	0.4	100.0	2.8
South	45.4	15.3	4.7	0.8	33.7	0.1	100.0	4.7
South-West	31.9	12.2	14.6	0.1	38.5	2.7	100.0	14.6
Yaounde	14.9	59.5	7.9	2.8	13.4	1.6	100.0	7.9
Very poor	42.7	0.9	0.6	1.1	54.4	0.3	100.0	0.6
Second	52.3	7.8	1.3	0.6	37.9	0.2	100.0	1.3
Average	45.3	19.5	2.4	2.3	29.9	0.5	100.0	2.4
Fourth	33.8	36.2	3.7	2.4	22.9	1.0	100.0	3.7
Very rich	17.3	44.0	19.8	1.2	16.1	1.6	100.0	19.8
Cameroon	**37.5**	**22.7**	**6.2**	**1.5**	**31.4**	**0.8**	**100.0**	**6.2**

Table 6.4: Hand washing

Percentage of the population for which the place most often used to wash hands was observed according to whether the place is fixed or mobile; Percentage of population with a basic handwashing facility; Percentage of population with a limited handwashing facility

Background characteristics	Existence of a handwashing facility in the household						Availability of water at the handwashing facility			Percentage of population with a basic handwashing facility	Percentage of population with a limited handwashing facility	No handwashing facility observed
	Handwashing facility observed	Transportable object used to wash hands (kettle, bucket, basin, container, etc.)	Not observed because not in the accommodation/yard/plot	Refusal to show/permission not obtained	Not observed for other reason	Total	Water available	Water not available	Total			
Area of residence												
Urbain	19,2	43	27,4	1,2	9,2	100	80,8	19,2	100	40,8	21,4	37,8
Rural	6,8	57,3	28,6	0,8	6,6	100	81,3	18,7	100	35,3	28,8	36
Survey region												
Adamawa	6,3	65,9	22,9	0,0	4,8	100,0	95,4	4,6	100,0	39,0	33,3	27,7
Centre (excluding Yaounde)	6,1	59,5	28,1	1,5	4,8	100,0	81,2	18,8	100,0	50,2	15,4	34,4
Douala	24,7	34,3	28,8	0,6	11,6	100,0	84,0	16,0	100,0	44,6	14,5	40,9
East	1,5	42,3	42,1	0,0	14,1	100,0	97,5	2,5	100,0	26,8	17,0	56,2
Far-North	6,3	68,4	18,9	0,7	5,7	100,0	72,8	27,2	100,0	19,8	54,9	25,3
Littoral (excluding Douala)	20,6	13,6	30,3	3,8	31,6	100,0	80,0	20,0	100,0	25,0	9,2	65,8
North	6,1	56,0	37,5	0,0	0,4	100,0	91,1	8,9	100,0	41,0	21,1	38,0
North-West	8,5	59,7	25,3	0,7	5,8	100,0	81,0	19,0	100,0	50,6	17,6	31,8
West	10,1	67,0	21,5	0,5	1,0	100,0	79,4	20,6	100,0	57,6	19,4	22,9
South	7,3	42,2	30,9	0,8	18,9	100,0	59,8	40,2	100,0	28,5	21,0	50,5
South-West	28,8	30,7	32,8	2,5	5,3	100,0	85,7	14,3	100,0	39,7	19,8	40,5
Yaounde	29,4	35,6	29,4	1,7	3,9	100,0	75,4	24,6	100,0	43,3	21,7	35,0
Wealth quintile												
Very poor	3,5	65,1	26,3	0,4	4,7	100,0	78,0	22,0	100,0	29,7	38,9	31,4
Second	6,0	55,1	30,2	0,2	8,5	100,0	81,5	18,5	100,0	34,9	26,2	38,9
Average	8,9	48,1	29,5	2,3	11,2	100,0	81,9	18,1	100,0	34,3	22,7	43,0
Fourth	14,4	46,9	29,5	1,0	8,1	100,0	78,2	21,8	100,0	41,6	19,7	38,7
Very rich	33,9	31,8	24,8	1,4	8,0	100,0	85,9	14,1	100,0	51,2	14,5	34,2
Cameroon	13,0	50,1	28,0	1,0	7,9	100,0	81,0	19,0	100,0	38,1	25,1	36,9

Table 6.5: Average monthly household expenditure for the disposal of household waste

Background characteristics		Monthly household expenditure for the disposal of household waste (CFA francs)	Annual household expenditure for the disposal of household waste (CFA francs)
Area of residence	Yaounde/ Douala	4,435	53,221
	Other urban	1,939	23,266
	Total urban	3,330	39,957
	Rural	1,877	22,527
Survey region	Adamawa	1,363	16,351
	Centre (excluding Yaounde)	779	9,345
	Douala	6,150	73,801
	East	995	11,938
	Far-North	3,567	42,804
	Littoral (excluding Douala)	1,276	15,306
	North	1,349	16,193
	North-West	4,442	53,305
	West	1,242	14,899
	South	2,215	26,582
	South-West	3,467	41,607
	Yaounde	3,850	46 198
Wealth quintile	Second	7,915	94,976
	Average	1,142	13,704
	Fourth	1,920	23,043
	Higher	3,967	47,601
	Total	3,305	39,658

Table 6.6: Willingness to pay for more improved toilets.

Among the households that use unimproved toilets, Proportion of those ready to pay an amount of 270,000 CFA francs for the construction of new, more improved latrines and distribution of those not ready to pay by main reason

Background characteristics		Proportion of those who are ready to pay an amount of 270,000 CFA francs for the construction of new, more improved latrines	For what main reason would your household not want to pay 270,000 CFA francs for the construction of new improved latrines?					Number of households using unimproved toilets
			Lack of financial means/ amount too high	The accommodation does not belong to us	Already have the toilets/ no need	Other reason	Total	
Area of residence	Yaounde/ Douala	(*)	(26.5)	(45.0)	(*)	(*)	100.0	99
	Other urban	(*)	48.5	19.8	30.1	(*)	100.0	488
	Total urban	(*)	43.4	25.7	28.5	(*)	100.0	587
	Rural	4.0	58.6	4.7	34.5	2.2	100.0	1,790
Survey region	Adamawa	(*)	(51.2)	(*)	(40.6)	(*)	100.0	94
	Centre (excluding Yaounde)	(*)	45.8	(*)	45.0	(*)	100.0	163
	Douala	(*)	(*)	(*)	(*)	(*)	(100.0)	44
	East	(*)	41.7	(*)	43.1	(*)	100.0	252
	Far-North	(*)	72.8	(*)	22.5	(*)	100.0	670
	Littoral (excluding Douala)	(*)	(48.4)	(*)	(*)	(*)	100.0	85
	North	(*)	57.0	(*)	39.5	(*)	100.0	490
	North-West	(*)	(77.7)	(*)	(*)	(*)	100.0	57
	West	(*)	44.0	(*)	48.7	(*)	100.0	215
	South	(*)	32.3	(*)	53.5	(*)	100.0	194
	South-West	(*)	(*)	(43.4)	(*)	(*)	100.0	51
	Yaounde	(*)	(*)	(49.4)	(*)	(*)	100.0	62
Wealth	Lower	4.2	65.8	(*)	31.2	2.0	100.0	1,123

	Second	(3.1)	52.5	6.6	38.1	(*)	100.0	820
	Averages	(*)	41.6	23.5	33.2	(*)	100.0	274
	Fourth	(*)	(26.4)	49.1	(22.6)	(*)	100.0	125
	higher	(*)	(*)	(*)	(*)	(*)	(100.0)	35
	Total	**3.7**	**55.8**	**8.6**	**33.4**	**2.3**	**100.0**	**2,377**

Note: Values in brackets are based on 25-49 unweighted cases. An asterisk indicates that a value is based on less than 25 unweighted cases and has been suppressed

Table 6.7:Ability of households to pay for more improved toilets and emptying for all households:

Average amount that households using unimproved toilets are able to pay for a more improved toilet; Average amount households are ready to pay for emptying toilets

	Average amount that households using unimproved toilets are able to pay for a more improved toilet	Average amount households are ready to pay for emptying toilets
Area of residence		
Yaounde/ Douala	27972.8	20340.1
Other urban	18797.7	9125.8
Total urban	20039.7	13988.1
Rural	21311.7	4465.9
Survey region		
Adamawa	17569.6	6054.9
Centre (excluding Yaounde)	47494.8	4488.7
Douala	24767.8	24146.4
East	34817.3	3461.6
Far-North	11466	3723.4
Littoral (excluding Douala)	53995.2	6650.4
North	13720	6506.4
North-West	26661.8	9545.8
West	23849.6	6202.8
South	19221.3	10350.5
South-West	7117.6	9847.6
Yaounde	29686	15717.4
Wealth quintile		
Lower	14700.1	3255.9
Second	30203	3802.9
Average	30235	7423.4
Fourth	22942.2	11337.9
Higher	13565.1	19946.3
Total	21129.4	9564.2

Table 6.8: Disposal of household waste

Distribution (%) of households by main means of disposal of household waste by background characteristics

	Garbage disposal method											
	Picked up by a HYSACAM garbage truck/bin	Deposited at a place/ site to quarter then picked up by HYSACAM	Picked up by a truck/ Council garbage bin	Private pickup (NGO, individual, etc.)	Thrown in the wild	Buried/ burned	Recycled	River /lake/ backwater	Hole/ ditch	Other	Total	Proportion (%) of households that dispose of waste properly
Residence												
Yaounde/ Douala	58.6	15.4	5.1	2.5	12.7	2.4	0.7	0.7	0.7	1.1	100	66.2
Other Urban	16.7	10.5	5.7	1.2	42.4	17.2	2.8	0.6	0.6	2.3	100	23.6
Total urban	35.0	12.6	5.4	1.8	29.4	10.7	1.9	0.6	0.7	1.8	100	42.3
Rural	2.1	2.3	0.5	0.3	69.1	17.7	5.2	0.1	0.4	2.4	100	2.9
Survey regions												
Adamawa	6.3	9.3	0.7	0.3	54.7	17.4	0.9	3.7	2.6	4.0	100	7.3
Centre	5.0	4.9	3.0	0.9	46.4	34.1	0.2	0.0	0.1	5.4	100	8.9
Douala	63.0	15.3	4.8	1.3	13.3	0.7	0.7	0.6	0.0	0.3	100	69.1
East	4.0	3.4	0.3	1.3	81.8	8.5	0.2	0.0	0.2	0.3	100	5.6
Far-North	2.6	3.2	0.9	0.5	72.8	16.9	1.7	0.0	0.3	1.0	100	4.0
Littoral	9.9	5.7	8.4	1.2	50.5	4.5	12.2	0.3	0.8	6.6	100	19.4
North	2.7	7.5	1.8	0.0	75.6	12.2	0.1	0.0	0.0	0.0	100	4.5
North-West	4.9	0.0	4.4	0.8	64.5	22.5	0.0	0.0	0.0	2.9	100	10.1
West	7.8	4.3	3.4	0.6	47.5	12.2	22.8	0.2	0.3	1.0	100	11.8
South	20.4	11.5	1.5	0.8	55.3	9.1	1.1	0.0	0.1	0.1	100	22.8
South-West	25.1	11.8	0.4	0.2	33.7	26.5	0.0	0.2	1.3	0.7	100	25.8
Yaounde	51.9	15.1	5.4	3.9	13.1	4.9	0.8	0.7	1.5	2.6	100	61.2
Wealth quintile												
Lower	0.1	0.6	0.2	0.2	82.3	13.3	1.5	0.2	0.3	1.3	100	0.5
Second	0.9	0.8	0.3	0.1	67.8	19.9	8.1	0.1	0.4	1.6	100	1.3
Average	12.8	7.0	3.7	0.6	50.3	15.3	4.9	0.8	0.7	3.9	100	17.1
Fourth	34.5	11.8	4.7	1.3	30.6	12.2	1.6	0.5	0.9	1.9	100	40.5
Higher	45.3	17.2	6.3	2.9	15.5	9.2	0.9	0.4	0.5	1.8	100	54.5
Total	**19.9**	**7.9**	**3.1**	**1.1**	**47.7**	**13.9**	**3.4**	**0.4**	**0.5**	**2.1**	**100**	**24.2**

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APPENDICES

APPENDIX A: SAMPLING DESIGN

A.1.1 Introduction

The main features of the sampling design are described in this section. Characteristics of the sampling design include the size of the target sample, distribution of the sample, sampling frame, establishment of the list of households, choice of areas of study, stages of sampling, stratification and calculation of sample weights. ENACE-1 survey is the first of its kind conducted in Cameroon. ENACE-1 sampling design is based on that of the third Employment and Informal Sector Survey (EESI 3). It targets a national sample of approximately 10,642 ordinary households. ENACE-1 is a national sample survey designed to provide information on access to and use of different forms of energy, water and sanitation by households in Cameroon. A one-stage or two-stage stratified cluster sampling approach was used for survey sample selection.

A.1.2 Sampling frame

The sampling frame used for ENACE-1 was the basis of all the EAs resulting from the mapping of the fourth General Census of Population and Housing (RGPH4) conducted in 2017 by BUCREP. The sampling frame included 21,826 non-empty EAs and information on their identifier, their location (urban or rural) and their size in households. In Cameroon, there are 10 administrative regions; each region is comprised of divisions, and each division is comprised of sub-divisions. Operation of the samplingframe resulted in a total of 58 divisions and 360 sub-divisions. Yaounde and Douala are part of the Centre region and Littoral region respectively.

Each sub-division is subdivided into urban, semi-urban and rural EAs. An EA may be comprised of one locality or several localities, of a village or quarter or of several villages or quarters, or even of a block or several blocks of the same quarter or village. Each EA has a map defining its boundaries, with identifying information and a measurement of size, which corresponds to the number of residential households listed during the RGPH4 mappingconducted in 2017.

A.1.3 Fields of study

Cameroon has 10 administrative regions, 58 divisions and 360 sub-divisions. Yaounde and Douala are thetwo largest cities in the country. The sample was stratified so as to provide an adequate representation of urban and rural areas as well as of the twelve survey regions,

corresponding to the ten administrative regions and the cities of Yaounde and Douala, for which an estimate is available for all indicators. Given that the cities of Yaounde and Douala constitute two independent areas of study, results concerning the Centre region exclude the city of Yaounde and those of the Littoral region exclude the city of Douala.

Survey results will be presented for Cameroon, for urban and rural areas separately, and for the twelve survey regions.

A.1.4 Sample size and distribution

The household sampling will use a two-step procedure which involves first sampling the EAs and then the households within the selected EAs. Given that the sampling design is based on that of EESI 3, the overall sample size was determined as part of EESI 3 (see EESI3 report). A check was conducted to ensure that this size met the accuracy targets at the national level and for the 12 areas of study for the main indicators of ENACE-1. Thus, with this sample size, the following details of the main indicators were expected:

- Estimates calculated at the national level must have a 95% confidence interval with a margin of error of 2 percentage points or less and a relative standard error <= 6% for estimates of the household rate of access to electricity through the interconnected network, household rate of access to domestic gas as fuel, household rate of access to safely managed drinking water supply services and household rate of access to safely managed sanitation services;
- Estimates calculated at the area level should have a 95% confidence interval with a margin of error of 6 percentage points or less and a relative standard error <= 33% for estimates of the household rate of access to electricity through the interconnected network, household rate of access to domestic gas as fuel, household rate of access to basic sanitation facilities, i.e. improved non-shared facilities and household rate of access to a basic drinking water supply service.

The geographical areas of the study for which independent estimates of the main indicators of access to and use of the various forms of energy, water and sanitation by households are: Douala, Yaounde, Adamawa, Centre (excluding Yaounde), East, Far-North, Littoral (excluding Douala), North, North-West, West, South and South-West.

The minimum number of EAs for each area was determined by estimating the minimum number of respondents needed (taking into account response rates from previous surveys) to provide estimates of the main indicators with a 95% confidence interval of +/ - 6% or less and a relative standard error not exceeding 33%.

Sample distribution was also affected by the need to achieve a relative error of 6% or less for the national level estimates of the main indicators of access to and use of the different forms of energy, water and household sanitation. The smallest sample that would meet this requirement is allocated proportionally to the size of the population in each area between urban, semi-urban and rural. The final sample allocation is the combined product of the sample size required for the main indicators of access to and use of different forms of energy, water and sanitation by households at the level national and areas.

Table A.1: Allocation of the EA sample and household sample by area and by residence stratum

	Number of households					Number of EAs			
Region	Urban	Semi-urban	Rural	Total		Urban	Semi-urban	Rural	Total
Adamawa	**204**	**108**	**312**	**624**		**17**	**9**	**26**	**52**
Centre*	**144**	**156**	**432**	**732**		**12**	**13**	**36**	**61**
Douala	**1,414**	**///**	**///**	**1,414**		**101**	**///**	**///**	**101**
East	**168**	**98**	**336**	**602**		**14**	**8**	**28**	**50**
Far-North	**276**	**144**	**756**	**1,176**		**23**	**12**	**63**	**98**
Littoral*	**264**	**180**	**168**	**612**		**22**	**15**	**14**	**51**
North	**288**	**84**	**516**	**888**		**24**	**7**	**43**	**74**
North-West	**324**	**156**	**468**	**948**		**27**	**13**	**39**	**79**
West	**420**	**132**	**492**	**1,044**		**35**	**11**	**41**	**87**
South	**192**	**72**	**312**	**576**		**16**	**6**	**26**	**48**
South-West	**432**	**84**	**432**	**948**		**36**	**7**	**36**	**79**
Yaounde	**1,224**	**///**	**///**	**1,224**		**102**	**///**	**///**	**102**
Total	**5,350**	**1,214**	**4,224**	**10,642**		**429**	**101**	**352**	**882**

A.1.5 Sample drawing procedure

A stratified and 2-stage random sampling was implemented.

A.1.5.1 First stage drawing

A stratified sample of 882 EAs was selected at the first stage from the EA final sampling frame in the light of the sample allocation shown in Table A.1. The primary sampling unit is the EA as defined for RGPH4. Each area was separated into urban (large cities, of at least 50,000 inhabitants), semi-urban (small cities, of 10,000 to less than 50,000 inhabitants) and rural (small cities of less than 10,000 inhabitants) strata to form the sampling strata. Yaounde and Douala as specific areas only have urban strata and correspond respectively to the Mfoundi and Wouri divisions. In total, 32 sampling strata were constituted comprising the two cities of Yaounde and Douala (which are mainly urban) plus urban areas, semi-urban and rural areas of the 10 administrative regions of Cameroon. The sample was drawn independently in each stratum with a specific allocation provided in Table A.1. In each stratum, sample EAs were selected systematically and with probabilities proportional to their

size; the size of an EA or size measurement (SM) is defined by the number of households it contains at the time of the 2017 RGPH4 mapping.

In each stratum, the EAs of the sampling frame were sorted by division, by sub-division within each division, and finally by the EA code within each sub-division. This sorting of the EAs before the selection of the sample induces an implicit geographical stratification. To select the sample from a particular stratum, the cumulative SM was determined for each EA in the ordered list of EAs, and sample EA selections were made using a sampling interval equal to the total EA SM of the stratum divided by the number of EAs to be selected and a random starting point. The resulting sample has the property that the probability of selecting an EA in a particular stratum is proportional to the SM of the EA in that stratum.

A.1.5.2 Second stage drawing

After selection of the EAs at the first stage, mapping documents and lists of households of each selected EA were updated during the household mapping and enumeration operation as part of EESI3. This updated list of households served as the sampling frame for the selection of second-stage households. A household being defined as a person or a group of persons related or not, living under the same roof (house, compound, etc.) and usually taking their meals together, pooling all or part of their income to meet their needs, and recognizing the authority of a person among them called head of household. All households in the sampled EA are eligible to participate in the study.

Household selection for ENACE-1 involved the following steps: (1) listing all dwellings/households in the sampled EAs; (2) assign eligibility codes to listed dwellings/households; (3) selecting the dwelling/household samples; and (4) selecting a subsample of households for water testing to measure the presence of E.Coli.

To maintain homogeneous workloads in the EAs selected for data collection, a fixed sample size of 14 households per EA in Douala and 12 per EA in the other strata was retained for ENACE-1. Based on an assumed occupancy rate of 95.5%, the sample sizes retained should generate approximately 13 households per EA in Douala and 12 households per EA in the other strata. Such a design produces self-weighted (equal probability) samples of households in each sampling stratum only if the number of households listed for the EAs in the stratum is proportional to the corresponding size measurement (SM) used for selection of EAs. However, given that the SMs used for EA selection were based on a rapid household enumeration during the 2017 RGPH4 mapping prior to the actual census, there were significant differences between SM and the actual number of households found during the household mapping and enumeration operation for several of the sampled EAs. Therefore, the

fixed sample size per EA design originally proposed for ENACE-1 would have resulted in extremely large design effects due to unequal weighting within strata. To reduce the impact of unequal weighting on sampling accuracy, the retained sample sizes of 14 (in the Douala EAs) or 12 (in the EAs of other strata) were doubled, tripled or quadrupled, depending on the magnitude of the difference between the actual number of households found and the SM. To compensate for the increase in sample size, the number of households to be sampled from the remaining EAs was reduced accordingly. EA sample sizes were increased 1.25 times in 19 EAs, 1.5 times in 21 EAs, doubled in 88 EAs, tripled in 16 EAs, quadrupled in 2 EAs, and quintupled in 1 EA, and resulting design effects were lower than 1.25 for all the strata and not higher than 1.10 for 27 out of 32 strata.

Selected households were visited and no replacement or change of the selected households was allowed. The number of households expected to be vacant and not responding by refusal or absence is already taken into account in the sampling desing by increasing the number of households surveyed in each stratum. During the mapping and enumeration operation, the GPS coordinates of all households were collected and used during the survey to locate the households selected for the main survey.

A.1.6 Weighting

A.1.6.1 Overview

In general, the purpose of weighting survey data from a complex sample design is to (1) compensate for varying probabilities of selection, (2) account for differential nonresponse rates within sub -relevant sample sets, and (3) correct for risks of potential undercoverage of more particularly population groups. Weighting is achieved by assigning an appropriate sampling weight to each responding sampled unit (eg, a household or an individual), and using this weight to calculate weighted estimates from the sample. The critical component of the sampling weight is the base weight, defined as the inverse of the probability of including a household or person in the sample. Base weights are used to extrapolate responses from sampled units to population levels and are usually unbiased (or consistent) if there is no nonresponse or noncoverage in the sample. In the event of non-response or non-coverage in the survey, weighting adjustments are applied to the base weights to compensate for these two types of sample omissions.

Nonresponse is inevitable in almost all surveys of human populations. In the context of ENACE-1, non-response may occur at different stages of data collection, for example, 1) before the establishment of the list of household members and 2) after the establishment of list of household members.

Undercoverage occurs when some members of the survey population have no chance of being selected for the sample. For example, undercoverage may occur if field operations fail to enumerate all households during the enumeration and mapping process, or if some household members are omitted from the household list, or if some EAs are not included in the sampling frame. To compensate for these omissions, post-stratification procedures are used to adjust the weighted survey estimates to match available population projections.

A.1.6.1 Method

The overall weighting method as part of ENACE-1 consists of several steps.

Initial checks: Data file checks are performed as part of the survey and data quality control, and PSUs and households selection probabilities are calculated and checked.

Creation of replicated samples with the jackknife method: The variables needed to create the jackknife replicates for variance estimation are established at this point. This step may be implemented immediately after the PSU sample selection. All of the following weighting steps described below are applied to the entire sample and to each of the jackknife replicates.

Calculation of PSU basis weights: The weighting process begins with the calculation and verification of the base weights of the primary sampling units (PSUs) as being the inverse of the overall selection probabilities of the PSUs.

Calculation of household weight: The next step is to calculate the household weight. The basic household weights are calculated as follows: the PSU weights multiplied by the inverse of the selection probabilities of households within the PSU. The basic household weights are first adjusted to take into account the housing units for which it was impossible to determine whether the housing unit is indeed a household ; the weights of the responding households were subsequently adjusted to take into account non-responding households. This adjustment is conducted based on the EA in which the households are and the resulting weight is the final household weight.

E.Coli test weight calculation: The nonresponse-adjusted household weights are in turn the initial weights for the E.Coli test data sample, with an additional adjustment for E.Coli test nonresponse and a final adjustment post-stratification to compensate for undercoverage.

Applying weighting adjustments to jackknife replicas: All adjustment processes are applied to the full sample and replicate samples so that the final set of full sample and replicate weights can be used for variance estimation accounting for the complex sample design and of each step of the weighting process.

Selection probabilities were calculated separately for each stage of sampling and for each sampling unit. The following notation is used:

P_{1h}: first-stage selection probability of the cluster*I*in stratum h

P_{2hij}: probability of selectionat the second stage of household jth in cluster i

ah: number of clusters selected in the stratum*h*

Mhi: measurement of the size of theI^{th}cluster of stratum h (i.e. the number of households in the EA from the sampling frame)

$\sum_i M_{hi}$: total measurement of the size of all clusters in stratum h

Probability of selection of cluster *i* in the sample is calculated by:

$$P_{1hi} = \frac{a_h M_{hi}}{\sum M_{hi}} \times b_{hi}$$

Where $b_{hi}$is the ratio between the estimated number of households in the selected segment and the estimated total number of households in EA *i* of stratum *h* if the EA is segmented during the mapping and enumeration operation; otherwise $b_{hi} = 1.$

Let be the selection probability of household *j* of cluster *i* of stratum *h*. The overall selection probability of household *j* in cluster *i* of stratum *h* is the product of the selection probabilities at the two stages of sampling:

$$P_{hij} = P_{1hi} P_{2hij}$$

Since the household sample is designed to be an equal probability sample in each stratum,$P_{hij} = P_h$where the value P_h is determined to produce the desired sample size in stratum *h*. Thus, the sampling fraction, *fhi*, to be used to select households in cluster *hi* is given by $fhi = P_h / P_{1hi}$. This fraction is applied to the list of households obtained from the mapping and enumeration operation for a given cluster. Let *Lhi* be the number of households found during the mapping and enumeration operation in cluster *i* of stratum *h*. On average, the number of households to be selected in the cluster will be around 14 in Douala and 12 in the other areas, but this number may vary from one cluster to another depending on the proximity between *Lhi* and *Mhi*, the size measurement used to select the cluster.

Due to the non-proportional allocation of the sample to the different strata, sampling weights will be needed to compensate for any analysis of the sample at the national level. The design weight, w_{hij}, for household j in cluster *i* in stratum *h* is the inverse of its probability of selection:

$$w_{hij} = 1 / .P_{hij}$$

The household design weight, w_{hij}, is referred to as the household's "design weight" because it may be used to obtain unbiased estimates of household characteristics in the population in the absence of nonresponse and lack of coverage of the survey coverage.The basic household weight is usually also the basic person-level weight for sampled persons aged 10 years and more, because all persons 15 years and more in the sampled household are included in the study; i.e., *k*th person aged 10 or more from household *j* in cluster *i* of stratum *h*, the basic person-level weight is:

$$w_{hijk}^{10+} = w_{hij} = 1 / P_{hij}.$$

A.1.7 Estimation of population parameters

Estimates of ENACE-1 indicators are proportions, ratios (means) or totals. The estimation process consists in multiplying the reported value of a survey item or derived variable $y_{hij}$for the *j*th respondent (household or individual) in cluster *i* of stratum *h* by the final weight (i.e. the adjusted weight of the corresponding non-responsew_{hij}^{F}) and sum all the products. Thus, for the population total Y, the weighted estimate is given by:

$$\hat{Y}=\sum_h \quad \sum_i \quad \sum_j \quad w_{hij}^{F} y_{hij}$$

For a population ratio of the form R = Y/X, the corresponding weighted estimates for Y and X are calculated, and the estimated ratio is subsequently calculated as follows

$$\hat{R}= /\hat{Y}\hat{X}$$

A.1.8 Estimation of sampling errors

Estimates derived from a sample survey are subject to sampling and non-sampling errors. Sampling errors are usually controlled by the sampling design and may be estimated from the sample;meanwhile the latter are not easy to control, as they come from various sources other than sampling and result from problems that arise during data collection and processing, such as the inability to locate and interview the correct household, interviewer or respondent misunderstandings, and data entry errors. Although not directly measurable from the survey results, quality control measures designed to minimize non-sampling errors have been implemented and described in the survey standard operating procedures.

Estimation of sampling errors will need to take into account complex survey design features such as stratification, clustering and varying probabilities of selection.

Two general methods can be used to estimate the sampling errors of ENACE-1 based estimates: jackknife replication and Taylor series methods. The jackknife replication variance

estimation method is a widely used method for producing variance estimates using complex survey data. This method can correctly account for stratification, clustering and sample weighting, including the nonresponse and poststratification weighting adjustments used in the complex ENACE1 sample design. The Taylor series is another widely used method that uses linear approximations to calculate the variance of an estimate derived from a sample.

To implement either method, more particularly variables necessary for variance estimation must be included in the weighted data files. In the case of a jackknife replication, the required variables are a series of weights corresponding to each of the jackknife replicates. In the case of the Taylor series method, the required variables are variables that indicate the "variance stratum" and "variance unit" to which each sampled respondent belongs.

A.1.8.1 Jackknife replication

To enable variance estimates to be calculated from survey data, a series of weights, called jackknife replicate weights, are appended to each observation in the data file, along with the corresponding overall final sample weight. Calculating replicate weights first requires constructing a set of subsamples of the overall sample called a "jackknife replication". Since these replications only depend on the selected PSUs, they were created immediately after the PSUs were selected.

As described in section A.1.5, PSUs were selected systematically from a list of PSUs that had been classified in each stratum by division, sub-division in the division, and finally by EA code in the sub-division. To account for the advantages of implicit stratification on precision, the sampled PSUs in each region were matched in the systematic order in which they were selected, treating each pair as a variance estimation stratum. When there was an odd number of sampled PSUs in a region, one of the variance estimation strata was defined to contain three sampled PSUs.

To fully reflect the sample design, the formation of the variance estimation strata was applied to all 882 sampled PSUs, including the PSUs that were not the subject of data collection. .

For ENACE-1, a total of 433 variance estimation strata were created. A jackknife replication was subsequently formed by randomly removing a PSU from a particular variance estimation stratum k, for example, and keeping all the PSUs in the remaining variance estimation strata. For a variance estimation stratum composed of a pair of PSUs, the weight of the PSU retained in the variance estimation stratum k was doubled. For a variance estimation stratum comprised of three PSUs, the weight of the two PSUs retained in the variance estimation stratum was multiplied by 1.5. This process was repeated for all strata of variance estimation

r = 1, 2, ..., 433, resulting in a total of 433 jackknife replicates.Table A.2 summarizes the number of jackknife replicates that were created for variance estimation.

Table A.2: Number of PSUs and variance estimation strata constructed for variance estimation

Stratum code	Stratum name	Number of EAs	Number of variance strata composed of pairs	Number of variance strata comprised of triplets	Jackknife Replication Number
1	ADAMAWA_Rural	26	13	0	13
2	ADAMAWA_Semi-Urban	9	3	1	4
3	ADAMAWA_Urban	17	7	1	8
4	CENTRE_Rural	36	18	0	18
5	CENTRE_Semi-Urban	13	5	1	6
6	Urban Centre	12	6	0	6
7	DOUALA_Urban	101	49	1	50
8	EST_Rural	28	14	0	14
9	EAST_Semi-Urban	8	4	0	4
10	EAST_Urban	14	7	0	7
11	FAR-NORTH_Rural	63	30	1	31
12	EXTREME-NORTH_Semi-Urban	12	6	0	6
13	FAR-NORTH_Urban	23	10	1	11
14	LITTORAL_Rural	14	7	0	7
15	LITTORAL_Semi_Urban	15	6	1	7
16	LITTORAL_Urban	22	11	0	11
17	NORTH_Rural	43	20	1	21
18	NORTH_Semi-Urban	7	2	1	3
19	NORTH_Urban	24	12	0	12
20	NORTH-WEST_Rural	39	18	1	19
21	NORTH-WEST_Semi-Urban	13	5	1	6
22	NORTH-WEST_Urban	27	12	1	13
23	WEST_Rural	41	19	1	20
24	WEST_Semi-Urban	11	4	1	5
25	WEST_Urban	35	16	1	17
26	SOUTH_Rural	26	13	0	13
27	SOUTH_Semi-Urban	6	3	0	3
28	SOUTH_Urban	16	8	0	8
29	SOUTH-WEST_Rural	36	18	0	18
30	SOUTH-WEST_Semi-Urban	7	2	1	3
31	SOUTH-WEST_Urban	36	18	0	18
32	YAOUNDE_Urban	102	51	0	51
Total		**882**	**417**	**16**	**433**

A.1.8.2 Linearization of the Taylor series

Although jackknife replication is the recommended method for variance estimation in ENACE-1, not all software has a replication option to produce variance estimates. For example, SPSS has built-in options for estimating variance using Taylor Series methods, but the end user must write a programme in SPSS to produce replicated variance estimates. Therefore, the information needed to produce the Taylor series variance estimates is included in the ENACE-1 data files.

The overall sampling weight is used as the weight to calculate the Taylor series variance estimates. The VarStrat variable indicates the 433 variance estimation strata and the VarUnit variable indicates the primary sampling unit (PSU) or cluster within the variance estimation stratum. This pair of variables enables the analyst to produce variance estimates if their software does not readily accommodate replication methods, but has Taylor series capability. Note that variance estimation strata and sampling strata are not equivalent: as shown in Table A.3, sampling strata are defined by region and urban, semi-urban, and rural areas, meanwhile the variance estimation strata are based on groupings of PSUs within each sampling stratum.

Formulas for calculating sampling errors using the Taylor linearization technique combined with the ultimate cluster technique[8]are described below for estimates of totals and ratios.

Variance estimates for totals.Let be the weighted estimate of the total of a population. The variance is estimated using the following formula:

$$\text{var}(\hat{y}) = \sum_h \frac{a_h}{a_h - 1}\left(\sum_i y_{h\alpha} - \frac{y_h^2}{a_h}\right)$$

where a_h is the number of clusters selected in stratum h, $y_{h\alpha}$ is the weighted total of the variable of interest for cluster α in stratum h, and $y_h$is the weighted total in stratum h.

Variance estimates for ratios. For a simple proportion or ratio of the form$r = \hat{y}/\hat{x}$, the variance of r can be calculated as follows:

$$\text{var}(r) = (1/\hat{x})^2 [\text{var}(\hat{y}) + r^2 \text{var}(\hat{x}) - 2r \text{cov}(\hat{x}, \hat{y})] ,$$

where $\text{var}(\hat{y})$ and $\text{var}(\hat{x})$ are the estimated variance of y and x respectively, and $\text{cov}(\hat{x}, \hat{y})$ is the estimated covariance of x and y.

[8]A relatively simple approach that can be used to estimate the standard errors of survey statistics is given by the method of ultimate cluster variance estimation. In this technique, the weighted survey responses are aggregated at the cluster level, and the variability between the cluster totals is used to estimate the variance of the sample statistic.

INTERVIEW RESULTS

Tables A.3presents the detailed results of the household interviews. Following classification of households by different result codes,the household survey response rate (HRR) is calculated as follows:

$$HRR=\frac{100*R}{MO}$$

Where R= Number of households successfully interviewed and MO= Number of households occupied and identified in the field

Table A.3: Number (unweighted) of households, number of interviews and response rate by area of residence

	Area of residence				**Survey region**												Total
Results	Yaounde/ Douala	Other urban	Urban set	Rural	Adamawa	Centre (Excluding Yaounde)	Douala	East	Far-North	Littoral	North	North-West	West	South	South-West	Yaounde	
Household interviews																	
Selected households	2565	4131	6696	3072	588	733	1400	593	1082	613	875	481	1044	564	579	1216	9768
Occupied/identified households (MO)	2345	3829	6174	2855	546	610	1295	563	996	575	870	453	937	534	553	1097	8968
Households successfully interviewed (R)	1712	3464	5176	2694	541	485	1031	541	967	495	869	350	881	510	481	719	7871
Household response rate (HRR)	**73.0**	**90.5**	**83.8**	**94.4**	**99.1**	**79.5**	**79.6**	**96.1**	**97.1**	**86.1**	**99.9**	**77.3**	**94.0**	**95.5**	**87.0**	**65.5**	**87.8**

APPENDIX B: POLL ERROR

Estimates from sample surveys are affected by two types of error: non-sampling errors and sampling errors. Non-sampling errors result from errors made during data collection and data management (for example, transcription errors during data entry). ENACE has implemented numerous quality assurance and control measures minimizing non-sampling errors. However, such errors are impossible to avoid and difficult to assess statistically.

Sampling errors, in contrast, can be assessed statistically. The sample of respondents selected as part of ENACE is just one of many samples that could have been selected from the same population, using the same design and the same predicted size. Each of these samples would give somewhat different results than the actual sample selected. Sampling errors are a measurement of the variability between all possible samples. Although the degree of variability is not precisely known, it may be estimated from the survey results.

The standard error, which is the square root of the variance, is the usual measurement of sampling error for a given statistic (eg, proportion, rate, total). In turn, the standard error can be used in the calculation of logical and hypothetical confidence intervals of the true population value. For example, for any given statistic calculated from a sample survey, the value of that statistic will fall within a range of plus or minus two times the standard error of that statistic in 95% of the possible sample sizes and of identical design.

ENACE used a multi-stage stratified sample design, which requires complex calculations to obtain sampling errors. Specifically, a variant of Jackknife's repeated replication method was used in Stata to estimate the variance of proportions and totals. Each replication considers all but one cluster in calculating estimates. Pseudo-independent replicates are thus created. In ENACE, a Jackknife replicate is created by randomly removing one cluster from each variance estimation stratum and retaining all clusters in the remaining strata. In total, 433 variance estimation strata were created by coupling (or occasionally tripling) the sample clusters in the systematic order in which they were selected. Thus, 433 replicates were created. The variance of a sampling statistic, y, is calculated as follows:

$$\text{Var}(y)=\sum_{k=1}^{K}(y-y^{k})^{2}$$

where y is the full sample estimate and yk is the corresponding estimate for the jackknife replicate k (k = 1, 2,...,K)

In addition to the standard error, the design effect for each estimate is also calculated. The design effect is defined as the ratio of the standard error using the given sample design to the standard error that would result from using a simple random sample. An effect of 1.0

indicates that the sample design is as efficient as a simple random sample, meanwhile a value greater than 1.0 indicates the increase in sampling error due to the use of a more complex and less statistically efficient plan. The confidence limits for the estimates, calculated as follows:

$y \pm t(0.975,K)\sqrt{var(y)}$

where t (0.975; K) is the 97.5th percentile of a t-distribution with K degrees of freedom.

Sampling errors for ENACE were calculated for some variables considered essential. Results are presented in this appendix for Cameroon, for rural and urban areas. For each variable, the type of statistic (mean, proportion, total or rate) and the base population are presented in **Table B.1**. **Tables B.2** to **4** present the value of the statistic (M), the standard error (SE), number of unweighted (N) and weighted (WN) cases, design effect (DEFT), relative error (SE/M), and 95% confidence interval (M±1.96SE), for each variable. The DEFT is considered undefined when the standard deviation under the simple random sample is zero (when the estimate is close to 0 or 1).

The confidence interval can be interpreted as follows: If the percentage of the population with access to an improved water source is estimated at 87% with a 95% CIbetween 83% and 90%, it could be said informally: If the survey is free from significant bias, we are 95% confident that the actual coverage of the population with access to an improved water source in the population is between 83% and 90%. Or it could be said that if the survey were repeated a large number of times without significant bias, each time drawing a different sample of clusters and respondents, then 95% of the confidence intervals relating to the different samples would contain the true coverage value in the population. We are not going to repeat the survey several times, but we have a 95% chance that this CI calculated from the sample that was collected is one that contains the true coverage value. Hence the interpretation that we are 95% sure that the actual coverage is between 83% and 90%.

For the total sample, a DEFT of 1.6 means that due to clustering the sample in multiple stages, the average standard error is 1.6 times greater than that of an equivalentsimple random sample.

Table B.1 List of variables used for the calculation of sampling errors, ENACE-1, 2021

Variable	Estimate	Base population
Electrica energy		
Access to electricity by households	Proportion	Households
Access of households to electricity through the interconnected network	Proportion	Households
Access to electricity by household population	Proportion	De facto household population
Average monthly electricity consumption expenditure per household	Mean	Households
Households that use clean fuels (electricity, domestic gas or biogas) for cooking	Proportion	Households
Average monthly electricity bill per household - interconnected network	Mean	Households
Household access to firewood as fuel (%)	Proportion	Households
Access of households to domestic gas as fuel (%)	Proportion	Households
Household access to kerosene as fuel	Proportion	Households
Average monthly fuelwood consumption bill per household (CFA francs)	Mean	Households
Average monthly domestic gas consumption bill per user household (CFA francs)	Mean	Households
Households considering being able to pay the amount of 70,000 CFA francs to secure a subscription to the public electricity distribution network	Proportion	Households
Water		
Access to an improved water source by households	Proportion	Households
Access to an improved water source by the household population	Proportion	De facto household population
Households that have access to a basic drinking water service	Proportion	Households
Households that have access to a limited drinking water service	Proportion	Households
Households ready to pay an amount of 95,000 CFA francs for a connection to the public water distribution network (%)	Proportion	Households
Households whose drinking water is contaminated with E.Coli bacteria	Proportion	Households
Households whose drinking water was available in sufficient quantity during the 30 days preceding the survey	Proportion	Households
Households with access to safely managed drinking water services	Proportion	Households
Sanitation		
Access to improved toilets by households	Proportion	Households
Population of households using improved sanitation facilities (toilets)	Proportion	De facto household population
Households that use basic sanitation facilities, i.e. improved non-shared facilities	Proportion	Households
Population living in a household with soap for handwashing	Proportion	De facto household population
Population using safely managed sanitation services	Proportion	De facto household population
Population using safely managed sanitation services including handwashing facility with soap and water at home	Proportion	De facto household population
Households whose waste is collected by HYSACAM trucks	Proportion	Households

Table B.2 Sampling Errors: Total Sample, ENACE Cameroon 2022

VARIABLE	Value (M)	Standard Error (SE)	Number		Sampling design effect (DEFT)	Relative Error (SE/R)	confidence interval	
			Unweighted (N)	Weighted (N)'			M-1.96SE	M+1.96SE
ELECTRICAL ENERGY								
Access to electricity by households	0.674706	0.0128	7,870	5,353,259	2.43154	0.019	0.649466	0.69995
Access of households to electricity through the interconnected network	0.591471	0.0153	7,870	5,353,259	2.75768	0.0258	0.561436	0.62151
Access to electricity by household population	0.634186	0.0137	40,835	27,136,499	5.75118	0.0216	0.607243	0.66113
Households that use clean fuels (electricity, domestic gas or biogas) for cooking	0.297438	0.0129	7,590	5,169,023	2.46716	0.0435	0.271993	0.32288
Average monthly electricity bill per household - interconnected network	4901.885	164.5	3,940	2,377,545	1.08567	0.0336	4579	5225
Household access to firewood as fuel (%)	0.707909	0.011	7,870	5,353,259	2.13623	0.0155	0.686386	0.72943
Access of households to domestic gas as fuel (%)	0.376576	0.0132	7,870	5,353,259	2.42164	0.0351	0.350578	0.40257
Household access to kerosene as fuel (%)	0.186576	0.0069	7,872	5,354,339	2.45514	0.0369	0.173053	0.2001
Average monthly fuelwood consumption bill per household (CFA francs)	10609.81	269.46	4,885	3,224,920	1.36082	0.0254	10080.19	11139.4
Average monthly domestic gas consumption bill per user household (CFA francs)	6289.229	56.624	3,081	2,011,150	1.17868	0.0090	6177.936	6400.52
Households considering being able to pay the amount of 70,000 CFA francs to secure a subscription to the public electricity distribution network	0.409165	0.0206	2,599	2,046,910	2.13490	0.0503	0.368688	0.44964
WATER								
Access to an improved water source by households	0.772067	0.0112	7,344	5,032,323	2.28198	0.0145	0.75011	0.79402
Access to an improved water source by the household population	0.753654	0.0117	38,379	25,656,826	5.32431	0.0155	0.730637	0.77667
Households that have access to a basic drinking water service	0.656606	0.0109	7,344	5,032,323	1.97547	0.0167	0.63509	0.67812
Households that have access to a limited drinking water service	0.102915	0.0056	7,344	5,032,323	1.58198	0.0545	0.09189	0.11394
Households ready to pay an amount of 95,000 CFA francs for a connection to the public water distribution network (%)	0.288592	0.0100	6.173	4,270,525	1.72988	0.0346	0.268983	0.3082
Households whose drinking water is contaminated with E.Coli bacteria	0.366448	0.0119	2,601	1,836,804	1.26360	0.0326	0.34298	0.38992
Households whose drinking water was available in sufficient quantity during the 30 days preceding the survey	0.860965	0.009	2,601	1,836,804	1.32830	0.0105	0.843251	0.87868
SANITARY								
Access to improved toilets by households	0.660957	0.0118	7871	5,353,970	2.21366	0.0179	0.63774	0.68417
Population of households using improved sanitation facilities (toilets)	0.623823	0.0128	40,835	27,136,499	5.34104	0.0205	0.598658	0.64899
Households that use basic sanitation facilities, i.e. improved non-shared facilities	0.47858	0.0120	7,871	5,353,970	2.13688	0.0251	0.45493	0.50223
Population living in a household with soap for handwashing	0.674319	0.0126	25,754	17,114,751	4.30496	0.0186	0.64961	0.69903
Population using safely managed sanitation services	0.256038	0.0103	40,835	27,136,499	4.79041	0.0404	0.235702	0.27637
Population using safely managed sanitation services including handwashing facility with soap and water at home	0.128000	0.0077	40,835	27,136,499	4.64860	0.0600	0.112895	0.14311

Households whose waste is collected by HYSACAM trucks	0.24164	0.0096	7,870	5,353,259	1.9854	0.0396	0.222809	0.26047

Table B.3 Sampling errors: Urban sample, ENACE Cameroon 2022

VARIABLE	Value (M)	Standard Error (SE)	Number		Sampling design effect (DEFT)	Relative Error (SE/R)	confidence interval	
			Unweighted (N)	Weighted (N)'			M-1.96SE	M+1.96SE
ELECTRICAL ENERGY								
Access to electricity by households	0.904997	0.0095	5,176	2,890,894	2.12301	0.0106	0.886228	0.92377
Access of households to electricity through the interconnected network	0.846218	0.0132	5,176	2,890,894	2.38076	0.0156	0.820323	0.87211
Access to electricity by household population	0.896602	0.0126	25,203	13,628,068	5.93856	0.0141	0.871785	0.92142
Households that use clean fuels (electricity, domestic gas or biogas) for cooking	0.49056	0.0149	4,976	2,786,044	1.90995	0.0304	0.461217	0.5199
Average monthly electricity bill per household - interconnected network	5282.514	189.62	3,507	1,941,741	0.94502	0.0359	4910	5655
Household access to firewood as fuel (%)	0.541336	0.0126	5,176	2,890,894	1.64629	0.0232	0.516602	0.56607
Access of households to domestic gas as fuel (%)	0.603895	0.0133	5,176	2,890,894	1.76846	0.022	0.577816	0.62997
Household access to kerosene as fuel (%)	0.204921	0.0092	5,178	2,891,974	1.48884	0.045	0.186805	0.22304
Average monthly fuelwood consumption bill per household (CFA francs)	7263.649	259.8	1,469	839.115	0.81462	0.0358	6753.022	7774.28
Average monthly domestic gas consumption bill per user household (CFA francs)	6,265.50	62.672	2,869	1,741,039	1.05985	0.0100	6142.317	6388.68
Households considering being able to pay the amount of 70,000 CFA francs to secure a subscription to the public electricity distribution network	0.735642	0.028	569	319,394	1.27836	0.0381	0.68061	0.79067
WATER								
Access to an improved water source by households	0.917741	0.0076	5,176	2,890,894	1.79513	0.0082	0.90287	0.93261
Access to an improved water source by the household population	0.917152	0.0088	23,153	12,502,007	4.36377	0.0096	0.899864	0.93444
Households that have access to a basic drinking water service	0.743043	0.0095	5,176	2,890,894	1.42033	0.0128	0.724331	0.76176
Households that have access to a limited drinking water service	0.089259	0.0049	5,176	2,890,894	1.12857	0.0553	0.079557	0.09896
Households ready to pay an amount of 95,000 CFA francs for a connection to the public water distribution network (%)	0.243436	0.0105	3,982	2,200,995	1.39099	0.0433	0.22271	0.26416
Households whose drinking water is contaminated with E.Coli bacteria	0.313899	0.0125	1,818	1,040,177	1.03942	0.0399	0.289269	0.33853
Households whose drinking water was available in sufficient quantity during the 30 days preceding the survey	0.822164	0.0112	1,818	1,040,177	1.12782	0.0136	0.800144	0.84418
SANITARY								
Access to improved toilets by households	0.885269	0.0088	5176	2,890,894	1.80796	0.0100	0.867896	0.90264
Population of households using improved sanitation facilities (toilets)	0.87543	0.0112	25,203	13,628,068	4.85748	0.0128	0.853414	0.89745
Households that use basic sanitation facilities, i.e. improved non-shared facilities	0.60885	0.0107	5,176	2,890,894	1.42852	0.0176	0.587831	0.62987
Population living in a household with soap for handwashing	0.767827	0.0161	15,719	8,468,628	4.31076	0.021	0.736137	0.79952
Population using safely managed sanitation services	0.381628	0.0125	25,203	13,628,068	3.68915	0.0328	0.357031	0.40623
Population using safely managed sanitation services including handwashing facility with soap and water at home	0.183219	0.0092	25,203	13,628,068	3.41766	0.0504	0.165073	0.20136

Households whose waste is collected by HYSACAM trucks	0.422771	0.0159	5,176	2,890,894	2.10411	0.0377	0.391431	0.45411

Table B.4 Sampling errors: Rural sample, ENACE Cameroon 2022

VARIABLE	Value (M)	Standard Error (SE)	Number		Sampling design effect (DEFT)	Relative Error (SE/R)	confidence interval	
			Unweighted (N)	Weighted (N)'			M-1.96SE	M+1.96SE
ELECTRICAL ENERGY								
Access to electricity by households	0.404337	0.0204	2,694	2,462,365	2.50619	0.0506	0.364155	0.44452
Access of households to electricity through the interconnected network	0.29239	0.0232	2,694	2,462,365	3.07426	0.0795	0.246707	0.33807
Access to electricity by household population	0.369446	0.0202	15,632	13,508,431	5.97913	0.0548	0.329662	0.40923
Households that use clean fuels (electricity, domestic gas or biogas) for cooking	0.071652	0.0176	2,614	2,382,979	4.03339	0.2455	0.037085	0.10622
Average monthly electricity bill per household - interconnected network	3,205.98	315.94	433	435,803	1.94645	0.0985	2585	3827
Household access to firewood as fuel (%)	0.903471	0.0153	2,694	2,462,365	3.12694	0.017	0.873304	0.93364
Access of households to domestic gas as fuel (%)	0.109696	0.0196	2,694	2,462,365	3.77843	0.1789	0.07112	0.14827
Household access to kerosene as fuel (%)	0.16503	0.0112	2,694	2,462,365	1.80815	0.0676	0.143103	0.18696
Average monthly fuelwood consumption bill per household (CFA francs)	11848.91	452.14	2,075	1,764,087	1.51672	0.0382	10960.25	12737.6
Average monthly domestic gas consumption bill per user household (CFA francs)	6442.192	108.62	212	270.111	1.20976	0.0169	6228.709	6655.68
Households considering being able to pay the amount of 70,000 CFA francs to secure a subscription to the public electricity distribution network	0.564062	0.0236	2,030	1,727,516	2.22417	0.0418	0.517768	0.61036
WATER								
Access to an improved water source by households	0.600892	0.0197	2,694	2,462,365	1.79513	0.0327	0.562258	0.63953
Access to an improved water source by the household population	0.59827	0.0208	15,226	13,154,819	5.93975	0.0347	0.557469	0.63907
Households that have access to a basic drinking water service	0.469546	0.0188	2,694	2,462,365	2.26157	0.0400	0.432673	0.50642
Households that have access to a limited drinking water service	0.105535	0.0101	2,694	2,462,365	1.96879	0.0953	0.085774	0.1253
Households ready to pay an amount of 95,000 CFA francs for a connection to the public water distribution network (%)	0.326184	0.0153	2,620	2,332,839	1.89674	0.0468	0.296195	0.35617
Households whose drinking water is contaminated with E.Coli bacteria	0.418373	0.0204	961	909,996	1.48978	0.0488	0.378255	0.45849
Households whose drinking water was available in sufficient quantity during the 30 days preceding the survey	0.907921	0.0135	961	909,996	1.67568	0.0148	0.881471	0.93437
SANITARY								
Access to improved toilets by households	0.397683	0.0232	2695	2,463,076	2.85068	0.0583	0.35211	0.44326
Population of households using improved sanitation facilities (toilets)	0.369989	0.0220	15,632	13,508,431	6.51029	0.0596	0.326657	0.41332
Households that use basic sanitation facilities, i.e. improved non-shared facilities	0.325683	0.0245	2,695	2,463,076	3.14901	0.0753	0.277479	0.37389
Population living in a household with soap for handwashing	0.58273	0.0207	10.035	8,646,123	4.79323	0.0356	0.542002	0.62346
Population using safely managed sanitation services	0.129335	0.0156	15,632	13,508,431	6.63701	0.1208	0.098632	0.16004
Population using safely managed sanitation services including handwashing facility with soap and water at home	0.072293	0.0122	15,632	13,508,431	6.72596	0.1690	0.04828	0.09631
Households whose waste is collected by HYSACAM trucks	0.028988	0.0101	2,694	2,462,365	3.61998	0.3482	0.009146	0.04883

APPENDIX C: IMPLEMENTATION STAFF

STEERING COMMITTEE

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Mr. NDJOUKE THOME Adolphe, Secretary General of the Ministry of Water Resources and Energy (MINEE);

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Mr. TEDOU Joseph, Director General of the National Institute of Statistics (NIS);

Supervisor:

Mr. NDODJENG BOSSONG Antoine, Head of Programme 422 "Access to Energy" and Director of Petroleum Products and Gas at MINEE;

Coordinator:

Mr. NKUE Valerie, Director of Renewable Energy and Energy Management at MINEE;

Members:

- **Mrs. NGO NDJIKI Jocelyne Alice Epse MINE**, Head of Programme 423 "Access to drinking water and liquid sanitation" and Director of Water Resources Mobilization at MINEE or their representative;
- **Mr OMGBA OYONO Lionel**, Head of Programme 421 "Energy Supply" and Director of Electricity at MINEE or their representative;
- **Mr. MAMOUDOU Ousman**, Director of Water Resources Management at MINEE or their representative;
- **Mr. LIBITE Paul Roger**, Head of the Department of Demographic and Social Statistics at the NIS;
- **Mr. DZOSSA Anaclet Désiré**, Head of Division of Demographic Statistics at the NIS;
- **Mrs. LIDJA Francine epse AZANTSA KINGUE**, Sub-Director of Monitoring and Control of Supplies and Storage of Petroleum Products at MINEE;
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- **Mr MBARGA MENGUE Paul Bertrand**, Sub-Director of Budget, Equipment and Maintenance at MINEE;
- **Mr. FOBASSO Jean**, Administrative and Financial Director at the NIS;
- **Mr. BOUAYEKON François Milère**, Head of Service of Refining and Imports of Petroleum Products at MINEE.

Technical Secretariat:

Head of the Technical Secretariat:

Mrs. NGONO Marie Cornellie,Head of the National Energy Information System Unit at MINEE;

Deputy Head of Technical Secretariat:

Mr. KONLACK LONLACK Giscard, Assistant Research Officer in the Division of Demographic Statistics at the NIS;

Members of the Technical Secretariat:

- **Ms. NGO BASSOM Christine Reine**, Assistant Research Officer No. 1 in the Department of Water Resources Management at MINEE;
- **Mr. BIKOK Aimé Thomas**, Assistant Research Officer in the Legal Affairs Unit at the NIS;
- **Mrs. TCHUISSEU MBOMDA Angèle**, Statistical and Economist Engineer in the Department of Electricity at MINEE;

DATA COLLECTION TEAM

Field supervisors

DZOSSA Anaclet Désiré	CHOUNDONG JIOFACK Diane	NGATTI Ambrouasse
FOMO born TEULAWO Marie Antoinette	DJEMNA KAMGA Elvis	TIM Isidore KUKWA
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EBONG ENONE epse EWANE Mariette	DONGMO SOUMELOU	NGUEFACK Roger
TCHOUDJA Victorian	EKOBE EYEM Abel	NGO PONDI Rose Benjamin
BIKOK Aime Thomas	NGOO DJOB Désiré	

MINEE support for supervision

NDODJENG BOSSONG Antoine	TCHUISSEU MBONDA Angèle	COUPO FODJO Benoit
LIDJA Francine Epse AZANTSA KINGUE	BOUAYEKON Francois Milere	LINJOUOM Antoine
MBARGA MENGUE Paul Bertrand	WOOP MAKEM Chanel Michel	MAINA PAGOU Emile

Support for regional supervision

Achille NJOUOM AHMADOU, Office Head, NIS/ES-RO	Ghislain Gilles GEUWOU FEUCHOUANG Office Head, NIS/SO-RO	Leonnel KWAYEP DIMOU, Office Head, NIS/FN-RO
Angélique Lucile MATENE SOB, Office Head, NIS/NO-RO	Guy Sylvain ETO Office Head, NIS/SW-RO	NGO NYEMB ep. BAKET, Office Head, NIS/WE-RO
Emmanuel DJITUPURI, Office Head, NIS/AD-RO	Joseph TAMCHE, Office Head, NIS/LT-RO	Sébastien FOTUE NJOMOU, Office Head, NIS/NW-RO
Fernande Irène EVINA MBO, Office Head, NIS/CE-RO		

Collection agents

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CHEBOU VIVIANE NADEGE	NDEH FRANCIS NYAMBI	TAGNE FOKOUA RODRIGUE HEALTH
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EKOUMA METOU ERIC DIEUDONNE	FLAVIAN FUKAH JAM	SAKWE ALICE-REIN NADOA
ENGON NNA GISCARD	KAPCHE RAISSA	ETIENE NYUYIDZE KPUNSA
ELLA NNA Arlette	MA-AKEDE MARKUS	

Interviewers

ABITA CHARLES	ESSAM EYA'ANE INES SABRINA ELODIE AUDREY	NGRANA MATHIAS
ABOUBAKAR SIDDIK	ETONG AYE MICHELLE	NGUEFACK RATIVIE CEVINE
ABOUBAKARY MOHAMADOU	ETO Luc Steven	NGUIJOI TONYE JEAN

		HYACINTHE
ABOUKAR IBRAHIM	FAOUZIA ALIOUM	NKENGLEFACK ROLAND AKWANGHA
ALI ABBA GANA	FOMO KOUAKAM JUNIOR	NLOGA LYDIE LAURE
AMBARO MENKEUM INGRID	FORKWA BERNICE ANIM	NNOUKA KEPDY PAUL YVAN BRIDGE
AMBO BORIS EZIEH	GAMAHIN HYACINTHE THIERRY	NONGNY OMBOLEY VIDAL
AMINADAB RAHAB KOTAKOUA CECILE	GNINTEDEM TEUFO VIVIEN	NONO WADJI VIVIANE LAURE
AMINATOU BOUBAKARY	HESSI PAUL GABINE	NTIMIN NERISE RIKUMBA
AMOUGOU GABRIEL	KAMGA WANDJI CLARISSE MIREILLE	NYAH SIMON NYAH
ASONGMO AJUA ALOYS	KEMWELE TEUFO AUGUSTINE	NYAMBAM MBAK CHRISTIANE STELLE
ATOUGA BIKELE LAURENT	KENGNE NDJOMOU JONATHAN	NYENTI PAMELA MOTOMBY
AWASUM NGWENETAH LINDA	KISSEBINI MISSENDE VLADIMIR PROPER	OMGBA EKOBENA MARC ALAIN
AYISSI BINDZI BRICE	LONLA LALY LAURA	ROBERTSON ALFRED BRYAN
BEMEHOUGUINE BAGUISSOGA CLARISSE	MABAH CHRISTINE	SAMIRA MOHAMAN OUMATE
BILIBY PRISCILLE	MALIKI BAPPA	SOUAIBOU
BITA STEVE JORDAN	MANDOKI EMMANUEL JOEL	TAKANG MICHAEL NJUITATA
TAGNE ADONIA CHOUPE	MBOCK MBEI SON FRIDOLIN	TAMO WOKAM EDWIGE SANDRA
CLAUDE FONYUY-SHAFE	MIMBE JELLY CHRISTELLE	TCHAGUE YOUMBI ANINE BERGE
DAGUEBAH MASSI-G	MIMMA PERPETUA DINGA	TCHOFFO NDISSOCK BLAISE
DAINONE IGNAREKI DAMASCUS	MOSSUS NTSI STEPHANE HUGUES	TEKORE MIRAILLE
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EDJO'O MVONDO Verleine Vanessa	NDZINGA NDZINGA THOMAS JUNIOR	TITI MBANG DIDIER
EKESSE MADELEINE	NGADE TOUKO ANGE Francky	TODOU ELYSEE
ENGWA LODOVICH ENGWA	NGO NKOLONG UM HONORE SOLANGE	VOUFACK BLANDINE LINDA
	NGOOUCHEME NJOYA AYOUBA	WADJI NGASSA WILLIAM
	NGOUH KACHIWOUO BENJAMIN	YADA ROSALIE

Drivers

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AMADOU Jean Bernard	ISMAILA MOHAMADOU	NDI Linus Kong
AMAH René FONGANG	ISSA	NGANE AMBASSA Ignace Bertrand
Bertrand TATSINGOUM	JUENGUE Nana Victor	NGNEYAMBA FOMBIT Emmanuel
CHE Joseph MOFOR	KOUEMO Seraph	NTSALEFACK Elie Alexis
CHENDJOU Joseph Blaise	LISSOM LI NKEMBE Albert Eric	TATENOU Michel Standhal

TECHNICAL EDITORIAL TEAM

General coordination

TEDOU Joseph, Director General/NIS
SHE ETOUNDI Joseph Guy B, Deputy Director General/NIS

Technical Coordination

DZOSSA Anaclet Désiré, Head of Division, DDS/NIS
WOUNANG Romain, Research Officer, DDS/NIS
KONLACK LONLACK Giscard, Assistant Research Officer, DDS/NIS

Drafting

DZOSSA Anaclet Désiré, Head of Division, DDS/NIS
FOMO Antoinette, Head of Division, DDS/NIS
NGONO Ghislaine, Research Officer, DDS/NIS
WOUNANG Romain, Research Officer, DDS/NIS
SOHKADJE SONGO Pierre, Research Officer, DDS/NIS
SOUAIBOU MOUSSA, Research Officer, DDS/NIS
DJEMNA Elvis, Research Officer, DDS/NIS
TCHAKOTE Alice, Assistant Research Officer, DDS/NIS
KONLACK LONLACK Giscard, Assistant Research Officer, DDS/NIS
MOODJOM Roland Marc, Assistant Research Officer, DDS/NIS
FOMEKONG Félicien, Assistant Research Officer, DDS/NIS
ELEMBENG AKOUMBA Yolande Epse NTI MEFE, Assistant Research Officer, DDS/NIS
DOUALA Roméo, Assistant Research Officer, CE-RO/NIS
NGONO MARIE CORNELLIE, MINEE
BIEMBLE Pélagie, MINEE
BOUAYEKON François Milère, MINEE
MAINA PAGOU Emile, MINEE
TSAFACK NGOUFACK Estelle Bechamelle, MINEE
METALA Rodrigues, MINEE
OBAKERE NJIE Elise, MINEE
TCHUISSEU MBOMDA Angèle, MINEE
SIAKAM TCHAMABO Christian, MINEE

Data operation

NDEFFO GOUOPE Guy F., Head of Division, DIN/NIS
TCHOUDJA Victorien, Research Officer, DIN/NIS

REPUBLIC OF CAMEROON
Peace – Work – Fatherland

REPUBLIQUE DU CAMEROUN
Paix – Travail – Patrie

NATIONAL SURVEY ON ACCESS TO ENERGY (ENACE 1)

HOUSEHOLD QUESTIONNAIRE

STRICTLY CONFIDENTIAL AND FOR NON-TAX PURPOSES

The information collected during this survey is strictly confidential under the terms of Law No. 91/023 of 16 December 1991 on Censuses and Statistical Surveys which stipulates in Section 5 that "individual information of an economic or financial nature appearing on any statistical survey questionnaire may under no circumstances be used for purposes of control or economic repression".

MINISTRY OF WATER RESOURCES AND ENERGY

NATIONAL INSTITUTE OF STATISTICS

October 2020

SECTION 00: GENERAL INFORMATION

A – IDENTIFICATION OF THE HOUSEHOLD

S0Q1 **SURVEY AREA**: _____	|__|__|
S0Q2 **EA SEQUENTIAL NUMBER**: _____	|__|__|__|
S0Q3 **NUMBER OF THE STRUCTURE IN THE EA**: _____	|__|__|__|
S0Q4 **SEQUENTIAL NUMBER OF SAMPLE HOUSEHOLD IN THE EA**: _____	|__|__|__|

B – HOUSEHOLD INFORMATION

S0Q5	**DIVISION : _____**	|__|__|
S0Q6	**SUB-DIVISION/CITY: _____**	|__|__|__|
S0Q7	**VILLAGE/CITY QUARTER: _____**	
S0Q8	**RESIDENCE STRATUM: _____**	|__|
	1 = Urban stratum 2 = Semi-urban stratum 3 = Rural stratum	
S0Q9	**NAME OF HEAD OF HOUSEHOLD: _____**	
S0Q10a	**Is there a telephone contact by which we can reach your household?**	|__|
	1 = Yes 2 = No (If No, go to S0Q11)	
S0Q10b	**If Yes, 1st Phone number** |__| |__|__| |__|__| |__|__| |__|__| **Direct contact ? 1 = Yes 2 = No**|__|	
	2nd Phone number|__| |__|__| |__|__| |__|__| |__|__| **Direct contact ? 1 = Yes 2 = No**|__|	
S0Q11	**GPS coordinates: Longitude: ____. _____ Latitude: ____. _____ Altitude : ____. ____**	
S0Q12	**NUMBER OF PERSONS IN THE HOUSEHOLD (including visitors)**	|__|__|

C – COLLECTION INFORMATION

S0Q13	**INTERVIEWER:**	|__|__|__|__|
S0Q14	_____	|__|__|__|__|
S0Q15	**CONTROLLER: _____**	|__|__|__|__|
S0Q16	**SUPERVISOR : _____**	**|__|__|__|__||_2_|_0_|_2_|_1_|**
	Survey start date: _____	
S0Q16a	**Survey end date: _____**	**|__|__|__|__||_2_|_0_|_2_|_1_|**
S0Q17a	**Start time**_____|__|__|**h**|__|__|**min S0**Q17b **End time**___|__|__|**h**|__|__|**min**	
S0Q17c	**Total number of visits made to the household** |__|	

S0Q18a	**HAVE DATA ON THIS HOUSEHOLD BEEN COLLECTED?** **1= Yes, Complete survey 2 = Yes, Incomplete survey 3 = No if 1, go to S0Q19, if 3, go to S0Q18c**	|__|
S0Q18b	**WHY IS THE INTERVIEW PARTIALLY OVER?** **1= Unavailable to continue 2= Refuse to continue 3= Questionnaire too long/boring 6= Other (specify) go S0Q19**	|__|
S0Q18c	**PLEASE GIVE THE REASON WHY DATA WERE NOT COLLECTED FOR THIS HOUSEHOLD** **1=Refusal 2=Respondent not present 3=Incapacity** **4= Present but never available to answer 5= Housing empty/destroyed/no housing at this address** **6 = Other (specify)** *If 2, 3, 4 or 6 end of the questionnaire*	|__|
S0Q18d	**WHAT ARE THE REASONS WHY YOU ARE NOT WISHING TO PARTICIPATE IN THE SURVEY?** **01=Doesn't have time to take the survey 02=Not interested in the survey 03=Has had a bad experience in a previous survey 04=Finds the topic uncomfortable 05=Is tired of surveys 06 =Surveys are useless 96 = Other (specify**) End of quiz	|__|__|
S0Q19	**ASSESSMENT OF THE QUALITY OF THE SURVEY** **1=Very good 2=Good 3=Average 4=Bad 5=Very bad**	|__|
S0Q20	**NAME AND ORDINARY NUMBER OF THE MAIN RESPONDENT:** **_____**	|__|__|
S0Q21	**INTERVIEW LANGUAGE: 1= French 2= English 3= Local language**	|__|

SECTION 01: CHARACTERISTICS OF HOUSEHOLD MEMBERS

01.1.HOUSEHOLD COMPOSITION	**Names and first names of household members** ***Completely list all household members, starting with the head of household and ask the following questions for each member.***																
S1Q1	**Number order**	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17
S1Q2	***(Name)*is female or male?** **1= Male 2= Female**	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__
S1Q3	**What is (Name)'s relationship to the Head of Household?*SEE* CODES**	_0|1_	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____
S1Q4	**How old is (Name)?** **Enter the age in completed years. (95 for age >= 95 and 98 for Does Not Know)** (IF AGE < 10 YEARS, go to S1Q6)	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____
S1Q5	**What is (Name)'s marital status?** ***SEE* CODES**	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__
S1Q6	**What is the nationality of (Name)?** **1 = Cameroonian 2 = Other CEMAC country 3 = Nigeria 4 = Rest of Africa 5= France 6= Rest of Europe 7= China 8= Rest of Asia 9= Rest of the world.**	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__
S1Q7a	***(Name)*does he/she usually live in the household?1=Yes 2=No**	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__
S1Q7b	***(Name)*did he/she spend last night in the household?1=Yes 2=No**	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__
For persons aged 3 or more																		
S1Q8	***(Name) has he/she ever attended a school? 1=Yes 2=Name*** *If No, go to the next individual*	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__
S1Q9	**N. What is the highest level of education that (Name) has attained?** **C. What is the last class that (Name) successfully completed at this level?** ***SEE CODES***	__ __	__ __	__ __	__ __	__ __	__ __	__ __	__ __	__ __	__ __	__ __	__ __	__ __	__ __	__ __	__ __	__ __
S1Q10	**What is (Name)'s highest degree?** ***SEE CODES***	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__	__

NB: Check that all household members have been registered and check this box ☐

codesS1Q3			codesS1Q5		CodedS1Q6
01 = Head of Household	**07 = In-laws**	**12= Domestic**	**1 = Single/never married**	**4 = Widowed**	**1= Cameroon 2= Other CEMAC country**
02 = Spouse of Head of Household	**08 = Brother/Sister**	**13= Other relative**	**2 = Married monogamous**	**5 = Divorced/Separated**	**3= Nigeria 4= Rest of Africa 5= France 6= Rest of Europe**
03 = Son or daughter of of Head of Household	**09 = Direct Nephew/Niece**	**14= Unrelated**	**3 = Married polygamist**	**6 = Common-law**	**7= China 8= Rest of Asia 9= Rest of the world**
04 = Son-in-law or daughter-in-law	**10= Nephew/Niece by marriage**	**98= Does not know**			
05 = Grandson/Granddaughter	**11= Adopted/in custody/Child of of Head of Household's spouse**				
06 = Father/Mother					

codesS1Q10	codesS1Q9					
1 = WITHOUT DIPLOMA	LEVEL	PRESCHOOL/NURESRY SCHOOL=0	PRIMARY = 1	SECONDARY 1st Cycle = 2	SECONDARY 2nd Cycle = 3	SUPERIOR = 4	Does not know = 8
2 = CEP/CEPE/FSLC **3 = BEPC/CAP/GCEOL** **4 = PROBATOIRE/BP** **5 = BAC/GCEAL/BEP/BT** **6 = BTS/DUT/DEUG//HND** **7 = LICENCE/BACHELOR'S DEGREE** **8 = MAITRISE/POST-GRADUATE DIPLOMA/MASTER'S DEGREE/DEA** **9 = DOCTORATE/PHD**	CLASS	**1**	**0= Less than 1 year** **1= SIL/Class1** **2= CP/CPS/class2** **3= CE1/Class3** **4= CE2/Class4** **5= CM1/Class5** **6= CM2/Class6/7** **8= Does not know**	**0= Less than 1 year** **1= 6è/1è AT/Form 1** **2= 5è/2è AT/Form 2** **3= 4è/3è AT/Form 3** **4= 3è/4è AT/Form4** **8= Does not know**	**0= Less than 1 year** **1= 2nd L or T/Form 5** **2= 1ère G or T/Lower 6** **3= Terminale G or T/Upper 6** **8= Does not know**	**0= Less than 1 year** **1= 1st year** **2= 2nd year** **3= 3rd year** **4= 4th or 5th year.** **5= 6th year or more** **8= Does not know**	

Section 02: ECONOMIC ACTIVITY OF PERSONS AGED 10 OR MORE

ECONOMIC ACTIVITY						
S2Q0	**Serial number of individual aged 10 or more**	__|__|	__|__|	__|__|	__|__|	__|__|
S2Q1	**(Name) has he/she undetaken any economic activity, paid or unpaid, over the past 7 days or does he/she have a job? 1= Yes 2= No**if Yes, go to S2Q2	__|__|	__|__|	__|__|	__|__|	__|__|
S2Q1a	**Why has (Name) not worked in the past 7 days?** **01= Is on medical leave/vacation/rest**➔go to S2Q2 **02= Temporary work stoppage/suspension**➔go to S2Q2 **03= Off season/campaign**➔go to S2Q2 **04=Pupil/student** **05= Retired** **06= Doesn't want to work/doesn't need it** **07= Is looking for a job** **96= Other (specify) _____**	__|__|	__|__|	__|__|	__|__|	__|__|
S2Q1b	**Although (Name) states that he/she has not worked over the past 7 days and that he/she does not have a job, has he/she undertaken any of the following activities over the past 7 days, home or away?** **01 = While working in a personal business06 = Working as a paid or unpaid apprentice** **02 = By making a product for sale 07 = By working while studying** **03 = Working at home for income 08 = Working for another household** **04 = By providing a service for income 09 = Any other activity for income** **05 = Helping in a family business 10 = No such activity**➔go to the next individual	__|__|	__|__|	__|__|	__|__|	__|__|
S2Q2	**What is the socio-professional category of (Name) in his job or in this activity?** ***(Name) is he/she***: **01 = Senior management staff, engineer and similar 06 = Employer (Boss)** **02 = Middle management staff, first-line supervisor 07 = Self-employed worker** **03 = Employee/skilled worker 08 = Family helper** **04 = Semi-skilled employee/worker 09 = Paid or unpaid apprentice, trainee** **05 = Labourer 10 = Unclassifiable (to be specified) ___**	__|__|	__|__|	__|__|	__|__|	__|__|
S2Q2a	**What is the name of the trade, profession, position, task, main job that(NAME) has undertakenover the past 7 days or that he/she usually undertakes?..... ....** ***See Nomenclature of jobs, professions and trades***	__|__|__|__|__|	__|__|__|__|__|	__|__|__|__|__|	__|__|__|__|__|	__|__|__|__|__|
S2Q3	**The enterprise in which (Name) undertakes his/her main activity/employment (or which he/she manages) is a:** **1 = Public administration 5 = International organization** **2 = Public or parastatal enterprise 6 = Associative enterprise (cooperative, NGO, union, etc.)** **3 = Non-agricultural private enterprise 7 = Household (domestic staff)** **4 = Agricultural holding (plantation, fields, farm, breeding, fishing, …)** If code 1, 2.5 and 7 go to S2Q8	__|	__|	__|	__|	__|
S2Q4	Does the enterprise in which (Name) hold his/her main job (or which he/she manages) have a taxpayer number? **1=**Yes 2= No 8= Does not know	__|	__|	__|	__|	__|

S2Q5	Does the enterprise in which (Name) hold his/her main job (or which he/she manages) keep accounts? 1= Statistical and Tax Return or formal accounting 2= Non-detailed accounting 3= No (***no accounting)*** 6=Other(specify) _____	|__|	|__|	|__|	|__|	|__|
S2Q6	*VERIFICATION IF (NAME) HAS OR NOT AN INFORMAL PRODUCTION UNIT (IPU) IN WHICH HE HAS HIS MAIN EMPLOYMENT* *1= Yes (If ([S2Q2= 06 or 07] and ([S2Q4= 2 or 8] and/or [S2Q5= 2 or 3 or 6])))(i.e. (Name) is an employer/boss or own-account worker and does not have a taxpayer number and/or (Name) is an employer/boss or own-account worker, has a taxpayer number, but does not keep formal accounts)* *2= No (if other combination of answers for S2Q2, S2Q4 and S2Q5)*	|__|	|__|	|__|	|__|	|__|
S2Q8	**In addition to his/her main job, has (Name) held any other jobs of any type over the past 7 days? 1= Yes 2= No**If No, go to S2Q13	|__|	|__|	|__|	|__|	|__|
S2Q9	**What is the socio-professional category of (Name) in his most important secondary job?** **01 = Senior management staff, engineer and similar 06 = Employer (Boss)** **02 = Middle management staff, first-line supervisor 07 = Self-employed worker** **03 = Employee/skilled worker 08 = Family helper** **04 = Semi-skilled employee/worker 09 = Paid or unpaid apprentice, trainee** **05 = Labourer 10 = Unclassifiable (to be specified) ___**	|__|__|	|__|__|	|__|__|	|__|__|	|__|__|
S2Q9a	**What is the name of the trade, profession, position, task, side job**the most important that **(NAME) has undertakenover the past 7 days or that he/she usually undertakes?** **..... ....** ***See Nomenclature of jobs, professions and trades***	|__|__|__|__|__|	|__|__|__|__|__|	|__|__|__|__|__|	|__|__|__|__|__|	|__|__|__|__|__|
S2Q9b	**The enterprise in which (Name) holds his secondary activity/employment**Most important**(or that he/she directs) is a:** **1 = Public administration 5 = International organization** **2 = Public or parastatal enterprise 6 = Associative enterprise (cooperative, NGO, union, etc.)** **3 = Non-agricultural private enterprise 7 = Household (domestic staff)** **4 = Agricultural holding (plantation, fields, farm, breeding, fishing, …)** **If code 1, 2.5 and 7, go to S2Q12**	|__|	|__|	|__|	|__|	|__|
S2Q10	Does the enterprise in which (Name) holds his most important secondary employment have a taxpayer number **1=**Yes 2= No 8= Does not know	|__|	|__|	|__|	|__|	|__|
S2Q11	Does the enterprise in which (Name) holds his most important secondary job keep accounts? **1= Statistical and Tax Return or formal accounting 2= Non-detailed accounting 3= No (*no accounting)*** **6= Other(specify)_____**	|__|	|__|	|__|	|__|	|__|
S2Q12	*CHECK WHETHER OR NOT (NAME) HAS AN INFORMAL PRODUCTION UNIT (IPU) IN WHICH HE/SHE DOES HIS/HER MOST IMPORTANT SECONDARY JOB.*	|__|	|__|	|__|	|__|	|__|

	1= Yes (If ([S2Q9= 06 or 07] and ([S2Q10= 2 or 8)] and/or [S2Q11= 2 or 3 or 6]))(i.e. (Name) is an employer /boss or self-employed worker and does not have a taxpayer number and/or (Name) is an employer/boss or self-employed worker, has a taxpayer number but does not keep formal accounts) *2= No (if other combination of answers for S2Q8, S2Q9 and S2Q10)*					
S2Q13	**At what amount (IN CFA francs) can we estimate the monthly or annual income from all the jobs (main job and secondary jobs) of (Name) including benefits in cash and in kind?** **NB: Insist on having, if possible, the best estimate in the form of a value and not the interval.** **01=**Monthly evaluation of the amount given 02 = Annual evaluation of the amount given 98=Does not know/refusal	| |__|__|	|__|__|	|__|__|	|__|__|	|__|__|
	Monthly income bracket **10=less than 36,270 CFA francs** **11= [36,270, 50,000[** **12= [50,000, 100,000 [** **13= [100,000, 200,000 [** **14= [200,000, 400,000 [** **15 = [400,000, 800,000 [** **16 = 800,000 CFA francs or more**	Annual income bracket **20= Less than 200,000 CFA francs** **21= [200,000, 400,000 [** **22= [400,000, 800,000 [** **23= [800,000, 1,500,000 [** **24= [1,500,000, 3,000,000 [** **25= [3,000,000, 5,000,000 [** **26. 5,000,000 CFA francs or more**	|__|__|__|__|__|__|	|__|__|__|__|__|__|	|__|__|__|__|__|__|	|__|__|__|__|__|__|	|__|__|__|__|__|__|

SECTION 03:CHARACTERISTICS OF THE ACCOMMODATION

S3Q1. Housing type	S3Q2. Main wall material			S3Q3. Main housing roof material		
01=House/Hut/Tent/Hut **02=Isolated house** **03=Multi-unit house** **04=Modern villa** **05=Duplex** **06=Castle** **07=Apartment building** **08=Compound/Sare**	NATURAL MATERIAL **01=No wall** **02=Bamboo/cane/palms/trunk** **03=Earth** _____	BASIC MATERIAL **04= Bamboo with mud** **05=Stone with mud** **06=Adobe uncovered** **07= Plywood** **08= Cardboard** **09= Reclaimed wood**	DEVELOPED MATERIAL **10=Cement** **11=Stone with cement/lime** **12=Bricks** **13=Cement blocks** **14=Adobe covered** **15=Wooden plank/shingles** **16=Other (specify)**	NATURAL MATERIAL **01=No roof** **02=Stubble/palms/leaves** **03=Clods**	BASIC MATERIAL **04= Wooden planks** **05=Mat** **06=Flippers/bamboo** **07= Cardboard/tarpaulin** |__|__|	DEVELOPED MATERIAL **08=Sheet** **09=Wood** **10=Zinc/fiber cement** **11=Cement** **12=Shingles** **13=Other (specify)**

S3Q4. Main housing floor material			S3Q5.What is (in m^2) the surface area of your	S3Q6. Housing occupancy status
NATURAL MATERIAL **01=Dirt/sand** **02=Dung**	BASIC MATERIAL **03= Wooden planks** **04=Palms/bamboo**	DEVELOPED MATERIAL **05=Wooden floor or waxed wood** **06=Vinyl/asphalt strips** **07=Tile/marble** **08=Cement**	***(Write 950 if 950 m^2 or more)***	**1= Owner** **2= Co-owner** **3= Tenant** **4= Hosted (relative, friend, employer etc.)** |__|

|__|__|	09=Carpet 10=Other (specify) _____	|__|__|__|	

S3Q7. Total number of:	S3Q8.What is the main source of lighting in your household?	S3Q9. Total number of rooms in the dwelling/rooms for sleeping
A. Lounges: |___| B. Dining rooms: |___| C. Modern showers/bathrooms: |___| D. Traditional showers/bathrooms: |___| E. Modern kitchens: |___| F. Traditional cuisines: |___|	01= Kerosene lamp 02= AES-SONEL/ENEO individual meter 03= Collective meter (main user) AES-SONEL/ENEO 04= AES-SONEL/ENEO collective meter without sub-meter 05= AES-SONEL/ENEO collective meter with submeter 06= AES-SONEL/ENEO without meter (direct) 07= Generator/diesel/petrol/petroleum generator 08= Gas Lamp 09=Home solar system 10=Solar plant 11= Solar lamp/torch 12= Battery-powered lamp/torch 96= Other (specify)	**A- What is the total number of rooms in your home?** Total: |___|___| NB: Only the main rooms (bedrooms, living rooms, dining rooms, offices, etc.) are considered here for the Total number of rooms in the dwelling. Secondary rooms such as kitchens, bathrooms, anterooms, corridors, etc. are not considered parts. However, secondary rooms will only be considered if they are usually used for sleeping by household members **B- How many rooms do you usually use for sleeping?** Sleep |___|___|

S3Q10.What type of toilet do members of your household usually use?		S3Q11. What is your main source of drinking water?	
Flush with or without water tank 01= Connected to sewage system 02= Connected to septic tank 03= Connected to a latrine 04= Connected to something else 98= Connected to an unknown/unsure/Does not know location	*Pits/latrines* 06= Improved ventilated latrines 07= Pit latrine with slab 08= Pit latrine without slab/open pit 09= Composting toilets 10= Buckets 11= Hanging toilets/latrines 12= No toilet/bush/field 96= Other (specify) |___|___|	01=SNEC/CAMWATER/CDE individual tap 02= Collective tap SNEC/CAMWATER/CDE (main user) 03= SNEC/CAMWATER/CDE collective tap without submeter 04= SNEC/CAMWATER/CDE collective tap with sub-meter 05=SNEC/CAMWATER/CDE tap water retailer 06= Other individual tap 07=Public standpipe 08= Other collective tap 09=Borehole 10= Pump well 11= Protected wells|___|___|	12= Unprotected wells 13= Source Protected 14= Source not protected 15= Rainwater 16= Tank truck 17= Cart with small cistern/Barrel 18=Surface water (river, stream, dam, lake, pond, irrigation canal) 19= Bottled (mineral)water 20=Sachet water 96= Other (specify)_____

S3Q13: Does your household have access to an Internet connection at home?1=Yes, at all times2=Yes, at times 3=No|___|

S3Q14: What is the main fuel used in your household for cooking |___|		S3Q15: What type of stove did your household use most often over the past 12 months to prepare meals, prepare tea/coffee and boil water?|___|___|
1= Electricity 2= Liquefied Petroleum Gas (LPG) 3= Natural gas 4= Biogas 5= Kerosene 6= Charcoal 7= Wood 8= Straw/twigs/grass	9=Animal dung/waste 10= Agricultural residues 11= Sawdust/chip 12= Solar/Wind Power 12= No meal prepared in the household➔*next section* 96= Other (specify)	01= 3-stone fireplace/open fire 02= Other biomass stove 03=Mineral charcoal fireplace 04=Gas fireplace (LPG or natural) 05= Kerosene fireplace 06= Electric cooker 96= Other (specify)

SECTION 4 – ENERGY HABITS AND PRACTICES IN HOUSEHOLDS

4.1 FUELS USED

Line number	**Sources of energy** ***First ask question A1 for all the energy sources listed before coming back to ask, for each type of energy used in the household, questions from A1a to A10. For unused energy types, go directly to C8a***	**A1. In the last 12 months, i.e. since …, has your household used (**fuel name) **1**= Yes **2= No**	**A1a. How long have you been using the (**fuel name)? **1= Less than a year** **2= One year to less than three years** **3= Three years to less than five years** **4= Five years or more** **8= Does not know**	**A2. Where does your household supply (**fuel name)? **01= Market** **02= Shop** **03= Warehouse/depot** **04= Petrol station** **05= Itinerant or street vendor** **06= Collected/picked up** **07= Self produced** **96= Other (specify)**	**A3. How many persons in your household are responsible for supplying the household with (**Fuel name**) in the past 3 months?** *If 0 male and 0 female, go to A6* Number of men	# of women	**A4. Who was responsible for supplying your household with (**Name of fuel) last time? ***Name and code of the person.*** ***If several persons, take the one who usually does it***	**AT 5. How long did (Name) take last time to pick up (**Name of fuel) and return to your household? **98= Does not know** time unit 1= Minute 2= Hour	Number	**A6. How far from your household is the nearest supply point in (**fuel name) **95= 95 km or more** **98= Does not know** *NB. This point is not necessarily where the household gets its supplies* Unit of measurement 1= m 2= km	Number	**A7. How do you rate the accessibility to (**fuel name) **1= Very easy** **2= Easy** **3= Difficult** **4= Very difficult**	**AT 8. What safety measures does your household have in place to prevent harm/danger from using (**Fuel name**)?**	**A9. Has your household ever suffered damage from the use of (**Fuel name**)?** **1= Yes** **2= No** Otherwise,go to fuelfollowing	**A10. What type(s) of damage(s) has your household suffered as a result of the use of (**Fuel name**)?** **A= Fire** **B= Burns** **C= Death** **X= Other (to be specified)** ***Circle the corresponding codes***
1	**Domestic gas (LPG)**	__|	__|	__|__|	__|	__|	_____|__|__|	__|	__|__|	__|	__|__|	__|	__|__|__|__|	__|	**ABC X____**
2	**Petrol/Super**	__|	__|	__|__|	__|	__|	_____|__|__|	__|	__|__|	__|	__|__|	__|	__|__|__|__|	__|	**ABC X____**
3	**Diesel/Diesel**	__|	__|	__|__|	__|	__|	_____|__|__|	__|	__|__|	__|	__|__|	__|	__|__|__|__|	__|	**ABC X____**
4	**Biogas**	__|	__|	__|__|	__|	__|	_____|__|__|	__|	__|__|	__|	__|__|	__|	__|__|__|__|	__|	**ABC X____**
5	**Charcoal**	__|	__|	__|__|	__|	__|	_____|__|__|	__|	__|__|	__|	__|__|	__|	__|__|__|__|	__|	**ABC X____**
6	**Firewood**	__|	__|	__|__|	__|	__|	_____|__|__|	__|	__|__|	__|	__|__|	__|	__|__|__|__|	__|	**ABC X____**
7	**Kerosene**	__|	__|	__|__|	__|	__|	_____|__|__|	__|	__|__|	__|	__|__|	__|	__|__|__|__|	__|	**ABC X____**
8	**Candle**	__|	__|	__|__|	__|	__|	_____|__|__|	__|	__|__|	__|	__|__|	__|	__|__|__|__|	__|	**ABC X____**
9	**Battery**	__|	__|	__|__|	__|	__|	_____|__|__|	__|	__|__|	__|	__|__|	__|	__|__|__|__|	__|	**ABC X____**
11	**Agricultural residues**	__|	__|	__|__|	__|	__|	_____|__|__|	__|	__|__|	__|	__|__|	__|	__|__|__|__|	__|	**ABC X____**
12	**Animal waste**	__|	__|	__|__|	__|	__|	_____|__|__|	__|	__|__|	__|	__|__|	__|	__|__|__|__|	__|	**ABC X____**
13	**Wood waste(sawdust, shavings, etc.)**	__|	__|	__|__|	__|	__|	_____|__|__|	__|	__|__|	__|	__|__|	__|	__|__|__|__|	__|	**ABC X____**

14	**Other specify)**	|___|	|___|	|___|___|	|___|	|___|	_ _ _ _ _ _ _ _ |___|___|	|___|	|___|___|	|___|	|___|___|	|___|	|___|___|___|___|	|___|	**ABC X____**

4.2: CONSUMPTION OF DOMESTIC FUELS

Line number	**Sources of energy** ***For each fuel used in the household (A1=1), ask questions from C1 to C9 before moving on to the next fuel. For those that are not used (A1=2), ask question C8a directly***	**C1. What is the main purpose of (**Fuel name**) used in your household?** **01= Meal cooking** **02= Water/meal heating** **03= Lighting** **04= Fuel** **05= Space heating** **06= Power supply of electrical appliances** **07= Generation of electricity** **96= Other (specify)**	**C2. On what periodicity can you easily estimate the amount of (**Fuel name**) that you usually consume in your household?** **1= Day** **2= Week** **3= Month** **4= Quarter** **5= Semester** **6= Year**	**C3. What is the amount of (**Fuel name**) that you usually consume for this periodicity?**		**C4. How much do you estimate the value (in CFA francs) of this amount?**	**C4a. Give an estimate of the proportion (as a %) of the amount of (**Fuel name**) which is used for each of the following uses on the same periodicity** ***NB. The sum of the percentages declared for each energy source must give 100***							
				Unit of measurement **1= Kg** **2= Bag/net** **3= Heap/Bundle** **4= Litre** **5= Number/unit/piece** **6= Not concerned** **9=Other (specify)**	**Total amount** **998.0= Does not know/cannot assess**		Cooking meals **998= Does not know/cannot rate**	Water and meal heating **998= Does not know/cannot rate**	Lighting **998= Does not know/cannot rate**	Fuel **998= Does not know/cannot rate**	Space heating **998= Does not know/cannot rate**	Power supply electrical appliances **998= Does not know/cannot rate**	Electric production **998= Does not know/cannot rate**	Other use **998= Does not know/cannot rate**
1	**Domestic gas (LPG)**	|__|__|	|__|	|__|	|__|__|.|__|	|__|__|__|__|__|	|__|__|	|__|__|						|__|__|
2	**Petrol/Super**	|__|__|	|__|	|__|	|__|__|.|__|	|__|__|__|__|__|				|__|__|			|__|__|	|__|__|
3	**Diesel/Diesel**	|__|__|	|__|	|__|	|__|__|.|__|	|__|__|__|__|__|				|__|__|			|__|__|	|__|__|
4	**Biogas**	|__|__|	|__|	|__|	|__|__|.|__|	|__|__|__|__|__|	|__|__|	|__|__|	|__|__|					|__|__|
5	**Charcoal**	|__|__|	|__|	|__|	|__|__|.|__|	|__|__|__|__|__|	|__|__|	|__|__|	|__|__|		|__|__|			|__|__|
6	**Firewood**	|__|__|	|__|	|__|	|__|__|.|__|	|__|__|__|__|__|	|__|__|	|__|__|	|__|__|		|__|__|			|__|__|
7	**Kerosene**	|__|__|	|__|	|__|	|__|__|.|__|	|__|__|__|__|__|	|__|__|	|__|__|	|__|__|				|__|__|	|__|__|
8	**Candle**	|__|__|	|__|	|__|	|__|__|.|__|	|__|__|__|__|__|			|__|__|					|__|__|
9	**Battery**	|__|__|	|__|	|__|	|__|__|.|__|	|__|__|__|__|__|			|__|__|			|__|__|		|__|__|
11	**Agricultural residues**	|__|__|	|__|	|__|	|__|__|.|__|	|__|__|__|__|__|	|__|__|	|__|__|			|__|__|			|__|__|
12	**Animal waste**	|__|__|	|__|	|__|	|__|__|.|__|	|__|__|__|__|__|	|__|__|	|__|__|			|__|__|			|__|__|
13	**Wood waste (sawdust, shavings, etc.)**	|__|__|	|__|	|__|	|__|__|.|__|	|__|__|__|__|__|	|__|__|	|__|__|						|__|__|
14	**Other specify)**	|__|__|	|__|	|__|	|__|__|.|__|	|__|__|__|__|__|	|__|__|	|__|__|	|__|__|		|__|__|	|__|__|	|__|__|	|__|__|

Line number	Sources of energy	C6. What do you think is the main benefit of using (Fuel name)? *See codes*	C7. What do you think is the main disadvantage of using (Fuel name)? *See codes*	C7a. How often is (Fuel name) in your household? 1= Regular 2= Occasional 3= Rare *If 1, go to next fuel or C10 if last.* If 2 or 3 go to C8	C8a. Has your household ever had to use (Fuel name) in the past ? 1= Yes 2= No *Check that A1=2 before asking this question*	C8. What is the main reason for non-use or occasional/rare use of (fuel name)in your household? 01= Difficult to find/little or not available 02= Expensive/High cost 03= Not suitable 04= No device (equipment) 05= Not needed/not needed 06= Complicated/Does not know how to use it 07=Fear of the risk of fire 08= No reason 09= Not healthy 96= Other (specify)	C9. Do you plan to use (Fuel name) in the next 12 months in your household? 1= Yes 2= No 8= Does not know
1	Domestic gas(LPG)	__|__|	__|__|	__|__|	__|	__|__|	__|
2	Petrol/Super	__|__|	__|__|	__|__|	__|	__|__|	__|
3	Diesel/Diesel	__|__|	__|__|	__|__|	__|	__|__|	__|
4	Biogas	__|__|	__|__|	__|__|	__|	__|__|	__|
5	Charcoal	__|__|	__|__|	__|__|	__|	__|__|	__|
6	Firewood	__|__|	__|__|	__|__|	__|	__|__|	__|
7	Kerosene	__|__|	__|__|	__|__|	__|	__|__|	__|
8	Candle	__|__|	__|__|	__|__|	__|	__|__|	__|
9	Battery	__|__|	__|__|	__|__|	__|	__|__|	__|
11	Agricultural residues	__|__|	__|__|	__|__|	__|	__|__|	__|
12	Animal waste	__|__|	__|__|	__|__|	__|	__|__|	__|
13	Wood waste (sawdust, shavings, etc.)	__|__|	__|__|	__|__|	__|	__|__|	__|
14	Other specify)	__|__|	__|__|	__|__|	__|	__|__|	__|
C10	Has anyone in your household been sick with a cough at any time over the past 2 weeks? 1= Yes 2= No 8= Does not know						__|
C11	Has any member of your household had rapid shortness of breath or difficulty breathing at any time in the past 2 weeks? 1= Yes 2= No 8= Does not know, if No or Does not know, go to section 4.3						__|
C12	Was this rapid breathing or difficulty in breathing due to a pin (chest) problem or a stuffy or runny nose? 1= Bronchus only 2= Stuffy or runny nose only 3= Both 8= Does not know 9= Other (specify)						__|

Codes of A8	C6 Codes		Code of C7	
A= I have a fire extinguisher B= Systematically close the bottle after use C= Location safe from children D= Avoid any flame E= Switch off after use F= Move away from flammable objects/supports G= Ensure the reliability of accessories G=No other measure Z=Other (specify)	01= Economy 02= Easy to use 03= Less expensive 04= Easily accessible 05 Regularly available/little or no shortage (discontinuation) of stock	06= Does not pollute 07= Clean/less messy 08= Reassuring 09= None 10= Less tiring 96= Other (specify)	01=Not economical 02= Difficult to use 03= More expensive 04= Difficult to reach 05= Often/regularly unavailable/out of stock	06= Pollutes a lot/too much 07= More messy 08= Odor in meals 09= Dangerous/risk of fire 10= None 96= Other (specify)

4.3 ELECTRICAL AND RENEWABLE ENERGIES

Line number	ELECTRICITY SOURCES ***Now I would like to ask you about your source(s) of electricity*** ***Ask question S01 for each source first. Then ask S01a – S13 for each of the sources used by the household.*** .	S01. Has your household used electricity from (Name of source) over the past 12 months, ie since …? ***1=Yes exclusive*** ***2=Yes main*** ***3= Yes in back-up*** ***4=No*** *If No, go to S11*	**S01a. How long have you been using electricity from (**source name)? **1= Less than a year** **2= One year to less than three years** **3= Three years to less than five years** **4= Five years or more** **5= Used but not currently using** **8= Does not know** *If 5, go to S11*	**S01b. Who is the supplier of (***Source Name***) used in your household?** **01= ENEO/SONEL** **02= EAR/HUAWEI** **03=Independent producer** **04= Our household** **05= Council/town hall** **06= NGO/association/ International Organization/Development Committee** **07= Other business/enterprise** **96= Other (specify)** **98=Does not know**	**S01c. Does your household have a subscription with the provider of (***Source Name***)?** **1= Yes** **2= No**	**S02. What is the electricity of (***Source Name***) used in your household? List the top three (03) uses (if any) in order of importance.** **A=Lighting** **B=Television** **C= Wireless** **D= Ventilation** **E= Air conditioning** **F=Refrigeration** **G=Cooking** **H=Water pumping** **I=Ironing** **J=Phone recharge** **K=Power supply to other household appliances** **Z= Other use (to be specified)** **X= No other uses**			S03. On what basis do you assess your consumption of energy from (Name of source)? **1=Direct counter** **2=Submeter** **3=Flat rate** **4=Self-produced** **5= Don't pay** **6= Other (specify)** If 4 or 5, then go to S04	S3a. Who receives payment for your electricity consumption from (Name of source)? **01=Supplier** **02= Management Committee** **03= Town hall/council** **05= ENEO agent / ENEO subcontractor at home** **06= Lessor** **07= Neighbor** **10= Third party** **96= Other (specify)**	**S3b. By what means of payment do you usually pay for your electricity consumption from (Name of source)?** **1=Cash** **2= Telephone (OM, MOMO, EU mobile, etc.)** **3=Microfinance /bank** **4= Prepaid electricity card/credit** **6= Other (specify)**	S04. What are the quantities (in Kwh) of electricity from (Name of source) consumed in your household over the past 3 months? *99998=Does not know/cannot rate* (See invoice or alert message if possible)			S05. How much (in CFA francs) has your household spent over the last three months to have electricity from (Name of source) or what are the amounts of the last three monthly bills? *99998=Does not know/cannot rate* (See invoice or alert message if possible)		
						Code 1st use	**2nd use code**	**3rd use code**				Month 1	Month 2	Month 3	Month 1	Month 2	Month 3
1	**National electricity grid connected**	|___|		|___|	|___|	|___|	|___|	|___|	|___|	|___|___|	|___|						
2	**Thermal or gas power plant**	|___|		|___|	|___|	|___|	|___|	|___|	|___|	|___|___|	|___|						
3	**Generator**	|___|		|___|	|___|					|___|___|							
4	**Micro hydroelectric plant**	|___|		|___|	|___|	|___|	|___|	|___|	|___|	|___|___|	|___|						
5	**Solar power plant**	|___|		|___|	|___|	|___|	|___|	|___|	|___|	|___|___|	|___|						
6	**Home solar system**	|___|		|___|	|___|	|___|	|___|	|___|	|___|	|___|___|	|___|						
7	**Small plate/solar lamp**	|___|		|___|	|___|	|___|	|___|	|___|	|___|	|___|___|	|___|						
8	**Solar lantern**	|___|		|___|	|___|	|___|	|___|	|___|	|___|	|___|___|	|___|						
9	**Wind power**	|___|		|___|	|___|	|___|	|___|	|___|	|___|	|___|___|	|___|						
10	**Other type of energy (biomass, biogas, rechargeable battery, etc.)**	|___|		|___|	|___|	|___|	|___|	|___|	|___|	|___|___|	|___|						

Line number	**S05a. Does the electricity from (*Source Name*) allows you to normally power all your devices including light bulbs? 1= Yes 2= No**	**S05b. In total, how many light bulbs do you use in your household with electricity from (*Source Name*)?** ***95= 95 or more 98= Does not know***	**S05c. For households using solar energy** (S01_5=1 or S01_6=1 or S01_8=1)): **How many bulbs can you use with your solar device? 1= Zero 2=Only one 3=Two or more**	**S06. How often was the power outage from (*Source Name*) in the past 3 months?** **1**= No break 2= Rare 3= Often 4= Very often	S06a. In the past 7 days, how many unplanned power outages/cuts have occurred for (Name of source)? ***20=20 or more 98= Does not know*** *If 0, go to S09b*	**S07**. How many days has your household had an interruption in electricity from (Name of source) over the past 7 days?	**S08.**On average, how long per day have these interruptions lasted over the past 7 days?		S09. What do you think was the main cause of this interruption of electricity from (Name of source) in your household? *SEE CODES*	S09a. **On average, how many hours or minutes does electricity from**(source name)**is available every day?**		S09aa. **On average, how many hours or minutes does electricity from**(source name)**is available each evening from 6 p.m. to 10 p.m.?**		S09b. **During the last 12 months, that is to say since…, has at least one appliance in your household suffered damage due to the rise or fall of electrical voltage? 1=Yes 2=No**	S09c.During the past 12 months, i.e. since …, has any member of your household suffered any of the following damages while using electricity from (Name of source) **A= Death B= Injury C= Electrocution D=Asphyxia X=Other Z=None/no other**	S10. What main safety measure do you take in your household to avoid or limit incidents related to the use of electrical energy from (Name of source)? *SEE CODES*	**S10a. How much did it cost (in CFA francs) to connect to the network or acquire production equipment for (*Source Name*)?** *999995= 999995 or more* *999998= Does not know* *Go to next source, and if last source, go to S15*	S11. Has your household ever been connected to electrical power from (Name of Source) in the past? **1= Yes 2= No**	S12. For what main reason do you not/no longer use electrical energy from (Name of source) in your household? *SEE CODES*	S13. Do you plan to use electrical energy from (Name of source) in the next 12 months? **1= Yes 2= No**
							Unit 1=h 2=min 8 = Does not know	**Time If over 2 hours, take the time in hours**		**Unit 1=h 2=min**	**Time (Max 24 hrs or Max 1440 mins) *9998 for Does not know***	**Unit 1=hours 2=minutes**	**Time (Max 4 hrs or Max 240 mins) *998 for Does not know***							
1	|___|	|___|___|		|___|	|___|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|___|___|	|___|	|___|___|___|	|___|	|___|___|___|	|___|	|___|___|___|___|	|___|	|___|___|	|___|
2	|___|	|___|___|		|___|	|___|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|___|___|	|___|	|___|___|___|	|___|	|___|___|___|	|___|	|___|___|___|___|	|___|	|___|___|	|___|
3	|___|	|___|___|													|___|___|___|	|___|	|___|___|___|___|	|___|	|___|___|	|___|
4	|___|	|___|___|		|___|	|___|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|___|___|	|___|	|___|___|___|	|___|	|___|___|___|	|___|	|___|___|___|___|	|___|	|___|___|	|___|
5	|___|	|___|___|	|___|	|___|	|___|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|___|___|	|___|	|___|___|___|	|___|	|___|___|___|___|	|___|	|___|___|	|___|
6	|___|	|___|___|	|___|												|___|___|___|	|___|	|___|___|___|___|	|___|	|___|___|	|___|
7															|___|___|___|	|___|	|___|___|___|___|	|___|	|___|___|	|___|
8															|___|___|___|	|___|	|___|___|___|___|	|___|	|___|___|	|___|
9	|___|	|___|___|													|___|___|___|	|___|	|___|___|___|___|	|___|	|___|___|	|___|
10	|___|	|___|___|													|___|___|___|	|___|	|___|___|___|___|	|___|	|___|___|	|___|
S15	*CHECKANSWERS TO QUESTIONSS01_1, S01_2 AND S01_5.* *IS S01_1= 1 OR S01_2=1 OR S01_5= 1 (i.e. the household uses electrical energy from the connected national grid or from a thermal/gas power plant or from a solar power plant)* *1=Yes ➔Continue to question S16* *2= No ➔Go to S21*																			|___|

S16	What are the most serious problems you have encountered with your connection to the electricity network over the past 12 months? ***Record up to 3 responses.***	
	01= Shortage of supply/not enough hours of electricity 02= High/low voltage problems or voltage fluctuations 03= Unpredictable interruptions 04= Amount of unpredictable invoices, fanciful invoicing 05= High cost of electricity 06= You don't trust the supplier 07= You cannot power large electrical appliances 08= Maintenance/service issues 09= No delivery of consumption invoices 10= Racketeering of users/monetization of services 96= Other (specify)_____ **97= No problem**	A. |___|___| **B.** |___|___| **C.** |___|___|
S17	**What kind of lamps do you mainly use in your household?** **1= Incandescent bulbs/ High efficiency halogen bulb** **2= Fluorescent tube/Neon tube 3= Compact fluorescent bulb/LED bulb 9= Other (specify)**	|___|
S18	**To reduce your energy consumption, do you plan to replace your current lamps with more economical lamps?** **1= Yes 2= No 3= Not concerned/our lamps are already economical**	|___|
S19	**Apart from refrigerators and freezers, do you always unplug all other appliances when you are not using them? 1= Yes 2= No 3= Not concerned**	|___|
S20	**Do you turn off lamps/light bulbs in unoccupied spaces of your home when lighting is not essential at this time?** **1 = Never 2= Rarely 3= Often 4= Always 5= Not concerned**	|___|
S21	*CHECK the answers to questions: S01-1, S01-2, |S01c-1 ETS01c-2* *IS IT THAT(S01-1= 4 or S01-2= 4 or S01c-1=2 or S01c-2=2) (i.e. the household does not use electricity from the national grid or from a thermal/gas plant or does he use but does not have a subscription)?***1= Yes 2= No***If Yes (code 1), then ask S22, if No (code 2), go to section 5*	|___|
S22	**Are you able to pay 70,000 CFA francs to have a connection to the national electricity distribution network (ENEO)? 1= Yes 2= No If No, go to S27**	|___|
S23	**Would you be ready to pay this amount all at once for this connection? 1= Yes 2= No If Yes, go to section 5**	|___|
S24	**Would you be ready to pay this amount if given 6 months to do so? 1= Yes 2= No If Yes, go to section 5**	|___|
S25	**Would you be ready to pay this amount if given 12 months to do so?1= Yes 2= No If Yes, go to section 5**	|___|
S26	**Would you be ready to pay this amount if given 24 months to do so?1= Yes 2= No If Yes, go to section 5**	|___|
S27	**Why do you think you are not able to pay 70,000 CFA francs to have a connection to the national electricity distribution network?***SEE CODES*	|___|

S10 Codes	*Codes of S09*	*S12 Codes*	S27 Codes
1= I have the fire extinguisher **2= Unplug devices when not in use** **3=Has circuit breaker(s)** **4= No measurement** **9=Other (specify)**	**1= Outdated facilities** **2= Technical failure/incident on the network** **3=Technical breakdown/incident in the household** **4= Invoice not paid** **5= Rationing/shedding** **8= Does not know** **9= Other (specify) _____**	**01= Lack of resources** **02= Not available in locality/network very far from home** **03= High installation/connection cost** **04= Difficult to maintain** **05= Overcharge** **06= Theft/vandalism on equipment** **07= Faulty equipment** **08= Very high monthly consumption cost** **09= Don't need it/satisfied by current solution or source** **10= Too complicated administrative procedures** **11= Too much hassle to get a subscription** **12= Has submitted the connection request and is waiting to be served** **13= Does not know this source of electricity** **96= Other (specify)**	**1= I do not have the means to pay this amount** **2= I already use a source of electricity** **3= I don't need electricity**

SECTION 05: HOUSEHOLD ENERGY EQUIPMENT

Order number	E1. Equipment *First ask question E2 for all the equipment before coming back to ask, for each equipment used in the household, questions from E3 to E9*	E2. Does your household have (Name of equipment)? 1=Yes 2=No (if No go to E9)	E3. What is the number of (Name of equipment) used in your household?	E4. On average, how many days per week do you use (Name of equipment) in your household?	E5. How long on average do you use (Name of equipment) per day of use?		E6. What type of energy is used primarily in your household to power (Equipment name)? SEE CODE	E.7 In what state did you get the last piece of (Name of equipment) used in your household? 1= Nine 2= Used 8= Does not know	E8. How long ago did you get the (last) piece of (Equipment name)		E9. Do you plan to get one/another (Name equipment) in the next 12 months? 1=Yes 2=No 8=Does not know
					Time unit 1= Minute 2= Hour	Number			time unit 1= Day 2= Month 3= Year	Number 98= Does not know	
1	Car	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
2	Motorcycle / moped	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
3	Radio station	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
4	TV	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
5	Satellite dish/decoder	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
6	CD/DVD/VCD player	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
7	Music Channel/Piano	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
8	Cook	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
9	Kerosene stove	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
10	Gas stove/plate	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
11	Microwave/Oven	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
12	Hotplate	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
13	Improved hearth	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
14	Traditional hearth (three	|___|	|___|	|___|	|___|	|___|___|	|___|___|				
15	Water heater/kettle	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
16	Coffee maker	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
17	Gas bottle	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
18	Fan	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|

19	**Air conditioner**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
20	**Fridge/Refrigerator**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
21	**Freezer**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
22	**Mobile phone/tablet**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
23	**Landline telephone**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
24	**Desktop computer**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
25	**Laptop**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
26	**Internet dongle/modem**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
27	**Printer/Copier**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
28	**Fax / Fax**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
29	**Washing machine / dryer**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
30	**Electric sports device**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
31	**Grinder/mixer**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
32	**Genset/generator**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
33	**Iron**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
34	**Water suppressor/pump**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
35	**Torch**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
36	**Lamp**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
37	**Sewing machine**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
38	**Power bank**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
39	**hair dryer**	|___|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
40	**Incandescent bulb**	|___|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
41	**Fluorescent tube / Neon**	|___|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
42	**Compact fluorescent bulbs**	|___|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
43	**LED bulb**	|___|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|
44	**Other energy equipment (to be specified)**	|___|	|___|	|___|	|___|	|___|___|	|___|___|	|___|	|___|	|___|___|	|___|

Code E6	
01= Electricity/Eneo	**13= Charcoal**
02= Generator electricity	**14= Firewood**
03= Electricity from a thermal or gas plant	**15= Kerosene**
04= Micro hydroelectric plant	**16= Candle**
05= Electricity from a solar plant	**17= Batteries**
06= Electricity of a plate	**18= Car Battery**
07= Home Solar System Electricity	**19= Agricultural residues**
08= Wind energy	**20= Animal waste**
09= Domestic gas (LPG)	**21= Wood waste**
10= Petrol/Super	**22= Uses no energy**

11= Diesel **12= Recycled coal**	**96= Other (specify)**

SECTION 06: OTHER EQUIPMENT AND ELEMENTS OF HOUSEHOLD PROPERTY

For each of the following property, give the number owned by the household. Enter 0 if the household does not have one.

S6Q1. Tractor/Agricultural machine	**S6Q2. Rickshaw/cart/wheelbarrow**	**S6Q3. Ox(es), donkey(s), horse(s) for plowing**	**S6Q4. Dwelling house unoccupied**
Number?|___|___|	**Number?**|___|___|	**Number?**|___|___|	**Number?**|___|
S6Q4a Bicycle	**S6Q4b:Cart with animal**	**S6Q4c:Canoe**	
Number? |___|	**Number?** |___|	**Number?** |___|	
S6Q5. Cultivated land (agricultural)	**S6Q6. Non-agricultural land**	**S6Q7. House for rent**	**S6Q8. Operated pond**
a. Number?|___|___| **b.** Area|__|/|__|__|__|__| Area code 1= m2, if < 1 ha **2= ha** 9998 for Does not know/cannot estimate **NB: 1**ha=10,000 m²	**a.** Number?|___|___| **b.** Area|__|/|__|__|__|__| Area code 1= m2, if < 1 ha 2= ha 9998 for Does Not Know/ cannot estimate NB: 1 ha = 10,000 m²	**Number?**|___|___|	**a.** Number?|___| **b.** Area|__|/|__|__|__|__| Area code 1= m2, if < 1 ha 2= ha 9998 for Does Not Know/ cannot estimate NB: 1 ha = 10,000 m²
Possession of livestock, herds or farm animals Does your household own? Give the number for each type.			
S6Q10. Cattle (Beggs/cows)	**S6Q11. Goats (Goats)**	**S6Q12. Sheep (Sheep)**	**S6Q13. Pigs (Pigs)**
Number? |___|___|___|	**Number?** |___|___|___|	**Number?** |___|___|___|	**Number?** |___|___|___|
S6Q14. Equidae(Horses/Donkeys/Mules)	**S6Q15. Rabbits**	**S6Q16. Guinea pigs**	**S6Q17. Other livestock (specify)** _____
Number?|___|___|___|	**Number?** |___|___|___|	**Number?** |___|___|___|	**Number?**|___|___|___|
S6Q18. Chickens	**S6Q19. Other poultry**		
Number?|___|___|___|	**Number?**|___|___|___|		

SECTION 07: HOUSEHOLD CONSUMPTION AND EXPENDITURE

For this section, the respondent must be the head of household or their spouse

Coded	Article	Value of consumption (CFA francs) over the past 7 days 998 = Does not know		
		A. Bought	B. Product	C. Received as a gift/donation
Consumption (include products purchased, produced and received for free)				
P.1	Cereals and cereal products (eg: rice, maize, wheat, flour, millet) and starchy staples (eg: cassava, plantain, yam, taro)	|__|__|__|__|__|	|__|__|__|__|__|	|__|__|__|__|__|
P.2	Legumes and nuts (for example: beans, peanuts, palm nuts, soybeans)	|__|__|__|__|__|	|__|__|__|__|__|	|__|__|__|__|__|
P.3	Milk and dairy products (eg: powdered, canned, fresh)	|__|__|__|__|__|	|__|__|__|__|__|	|__|__|__|__|__|
P.4	Edible oil (eg: palm oil, peanut oil, coconut oil)	|__|__|__|__|__|	|__|__|__|__|__|	|__|__|__|__|__|
P.5	Vegetables (for example: okra, tomato, onion, carrot, cabbage, eggplant) and fruits (Bananas, coconut, pineapple, mango, orange and papaw)	|__|__|__|__|__|	|__|__|__|__|__|	|__|__|__|__|__|
P.6	Eggs and Poultry	|__|__|__|__|__|	|__|__|__|__|__|	|__|__|__|__|__|
P.7	Meat and meat products	|__|__|__|__|__|	|__|__|__|__|__|	|__|__|__|__|__|
P.8	Fish (fresh/smoked)	|__|__|__|__|__|	|__|__|__|__|__|	|__|__|__|__|__|
P.9	Sugar	|__|__|__|__|__|	|__|__|__|__|__|	|__|__|__|__|__|
P.10	Other food products (e, g, pepper, salt, spices, butter, jam, sardines, chocolate, bread, peanut paste, processed foods, snail, locust, termites, etc.) ***Include all processed food products not prepared by the household from raw ingredients***	|__|__|__|__|__|	|__|__|__|__|__|	|__|__|__|__|__|
P.11	Meals/food purchased outside the home ***Include all meals purchased from outside that are not prepared by the household***	|__|__|__|__|__|	|__|__|__|__|__|	|__|__|__|__|__|
P.12	Beverages (for example: malt drinks, minerals, coffee / Lipton / Milo)	|__|__|__|__|__|	|__|__|__|__|__|	|__|__|__|__|__|
P.13	Alcohol, tobacco and cigarettes	|__|__|__|__|__|	|__|__|__|__|__|	|__|__|__|__|__|

Monthly expenditure on goods and services		
Coded	**Article**	**Value of expenses (**CFA francs**) in the past 30 days. - 998 = Does not know**
P.14	Medical/pharmaceutical expenses (eg: tablets/syrups, insecticide, condoms, pharmacy, traditional/herbal medicine)	|___|___|___|___|___|___|___|
P.15	Soaps, disinfectants and cleaning products; cosmetics and toiletries	|___|___|___|___|___|___|___|
P.16	Water supply for drinking and other uses (tanker, pipeline, meters, boreholes, wells, purchased water)	|___|___|___|___|___|___|___|
P.17	Electricity and other fuels (kerosene, petrol, LPG, wood etc.)	|___|___|___|___|___|___|___|
P.18	Mobile phone top-up or bills	|___|___|___|___|___|___|___|
P.19	Internet, landline, satellite, cable and other household communications	|___|___|___|___|___|___|___|
P.20	House renting	|___|___|___|___|___|___|___|
P.21	Transport costs (fuel for personal vehicles, cost of public transport, buses, taxis)	|___|___|___|___|___|___|___|

P.22	Other recurring monthly expenses (domestic workers' wages, entertainment, gambling, etc.)	|___|___|___|___|___|___|___|
Expenditure on Goods and Services over the past 12 months		
	Article	**Value of expenses (**CFA francs**) in the past 12 months** - 998 = Does not know
P.23	Tuition fees and other study costs ***Include uniform, dues, books, tutor, school supplies, transportation, food, etc.***	|___|___|___|___|___|___|___|
P.24	Clothing, shoes and accessories	|___|___|___|___|___|___|___|
P.25	Celebrations (for example, funerals and expenses, weddings, parties, baptisms, engagements) ***Include only costs for organizing the celebration or relating to donations/gifts for attending celebrations.***	|___|___|___|___|___|___|___|
P.26	Gifts and donations (for example: a donation to a religious institution made by the household) ***Only include gifts and donations that are not already included on P.25***	|___|___|___|___|___|___|___|
P.27	Medical visits (hospital/doctor) and additional examinations (for example: consultations at the private hospital, public hospital, traditional healer) ***Do not include costs paid by insurance***	|___|___|___|___|___|___|___|
P.28	Furniture (for example: mattresses, living room furniture, home furnishings, floor mats, carpeting)	|___|___|___|___|___|___|___|
P.29	Repair, maintenance and construction (for example: cement, roofing, painting, carpentry, repair work, sewage disposal)	|___|___|___|___|___|___|___|
P.30	Kitchen utensils and equipment (for example: cups, plates, cutlery, pots, buckets)	|___|___|___|___|___|___|___|
P.31	Electronic appliances: TV, radio-cassette, VCR / DVD, Cassettes, CDs, records, satellite TV, MP3 player, video player, USB memory, other digital accessories, computer or laptop purchase	|___|___|___|___|___|___|___|
P.32	Appliances and tools (for example: electric iron, electric fans, refrigerator, lanterns, brooms)	|___|___|___|___|___|___|___|
P.33	Vehicles and motorcycles and bicycles (purchase or repair of own car / motorcycle / car battery)	|___|___|___|___|___|___|___|
P.34	Money transfer to family members and relatives	|___|___|___|___|___|___|___|
P.35	Losses due to theft, burglary, accidents, natural disasters, etc.	|___|___|___|___|___|___|___|
P.36	Other major expenses not yet covered (specify)	|___|___|___|___|___|___|___|

REPUBLIC OF CAMEROON
Peace – Work – Fatherland

REPUBLIQUE DU CAMEROUN
Peace – Work – Fatherland

NATIONAL SURVEY ON ACCESS TO ENERGY (ENACE 1), WATER AND SANITATION COMPONENT

HOUSEHOLD QUESTIONNAIRE

SECTION 00: GENERAL INFORMATION
A – IDENTIFICATION OF THE HOUSEHOLD

S0Q1 **SURVEY REGION**: _____ |__|__|
S0Q2 **EA SEQUENTIAL NUMBER**: _____|__|__|__|
S0Q3 **NUMBER OF THE STRUCTURE IN THE EA**: _____ |__|__|__|
S0Q4 **SEQUENTIAL NUMBER OF SAMPLE HOUSEHOLD IN THE EA**: _____ |__|__|__|

MINISTRY OF WATER RESOURCES AND ENERGY

NATIONAL INSTITUTE OF STATISTICS

October 2020

SECTION 01: ACCESS TO WATER

No.	AE1. Water supply source	AE2. Do you use water from (Name of source) in your household? **1= Yes, exclusive** **2= Yes, main** **3= Yes, back-up** **4= No** ***First ask this question for each of the water sources listed in AE1 before asking for each of the sources from which the household uses the water, the questions of AE3. at AE20.***	AE3. Who is the supplier or who built the (Name of source) **01= SNEC/CAMWATER/CDE** **02= Our household** **03= Council** **04=Member of the National Assembly/Senator** **05= Another government entity (Ministry, PNDP, FEICOM, etc.)** **06= An NGO/association/international organization/development committee** **07= A enterprise that produces water for sale** **08= Other enterprise** **09= A neighbour/relative/an elite** **10= No one/it's natural** **96= Other (specify)** **98=Does not know**	AE3a. How long has your household been using water from (Name of source) **1= Less than a year** **2= One year to less than three years** **3= Three years to less than five years** **4= Five years or more** **8= Does not know**	AE4a. During the last 12 months (ie since…), for how many months did you use water from (Name of source) in your household?	AE5. Over what frequency can you easily estimate the amount of water from (Name of source) that is used in your household? **1= Day** **2= Week** **2= Month**	AE6. How much water from (Name of source) is used in your household during this period? ***Ask to see the bill for those who subscribe to the public distribution network (CAMWATER/CDE)*** *Reminder* *1m3=1000 litres*		AE6a. How is water obtained from (Name of source)? **1= Bought/paid** **2= Collected or received for free** **3= Self-produced** **6 = Other (specify)** If AE6a= 2 or 3 Go to AE7.	AE6b. How much do you spend (in CFA francs) to buy/pay for this amount of water from (Name of source)?
							Unit **1= m3** **2=litre**	**Quantity**		
1	**Public water distribution network (SNEC/CAMWATER/CDE/SCAN WATER or Council)**	|__|	|__|__|	|__|	|__|__|	|__|	|__|	|__|__|__|	|__|	|__|__|__|__|__|
2	**Borehole**	|__|	|__|__|	|__|	|__|__|	|__|	|__|	|__|__|__|	|__|	|__|__|__|__|__|
3	**Pump well**	|__|	|__|__|	|__|	|__|__|	|__|	|__|	|__|__|__|	|__|	|__|__|__|__|__|
4	**Protected well**	|__|	|__|__|	|__|	|__|__|	|__|	|__|	|__|__|__|	|__|	|__|__|__|__|__|
5	**Unprotected well**	|__|	|__|__|	|__|	|__|__|	|__|	|__|	|__|__|__|	|__|	|__|__|__|__|__|
6	**Protected source**	|__|	|__|__|	|__|	|__|__|	|__|	|__|	|__|__|__|	|__|	|__|__|__|__|__|
7	**Unprotected source**	|__|	|__|__|	|__|	|__|__|	|__|	|__|	|__|__|__|	|__|	|__|__|__|__|__|
8	**Rainwater**	|__|	|__|__|	|__|	|__|__|	|__|	|__|	|__|__|__|	|__|	|__|__|__|__|__|
9	**Surface water (river, stream, dam, lake, pond, irrigation channel)**	|__|	|__|__|	|__|	|__|__|	|__|	|__|	|__|__|__|	|__|	|__|__|__|__|__|
10	**Bottled(mineral) water**	|__|	|__|__|	|__|	|__|__|	|__|	|__|	|__|__|__|	|__|	|__|__|__|__|__|
11	**Sachet water**	|__|	|__|__|	|__|	|__|__|	|__|	|__|	|__|__|__|	|__|	|__|__|__|__|__|
12	**Tanker/cart**	|__|	|__|__|	|__|	|__|__|	|__|	|__|	|__|__|__|	|__|	|__|__|__|__|__|
96	**Other specify)**	|__|	|__|__|	|__|	|__|__|	|__|	|__|	|__|__|__|	|__|	|__|__|__|__|__|

No.	AE7. For each use below, say over which period you can easily estimate the amount of water from (Name of source) used in your household, the number of times for each unit of time and the average amount (in litres) of water used each time for this purpose. ***Put 0 if the water from this source is not used for this purpose.***																	
	A. **Beverage**			**B. Cooking**			**C. Laundry/cleaning Dishes**			**D. Evacuation of excreta (toilet, etc.)**			**E. Personal hygiene (Bath, washing hands or feet, etc.)**			**F. Other water use**		
	time unit 1= Day 2= Week 3= Month 8= Does not know	**Number of times per unit of time**	**Amount of water each time (in litres)**	**time unit 1= Day 2= Week 3= Month 8= Does not know**	**Number of times per unit of time**	**Amount of water each time (in litres)**	**time unit 1= Day 2= Week 3= Month 8= Does not know**	**Number of times per unit of time**	**Amount of water each time (in litres)**	**time unit 1= Day 2= Week 3= Month 8= Does not know**	**Number of times per unit of time**	**Amount of water each time (in litres)**	**time unit 1= Day 2= Week 3= Month 8= Does not know**	**Number of times per unit of time**	**Amount of water each time (in litres)**	**time unit 1= Day 2= Week 3= Month 8= Does not know**	**Number of times per unit of time**	**Amount of water each time (in litres)**
1	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|
2	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|
3	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|
4	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|
5	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|
6	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|
7	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|
8	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|
9	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|
10	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|											__|	__|__|__|	__|__|__|__|.__|
11	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|											__|	__|__|__|	__|__|__|__|.__|
12	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|
96	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|	__|	__|__|__|	__|__|__|__|.__|

No.	EA10a.**Are there toilets/WC/septic tanks/catch basins located upstream of (Name of source)?** **1= Yes** **2= No** 8=**Does not know**	EA10b.**How far is the(source name) situated compared to the toilets/toilet/septic tanks/nearest cesspools?** **1=Less than 15m** **2=15m and more** **8=Does not know**	EA11.**Where is the water supply point from (Name of source) located in relation to your accommodation?** **1= In the dwelling** **2= In the yard/garden** **3= Elsewhere** ***If 1 or 2, go to AE14***	EA12.**How far (in meters) is the (Name of the source or its place of supply) located from your accommodation?** **99998= Does not know**	EA13**. Considering the means of transport most used by the household, how long does it take to go to the place where water is supplied from (Name of source) to get water and come back?** 1= Minute 2= Hour 8= Does not know	Number	EA14.**Did your household pay for a subscription to have access to (Name of source)?** **1= Yes** **2= No** **8=Does not know** *If 2 or 8, go to AE16*	EA15.**How much did your household pay in total as**subscription fees to access (Name of source)? ***Amount in CFA francs***	EA16.**Did your household spend to build/connect (Name of source)?** **1= Yes** **2= No** **8=Does not know** *If 2 or 8, go to AE19*	EA17.**How much did your household spend to build/connect (Name of source)?** ***Amount in CFA francs*** ***Put 9999998 for Does Not Know***	EA19.**Before drinking water from (Name of source), does your household treat it first?** **1= Yes** **2= No** **3= Does not drink water from this source** *If 2 or 3, go to next source*	EA20. Which technique is mainly used in your household to treat water from (Name of source)? **01= Filter through cloth/cotton** **02= Use a water filter (ceramic, sand, composite, etc.)** **03= Bleach/add chlorine** **04= Boil** **05= Leave to disinfect in the sun** **06= Leave to settle** **96= Other (specify)**
1			|___|	|_____|	|__|	|__|__|	|__|	|_____|	|__|	|_____|	|__|	|__|
2	|___|	|___|	|___|	|_____|	|__|	|__|__|	|__|	|_____|	|__|	|_____|	|__|	|__|
3	|___|	|___|	|___|	|_____|	|__|	|__|__|	|__|	|_____|	|__|	|_____|	|__|	|__|
4	|___|	|___|	|___|	|_____|	|__|	|__|__|	|__|	|_____|	|__|	|_____|	|__|	|__|
5	|___|	|___|	|___|	|_____|	|__|	|__|__|	|__|	|_____|	|__|	|_____|	|__|	|__|
6	|___|	|___|	|___|	|_____|	|__|	|__|__|	|__|	|_____|	|__|	|_____|	|__|	|__|
7	|___|	|___|	|___|	|_____|	|__|	|__|__|	|__|	|_____|	|__|	|_____|	|__|	|__|
8				|_____|	|__|	|__|__|					|__|	|__|
9	|___|	|___|	|___|	|_____|	|__|	|__|__|			|__|	|_____|	|__|	|__|
10				|_____|	|__|	|__|__|					|__|	|__|
11				|_____|	|__|	|__|__|					|__|	|__|
12				|_____|	|__|	|__|__|	|__|	|_____|			|__|	|__|
96	|___|	|___|	|___|	|_____|	|__|	|__|__|	|__|	|_____|	|__|	|_____|	|__|	|__|

AE 21.	**During the last 30 days, that is to say since …, have there been times when your household has been without the possibility of obtaining supplies from your main source of drinking water?**in sufficient quantity**when did you need it? 1= Yes 2= No**if 2, go to AE32	|__|
AE 22.	**During the last 30 days, that is to say since …, how many days did your household go without being able to get enough drinking water from your main source when you have it? needed?**	|__|
AE23.	**During the last 30 days, that is to say since …, how many hours per day on average did your household go without being able to get enough drinking water from your main source? enough when you needed it?**	|__|__|
AE 23a.	**In the past 30 days, that is since…, were there any times when your household stayed**without having any possibility**to get your main source of drinking water when you need it? 1= Yes 2= No**if 2, go to AE24	
AE23b.	**In the last 30 days, i.e. since…, how many days did your household stay**without having any possibility**to get your main source of drinking water when you need it?**	|__|__|
AE23c.	**Over the past 30 days, that is since …, how many hours per day on average did your household stay**without having any possibility**to get your main source of drinking water when you need it?**	|__|__|
AE24.	**For what main reason did your household not have the possibility of getting enough supplies from your main source of drinking water when you needed it?** 01= Source not functional (failure) 02= Load shedding/General outage in the quarter or locality 03= Unsuitable distribution schedule 04= Waiting time at the source too long/crowded 05= Water too expensive 06= Source not accessible (distance) 07= Water unsuitable for drinking 08= Source has dried up 96= Other (specify) **98= Does not know**	|__|__|
AE32.	Is your household connected or connected to the public water distribution network (SNEC/CAMWATER/CDE/SCANWATER) through a direct meter? 1= Yes 2= Process running 3= No ***If2, go to the next section. If 3, go to AE32b***	|__|
AE32a	What are the most serious problems you have encountered with your connection to the public water supply network over the past 12 months? RECORD UP TO 3 ANSWERS. 01= Shortage of supply 03= Unpredictable interruptions 04= Amount of unpredictable invoices, fanciful invoicing 05= High cost of water 06= Don't trust the provider **WHATEVER THE ANSWER(S), RECORD THEM AND GO TO THE NEXT SECTION** 08= Maintenance/service issues 09= No delivery of consumption invoices 10= Racketeering of users/monetization of services 96= Other (specify)_____ 97= No (other) problem	A.|__|__| **B.**|__|__| **C.**|__|__|
AE32b.	For what main reason is your household not connected or connected to the public water distribution network (SNEC/CAMWATER/CDE/SCANWATER or Council) through a direct meter? 1= For lack of means 2= Neighborhood/locality not served by the network➔***go to AE34*** 3= Household connected to neighbour's connection 4= don't need/not necessary 5= Already using another source of water 6= Other (specify) _____	|__|
AE33.	**Is your quarter/locality served by the public water distribution network (SNEC/CAMWATER/CDE/SCANWATER or Council)? 1= Yes 2= No 8= Does not know If 2 or 8, go to AE33a.**	|__|
AE33a.	**How far (in meters) from your home is the point of connection to the public water distribution network (SNEC/CAMWATER/CDE/SCANWATER) closest? 9998=Does not know 2000 = 2000m (2 km) or more** *Reminder 1Km=1000 meters*	|_|_|_|_|
AE34.	Would you like to acquire a connection to thenetworkpublic water supply*(*SNEC/CAMWATER/CDE/SCANWATER)for an amount of 95,000 CFA francs?**1= Yes 2= No** **If No, go to AE35**	|__|
AE34a.	Would you be ready to pay this amount immediately in one go for this connection? 1= Yes 2= No *If yes,***go to AE37**	|__|
AE34b.	Would you be ready to pay this amount if you were given 6 months to do so? 1= Yes 2= No If Yes, go to AE37	|__|
AE34c.	Would you be ready to pay that amount if given 12 months to do so? 1= Yes 2= No If Yes, go to AE37	|__|
AE34d.	Would you be ready to pay that amount if given 24 months to do so? 1= Yes 2= No If Yes, go to AE37	|__|
AE35.	**For what main reason would you not want to acquire a connection to the public water distribution network?** **1= Due to lack of financial means/very high amount** **2= Because of red tape➔go to AE37** **3= Due to untimely power outages/cuts➔go to AE37** **4= Not interested➔go to AE37** **6= Other (specify)➔go to AE37**	|__|
AE36.	**How much money (in CFA francs) is your household able to spend at most to secure a connection to the public water distribution network (SNEC/CAMWATER/CDE/SCANWATER)?**	|_|_|_|_|_|_|
AE37.	**What is the main method of storing drinking water in your household?** **1= Store in open containers 2= Store in closed containers** **3= Draws directly from the source to drink 6= Other (specify)**	|__|

SECTION 02: WATER-BORNE DISEASES

Now we are going to talk about water-related diseases in your household

Waterborne disease *First ask question MH1 for all diseases before coming to ask questions MH2 to MH11 for each disease for which the answer is Yes (MH1=1)*	1 **Cholera**	2 **Diarrhea**	3 **Amoebic dysentery (amoebas, etc.)**	4 **Typhoid fever**	5 **Parasitic skin diseases (scabies, ringworm, parasitosis, onchocerciasis, etc.)**	6 **Other water-related disease (specify) _____**
MH1.**In the last 6 months, i.e. since …, has a member of your householdsuffered from (Name of disease)** **1= Yes 2= No**	_|	_|	_|	_|	_|	_|
MH2.**How many members of your household have suffered from (Name of disease) over the past 6 months?** ***Make the answer consistent with the size of the household***	__|	__|	__|	__|	__|	__|
MH3.**What is the name of the last household member to have suffered from (Name of illness) over the past 6month ?** *Enter the code of this person*	__|	__|	__|	__|	__|	__|
MH4.**Has (Name) seen any health personnel (modern or traditional) for (Name of disease)?** **1= Yes, a modern health workforce, 2= Yes, a traditional health workforce 3= Yes, both 4= Neither.** ***If code 4, go to MH6.***	_|	_|	_|	_|	_|	_|
MH5.**How much can we estimate the total amount (in CFA francs) of the consultation fees of (Name) for the last episode of (Name of the**	_____|	_____|	_____|	_____|	_____|	_____|
MH6.**Has (Name) had any medical examinations for the last episode of (Name of illness) in the past 6 months?** **1= Yes 2= No If No, go to MH8**	__|	__|	__|	__|	__|	__|
MH7.**For this last episode of (Name of illness), how much can we estimate the total amount (in CFA francs) of the examination fees for (Name)?**	_____|	_____|	_____|	_____|	_____|	_____|
MH8.**How much can we estimate the total amount (in CFA francs) of drugs for the treatment of (Name) for this episode of (Name of the disease)?**	_____|	_____|	_____|	_____|	_____|	_____|
MH9. **Was** (Name)**he/she hospitalized for this last episode of (Name of illness)? 1= Yes 2= No If No, go to MH11**	_|	_|	_|	_|	_|	_|
MH10.**How much can we estimate the total amount (in CFA francs) of the hospitalization costs of (Name) for the treatment of (Name of the**	_____|	_____|	_____|	_____|	_____|	_____|
MH11.**How much can we estimate the total amount (in CFA francs) of all**other expenses (transport, …) incurred for the treatment of (Name) for this last episode of (Name of illness)?	_____|	_____|	_____|	_____|	_____|	_____|

SECTION 03: ACCESS TO SANITATION

AA1	**What type of toilet/WC do members of this household usually use?** *Flush with or without water tank* 01= Connected to sewage system 02= Connected to septic tank 03= Connected to a latrine 04= Connected to something else 05= Connected to unknown location/Does not know *Pits/latrines* 06= Improved ventilated latrines (LAV) 07= Pit latrine with slab 08= Pit latrine without slab/open pit 09= Composting toilets 10= Potty toilet (bucket/ Tinette) 11= Hanging toilets/latrines 12= No toilet/bush/field=====➔AA13 **96=**Other specify)		|__|__|
AA2	Where does the water (excreta) from your toilets go? VIA A PIPE CONNECTED TO THE ELEMENTFOLLOWING : 01= Piped sewer network 02= Sump ==➔AA5 03=Septic tank==➔AA5 04= Channel/open drain ==➔AA5 05=Open ground==➔AA5 06=Watercourse/body of water==➔AA5 THERE IS NO EVACUATION: 07=In-situ storage ===➔AA5a 96 = Other (specify)===➔AA5a 98= Does not know===➔AA5a		|__|__|
AA3	Did you pay a fee when the sewer connection was first made? 1= Yes 2= No 8= Does not know If 2 or 8, go to AA5		|__|
AA4	How much did you pay for this sewer connection? (in CFA francs)		|__|__|__|__|__|__|__|
AA5	What is the working condition of your toilet/toilet drainage system? 1= Works well 2= Damaged or cracked..... 3= Drain out of order (clogged pipe)		|__|
AA5a	How much do you estimate (in CFA francs) the cost of building the toilets usually used by the members of your household?9999998=Does not know/Difficult to estimate		|__|__|__|__|__|__|__|__|
AA5b	Has your household spent money on the construction of the toilets usually used by its members? 1= Yes, totally➔**AA6**2= Yes, partially 3= No➔**AA5d**		|__|
AA5c	How much (in CFA francs) did your household spend in total to build the toilets that are usually used by its members?9999998=Does not know/Difficult to estimate		|__|__|__|__|__|__|__|__|
AA5d	Who else spent on constructing the toilets usually used by members of your household? 1= A relative/relative 2= An NGO 3=The Commune/CTD 4= The lessor 6=Other (specify)		|__|
AA6	**Does your toilet/WC/septic tank/catch basins have already been emptied? 1= Yes 2= No 8= Does not know** ***If code 2 or 8, go to AA11***		|__|
AA7	**When was the last oil change?**	*U. Unit of time* **1= Day 2= Month 3= Year 8=Does not know**	|__|
		N.Number	|__|__|
AA8	**How was your toilet/WC flushed the last time?** **1= A service provider with a vacuum truck** **2= The council with a vacuum truck** **3= One or more third parties proceeded manually** **4= A member of the household proceeded manually** **6= Other (specify)**		|__|
AA9	**The last time the toilets were emptied, how much (in CFA francs) did you spend for this?**		|__|__|__|__|__|__|__|
AA10	**Usually, how often (or time interval) are your toilets/WCs emptied?**	**U. Unit of time** **1= Day 2= Week 3= Month** **4= Year 8=Does not know/irregular**=>AA11	|__|
		N.Number	|__|__|
AA11	**Does your household share its toilet/WC with other households? 1= Yes 2= No** ***If No, go to AA13***		|__|
AA12	**What is the number of households with whom the toilets/WCs are shared?**		|__|__|
AA13	How do you dispose of household waste? 01= Picked up by a HYSACAM garbage truck/bin 02= Picked up by municipal garbage truck/bin		|__|

	03= Private pickup (NGO, individual, etc.) 04= Discarded in nature 05= Buried/burnt 06= Recycled 07= Dropped off at a place/site in the quarter to be picked up by HYSACAM 96 = Other (specify)_____		
AA13a	How often does your household usually dispose of its household waste?	**time unit** **1= Day 2= Week 3= Month** **4= Year 8=Does not know/irregular**	|__|
		Number of times	|__|__|
AA13b	How much do you spend (in CFA francs) per month to dispose of garbage in your household? Enter 0 if no expense.		|__|__|__|__|__|__|
YY14	**How do you dispose of domestic wastewater (kitchen, shower and laundry) in your household?** 1 = Poured into the yard/roadway **2 = Poured into the channel/gutters** 3 = Poured into septic tank/latrine 4 = Poured into river/stream 5= Poured into nature **6 = Other (specify)_____**		|__|
YY15	**Please show me where members of your household wash their hands most of the time.**		|__|
	OBSERVED PLACE **1= Fixed place for hand washing observed (tap, sink, etc.)** **2= Transportable object observed used to wash hands (kettle, bucket, basin, container, etc.)**	*NO OBSERVED PLACE* **3= Not observed because not in the dwelling/yard/plot➔**AA17a **4= Refused to show/permission not obtained➔**AA17a **6= Not observed for other reason (specify)➔**AA17a	
AA15a	***OBSERVE THE PRESENCE OF WATER AT THE PLACE USED FOR WASHING HANDS*** **1= Water available 2= Water not available**		|__|
YY16	**Do you have soap or other hand-washing products available at this location?** **1=Yes 2= No, if No, go to AA17a**		|__|
YY17	**Can you please show them to me?** **SELECT/CHECK/CIRCLE EVERYTHING YOU HAVE SEEN AS A PRODUCT TO WASH YOUR HANDS** **A) Soap (piece, powder or liquid)** **B) Disinfectant (hand sanitizer or liquid, etc.)** **C) Ash/butt/sand** **X) Other (to be specified)_____** **Y) Could not show or refused to show**		|__| |__| |__| |__| |__|
AA17a	***CHECK THE ANSWER TO QUESTION AA1.*** ***AA1=01, 02, 03, 04, 05 or 06? 1= Yes 2= No If Yes, go*YY18**		|__|
AA17b	**Would your household like to pay an amount of**270,000 CFA francs **for the construction of new, more improved latrines (ventilated improved latrines)? 1=Yes 2= No, if Yes, go to AA18**		
AA17c	**For what main reason would your household not want to pay 270,000 CFA francs for the construction of new improved latrines?** **1= Lack of financial means/amount too high** **2= The accommodation does not belong to us➔**YY18 **3= Already have a toilet/no need➔**YY18 **6= Other (specify) _____ _____➔**YY18		|__|
AA17d	**How much (in CFA francs) is your household able to pay at most for the construction of the new improved latrines?**		|__|__|__|__|__|__|
YY18	**How much (in CFA francs) is your household able to pay at most to empty its toilets if necessary?**		|__|__|__|__|__|__|

SECTION 4: WATER QUALITY TEST

Now we want to assess the quality of the water you drink in your household, using some tests

T1	**Could you please give me some water that members of your household usually drink?1= Yes 2= No If no to T9**	|__|
T2	***OBSERVE WHETHER THE WATER HAS BEEN COLLECTED FROM THE SOURCE OR FROM A SEPARATE STORAGE CONTAINER.*** 1= Direct from source 2=Covered container 3= Container not covered **4= Could not observe**	|__|
T2a	***OBSERVE AND APPRECIATE HOW AND WITH WHAT THE WATER GIVEN TO YOU FOR THE TEST IS COLLECTED*** ***1= Water is collected directly from source with tubes/vials for testing (by yourself only)*** ***2= Water is collected with an apparently clean cup/small container*** ***3= Water is collected with an apparently dirty cup/small container*** ***4= Water is collected with a cup/small container whose state of cleanliness is unknown*** ***5= Other (specify)***	|__|
T2b	Would you like to know the result of the quality tests of this water that you usually drink in your household? 1= Yes 2= No **NB. This result will be communicated to you later by message sent to your phone.**	|__|

WATER CHEMICAL PARAMETERS TEST

T3	**What are the results of the water chemistry test?**	
1	**Free chloride (mg/L)**	*0* | *0.5* | *1* | **3** | **5** | **10** | **20**
2	**pH**	**6.0** | *6.5* | *7.0* | *7.5* | **8.0** | **8.5** | **9.0**
3	**Total alkalinity (mg/L)**	**0** | **40** | **80** | *120* | **180** | **240** | **400**
4	**Hardness (mg/L)**	**25** | **50** | **100** | *250* | *425* | *1000*
5	**Iron (mg/L)**	*0* | **5** | **10** | **25** | **50** | **100** | **250** | **500**
6	**Copper (mg/L)**	*0* | **1** | **10** | **30** | **100** | **300**
7	**Lead (mg/L)**	*0* | **20** | **50** | **100** | **200** | **500**
8	**Nitrate (mg/L)**	*0* | *10* | **25** | **50** | **100** | **250** | **500**
9	**Nitrite (mg/L)**	*0* | *1* | **5** | **10** | **20** | **40** | **80**
10	**Bromine (mg/L)**	*0* | **1** | **5** | **10** | **20**
11	**Total chlorine (mg/L)**	*0* | **25** | **50** | **100** | **250** | **500**
12	**Chromium/Cr (mg/L)**	*2* | **5** | **10** | **30** | **50** | **100**

13	**Fluorine (mg/L)**	*0* | **25** | **50** | **100** | **200**
14	**Cyanuric acid (mg/L)**	*0* | *30-50* | **100** | **150** | **240**
BIOLOGICAL WATER TEST		
T4: ELIGIBILITY OF THE HOUSEHOLD FOR THE BIOLOGICAL TEST 1= Yes 2= No If No (code 2), go to end of household questionnaire		|__|
T4A	**NOTE THE DATE OF THE TEST (IN DAY/MONTH/YEAR FORMAT)**	____/____/____
T5	**NOTE THE TIME OF THE WATER REACTION WITH THE TEST**	***h*** ***mn***
T6	**WRITE DOWN THE SAMPLE CODE TO PASTE ON THE REAGENT BOX (XXX/YYY WHERE XXX REPRESENTS THE EA CODE AND YYY IS THE SAMPLE HOUSEHOLD NUMBER)**	____/____
T7	**NOTE THE TIME OF READING THE TEST RESULT**	***h*** ***mn***
T8	**WHAT IS THE TEST RESULT? 1= POSITIVE (Red or orange colour) 2= NEGATIVE (Yellow colour)**	|__|
T9	**For what main reason can we not have some water to drink in your household?** **1= No drinking water available** **2= Refusal to give water** **3= Other (specify)**	|__|