



Enumerator- and Supervisor Manual

Household Energy Consumption Survey of 2023

National Bureau of Statistics,
The United Republic of Tanzania

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SECTION I: INTRODUCTION

1.1 Background

The energy sector in Tanzania plays a crucial role in the country's economic development and social welfare. Tanzania's energy landscape is characterized by a mix of traditional and modern energy sources, with a heavy reliance on biomass for household energy needs and a growing emphasis on expanding access to electricity and developing renewable energy sources

The **United Republic of Tanzania and the European Union (EU)** signed the Financing Agreement to finance the Tanzania Energy Sector Reform Programme. Energy statistics is part of the wide programme project implemented through **Expert France**. The overall objective of the programme is to enhance the sustainable development of Tanzania Energy Sector. As part of our commitment to improving the quality and depth of statistical data in energy, NBS in collaboration with the Ministry of Energy is implementing the household energy consumption survey 2023.

1.2 Objective of the survey

The main objective of the survey is to gather detailed information on various aspects of energy consumption, including the types of energy used, the purposes for which energy is consumed, and the socio-economic factors influencing energy use. The insights gained from this survey are crucial for developing policies, improving energy efficiency, and promoting sustainable energy practices.

1.3 Timing and organization of the survey

The HECS 2023 will be implemented by NBS in collaboration with the Ministry of Energy (MoE), with technical support from Expertise France. Data collection will be carried out by a total of 26 field teams. Each field team is made of 4 enumerators and 1 team supervisor (see roles and responsibilities in Chapter II, section 1 below), which means that the survey will involve a total of 104 enumerators and 26 team supervisors. In addition, XX quality control (QC) supervisors will be in charge of quality control procedures and will operate independently from the field teams, driving from one team to another to run spot checks, re-interviews, observations, etc. Finally, a total of XX headquarters staff, based in Dodoma, will be responsible for the third level of data review (after the

enumerator and the data supervisor). These figures are summarized in **Error! Reference source not found.** below.

Table 1.1: Number of Teams

Role	#
Enumerators	104
Team Supervisors	26
QC Supervisors	
Headquarters	
Total	

Each team will move to their assigned enumeration areas (EAs) by car. Before the start of any data collection activity in the EA, the team supervisor will inform local authorities about upcoming field activities in their village. He/she will also coordinate with local authorities so they can facilitate the meetings with the EA households and make sure that as many of them as possible are available on the day of the visit.

1.4 Fieldwork

The field teams will have an average of 3 days in each enumeration area. In some regions, there might be more days needed, and in others- less days. As a guide, they will use 1 day for listing and 2 days for interviewing and moving to the next EA.

1.4.1 Arrival at the Enumeration Area (EA)

It is a precondition that the administrative levels down to the local administration in or near the EA are well informed and have accepted the survey before the arrival of the field team. This will be the responsibility of the Headquarters (HQ) Survey Controller and he/she should involve the local NSO office in the actual Region/District well before the start of the fieldwork.

Each survey field team will bring letters from the Head of the National Statistical Office (NSO) acting on behalf of the Government of Tanzania and introduce themselves first to the local leaders, as far as practical possible, from the Province/Regional administration and then at each relevant administrative level with a selected EA and down to the local chief (LC) or village executive officer (VEO). Upon arrival in the EA/community, the field-team Supervisor will link up with the VEO/Mtaa Executive Officer for introduction so that enumeration can run smoothly.

The survey field team will be controlled by their Supervisor and directed to the pre-selected EA by him/her, if necessary with assistance from the WEO/VEO. During the fieldwork, the driver should, for practical and security reasons, remain near the field team and be easy to reach by mobile phone at any time.

The local WEO/VEO will identify a local assistant (LA) or him/herself to assist the field team in locating all households in the EA and otherwise be present and assist during the listing and enumeration. The nominated LA is entitled to payment/tokens for the contribution during the enumeration. Backdrop maps for the actual area should be downloaded from Google Maps to all the tablets of the field team using Wi-Fi

When local contact and camp/accommodation for the field team is established and the team is ready for work, the Supervisor should report the status to the HQ survey controller by mobile phone.

1.4.2 Identify the EA outer boundaries for listing work

Before listing and enumeration start, the supervisor should ensure that all field-team members know the outer boundaries of the EA using the maps (digital maps/satellite imageries as downloaded on the tablets) and to the extent practical possible also walk together across the EA. This work should be done together with the local leader.

During this preparatory work, the whole field team and the local leader should agree on how to systematically move within the EA to best cover all households. Thereafter the supervisor should allocate a specific sector of the EA to each enumerator in the field team for parallel listing of households. The sectors should be non-overlapping, easy to identify and as a sum, they should cover the whole EA. This is to avoid double counting and missing.

1.4.3 Listing of all households in each sector

The listing of households is the basis for the second level of stratification and sampling before the household questionnaire can be implemented.

The listing will be done using the survey solution app on the tablet, by selecting the "Listing form" option from the enumerator's tablet menu.

Before the listing activity starts in a new EA, the sample data file from the previous EA must be deleted. The actual deleting of this data file is triggered when the enumerator opens the tablets "Listing form" option from the enumerator's tablet menu and confirms "Yes" when asked "Have you moved to a new EA? - Yes/No" (NB. "Yes" only for the first household to be listed in a new EA). After confirming "Yes" to move to a new EA, the enumerator will be requested to select the correct geographical information for the

current EA (from province/region down to enumeration area (EA). These ID codes will remain the same for all further households in the same EA. Note: Onwards from the second household and up to the end of the listing of all households in the same EA the enumerator should confirm “No” to the leading question “Have you moved to a new EA?”.

The application will keep track of household numbering giving each household a serial number. The tablet will make sure each enumerator has a unique counter starting point when listing the household, from either 100, 300, 500, or 700.

GPS coordinates should normally be downloaded and, when doing so, the enumerator must be outside the building for the GPS function in the tablet to work properly. In the case of several households located in a block of flats etc., the coordinates for the first household should be taken outside of the main entrance of the building. Thereafter, for each household inside the building, the choice “Copy GPS from the previous questionnaire” should be used.

The households should be approached politely and the purpose of the listing should be explained – it is important to stress the confidentiality of data and the NSO’s role as an institution.

The listing information can normally best be achieved by shortly interviewing the household member(s) when present or partially by observation or referring to neighbours/a local guide etc.

When the above information is registered for the first household in the EA, the enumerator will be requested by the app to save the information and continue to the next household in his/her sector of the EA and repeat the listing until all households are listed. The supervisor will follow the enumerators during the listing, ad-hoc checking entries on the tablets, and otherwise assist, together with the LA, when enumerators report difficulties, etc.

1.4.4 Copy the enumerator listing data to the supervisor’s tablet

When all households in the actual sector are listed and saved on the enumerator tablets, the enumerator will send the data to the supervisor.

1.4.5 Sampling of households to be further interviewed

The sampling of households will be done by the supervisor on his/her tablet. The supervisor will run a program that excludes the households who are rejected to participate, reorder the households according to their electricity strata, and run a systematic sample routine that samples 15 households. This sampling procedure is pre-programmed in the tablet, and the supervisor therefore only needs to know the practical

procedures. Once activated, the supervisor will after a few seconds get a message that confirms that sampling is conducted OK and that he/she can return to the tablet menu.

The sampling program will consider the stratification process and will maintain the representation of households with grid electricity and no electricity. Households with “solar cells with battery or solar home system” will have a double chance of being selected. A “fixed random sampling” will be done in each stratum and the sampled households’ information will automatically be transferred to the household questionnaire. Note that all this is running in the background i.e. not visible to the tablet user.

1.4.6 Copy the selected households to the enumerator tablets

The subset of households sampled to be further interviewed based on the household questionnaire (HHQ), will be transferred back to the enumerator’s tablets. The enumerators are now ready to interview the households based on the household questionnaire.

1.5 The sample size of the survey

The main Survey will be implemented in all regions of Mainland Tanzania and will cover around 12,700 households. The total number of Enumeration Areas (EAs) selected for the survey is 845 with 15 households selected for interviews in each EA. While the EAs are sampled centrally, the sampling of households to be interviewed within each EA will be done by the enumeration teams based on a pre-programmed tablet-based application when in the field.

1.6 Confidentiality

Information collected from households and communities will be maintained with utmost data protection and confidentiality as required under the Statistics Act number 9 of 2015. The results from the survey will be aggregated and reported at the regional and/or national level and no individual information will go to the public.

It is very important to give assurance to the respondents/households that all information collected from them shall be kept with utmost confidentiality and will be used for statistical purposes only.

1.7 Role of Enumerator

The role of the interviewer is to gather information as it is instructed by the tool (mainly questionnaire). The quality and completeness of work are crucial for the success of the main survey. The interviewer should understand the questions and all responses in the tools as well as the login/off structure and skip patterns involved. Furthermore, the interviewer should:

- i) List all households in a given EA using tablets and reporting to the supervisor when finished;
- ii) Visit and conduct interviews for the households sampled;
- iii) Comply fully with the operating instructions provided to achieve the task and also comply with instructions given by your supervisors. Good Behaviour within the national code of conduct and local norms is expected. Remember that you are representing NBS;
- iv) When approaching the household for the first time, briefly and politely introduce yourself, explain the objective and organization of the survey, the scope of your mission, and the approximate length of the interview – asking for permission to proceed and for the household to appoint a suitable respondent (the head of the household or another member of the household aged 15 years or older with the best knowledge of the household history, composition, and activities);
- v) Build an environment of acceptance and trust between the interviewer and the respondent (the head of the household or someone assigned by the household (aged 15 years and above)) to obtain accurate results and completeness. If the respondent is not available at a first visit, make an appointment for a later visit and continue to the next selected household for another interview;
Note: If, for any reason, a refusal for an interview or other difficult situations occurs, the interviewer should politely retreat and contact his/her supervisor for follow-up procedures. If the respondent keeps on refusing, the supervisor/interviewer should communicate this to the local leaders for more assistance. If all these steps have been followed and the respondent is still refusing, it will be counted as a data loss. Thus, you will fill in the appropriate code, and end the questionnaire.
- vi) Always declare and insist on the confidentiality of the data collected from this exercise/survey. Persons who are not members of the household should not listen to the interview unless with permission of the respondent;
- vii) Remember to open and close interviews correctly with the tools to avoid losing data, this should be accompanied by partial saving of your data in the middle of the interview. Furthermore, Coordinates should be collected outside the building before entry;
- viii) Be short and expressive, but do not be in a rush while with a respondent. It is, however, expected that the interviewer should complete 3-4 interviews per day during the Survey fieldwork;
- ix) Be aware that in the interview, unlike in ordinary conversation, there is a person asking questions and another person responding to those questions. The interviewer

should refrain from giving his/her personal opinion, and should not be angry or express disagreement with the responses given. However, probing and explanations are to be done all the time;

- x) Follow the flow of the questions and all on-screen instructions built into the tools (tablets) to structure the interview through a series of questions and skips built up in a logical and sequential order. Nevertheless, do not forget to pay attention to the respondent during the interview. If the respondent gives you answers not based on the question or gives a lengthy explanation, try to bring him/her back gently into question as in the questionnaire;
- xi) Try to curb the situation by explaining the context as well as the confidentiality attached to the information provided if the respondent is reluctant to answer the question. If, after probing, the respondent still cannot answer a specific question, code 88 for “no-response” and continue to the next question. Note: If this code will frequently appear in your questionnaires, one must ask why only you, so be sure of this before using this code;
- xii) At the end of the interview remember to save the data and politely thank the respondent and possibly other household members present for their cooperation, then, wrap up the conversation and continue to the next selected household;
- xiii) Make sure that your tablet is fully charged every morning before you leave for the EA;
- xiv) In case of any issues that need quick assistance, communicate it to your team supervisor, if he fails to give a solution, he will communicate it to the quality control supervisor, and if no solution is found, communication will be done to the Desk Officer and finally to the Project Coordinator.

Remember: Tablets are electronic devices and can corrupt at any time, so make sure that whenever you finish interviewing for the day, send data to the supervisor to avoid loss of data, for if data gets lost, you shall be your cost go back to the EA and recollect the information.

1.8 Responsibilities of the Team Supervisors

Team Supervisors are the immediate leaders of the mobile teams who will be with the team from the beginning of the data collection in the fieldwork to the end. Each team will be composed of 1 Team leader, 1 Driver, and 4 Enumerators.

- i) Team Supervisors will make sure that formal letters that introduce the survey are sent on time to all administrative levels to enhance cooperation and avoid unnecessary stumbling;
- ii) Visit the EA or give a call to the Local leaders to cross-check if they got an introduction letter about the survey;
- iii) Familiarize with the place (EA) you are going to enumerate a day before, this can be done in cooperation with a driver;
- iv) Plan with your team a day before, inform them about the EA you are going and give them a time you will leave for the EA a day before;
- v) Ensuring all rules and regulations that guide enumerators are followed;
- vi) Spot which questions need more closer look, such questions might be the ones almost all team members face difficulties with;
- vii) Observe some interviews (look at proper asking, accuracy, speed, and flow);
- viii) Conduct regular reflection meetings to discuss some issues that happened in the field, such issues should mainly focus on the technical issues and some logistics if any;
- ix) Make sure that each enumerator sends data to HQ after every finish of an EA, to avoid data loss;
- x) Team Supervisors will ensure regular contact with the IT officers to make sure all data are successfully sent to the HQ servers;
- xi) Supervisors will regularly send a report to the Desk Officer about the status of the Work (will be measured in percentage);
- xii) At the end of the fieldwork, each Supervisor will send (5 to 10 pages) a final report for the whole work from the beginning of the data collection to the end.

1.9 Responsibilities of the Quality Control (QC) Supervisors

Quality data always needs careful regular inspection and this must be done in the field work. At the end of the work we all expect quality collected data and this will be successful if the quality control team is fully engaged in the whole process from the beginning to the end of data collection.

- i) Quality control Supervisors will be the biggest technical problem solvers in the field work wherever team supervisors stumble, he/she will be providing expertise whenever needed;
- ii) QC Supervisors will be doing sudden visits in the areas that have been interviewed to cross-check some of the information was well collected and the whole process is known as “Spot Check”;
- iii) The QC supervisor will assist the team supervisor on community issues such as refusal, conflicts, etc. and provide suitable solutions;
- iv) The QC team Supervisor will regularly check with the team supervisor to ensure that the data collected is sent to the server on time.

1.10 Interviewing Techniques

Initially, when approaching a household for an interview, gain the confidence of the respondent to secure his/her willingness to answer your questions. The first impression and the first things you do or say are of vital importance in gaining the cooperation and confidence of the respondent. Start by introducing yourself, stating your name (if you are not known to the respondent) that you are an employee of the Bureau of Statistics, and what your visit is all about. The following example may be followed.

**“Good morning. I am (your name) working
for the Bureau of Statistics. My visit today is
part of the nationwide HECS...”**

Emphasize the confidentiality of the data being sought and explain that no individual’s name will be used and that information pooled will be made public only in the form of statistical aggregates.

You must remain neutral as you administer the questionnaire. Do not lead the respondents to certain answers; do not show surprise or approval of the responses by your tone of voice or facial expression.

During the interview let the respondents take their time, never put answers in their mouths. The respondent’s answer to a question can be incomplete or irrelevant, or he/she has not been able to understand the question. If that happens, you will need to obtain

complete or relevant answers by asking some additional questions. This is called **probing**. It may take the form of repeating or explaining the question. But again, make sure that you do not suggest answers to the respondent.

When leaving the household and or village remember to thank the people for their cooperation.

1.11 Refusal and Difficult Cases

If you come across someone who refuses to answer questions, continue to be polite. Point out the importance of the survey to the national development. Inform him/her that the operation is not being undertaken in connection with political activities, such as elections, or for tax collection purposes. Also, information about individual persons will be treated with utmost confidentiality. Should the person still be uncooperative, report the matter to the village headman first and, if still necessary, to your supervisor.

1.12 Materials and equipment for the survey

The list is provided here to take stock of all equipment required and provided for the survey. If you do not have them all, please communicate with the head office/supervisor before proceeding with data collection. All items provided are meant to assist the interviewer in collecting data effectively. Please handle all items with care, and report to your supervisor any missing or malfunctioning equipment.

ITEM	RECIPIENT
1. Tablets	Enumerators and Supervisors
2. T-Shirts	Enumerator and Supervisors
3. Bags	Enumerators and Supervisors
4. Caps	Enumerators and Supervisors
5. Notebooks	Enumerators and Supervisors
6. Pencils/Ball pens	Enumerators and Supervisors

1.13: DEFINITIONS AND SPECIALIZED TERMINOLOGY

This section further describes the meaning of some key terminology, words, and units used in the HECS questionnaire.

Household:

Definition: A household is a person or persons living together, sharing the same pot, and recognizing one of them as the head of the household.

Head of household:

The head of the household can be a man or woman aged 15 years and above who is regarded as a provider, adviser, or decision-maker at the household level and is recognized by other household members as head of their household. Often, this is a man or woman who has the responsibility to look at the financial issues and other welfare for the household in general.

Household members:

Household members are all members who depend on the household head to lead them, support them, take care of them, advise them, and decide on them whenever needed.

Children who are temporarily away at boarding school:

Children who will be found at boarding school during the interview will also be included in the household roster since they are also the usual residents.

Visitors:

Visitors who have been found in the household during the interview will be included in the household roster **if and only if he/she has stayed in the household for more than six months**, otherwise, he/she will not be included.

More explanations about household:

Households may have one or more than one household member.

- i) ***Households of one person*** is a person who lives alone in the house or part of the house, does not usually share the pot with others in the house, and has his/her own decision in everything.
- ii) ***Households of more than one person*** is a group of two or more people who live in one house or part of the house and share the common pot. Typically, such households include a husband, wife, and children and/or other relatives, tenants, and long-term visitors and they all depend on the household head to lead them, advise them, decide on them, and support them.

iii) **A polygamy household** is a household where one man has more than one wife. In this case, we can face two main scenarios (a) All wives share the same pot (b) Each wife cooks on her pot.

➡ **Scenario (a):** All wives share the same pot: This household will be regarded as one household.

➡ **Scenario (b):** Each wife cooks on her pot: In this case, each wife will have her own household and if they all recognize their husband as their household head, the man will be enumerated in the household he slept a day before the interview and in other households, each wife will either be a household head or any other person they recognize as the household head but not their husband anymore to avoid double counting.

Other Explanations:

Last 7 days. means the last seven days counting from one day behind the current day (the day of the interview). Example: If an interview is on Monday, "seven days " you start counting back from Sunday (yesterday) till Monday of the last week.

Last 30 days: means the 30 days before the day of the interview.

1.14 Other terms, units, and definitions related to energy

2.1.1 List of key terms and definitions

The list below is sorted in alphabetical order and covers a selection of key definitions and technical expressions used in the questionnaires.

Word/expression/unit	Meaning/definition
Air conditions (AC)	Electric device used for cooling of air
Animal Dung	Energy from animal dung is obtained by drying the dung, such as from cattle, and using it as a fuel source in charcoal or wood-fired stoves. This energy source is predominantly available in rural areas among households engaged in livestock farming. Animal dung as an energy source does not require purchasing costs since they can be collected from livestock and nearby fields
Battery capacity	Usually expressed as the product of 20 hours multiplied by the current that a new battery can consistently supply for 20 hours at a temperature of 20°C while remaining above a specified terminal voltage per cell. Measured in either watt-hours (Wh) or ampere-hours (Ahr). For

	example, a 12-volt battery with a capacity of 100Ah allows energy storage of approximately $100 \text{ Ah} \times 12 \text{ V} = 1.200 \text{ Wh}$ or 1.2 kWh. The Ah is normally printed on the battery.
Battery dry cell	A dry cell battery has the electrolyte immobilized as a paste, so it can easily be moved. For example, a zinc-carbon battery
Battery rechargeable	An electrical battery that can be used and recharged many times
Bioethanol	Bioethanol is an energy derived from the fermentation of plant residues, especially carbohydrate crops such as sugar and grains. Among other uses, it can be used for cooking. Simple alcohol ($\text{C}_2\text{H}_5\text{OH}$)
Biogas	Biogas is a mixture of various gases, including methane gas produced from the processing of animal and human waste, food waste, or plant remains in an anaerobic environment. It is estimated that about 40 to 60 kilograms of feedstock are required to produce sufficient gas for six hours of cooking for a household of four people.
Briquettes	Briquettes alternative charcoal produced from various plant residues and agricultural waste, which are bound together using a binder such as clay, starch (including cassava and sweet potato flour), molasses, and/or glue. These residues include materials such as paper, sawdust, wood shavings, dry leaves, and rice husks.
Casamance Kiln	The Casamance kiln is made of two layers of small and medium-sized wood. For the first layer, the wood is evenly laid out radially around the central point of the base, and, for the second layer; the wood is tangentially arranged across the first layer
Charcoal	According to the Cooking Energy Action Plan 2022, approximately 10 to 12 tons of logs are burned to produce one ton of charcoal. Charcoal is the predominant source of energy in urban areas because it is believed to be affordable and is also available in small quantities based on the user's income.
Connection Mini-grid	Connected to a local electricity distribution network involving small-scale electricity generation
Connection National grid	Connected to the national electricity distribution network (TANESCO)
Electric boiler	Electrically heated storage tank for water
Electric heater	Electrically heated device for space heating

Electric kettle/coil	Kettle with build-in electric coil heater / electric coil heater to be submerged into a kettle
Earth Mound Kiln	This is one of the oldest and most commonly used kilns in Tanzania and East Africa. The size of the kiln varies from a few m ³ capacity to over 100 m ³ .
Firewood	According to the Household Budget Survey of 2017/18, the use of firewood is widespread, particularly in rural areas, where 84.8 percent of households rely on this energy source compared to 17.4 percent in urban areas.
Grid	Electricity distribution network (cables by poles or in the ground)
Half Orange Brick Kiln	The half-orange kiln was introduced in Tanzania by the Ministry of Energy and Minerals in the 1980s during the World Bank-funded energy project. The kiln is made up of fired bricks and has at least ten ventilation holes, which are equally spaced around the base.
Household dwelling	Housing unit – flat, villa, etc.
Household head	The person chosen by the household members as the main decision-taker. At least 15 years old.
Household respondent	The person chosen by the household members to be the main respondent during the interview – usually the head of household. At least 15 years old.
Kerosene	Kerosene has been used for many years as a cooking fuel in certain areas of the country. However, it is important to recognize that the use of kerosene for cooking comes with various challenges, including safety concerns as it can cause fires or explosions
LPG	LPG is a fuel stored in cylinders and is derived from the refining of crude oil, and natural gas with a propane and butane content exceeding 15 percent
Manufactured cooking stove	Cooking stove produced by professional industry
MoE	Ministry of Energy
Natural Gas	Natural gas is recognized as a cleaner energy source compared to other petroleum-based fuels because it emits a lower amount of carbon dioxide. The natural gas found in Tanzania has a methane content of approximately 97 percent.
Pico-hydro	Hydro-electric power generation under 5kW (small-scale production unit)

Pit Kiln	The pit kiln is a hole dug into the ground. The size may be small (around 2 – 3 m ³) or large (more than 10 m ³), and is rectangular.
Plant Residues	Plant residues are used as energy sources both in households and industries, utilizing various types of stove technologies. Plant residues as energy sources do not require purchasing costs since they can be collected from nearby fields
Retort Kiln	A retort is a type of kiln where wood is carbonized to become charcoal. A retort is capable of producing charcoal without using direct fire from the wood and instead, it uses heat from the outside of the retort i.e. externally heated
Reversible AC	Electric device used for cooling and heating of air
Solar home system	Stand-alone photovoltaic electric power supply system for a household/home
Solar lighting product	Products for small-scale/home lighting based on solar electricity power - usually sufficient for a few bulbs of LED light
Solar multi-light system	Products for medium scale/home lighting (many bulbs) and for other electricity consuming devices (TV etc.) based on solar electricity power
Solar panel power rating	Efficiency (actual production in percent of total power production capacity) of a solar panel.
Solar heating system	System for transforming sunlight into the production of heat needed to produce hot water for water and space heating.
Tanesco	Tanzania Electric Supply Company Limited
Unit: kg	Measure of weight (1000 grams). 1 kg = 2.2046 Pound
Unit: kilowatt (kW)	1000 Watt
Unit: kilowatt hour (kWh)	1000 Watt per hour
Unit: Liter	Measure of volume (1000 cm ³). 1 liter = 0.2641 US gallon
Unit: Watt	International (SI system) measure for the effect of electricity. Watt = Volt * Ampere (10 Ampere * 220 Volt = 2200 W)

1.15. HOW TO COMPLETE THE QUESTIONNAIRE

1.15.1 Identifying the location and household/interviewee

The Enumeration Areas (EAs) consist of a list of villages that were identified in 2022 during the Population and Housing Census. Therefore, the EAs and village boundaries should be as they were in 2022. You will however be provided with household location variables such as village names, wards, districts, and regions. These will appear on the cover page of the electronic questionnaire. Once you locate the household, confirm that you are in the right place. Further, validate the location variables with the respondent during the interview, and if errors are detected, enter the correct names and codes.

1.15.2 General principles of questionnaire filling

Before embarking on the interview, it is important to ensure that all interviewing equipment (tablets, notebook, etc) is in good working condition by:

- ◇ Keeping tablets in their protective covers
- ◇ Charging the tablets every evening (Note: Tablets need 1-2 hours to be fully charged).

During the questionnaire filling, enumerators should observe the following principles:


- ◇ Ensure that all parts/sections of the questionnaire are properly filled.
- ◇ For a “null” response, leave blank NOT “zero”
- ◇ After completing of questionnaire, go through it before leaving the household and confirm that all information required is properly filled.
- ◇ All questions should be asked to the household head, or to any other adult member of the household who is well familiar with the household’s issues.

SECTION II. QUESTIONNAIRES

The household questionnaire collects all possible information at the household level. As far as the household energy consumption survey is concerned, Titles were given to each kind of information required in this questionnaire, and these are;

- Identification Particulars
- Household member's demographic
- Business operations
- Electricity
- Cooking
- Water heating
- Space heating
- Lighting
- Privately owned vehicle
- Consumption.

Identification




United Republic of Tanzania


HOUSEHOLD ENERGY CONSUMPTION SURVEY 2023/24
(This information is collected under the Statistics Act, [Cap 351 R.E 2019])

THIS INFORMATION IS STRICTLY CONFIDENTIAL AND IS TO BE USED FOR STATISTICAL PURPOSES ONLY


Executed by the Ministry of Energy and National Bureau of Statistics



NATIONAL BUREAU OF STATISTICS
TANZANIA
STATISTICS FOR DEVELOPMENT



EXPERTISE
FRANCE
GROUPE AFD



IDENTIFICATION DETAILS 0.

HH GPS Coordinates

(S)

(E)

1. REGION

2. DISTRICT

3. COUNCIL

4. WARD/SHEHA

5. VILLAGE/MTAA

6. ENUMERATION AREA (EA)

7. HOUSEHOLD NUMBER & NAME OF HOUSEHOLD HEAD

8. NAME OF LOCAL LEADER/SHEHA

9. PHONE NUMBER OF LOCAL LEADER/SHEHA

10. NAME OF ENUMERATOR & ID

11. PHONE NUMBER OF ENUMERATOR

12. DATE OF INTERVIEW

13. DID THE HOUSEHOLD AGREE TO BE INTERVIEWED?
 YES.....1 NO 2

Page 1

CODE

NAME

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This section is intended to uniquely locate each selected household and will be prefilled in the tablet. Enumerators will select from the tablet the region, District, Subdistrict, Locality Village, and Enumeration Area names and codes will be embedded in each item selected. From the listing form, you will be able to know the household number of the

selected households. Urban or rural code is automatically copied from the listing depending on which EA you are enumerating. Coordinates (Latitudes/Longitudes) and Time (day, month, and year) will also be automatic.

Note: To mark the coordinates, make sure that you are not inside the building or under the tree to quickly access the satellites.

Therefore, each household in the sample is recognized for its uniqueness, a unique number consisting of 16 digits, including both the EA code and the household number.

Region:	2 digits
District:	2 digits
Council:	2 digits
Election State:	1 digit
Division:	1 digit
Ward:	3 digits
Village/Mtaa:	2 digits
Enumeration Area:	3 digits

SECTION III. HOUSEHOLD MEMBER'S INFORMATION

Description:

The section collects data on the members of the household. Household members include people living and eating together (sharing the same pot of food) in the past six months.

Question 1: A list of all members of the household.

This question captures a list of all household members who usually live in that household. A household is a person or persons living together, sharing the same pot and recognizing one of them as the head of the household. Including those who are temporarily away, and all visitors who have stayed in that household for more than 6 months during the last year. Start with the head of the household.

Note: *Household members who are temporarily away might be students who are in boarding schools/Colleges/universities, Usual Members who have traveled but will be back, etc.*

Question 2: What is the sex of [NAME]?

This question captures the Sex of the respondent. An interviewer will Code 1 for “Male” or Code 2 for “Female” and Continue to the next question.

Question 3: What is [NAME]'s relationship to the head?

This question is linking the relationship between the household members and the household head. If the relation is household head then put Code 1 “Head (only one head per household)” or Code 2 for “Spouse (of head)” or Code 3 for “Daughter/Son (of head/spouse)” or Code 4 for “father / mother or Code 5 for Grandson/Daughter “Parent (of head/spouse)” or Code 6 for “Other relative (of head/spouse)” or Code 7 for “Nonrelative (of head/spouse)”.

Question 4: How old is [NAME]?

This question is intended to capture the complete age of the respondent. All ages will be calculated based on the day he/she celebrated his/her birthday. In some circumstances, especially when you find old men/women in the households, they might say that they don't know their age. If this happens use the Calendar of the events below (Table 1) to probe and get the correct age. If a child is less than 1 year fill '00". If probing is not successful, try to estimate the age based on observation.

Table 1: Common Events for Probing Age

Event	Year
The Beginning of British Colonialism in Tanzania	1919
First World War	1939
The end of the Second World War	1945
Birth of TANU	1954
Independence Day of Tanganyika	1961
Zanzibar Revolution	1964
Arusha Declaration	1967
Birth of the Chama cha Mapinduzi	1977
Kagera War	1978
Retirement of the first president of Tanzania	1985

Question 5: What is [NAME]'s current marital status?

This question captures the marital status of all members of the selected households aged 12 years and above. The interviewer will Code 1 if “Never married” Code 2 if “Married” Code 3 if “Living Together” Code 4 if “Widowed” Code 4 if “Divorced” Code 5 if “Separated”, Code 6 if “Widowed “and Code 7 “Not stated “.

Question 5: What is the main economic activity of (NAME)?

This question needs to know the main activity of the respondent for the last 12 months. It should be known that the main activity is the one that takes much time of the household member(s) and they rely on it to generate income. The codes provided for the main activity are following International Standard Codes (ISIC- Rev4). The interviewer will select only one main activity from the list of ISIC codes below.

SECTION IV: EDUCATION

This Section collects information about the education of household members aged 5 years and above. You will need to probe to get the grade the highest reached by the respondent.

Question 1. Can [Name] read and write?

Code 1 for “Kiswahili”, Code 2 for “English”, Code 3 for “Kiswahili & English”, Code 5 for “any other language “and Code 6 “Don’t read/write”

Question 2. What is the schooling status of (NAME)?

This question intends to collect information on the current schooling status of respondents aged 5 years and above. Code 1 if the respondent is currently attending school, Code 2 “dropped out”, Code 3 “completed” and Code 4” Never attended school”.

Question 3. What is the highest grade of education [Name] completed?

This question needs to know the highest grade of education which was completed by the respondent. By completed we mean that the person finished the education and passed the required exams (if exams are required)

Code 1 = PP- Pre-primary School (Pre-Unit)

Code 2 = Adult Education

Primary Education:

Code 11= D1 – Standard One (I)

Code 12= D2 – Standard Two (II)

Code 13= D3 – Standard Three (III)

Code 14= D4 – Standard Four (IV)

Code 15= D5 – Standard Five (V)

Code 16= D6 – Standard Six (VI)

Code 17= D7 – Standard Seven (VII)

Code 18= D8 – Standard Eight (VIII)

Code 20=MS+Course - Training after Primary School

Secondary Education:

Code 21 = F1- Form One (I)

Code 22= F2- Form two (II)

Code 23= F3- Form three (III)

Code 24= F4- Form four (IV)

Code 25 = ‘O’ + Course – Training after secondary education

Code 31= F5- Form five (V)

Code 32= F6- Form six (VI)

Code 33= ‘A’ +COURSE – Training after high school education

Code 34= DIPLOMA – Diploma Training Course

University and Equivalent Education Level:

Code 41= U1- University First Year

PP.....1
ADULT.....2
PRIMARY
SECONDARY
D1.....11
F1.....21
D2.....12
F2.....22
D3.....13
F3.....23
D4.....14
F4.....24
D5.....15
'O'+COURSE.25
D6.....16
F5.....31
D7.....17
F6.....32
D8.....18
'A'+COURSE.33
OSC.....19
DIPLOMA...34
MS+COURSE.20
UNIVERSITY &
EQUIVALENT
U1.....41
U2.....42
U3.....43
U4.....44
U5&+.....45

Code 42= U2- University Second Year
Code 43 = U3- University Third Year
Code 44 = U4- University fourth Year
Code 45 = U5- University Fifth year, Masters and PhD

SECTION 1. BUSINESS OPERATION

"Business Operation" typically refers to households also running a business or commercial activity from home. This aspect of the survey seeks to understand how energy consumption is influenced by business activities conducted within the household.

Question 1: Did you run one or more businesses linked to your household in 2023?

The aim of asking this question is to understand whether, in the year 2023, the household was involved in operating any businesses that are associated with or managed by the household. The interviewer will probe and get the correct number and types of businesses run by the households in 2023. If the answer is "Yes" go to 1.1, "No" go to q2 in section 2

Question 1.1: Was this the only income?

If the answer in q1 is yes, the interviewer will probe and get the correct information if the household's businesses were the household's only income in 2023.

Question 1.1.1: Can you tell me the share of the household's overall income?

The interviewer will probe and get the correct information on the share of the business income in percent of the overall income of the household in 2023 and fill it in as a two-digit number in percent format.

Question 1.2: Is it possible to separate the energy consumption of business activities from private consumption?

In this question, we want to know whether a household can distinguish and measure the amount of energy used for business-related activities separately from the energy used for household activities.

The interviewer will probe and get the correct information if the energy consumption for business activities can be separated from private energy consumption.

Question 1.3-B1.8: Is it?

These questions are about the types of business. It will start with agriculture and be followed by other types.

Question 1.8.1: Please specify!

The interviewer will probe and get the correct information on the type of business and fill it in.

Overview Section 1: Businesses operation

Questions asked and Information requested	Yes=1/ no=2	Share	Specification
1. Did you run one or more businesses linked to your household in 2023?			
1.1. Is this the only income?			
1.2. Is it possible to separate the energy consumption of business activities from private consumption?			
Type of business			
Crop Farming			
Livestock breeding			
Charcoal production			
Restaurant			
Brickyard			
Brewery			
Other			

SECTION 2. ELECTRICITY

This section covers “Electricity”. It starts by mapping the different sources of electricity supply in the household.

The household member who will respond to this section should be the most knowledgeable on household electricity and must be aged 15 years or above. Before starting to ask questions about this section, ask the household member if he/she would be able to respond to this section or if somebody else in the household should answer.

Supply and Demand of Electricity

The respondent for the next section should be the most knowledgeable household member on household electricity. A list of household members aged 15 years and above will appear on the tablet screen. Select the correct respondent and continue the interview. Only one person can be selected.

Question 2: Did your household use Electricity from January to December 2023?

The question seeks to know whether the household had electricity usage throughout the year 2023, covering all months from January to December.

Question 2.1: What were the sources of your electricity?

The question aims to identify the different sources of electricity used by the household, which can include a mix of renewable and non-renewable sources. The interviewer will probe and get the correct information on where the electricity supplied in 2023 comes from. Select a response from the list of options.

Note: more than 1 source can be reported!



Fig: Example of national grid connection in Tanzania.

Question 2.1.1: Tanesco?

Tanesco means the **national grid**. It is a network of high-voltage power lines connecting major power stations that cover the whole country or large parts of the country. It is an interconnected network for delivering electricity from producers to consumers.

Question 2.1.2: Minigrid

A **local grid** is an off-grid electricity distribution network involving small-scale electricity generation. Mini-grids are used as a cost-effective solution for electrifying rural communities where a grid connection is challenging in terms of transmission and cost for the end user. The mini-grid can be powered by solar power, hydropower, wind power etc.

Note: In this survey, we are not interested in mapping the power source of the grid/mini-grid. Whether it is hydropower, solar power, or coal is not important. The government already has this information. We are interested in the source of electricity for the household, whether it is the grid, a solar home system, or batteries.

Question 2.1.3: Own solar (e.g. Solar Lantern, Solar Home system, Solar Multi-Light Product)

This is about devices that use solar power in the household. Probing is required in case a household member shows any kind of being unsure of what you are asking him/her. If you are both not sure, ask to see the solar lantern. Explain that this is a device that needs to be exposed to the sun to be able to work.

Solar Lantern: A Solar lantern is a simple application of solar photovoltaic technology, which has found good acceptance in rural regions where the power supply is irregular and scarce. Even in urban areas, people prefer a solar lantern as an alternative during power cuts because of its simple mechanism. It comes with only one light bulb. Some have a small separate solar panel, while others have the solar panel incorporated into the lamp. Some devices can also be used to charge a mobile phone or have a radio incorporated.

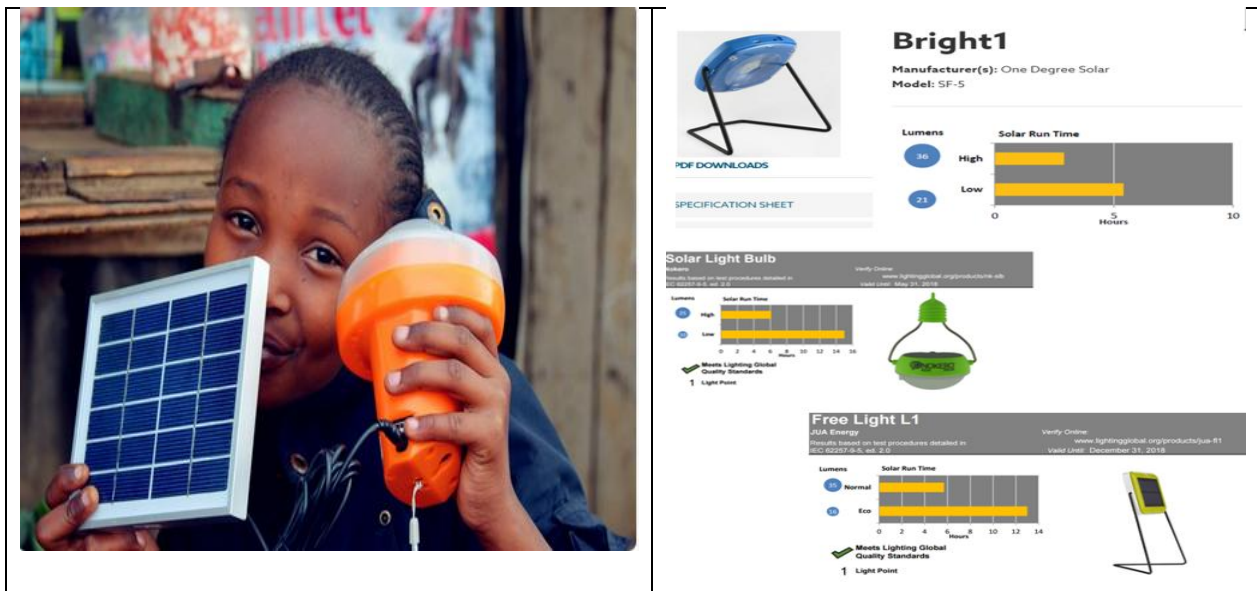


Fig: Examples of solar lantern

Solar home system (SHS) with a separate battery: The most advanced type of solar power. SHS is a stand-alone photovoltaic system that offers a cost-effective mode of supplying convenient power for lighting and appliances to off-grid households. Has a

separate solar panel and at least one separate battery to store energy for use when the sun is not shining. The system can power appliances (e.g. radio, fan).

It can come with e.g. 2+ light bulbs AND mobile charging AND/OR radio, television, fan, and other appliances.



Fig: Solar Home System (SHS) from the Shop

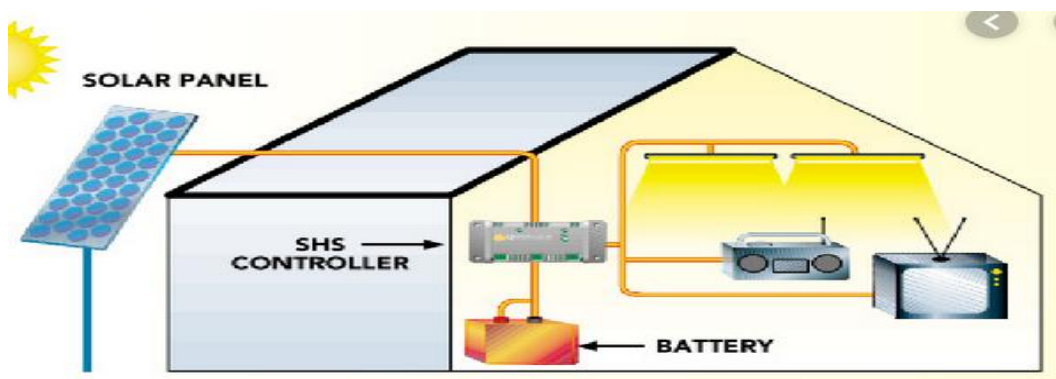


Fig: Solar Home system (SHS) when connected



Small solar home system



Solar panels and batteries for solar home systems.

Solar Multi-Light Product: Medium advanced solar power. Can power more than one light and charge mobile phones. Separate solar panel. It comes with an integrated battery (no separate battery).

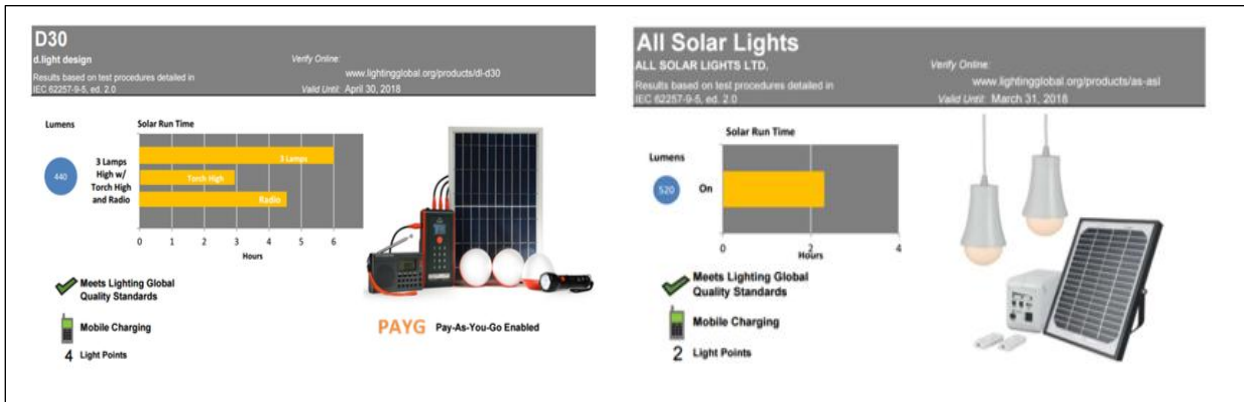


Fig: Solar Multi-Light product



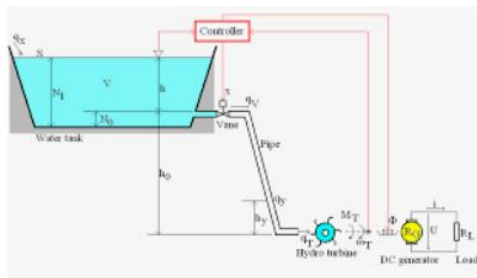
Question: 2.1.4 Own Generator



Small generators can be used as backup or main electricity supply devices. They can be operated with different fuel types. Quantities of these fuels used and related expenditures are requested either monthly or annually in Questions 2.1.4.1- 2.1.4.5. Fill in respective quantities and expenditures and tick the reporting period (month or year).

Question: 2.1.5 Other

These questions are about the household’s possible use of other electricity sources e.g. “Pico-hydro power”. Fill in the reported source. See the diagram of Pico-hydro below;



Pico-hydro power plant diagram | Download Scientific... researchgate.net



Hydroelectric Energy: Pico Hydro hydroelectric-energy.blogspot.com



Pico hydro turbines for electricity in rural ... journals.openedition.org

Figure: Pico-hydro power

Question 2.2: What is electricity used for?

The interviewer will probe and get the correct information on where the electricity supplied in 2023 comes from. Select a response from the list of options (Question 2.2.1-2.2.7)

Question 2.2.8: If 2.2.1 to 2.2.7 are 2: What do you use electricity for?

This question will be asked only if q2.2.1 to 2.2.7 the answer is “No”. we want to know if the electricity is used differently apart from the mentioned.

Question 2.3: What were the quantities purchased in the last month?

This question focuses on the calendar month before the date of the survey. In the case of this survey, it means April or May 2024. Although the survey focuses on 2023, we ask 2024 here, because it is highly unlikely that the respondent can provide reliable figures for 2023. On the other hand, the electricity consumption pattern is likely rather stable.

Question 2.4: What kind of tariff do you have?

This has to do with the requirements of the clients. The interviewer will fill in the kind of Tariff if it's D1, T1, T2, or T3. Examples of the Tariffs are shown in Table2

Table 2: Tariff Categories in Tanzania

Tariff Category	Tariff (TZS)	Description
Domestic Low Usage Tariff (D1)	100 (+350)	</= 75kWh
General Usage Tariff (T1)	292	75 – 7,500kWh
Low Voltage Usage Tariff (T2)	195	>7,500kWh with less than 500kVA
Medium & High Voltage Usage Tariff (T3)	MV – 157	Charged at 11kV and above
	HV – 152	

Question 2.4.1: How much did you pay for electricity in the last month?

This question focuses on the calendar month before the date of the survey. In the case of this survey, it means April or May 2024. Although the survey focuses on 2023, we ask 2024 here, because it is highly unlikely that the respondent can provide reliable figures for 2023. On the other hand, the electricity consumption pattern is likely rather stable.

Overview Section 2 Electricity

Questions asked and Information requested	Yes=1/no=2	Frequency annually=1 monthly=2	Quantity in l/kwh	Specification	Expenditures
2. Did your household use Electricity during the period of January to December 2023?					
2.1. What were the sources of your electricity?					
Tanesco					
Minigrid					
Own solar					
Own generator					
Diesel					
Petrol					
Kerosene					
Other					
Other					
2.2. What is electricity used for?					
Business					
Lighting					
Consumer and office electronics					
Kitchen Appliances					
Charger					
Air condition					
Other					
2.3. What were the quantities purchased in the last month?					
D1 Contract					
T1 Contract					
T2 Contract					
T3 Contract					
2.4. How much did you pay for electricity in the last month?					

SECTION 3. Use of Fuels for Cooking, Cooking Behavior, and Types of Stoves used for Firewood and Charcoal

This section captures the type of energy carriers used for cooking and the cooking solutions (see Tab.: Section 3 overview). It therefore mainly focuses its attention on firewood and charcoal as mostly used fuels and on the kind of cookstoves (can be Improved cookstoves (ICS) or Local Cookstoves) the households use for cooking and their potential health implications. To receive reliable results the quantities of firewood and charcoal used for one activity should be requested and weighted by the interviewer with the electronic scale provided. It is strongly recommended that *the household member who most frequently cooks food for the household*. But, if she/he is not present, then, the interviewer will choose any adult member of the household aged 15 years and above. More than 1 fuel can be reported.

Question 3: Do you cook mainly indoors?

This question aims to understand whether the majority of the household's cooking activities take place inside your house typically inside the kitchen, as opposed to outside (e.g., in an outdoor kitchen or on a grill). The interviewer will request if the household cooks mainly indoors.

Question 3.1: Do you use cooking activities during the cool season also for space heating?

Apart from cooking activities, we want to know if the household utilizes the heat generated from cooking to help warm the dwelling during the colder months. The interviewer will request if the fire used for cooking is additionally used to heat the dwelling.

Question 3.2: Do you use cooking also for water heating for other purposes than cooking?

This question seeks to know if after cooking the cooking fire is also used for heating water e.g. dishwashing, clothes washing, and/or body care.

Question 3.3-3.14: Do you use "xxxx" for cooking?

These questions are about the types of energy used for cooking and the number of respective actions per week. Examples: If firewood is used daily 3 times for cooking the respective number is 21 times a week (=7 days).

It will start with electricity and be followed by other types of energy commodities.

In the case of fuel wood and charcoal, the respondent will be asked what type of stove is used (see pictures below). The interviewer will ask to see the oven for easy identification of the right type of stove and then he/she will select the response from a list of options. Furthermore, the interviewer will ask to provide the quantity of firewood and/or charcoal

used for one cooking action and the interviewer will weigh these quantities and fill in the weight in kg (see example below, **has to be adapted to the type of scale we provide**).

Question 3.15: What energy commodity do you use for cooking?

This question becomes relevant only if all answers in **Questions 3.3-3.14** are “No”. In this case, the interviewer will ask the respondent directly to report the fuel he/she uses.

To weigh fuelwood, adopt the following procedure. The respondent is asked to form a bundle (or to fill a sack, in case of pellets, briquettes, wood chips or similar types of fuelwood) representing the typical quantity used in 1 day by the household for all possible purposes (cooking, space heating, domestic uses, commercial uses, etc.), excluding the wood used to produce charcoal (to be recorded in section 3).

The enumerator ties the material with a string and weighs it with the provided spring scale. The final quantity is reported in kg.

FIGURE 2. A SPRING SCALE.



If the quantity is too big to form a single bundle or sack, weigh a smaller bundle or sack and report the number of bundles or sacks composing the total quantity. The final quantity of fuelwood will be expressed in kg (for instance: 3 bundles of 1.5 kg each = 4.5 kg). To obtain precise values for the weight of a bundle, the spring balance should be calibrated at the beginning of each day of the survey using a reference weight (for example, of 1 kg). Otherwise, digital scales can be used.



Cookstoves in Tanzania

Tier 0

Tier 1

Tier 2

Tier 3

Tier 4

Tier 5

Fuel: Firewood, dung, twigs and leaves



101 Three-stone stove



102 Round mud stove



111 ICS w/ ceramic fire chamber



121 Rocket stove



131 Lorena 1 Rocket stove with high insulation



141 Lorena 2 Rocket stove with well- sealed chimney

Fuel: Charcoal or kerosene



201 Traditional charcoal stove - Open access for air



211 Charcoal stove, Old ICS
Opening for air may be closed



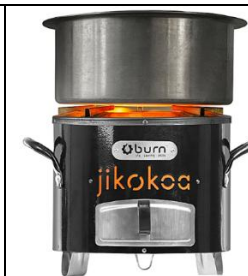
221 Ceramic lined charcoal ICS



231 Ceramic lined and insulated charcoal ICS



233 Kerosene cooking stove (Mehina)



241 Efficient charcoal stove with controlled airflow

Overview Section 3 Cooking

Questions asked / Information requested	Yes=1/no=2	Frequency	Quant. in kg	Specification
3. Did you cook mainly indoor?				
3.1. Did you use cooking activity during cool season also for space heating?				
3.2 Did you use cooking also for water heating for other purposes than cooking, e.g. dish washing or body care?				
3.3. Did you use electricity for cooking?				
3.4 Did you use LPG for cooking?				
3.5. Did you use kerosene for cooking?				
3.6. Did you use paraffin for cooking?				
3.7. Did you use natural gas for cooking?				
3.8. Did you use biogas for cooking?				
3.9. Did you use bioethanol for cooking?				
3.10. Did you use fire wood for cooking?				
Three-stone stove				
Round mud stove				
Improved cooking stove				
Rocket stove				
Burned mud/clay stove				
Lorena 1 Rocket stove				
Rocket stove metal				
Lorena 2 Rocket stove				
Moz Metal rocket stove				
3.10.3 Did you heat up water for other purposes than cooking (e.g. dish washing) directly after cooking?				
3.11. Did you use charcoal for cooking?				
Traditional charcoal stove				
Traditional raised charcoal stove				
Old-generation charcoal ICS				
Ceramic-lined charcoal ICS				
3.11.3 Did you heat up water for other purposes like cooking directly after cooking?				
3.12. Did you use other energy carriers?				
3.13. Did you use other energy carriers?				
3.14. Did you use other energy carriers?				

SECTION 4. USE OF FUELS FOR WATER HEATING

This section captures the type of energy carriers used for water heating (see Tab.: Section 4 overview). To receive reliable results the quantities of firewood and charcoal used for one action should be requested and weighted by the interviewer with the electronic scale provided. More than 1 fuel can be reported.

Question 4: Do you heat water regularly for other purposes than cooking and independently from cooking?

The question is whether the household routinely heats water for uses other than cooking, and if this heating is done separately from your cooking activities. The interviewer will request if the household is doing so.

Yes: If the households regularly heat water for purposes such as bathing, cleaning, or home heating, use a separate process from cooking.

No: If the household does not regularly heat water for these purposes or if the household only heat water as part of cooking activities.

Question 4.2-4.14: Do you use “xxxx” for water heating?

These questions are about the types of energy used for water heating and the number of respective activities per week. Examples: If electricity is used daily 2 times for water heating the respective number is 14 times a week (=7 days).

It will start with electricity and be followed by other types of energy commodities.

In the case of fuel wood and charcoal the interviewer will ask the respondent to provide the quantity of firewood and/or charcoal used for one activity and the interviewer will weigh these quantities and fill in the weight in kg.

In case solar heat is used (see systems below) the interviewer requests the system. In the case of an advanced system, the interviewer requests the solar panel area in m² or the installed capacity in kwh, fills in the reported value, and ticks the respective unit.

Simple Solar Pleasures



Simple Solar heat systems



Advanced solar heat system

Question 4.14: What energy commodity did you use for water heating?

This question becomes relevant only if all answers in **Questions 4.2-4.13** are “No”. In this case, the interviewer will ask the respondent directly to report the fuel the household uses.

Overview Section 4:

Questions asked and Information requested	Yes=1/no=2	Frequency	Quantity in kg	Specification	m ² /kWh
4.1. Do you heat up water regularly for other purposes than cooking and independently from cooking?					
4.2 Do you use electricity for water heating?					
4.3 Do you use LPG for heating?					
4.4. Do you use kerosene for water heating?					
4.5. Do you use paraffin for water heating?					
4.6. Do you use natural gas for water heating?					
4.7. Do you use biogas for water heating?					
4.8. Do you use bioethanol for water heating?					
4.9 Do you use fire wood for water heating?					
4.10 Do you use charcoal for water heating?					
4.11 Do you use solar heat for water heating?					
4.12. Do you use other energy carrier?					
4.13. Do you use other energy carrier?					

SECTION 5. USE OF FUELS FOR SPACE HEATING

This section captures the type of energy carriers used for space heating. To receive reliable results the quantities of firewood and charcoal used during one day should be requested and weighted by the interviewer with the electronic scale provided. More than 1 fuel can be reported.

Question 5: Did you use additional energy commodities for space heating last year?

This question is only relevant if the respondent has answered “yes” in Question 3.1. in section 3. The interviewer will request if the household is using other energy carriers additionally.

Question 5.1: Did you heat your dwellings last year?

This question is only relevant if the respondent has answered “no” in Question 3.1.

Question 5.2-5.10: Did you use “xxx” for space heating?

These questions are about the types of energy used for space heating and the number of weeks the dwellings were heated last year.

It will start with electricity and be followed by other types of energy commodities.

In the case of fuel wood and charcoal the interviewer will ask the respondent to provide the quantity of firewood and/or charcoal used for one day and the interviewer will weigh these quantities and fill in the weight in kg.

In case solar heat is used (see a usable system below) the interviewer requests to see the system. The interviewer requests the panel area in m² or the installed capacity in kwh, fills in the reported value, and ticks the respective unit.

Question 5.11: What energy commodity did you use for space heating?

This question becomes relevant only if all answers in **Questions 5.2-5.10** are “No”. In this case, the interviewer will ask the respondent directly to report the fuel the household uses.

Question 5.12: What is your main heating system?

The respondent will be asked what type of stove is used (see pictures below). The interviewer will ask to see the oven for easy identification of the right type of stove and then he/she will select a response from a list of options.

If the heating system and the fuel type reported mismatches a warning pops up and the interviewer has to clarify if either the fuel or the heating system is reported wrongly.

Portable stove



Stationary oven



Electric heater



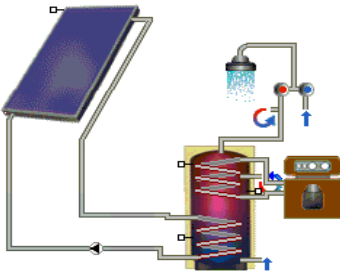
Gas heater



Reversible AC



Solar heat system



Section 5: Space heating

Questions asked/Variables requested	Yes=1/no=2	Period	Quantity in kg	Specification	m ² /kWh
5.0 Did you use additional energy commodities for space heating?					
5.1 Did you heat your dwellings during the cool season 2023?					
5.2. Did you use electricity for space heating?					
5.3. Did you use natural gas for space heating?					
5.4. Did you use biogas for space heating?					
5.5. Did you use LPG for space heating?					
5.6. Did you use kerosene for space heating?					
5.7. Did you use firewood for space heating?					
5.8. Did you use charcoal space heating?					
5.9. Did you use Solar heat for space heating?					
5.10. Did you use others?					
5.12. What is your main heating system?					
Open fire					
Portable stove					
Stationary oven					
Reversible AC					
Electric heater					
Solar heating system					

SECTION 6. LAMPS, CANDLES AND FUELS FOR LIGHTING

This section is about the fuels and appliances used for lighting. At least one fuel or appliance has to be reported, but more than one can be reported.

Question 6: Did you light your dwelling in 2023 regularly?

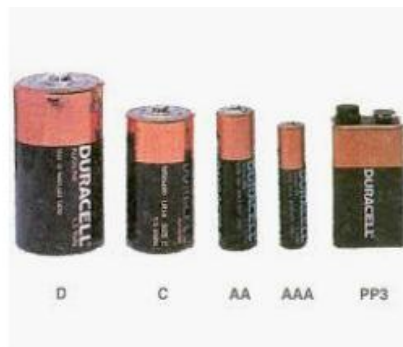
This question is asked to clarify if the household lights the dwelling. If the household does it only in exceptional cases the answer to this question should be “no”.

Question 6.1-6.11: Did you use “XXXX” for lighting?

These questions are about the types of energy/appliances used for lighting, the average number of rooms that were illuminated, and the number of hours the dwellings were lighted last year.

It will start with electricity and be followed by other types of energy commodities /appliances. If dry cell devices are used the interviewer requests the average number of batteries purchased each month.

See the illustrations of dry cell batteries and the devices powered by them below.



Lantern light



Task Light



Flash light

In the case of rechargeable battery lamps, the interviewer requests how often the lamp is charged in one month.

In the case of fuel wood, the interviewer will ask the respondent to provide the quantity of firewood used during one night, and the interviewer will weigh these quantities and fill in the weight in kg.

Question 6.12: What energy commodity did you use for lighting?

This question becomes relevant only if all answers in **Questions 6.1-6.11** are “No”. In this case, the interviewer will ask the respondent directly to report the fuel/appliance the household uses.

Overview Section 6: Lighting

Questions asked/Variables requested	Yes=1/no=2	Room nr	Time	Specification	Quantity/Frequency
6.0 Did you light your dwelling in 2023 regularly?					
6.1. Did you use electricity for lighting (excluding torches and solar lantern)?					
6.2. Did you use LPG for lighting?					
6.3. Did you use kerosene lighting?					
6.4. Did you use candles for lighting (paraffin wax)?					
6.5. Did you use acetylene for lighting?					
6.6. Did you use biogas for lighting?					
6.7. Did you use fire wood for lighting?					
6.8. Did you use solar lanterns for lighting?					
6.9. Did you use torches (using dry cells) for lighting?					
6.10. Did you use rechargeable battery lamp for lighting?					
6.11. Did you use other?					

SECTION 7. FUEL QUANTITIES USED BY PRIVATE HOUSEHOLDS

This section looks at the quantities and related expenditures for all fuels that have been reported to be used for Cooking, Water heating, Space heating, and Lighting by the household except electricity which has been already requested in Section 2.

The requested units have to meet the traded units to the furthest extent possible and are therefore different for each commodity (see examples below).

LPG bottles



Acetylene bottle



Although the survey focuses on 2023, we ask 2024 here in case the reported period is one month, because it is highly unlikely that the respondent can provide reliable figures for the respective month 2023. On the other hand, the consumption patterns are likely rather stable.

If quantities and expenditures are reported the price per unit will be calculated automatically. For all fuels where CPI prices are available, it will be checked automatically if the calculated price is within a +/- 30% interval around the respective CPI price. If this is not the case a warning will pop up and the Interviewer has to clarify with the respondent if quantities or expenditures are more reliable.

In the case of firewood, the Interviewer has to ask the respondent if the wood is stored for three or six months to dry the wood to receive a better quality.

Overview: Section 7: Quantities used/related expenditures

Questions asked/Variables requested	Purchased Yes=1/no=2	Consumption annually=1 monthly=2	Unit/Size kg/l/m ³ /basket	Quantity	Expenditures	Storage period
LPG	[Redacted]					[Redacted]
Kerosene						
Paraffin						
Acetylene						
Candles						
Natural gas						
Biogas						
Fire wood						
Charcoal						[Redacted]
Specified 1 in Section 2-Section 6						
Specified 2 in Section 2-Section 6						
Specified 3 in Section 2-Section 6						
Specified 4 in Section 2-Section 6						
Specified 5 in Section 2-Section 6						

SECTION 8. PRIVATELY OWNED VEHICLES

This section is looking at vehicles in use that are owned by private households. The vehicles are broken down into 4 main types of vehicles: personal cars, duty vehicles, 3-wheelers, and 2-wheelers. From the energy statistics point of view, the main focuses are the type of fuels used and the respective quantities used in the reporting period. The main transport fuels, for the time being, are diesel, gasoline, LPG, and kerosene. Although it's of minor importance today electricity is also requested, because its importance is expected to increase strongly soon.

To receive reliable information on this, two different approaches have been implemented, which in the end should provide similar results: For each vehicle the consumption in litres by 100 km, the overall purchased quantities, the related expenditures, and overall driven km. The implemented checks during the interview will provide the interviewer with the information if the requested variables fit. If this is not the case the Interviewer shall try to figure out the correct information together with the respondent.

Example:

- If the calculated price (=expenditures/quantities) doesn't fit with the respective CPI price it has to be assumed that the reported values are not correct and the following warning will pop up on the tablet: *"The price that is calculated from your reported information is not reliable. Can you please tell me if expenditures or filled-in quantities are correct"*? The interviewer then has to assist the respondent in figuring out if quantities or expenditures are more reliable.
- If the reported overall fuel quantities/by reported overall driven km differs widely from the reported average consumption again a warning will pop up: *"The calculated average consumption doesn't fit with the reported one. Could it be the case that you under-/overestimated the driven km?"*. The interviewer then has to assist the respondent in figuring out reliable information.

Additionally, for each vehicle in use, it is requested if it is used for business purposes e.g. load transport or taxi activities, too.

Overview Section 8: Privately owned vehicles

Questions asked/Variables requested	Ownership Yes=1/no=2	Business use Yes=1/no=2	Number	Quantity	Expenditures	l/100 km	Annual km
8.1.1. Do you own personal cars?							
Diesel							
Gasoline							
LPG							
Kerosine							
Electricity							
8. 1.2 Do you own light duty vehicles?							
Diesel							
Gasoline							
LPG							
Kerosine							
Electricity							
8.1.3. Do you own heavy duty vehicles?							
Diesel							
Gasoline							
LPG							
Kerosine							
Electricity							
8.1.4. Do you own 3-wheelers?							
Diesel							
Gasoline							
LPG							
Kerosine							
Electricity							
8.1.5. Do you own 2-wheelers?							
Diesel							
Gasoline							
LPG							
Kerosine							
Electricity							

SECTION 9. BUSINESS ENERGY CONSUMPTION

This Section is only relevant if Question 1.2 (Is it possible to separate the energy consumption of business activities from private consumption?) was answered with yes.

For all Businesses reported in Section 1, the Consumption and Expenditures for all fuels used will be requested analogous to Section 7.

The requested units have to meet the traded units to the furthest extent possible and are therefore different for each commodity.

Although the survey focuses on 2023, we ask for 2024 here in case the reported period is one month, because it is highly unlikely that the respondent can provide reliable figures for the respective month 2023. On the other hand, the consumption patterns are likely rather stable.

If quantities and expenditures are reported the price per unit will be calculated automatically. For all fuels where CPI prices are available, it will be checked automatically if the calculated price is within a +/- 30% interval around the respective CPI price. If this is not the case a warning will pop up and the Interviewer has to clarify with the respondent if quantities or expenditures are more reliable.

In the case of **Firewood**, the Interviewer has to ask the respondent if the wood is stored for three or six months to dry the wood to receive a better quality.

For **Charcoal Production** the amount of charcoal produced and the wood quantities used for that production are requested. Additionally, information on the Sources of the wood and the kiln type used are asked. Select a response (Yes/No) from the list of options This is important information to be able to assess the impact of charcoal production on the natural environment and the efficiency of the charcoal production process.

Sources of Wood

SOURCE OF WOOD: NATURAL FOREST



SOURCE OF WOOD: FOREST PLANTATION



Kiln Types

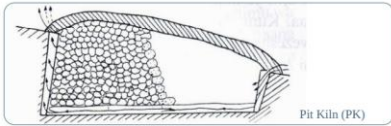


FIGURE 9.
EARTH PIT (1).



FIGURE 10.
EARTH PIT (2).



FIGURE 11.
EARTH MOUND.



FIGURE 12.
CASAMANCE (IMPROVED EARTH MOUND).

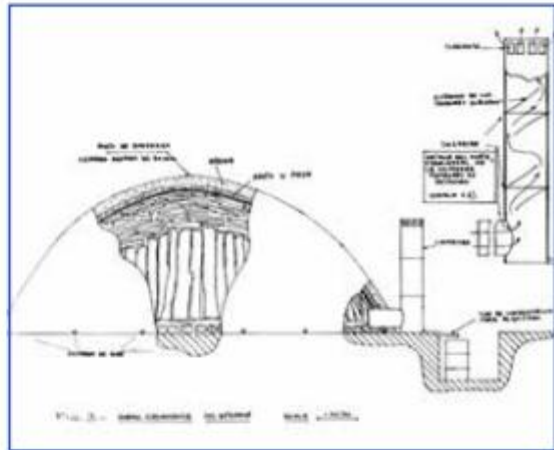


FIGURE 13.
BRICK KILN.



FIGURE 14.
RETORT (AN IMPROVED STEEL KILN).



Overview Section 9: Business related consumption for Businesses reported in Section 1 (except charcoal production)

Questions asked/Variables requested	Yes=1/no=2	Consumption annually=1 monthly=2	Unit/Size kg/l/m ³ /basket	Quantity	Expenditures	Storage period	
Electricity consumption							
D1 Contract							
T1 Contract							
T2 Contract							
T3 Contract							
LPG consumption							
Kerosene consumption							
Paraffin consumption							
Acethylene consumption							
Candles consumption							
Natural gas consumption							
Biogas consumption							
Fire wood consumption							
Charcoal consumption							
Other 1 consumption							
Other 2 consumption							
Other 3 consumption							
Other 4 consumption							
Other 5 consumption							

