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| Institute for International Programs – Johns Hopkins University |
| **Mapping assistant Manual**  **Coverage Survey** |
| *Version [DATE]* |

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REAL ACCOUNTABILITY: DATA ANALYSIS FOR RESULTS (RADAR)

Adapted from DHS / MICS manuals

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# Introduction and objectives

## Background

The Real Accountability: Data Analysis for Results (RADAR) Coverage Survey is a streamlined household survey tool developed by the Institute for International Programs (IIP) at the Johns Hopkins University Bloomberg School of Public Health to measure priority reproductive, maternal, newborn, and child health (RMNCH) coverage indicators for Global Affairs Canada’s (GAC) investments in RMNCH. This tool is adapted from and based primarily on traditional mapping approach used by survey programs as Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) that provide high quality coverage data, generally at regional level. The RADAR survey tool was developed to be implemented by programs in order to track changes in coverage in their program (and comparison) areas over the course of program implementation.

This manual has been prepared to provide all the basic information needed to guide mapping assistants who will perform mapping and enumeration of structures/households for the RADAR coverage survey. Mapping assistants and supervisors for the survey should study this manual and the accompanying forms/tools carefully during their training. The manual should be checked as a reference during the mapping in the field.

## Objective of the survey

**[Adapt objective based on program and country-specific details about aims, objectives, and timelines for the survey]**

The aim of this survey is to improve tracking of implementation coverage for RMNCH interventions as part of GAC-supported projects or programs. The overall objectives are to:

* To generate “real time” (i.e. annual) data on progress and generate results to guide programs
* To standardize GAC’s measurement of implementation coverage in order to promote consistent and comparable baseline and annual reporting

## Objective of the mapping

**[Adapt for country context or project-specific details and sampling strategy]**

People (women, children, men) to interview in the survey live in ordinary residential households which will be randomly selected from a set of sample points consisting of clusters of households. Selected households for the survey are located in clusters. The clusters are randomly selected as well and are small geographical units with well-defined boundaries and consisting of a number of adjacent households (100-200). Prior to selecting households and interviewing eligible people (household heads, women and men), all households located in the selected clusters should be identified through mapping operation. The main objective of mapping is to create a complete and updated list of households and their location as well for all selected clusters. The listing of households for each cluster will then be used for selecting the final sample of households to be included in the survey. In doing so, the objective is to draw a sample of households and individuals who are representative of the total population in the area.

The mapping operation consists essentially of visiting each cluster, recording on listing forms information about every household, and drawing a location map of the cluster along with a detailed sketch map of all structures where households reside. These materials will be used by the coordination team for pre-selecting households to interview, will guide the interviewers to find the pre-selected households for interviewing and will allow fieldwork supervisors to perform quality control during data collection.

# Sampling approach

**[Adapt for country context or project-specific details and sampling strategy]**

This survey uses a stratified cluster sample, where the hamlets are clusters. Households to interview are randomly selected based on a stratified multi-stage cluster sampling. Clusters are stratified according to the type of residence (urban/rural/mixed). Survey coordinators have randomly selected **[XX]** clusters in the urban stratum, **[XX]** in the mixed stratum, and **[XX]** in the rural stratum (figure 1). In total **[XX]** clusters have been sampled and will mapped and enumerated. The survey aims to interview **[XX]** households in each sampled cluster, and **[XX]** households overall.

***Figure 1. Survey sample stratification***

# Mapping assistants’ roles and training

## Roles and responsibilities of mapping assistants

Prior to collecting data, mapping operation will be carried out in each selected cluster by a team consisting of two persons (a mapper and an enumerator/lister). One will work as a mapper to map the structures and clusters while the second one will be assigned the role of enumerator or lister consisting to list all structures and households in the clusters. The mapper and the lister should work together at the same time in the same cluster. They will first identify the cluster boundaries together, and then the mapper prepares the location and sketch map while the lister does the household listing. The sketch map and the household listing form must be prepared in tandem. One (generally the mapper) should be designated as team leader to coordinate mapping process. In summary, mapping team responsibilities consist in:

* Contact the local authorities in their assigned clusters to inform them about the mapping;
* Identify the cluster boundaries, in consultation with local authorities;
* Draw a location map and detailed sketch map showing the location of the cluster and of all the structures it contains;
* List all the structures and households in the cluster in a systematic manner;
* Complete all the required forms;
* Transfer all completed forms and materials to the supervisor or to the central office;
* Whether allow mark the structure number on the door or doorframe of all the structures within the clusters;
* Perform mobilization and sensitization in community about the forthcoming survey;
* Inform supervisors or survey coordinators about problems encountered in the field and follow their instructions for resolving them.

Mapping teams (mappers and listers) works are overseeing by supervisors. Each supervisor will oversee **[XX]** mapping team(s) and a supervisor is responsible for:

* Obtain base maps for all clusters selected for her/his assigned supervision area;
* Assign clusters and workload to teams;
* Ensure that all mapping materials (manual for mapping, forms, supplies, etc.) are obtained before going to the field;
* Plan and organize fieldwork logistics (e.g. arranging for transport and accommodation, obtaining introductory letter, identifying and contacting local authorities and village leaders in each cluster to inform them about the mapping operation and to obtain their cooperation);
* Receive and review duly completed listing forms and maps and ensure that they are safely stored at the central office;
* Ensure that each cluster has been fully covered and listed;
* Monitor and verify that the quality of work is acceptable (location and boundaries well defined, structures on map match with structures on list on households, number of households well enumerated, etc.).

## Training of mapping assistants

Although some people are more adept at mapping than others, any person can become a good mapping assistant through training. The mapping training will consist of a combination of classroom activities (2 days) and field practice (2 days)[[1]](#footnote-1). The classroom training will include presentations, manual reading, explanations and hands-on exercises. Before each training session, you should study this manual carefully along with the accompanying tools, writing down any questions you have. Ask questions at any time to avoid making mistakes or encountering problems during actual mapping. Mapping assistants can learn a lot from each other by asking questions and talking about situations encountered in practice and during actual mapping situations.

Each mapping trainee will receive the following materials:

* Training agenda;
* Mapping manual;
* Mapping forms (listing/enumeration, location map, sketch map, segmentation);
* Notebook, sheets of white paper, pencils, erasers, blue pen.

Please ensure that you bring all these materials each day during the training and during fieldwork. During your formal training period, you will be given tests to see how well you are progressing. At the end of the training course, mapping assistants for the survey will be selected based on their test results and performance during the field practice. If you were not selected at the end of training, you may be called upon to act as back-up in the field at a later day, depending on necessity.

The training you receive as a mapping assistant does not end when the formal training period is completed. You will continue to learn and improve over the course of the mapping and your training will progress each time a supervisor or project coordinator meets with you to discuss your work. This is particularly important during the first few days of fieldwork. As you encounter situations that were not addressed during training, it will be helpful to discuss them with supervisors or project coordinators. Other mapping assistants may be having similar experiences or challenges. Time spent discussing challenges and experiences together or with supervisors can benefit in improving your work.

# Preparing for mapping operation

## Mapping planning and supplies

As mentioned, a mapping work is done by team of two assistants (mapper and enumerator) overseen by a supervisor. Each supervisor is responsible for **[XX]** mapping teams. Mapping/enumeration of a cluster will require approximatively one day or one day and half per team. Prior to arriving in the field, the research coordination team will assign to each mapping team a list of clusters to map with a schedule for completion. The coordination team will provide identification information for each cluster and some details about its location. Mappers and enumerators may be switched up to prevent collusion and ensure good data quality.

Prior going to the cluster, a mapping team must ensure it has the following items:

* Letters of introduction
* Identification badges
* Phone contacts of the study coordinators, and supervisors
* Mapping manual
* List of assigned clusters and their identification information
* Base maps of sampled clusters
* All required forms (listing/enumeration, location map, sketch map, segmentation)
* Supplies (sheets of white paper, pencils, erasers, rulers, blue pens, drawing boards/clipboards, folders to keep forms, bags)

The coordination team or supervisors will inform in advance the community leaders/authorities about the arrival of the mapping teams.

## Process for informing community leaders and households

Once a mapping team arrives in a cluster, the first step is to be in touch with the local authorities to introduce themselves and the institution leading the study, and to explain the purpose of the study and how they expect to work in the cluster and with the community. It is mandatory to obtain local authorities cooperation and to have assistance from a local leader for identifying the cluster boundaries. In addition to mapping, listing households, mapping team should play a role in households’ awareness in relation to the survey to conduct. Mapping activity in a cluster will require approximatively one working day per team.

For each enumeration area (cluster), mapping teams will proceed as follows for information and sensitization of community leaders and households:

* The mapping assistants (MAs) will introduce themselves first to the Village Leader (VEO) and/or the Hamlet Leader and submit introductory letters from NIMR, Local Government Authorities and **[insert implementing organization name]**. The village leader should have received prior information from one of the **[insert implementing organization name]** team members before the mapping day. The Village Leader (VEO) should be the one to introduce the team to the Village Chairperson and the Hamlet Leader.
* MAs will present the purpose of the mapping and review the key messages with the VEO, Village Chairperson and/or the Hamlet Leader at the time of visit.
* Ideally the hamlet Leader will serve as guide by introducing the team to the households to map and moving with the team to every household as the community members feel more comfortable when there is someone that they trust introducing the mapping team.
* At each household, the mapping assistants should present themselves, read the information/recruitment script (see annex 8) presenting the purpose of the mapping, the key messages of the data collection, requesting agreement from the household head to enumerate the household and answer any questions that the household head / household members may have at this time.
* The enumerated households will be informed that only 30 households will be selected for data collection and they may or not be comprised in selected households.

# Mapping fieldwork steps

## Performing mapping fieldwork

Although the two persons in a mapping team have separate tasks to perform, they must move together and work in close cooperation; the mapper prepares the maps, and the enumerator collects information about the structures and corresponding households. The mapping of the cluster and the listing of the households should be done in a systematic manner so that there are no omissions or duplications. The cluster should be divided into parts if possible, and a part can be a block of structures. The team should finish each block before going to the adjacent one. Within each block, start at one corner of the block and move clockwise around the block. In rural areas where structures are found in small groups, the team should work in one group at a time. In each group, start from the center/middle (choosing any landmark, such as a school, to be the center) and move clockwise around it.

Mapping fieldwork operation requires three main steps: locating each cluster, preparing the location and sketch maps of each cluster, and performing the listing/enumeration of all households found in each cluster. In some cases, cluster segmentation may be required. These steps will be described in the following sections.

Remember that the usefulness of the survey sample in representing the population of the survey area depends on the mapping assistants locating and enumerating **all** the households they are assigned. The supervisors and coordinators will carefully keep track completeness and data quality with respect to the number of households listed, accuracy of their location, information provided to locate them, and any problems besides data quality assessment.

## Locating the cluster

For each assigned cluster, the coordination team will provide the mapping team with a base map and some identification information. Upon arrival in a cluster, the team should first contact the local authorities for help in identifying the boundaries and get general information on the cluster, for example, the approximate number of residential households in the cluster. The team will typically make two tours of the cluster: the first to identify the cluster boundaries and to create the location map, and the second to create the listing and draw the sketch map. The location map should include all instructions on how to get to the cluster and any information that can be used to find the cluster and its boundaries. The location map will serve as a guide for interviewer teams when they begin data collection.

The first tour should be done with the assistance of the local authorities where the cluster is located. During this first tour, the team should determine an efficient route of moving for listing all structures in the cluster. In most cases, the cluster boundaries are recognizable by natural features such as streams or rivers, or features such as roads or railroads. However, in some cases such as in rural areas where the cluster boundaries may not be marked with visible features, particular attention should be paid to the information provided on the base map. In such cases, assistance from local authorities will be particularly helpful to demarcate a cluster area according to mapping procedure. You must then clearly and accurately mark on the location map the main landmarks and physical features observed in the cluster. These include roads, foot-paths, bridges, streams, ponds, hills, wells, schools, health centers, churches, mosques, administrative buildings and other natural and man-made features (see section 6.2). You should draw the cluster location map on the location map form (annex 2).

In addition to a page for drawing the location map (annex 2), this form contains a cover page (annex 1) where information for identifying and locating the cluster should be entered. The mapping assistants must fill out the name and number of the district, ward, village, and cluster, the type of residence (rural, mixed, or urban), the mapping assistants’ names and team number, and the date of mapping. Where indicated, they must also provide all relevant information concerning how to access to the cluster, the cluster boundaries, main landmarks in the cluster and any difficulties encountered during the mapping (e.g. areas that are difficult to access, difficulties working with local authorities or community, etc.). This information will be useful for the survey team during data collection. The location map form must contain a key to read it as well, and an arrow showing the North direction (see section 6.3). Annex 6 shows an example of a cluster location map.

## Drawing a cluster sketch

After identifying the cluster boundaries during the first tour, the mapping team will tour the cluster a second time to create the structures and households listing and draw the sketch map of the cluster. A sketch map is a detailed map of the cluster showing all its structures in addition to main features. The sketch map form must contain a key or legend to read it, and an arrow showing the North direction (see section 6.3) should be marked. Annex 3 is the form to use to draw the detail sketch map and an example of a sketch map is shown in annex 7. In the second tour of the cluster, using the sketch map form, the mapper will draw a sketch map of all structures found in the cluster (including vacant structures and structures under construction) as follows:

1. Marking the starting point with a large ‘**X**’.
2. Identify each structure on the map by a small square at the spot where it is located in the cluster. Non-residential structures should be identified by their use (e.g. school, shop, or factory).
3. Number all structures in sequential order beginning with “1”. Whenever there is a break in the numbering of structures (e.g. when moving from one block to another), use an arrow to indicate how the numbers proceed from one set of structures to another. Although it may be difficult to pinpoint the exact location of the structure on the map, even an approximate location is useful for finding the structure in the future.
4. Add to the sketch map landmarks (e.g. hill, park), public buildings (e.g. health facility, school, or church) and streets or roads. Sometimes it is useful to add to the sketch map landmarks that are found outside the cluster boundaries, if they are helpful in identifying the boundaries and other structures inside the cluster.
5. Add a map key to use for reading the sketch map. Section 6.2 shows some symbols commonly used as map key.
6. If allowed[[2]](#footnote-2) and with permission, use a marker or chalk to write on the door or doorframe of the structure the number that has been assigned to the structure on the sketch map. Note that this is the assigned serial number of the structure on the household listing form. In order to distinguish the survey number from other numbers that may already exist on the door/frame of the structure, write the survey abbreviation provided by the coordination team as prefix followed by the cluster and the structure numbers. For example, BS/45/16 would be used as BS for survey name (BS for Baseline Survey), 45 for the cluster number and 16 for the sequential number of the structure. It is very useful to write the structure ID number at the entrance to later assist the interviewer to identify the household for interview.
7. Ensure that all of the structures within the cluster boundaries are covered.
8. A structure is called a multi-unit structure if there are more than one household in the structure. Otherwise it is called a single-unit structure. All households found in a structure or multi-unit structure must be numbered from 1 to n, within the structure[[3]](#footnote-3).

The mapping team should be careful to locate hidden structures. In some areas, structures have been built so haphazardly that they can easily be missed. If there is a pathway leading from the listed structures, check to see if the pathway goes to another structure which is part of the cluster. People living in the area may help in identifying any hidden structures within the cluster.

## Collecting GPS waypoint for each cluster

**[Adapt for country context or project-specific needs]**

A GPS waypoint is a latitude and longitude reading that represents a cluster geographical location. An elevation or altitude will be recorded too for locating a cluster. Five GPS waypoints per cluster will be captured by the mapper while he/she is mapping the clusters. One waypoint is the GPS coordinates of the middle of the cluster. The other four waypoints represent the coordinates for four sides of the cluster boundaries **[Adapt to project-specific needs; e.g. whether a waypoint is required for each structure/dwelling]**. The GPS waypoints coordinates are read using a GPS unit and recorded on the cluster identification form (see annex 1) **[Adapt whether a waypoint is required for each structure, in that case the coordinates are recorded on the enumeration form]***.* Technical instructions on how to use the GPS device according to GPS unit brand will be provided during the training. However, to mark and save a waypoint, the following steps are necessary:

1. Seek for a place with a clear view of the sky;
2. Check the estimated accuracy of the reading to be less or equal to 5 meters;
3. Make the waypoint reading near the centre/middle of the cluster **[Adapt if a waypoint is required for each structure, in that case the reading should be at the front of the main structure of the household]**;
4. Mark the waypoint;
5. Rename the waypoint to match the cluster number (e.g. BS45) **[adapt whether a waypoint is required for each structure, in that case the reading should be at the front of the main structure of the household]**;
6. Save each waypoint on the GPS unit;
7. Record the waypoints coordinates information (latitude, longitude, altitude, accuracy) on the identification form (see annex 1).
8. Draw a circle on the sketch map of the cluster at the location where the waypoints are captured.

## Completing the enumeration form

Since the mapper and enumerator works in close cooperation and move together in the cluster, the enumerator will fill out the household enumeration or listing form while the first one draws maps. Using the enumeration form,the enumerator willrecord all structures and households found in the cluster as follows:

1. Begin by entering the identification information of the cluster.
2. Leave the first column blank which is reserved for office use only.
3. ***Column (1)*** *[Serial Number of Structure/Dwelling]:* Record for each structure the same structure serial number that the mapper enters on the sketch map. All structures must be listed and marked on the sketch map, including vacant structures and structures under construction, as well as structures where the household members refuse to co-operate, or are not at home at the time of listing.
4. ***Column (2)*** *[Serial Number of Household in the structure]:* This is the serial number assigned to each household found in the structure. There can be more than one household in a structure. The first household in the structure will always have number “01”. If there is a second household in the structure, then this household should be recorded on the next line, and “02” is recorded in column 2. If the structure is an apartment building, assign one serial number to the entire structure (only one square with one number appears on the sketch map), but complete columns 2 through 9 for each apartment in the building individually.
5. **Column (3)** [*Address/description of structure*]: Provide the street address of the structure or any description of the structure that helps to locate it. Where structures do not have visible street addresses (especially in rural areas), give a description of the structure and any details that help in locating it (for example, in front of the school, next to the store, etc.).
6. ***Column (4)*** *[Residence (Yes/No)]:* Indicate whether the structure is used for residential purposes (eating and sleeping) by writing **Y** for “**Yes**”. In cases where a structure is used for commercial or other purposes, write down **N** for “**No**”. Structures used for both residential and commercial purposes (for example a combination of store and home), should be classified as residential (i.e. write down **Y** in column 4). Make sure to list any dwelling unit found in a non-residential structure (for example, a guard living inside a factory or in a church). All structures seen in the cluster should be recorded on the sketch map of the cluster and in the listing.
7. **C*olumn (5)*** *[Name of the Head of Household]:* Write the name of the head of the household. There can only be one head per household. A household should be defined based only as per the definition provided for this survey (see section 6).
8. **C*olumn (6)*** *[Common Name of the Head of Household]:* Write the common name of the head of the household. Some people are well known in community through their common names. Sometimes, heads of household have a same name, so a common name may also help identifying the appropriate person.
9. **C*olumn (7)*** *[Phone number of the Head of Household]:* Enter the phone number of the head of the household or of another household member if available.
10. ***Column (8)*** *[Number of women age 15-49 years in the household]:* Record the number of women age 15-49 years in the household. This column is for data quality control purpose and to plan interviewers’ workload during data collection.
11. ***Column (8)*** *[Number of men age 15-49 years in the household]:* Record the number of men age 15-49 years in the household. This column is for data quality control purpose and to plan interviewers’ workload during data collection
12. ***Column (9)*** *[Number of children under 5 years in the household]:* Record the number of *children under 5* years in the household. This column is for data quality control purpose and to plan interviewers’ workload during data collection.
13. ***Column (10)*** *[Observations]:* Record any special information about the household or structure (e.g. non-residential structure, under construction, or household refusal, no one who speaks the mapper’s language(s)).

## Segmenting the cluster

Some of the selected enumeration areas (EAs) may be very large in population size, and should be subdivided into smaller segments of which only one will be selected for mapping and households listing. Upon arrival in a large EA that may need segmentation, the mapping team should first tour the EA and do a quick count to get the estimated number of households in the EA. As a standard, it is recommended that each EA with 300 or more households to be subdivided into an appropriate number of segments. The team should communicate to the mapping supervisor or the survey coordinator the cluster number, the estimated number of households and the suggested number of segments to be created. The final decision to segment an EA, and the number of segments to be created, can only be taken by the supervisor or coordinator. If possible, the segments should be roughly of equal size and ideally around 100-200 households each. However, it is critical to choose segment boundaries that are easily identifiable. This condition must take precedence over secondary considerations of roughly same size. Dividing an EA into a large number of segments (more than 3) should be avoided if it is not really necessary in order to minimize errors.

Each team should carry a sufficient number of Segmentation Forms (see annex 4) in the field each with a random number printed in the appropriate space on the Form[[4]](#footnote-4). Segmentation and selection of a sampled segment will be carried out as follows:

1. Draw a location map of the entire EA in the first tour as described above;
2. Using clear boundaries such as roads or rivers, divide the EA into segments of roughly equal size in terms of the number of households;
3. Mark the boundaries of the newly created segments on the location map of the EA;
4. Number the segments sequentially, starting at the northernmost point on the map and moving clockwise around the EA;
5. For each segment, do a quick count of the number of dwellings[[5]](#footnote-5), calculate the percentage[[6]](#footnote-6) and cumulative percentage[[7]](#footnote-7) of dwellings;
6. Using the Segmentation Form, record the identification information of the EA, the segments numbers, and the size of each segment in the appropriate columns (number of dwellings, percentage and cumulative percentage);
7. Compare the cumulative percentage of dwellings with the random number provided on the Segmentation Form;
8. Select the first segment for which the cumulative percentage is greater than or equal to the random number;
9. Draw a sketch map of the selected segment and list all the households found in the selected segment, as previously described. The selected segment corresponds to the cluster for the survey.

The table below shows an example of segments percentages and cumulative percentages calculation from a segmentation form. There are 348 dwellings in total in the EA, 3 segments to build and the assigned random number is 48. In this example, segment 2 would be selected for mapping and survey, as the cumulative percentage of 67 is the first higher than the assigned random number of 48.

|  |  |  |  |
| --- | --- | --- | --- |
| Segment sequential number  (1) | Number of dwellings  (2) | Percentage of dwellings  (3) | Cumulative percentage of dwellings  (4) |
| 1 | 118 | 34% | 34% |
| 2 | 116 | 33% | 67% |
| 3 | 114 | 33% | 100% |
| Total | 348 | 100% |  |

## Checklist for mapping and sensitization

* Introduction to the village leader (VEO) and/or the Hamlet Leader and submission of introductory letters from NIMR, Local Government Authorities and **[insert implementing organization name]**. The village leader should have received prior information from one of the **[insert implementing organization name]** team members before the mapping day. The Village leader (VEO) introduces the team to the Village Chairperson and the Hamlet Leader.
* Presentation of the mapping operation and review of the key messages with the VEO, Village Chairperson and/or the Hamlet Leader at the time of visit.
* Ideally the Hamlet Leader introduces the team to the households to map and moves with the team to every household as the community members feel more comfortable when there is someone that they trust introducing the Mapping Team.
* At each household, the mapping assistants should present themselves, read the information/recruitment script presenting the purpose of the mapping, explaining the key messages of the data collection, requesting agreement from the head to enumerate the household and answer any questions that the household head / household members may have at this time.
* Draw the needed sketches/maps, fill the different forms (identification, location detailed sketch, enumeration and segmentation if needed) and record GPS coordinates.
* Recall the upcoming data collection and the anticipated period to the head and/or member(s) before leaving each household and to the community leaders before leaving the hamlet.
* Thank the household head / household members and community leaders for their time and cooperation.

# Basic principles for mapping

## Definitions of key terms

An **Enumeration Area (EA)** is the smallest geographical statistical unit created for a housing and population census. For example, an EA can be a city block, a village or part of a village, or a group of small villages. The EA should have well-defined boundaries identified on a map.

A **cluster** is the smallest geographical statistical unit for a survey consisting of a number of adjacent households in an area. A cluster may correspond to an EA or a segment of a large EA with well-defined boundaries. In some setting, a cluster may correspond to a hamlet which is a sub-division of a village, to a part of a hamlet or a group of hamlets depending on the hamlet population size.

A**map**is a flat representation of a country, a region or an area of land. The most general map is called a topographic map. It represents all the elements that are on the surface of the earth.

A **base map** is a reference map that describes the geographical location and boundaries of an enumeration area. It is generally produced for census mapping purpose.

A **location map**is a map produced during the mapping operation that shows the location of the cluster along with its boundaries and main features. It also includes the cluster identification information and instructions on how to get to the cluster and any information that can be used to find the cluster and its boundaries.

A **sketch map**is a map produced during the mapping operation that shows all of the structures found in the cluster during the mapping operation. It also contains features such as landmarks (river, roads), public buildings (e.g. park, school, or temple) and streets or roads which help the interviewer to find the selected households.

A **dwelling unit** is a room or a group of rooms normally intended as a place of residence for one household (e.g., a single house, an apartment, or a group of rooms in a house). However, a dwelling unit can also be shared by more than one household.

A **structure** is a free-standing building that can have one or more dwellings for residential or commercial use. Residential structures can have one or more dwelling units (e.g. a single house or an apartment building).

A **household** consists of a person or group of persons, related or unrelated, who live together in the same dwelling unit, who acknowledge one adult male or female (15 years or older) as the head of household, who share the same living arrangements, and are considered as one unit. In some cases, one may find a group of people living together in the same house, but each person has separate eating arrangements; they should be counted as separate one-person households. Collective living arrangements such as hostels, army camps, boarding schools, or prisons are not considered households. **Household definition during enumeration operation should match with the definition provided during interviewers training and data collection.** Households are found in dwellings, dwellings in structures and structures in clusters.

Examples of households:

* A man living with his wife;
* A man with his wife or wives and their unmarried children;
* A man with his wife or wives living with their married children and partnering to provide for certain basic needs (the group recognizes the authority of a single person);
* An unmarried man or woman with or without children who is the sole provider for their basic needs;
* A widow or widower with or without children;
* A person who rents a room and who does not take his/her meals with the household would be considered as constituting a household;
* A group of unmarried people who share the same housing unit is considered a household if they recognize the authority of one person as the head of household. Otherwise, they are separate households.

A few tips or instructions for identifying households:

* Be sure to probe for potential multiple households in a dwelling/compound (who makes decisions and supports members of the family, where people sleep, whether people eat together, etc.). For large households, please make a note on the enumeration form so that data collection team can plan accordingly.
* For situations where there may be multiple wives: If it is confirmed that the husband is the provider of both (or more) families and the wives (and families) live near each other, this will count as one household (women and children from all the families should be counted). Make a note on the enumeration form in the observation column.
* For traditional doctors who may have many patients staying at their home, please register only those who are usually living there i.e. themselves and any family members or their visitors (that are not patients).
* Note when boundaries for the hamlet are not clear. For example, if there are households physically located within the cluster/hamlet, but do not officially belong to that cluster/hamlet (either for economic or political reasons, etc.).
* Please note on the enumeration form if there are any households where people do not speak Kiswahili. This should be communicated to the Mapping Supervisor who will inform the Data Collection Team.
* If there are no household members present, collect their information from the guide/Hamlet Leader or neighbors and ask the guide/Hamlet Leader if they can inform the household members about the study.

## Maps symbols or reading key

To represent landmarks and main features to mark on a map, the mapping assistant uses some signs or symbols as key for reading the map. Below are some commonly-used signs or symbols:

|  |  |
| --- | --- |
| North |  |
| Cluster boundaries |  |
| Segment boundaries |  |
| Paved road |  |
| Drivable road |  |
| Footpath or trail |  |
| Stream |  |
| Bridge |  |
| Lake, pond, etc. |  |
| Hill or mountain |  |
| Well, borehole |  |
| Bush |  |
| Market |  |
| School |  |
| Hospital, health center, dispensary, etc. |  |
| Administrative building |  |
| Church |  |
| Mosque |  |
| Cemetery |  |
| Residential structure |  |
| Non-residential structure |  |
| Empty structure |  |
| Electric pole |  |
| Cattle dip | CD |

## Geographical orientation

When you are making a map, it is very important to correctly indicate which direction is North on the map. This will allow interviewers to correctly orient themselves using the map when they are in the cluster. The compass included in the GPS unit is the main tool to find the right orientation. As an alternative, you can also find the right orientation as follows:

1. **First, orient yourself on the ground:** Locate the North. The sun rises in the East and sets in the West. When facing East, the North will be on your left, and the south to your right. If you are drawing your cluster map in the morning, stand directly facing the sun, and hold your LEFT arm straight out to the side. This is NORTH. If you are drawing your map in the afternoon, stand directly facing the sun, and hold your RIGHT arm straight out to the side. This is NORTH.

2. **Next, orient the map.** Stand facing North. Hold the map horizontally and turn it so that it is facing the same direction as you. Draw an arrow on the map to indicate North direction.



#### Cluster identification form

|  |  |
| --- | --- |
| ***Items*** | |
| *District name & number* I\_\_\_\_I\_\_\_\_I  *Ward name & number* I\_\_\_\_I\_\_\_\_I  *Village name & number*  I\_\_\_\_I\_\_\_\_I  *Cluster name & number*  I\_\_\_\_I\_\_\_\_I\_\_\_\_I  *Type of residence*  Rural Mixed Urban  *Mapping team names & number*  I\_\_\_\_I\_\_\_\_I  *Date of mapping*  (dd/mm/yyyy) I\_\_\_I\_\_\_I / I\_\_\_I\_\_\_I / I\_\_\_I\_\_\_I\_\_\_I\_\_\_I | |
| *Local leader name & phone #*  *Guide name & phone #* | |
| *Market day or potential days community not available* | |
| *Cluster middle waypoint GPS coordinates* | |
| *Latitude* | *Altitude* |
| *Longitude* | *Accuracy* |
| *Cluster boundary 1 waypoint GPS coordinates (B1)* | |
| *Latitude* | *Altitude* |
| *Longitude* | *Accuracy* |
| *Cluster boundary 1 waypoint GPS coordinates (B2)* | |
| *Latitude* | *Altitude* |
| *Longitude* | *Accuracy* |
| *Cluster boundary 1 waypoint GPS coordinates (B3)* | |
| *Latitude* | *Altitude* |
| *Longitude* | *Accuracy* |
| *Cluster boundary 1 waypoint GPS coordinates (B4)* | |
| *Latitude* | *Altitude* |
| *Longitude* | *Accuracy* |

***Relevant information on and to access to the cluster***

**Main roads and paths to access to the cluster:**

**Information and difficulties in identifying the cluster and its boundaries:**

**Other relevant information:**

#### Cluster location map form

Cluster …………….…………………………………………….…… *I\_\_\_I\_\_\_I\_\_\_I*

|  |
| --- |
|  |

#### Cluster sketch map form

Cluster …………….…………………………………………….…… I\_\_\_I\_\_\_I\_\_\_I

|  |
| --- |
|  |

#### Cluster segmentation form

Cluster name and code I\_\_\_I\_\_\_I\_\_\_I

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cluster’s random number | | | | |  |  | Number of segments  in the cluster | | | |  | Sampled segment | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Segment number  (1) | Number of dwellings  (2) | Percentage of dwellings  (3) | Cumulative percentage of dwellings  (4) |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| Total |  | 100 |  |

***Relevant information about segments and segmentation process***

**Information about the sampled segment and its boundaries:**

**Other relevant information about the segmentation:**

#### Enumeration form for households listing (Type 1)

|  |  |  |
| --- | --- | --- |
| Ward …………………………….…….… I\_\_\_I\_\_\_I  Village ………………….…..………I\_\_\_I\_\_\_I\_\_\_I | Cluster …………….…………………………………….… I\_\_\_I\_\_\_I\_\_\_I  Mapping team *…………………………………........* I\_\_\_\_I\_\_\_\_I | Type of residence R M U  Date I\_\_\_I\_\_\_I / I\_\_\_I\_\_\_I / I\_\_\_I\_\_\_I\_\_\_I\_\_\_I |

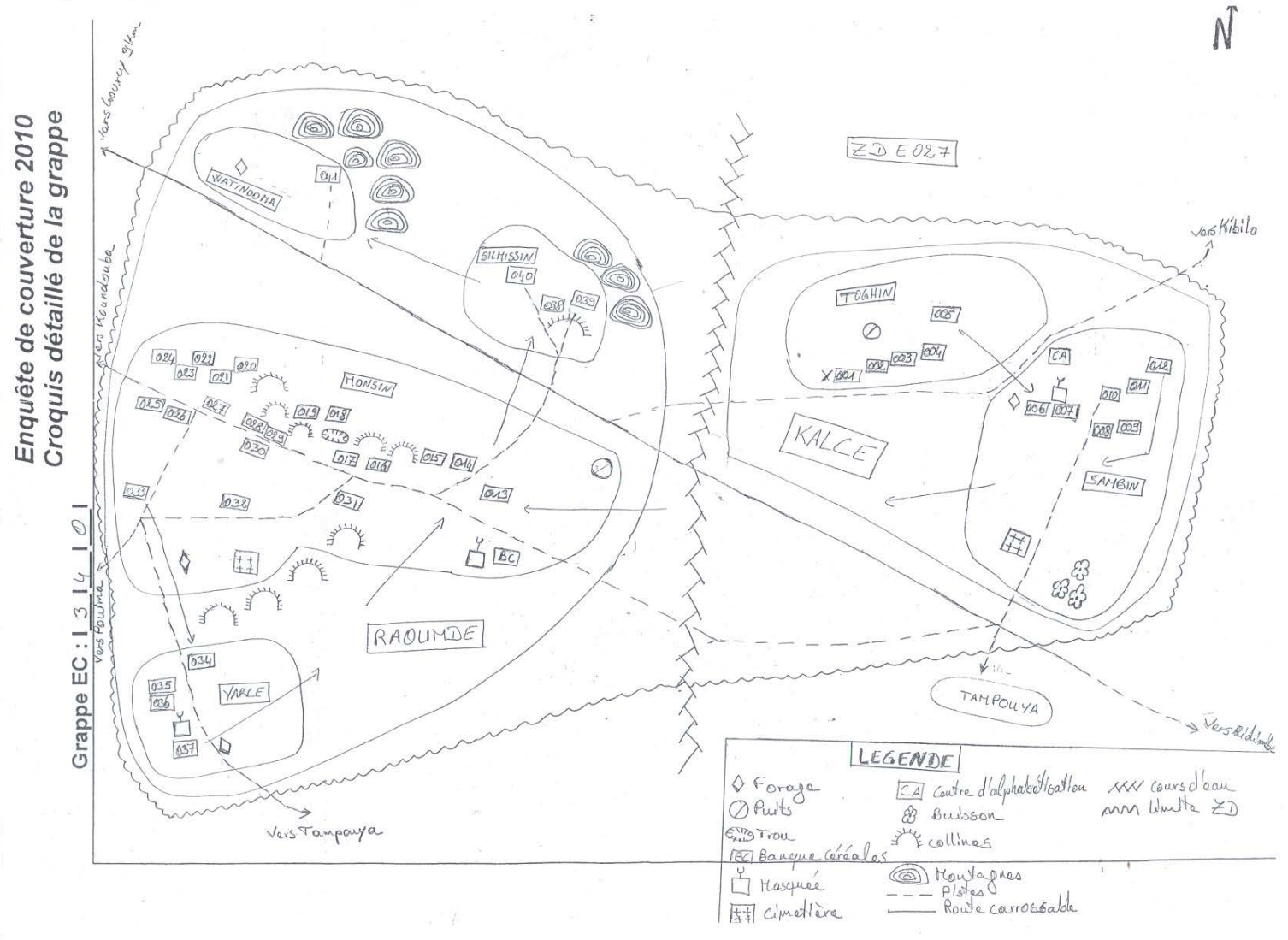
|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Dwelling number  (1) | Household number  (2) | Address/Description of dwelling/household  location  (3) | Residence?  Y / N  If no, record observations or proceed to next structure  (4) | Name of head of household  (5) | Common name of head of household  (6) | Head of household phone #  (7) | ##  F  (8)[[8]](#footnote-8) | ##  M  (9)[[9]](#footnote-9) | ##  C  (10)3 | Observations  (11) |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Dwelling number  (1) | Household number  (2) | Address/Description of dwelling/household  location  (3) | Residence?  Y / N  If no, record observations or proceed to next structure  (4) | Name of head of household  (5) | Common name of head of household  (6) | Head of household phone #  (7) | ##  F  (8) | ##  M  (9) | ##  C  (10) | Observations  (11) |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |

#### Examples of a cluster location map



#### Examples of a cluster sketch map



#### Mapping information/recruitment script

Hello. Our names are [insert name]. We are from **[insert organization]** and our team is in **[insert location]** to collect some information for a project called **[insert project name]**. The project [insert general project objectives]. This study is being done in **[insert number]** households selected throughout **[insert location]**.

We are here today to draw up a list of all of the households located in your community, including asking information about the name and contact information of your household head. We will then select **[insert number]** households from this list which will be visited in the period from **[insert scheduled data collection period]** by trained interviewers to ask some questions using a tablet about the health of the women, men, and children residing in your household. Your household may or may not be selected for these interviews. The list of households will be used only by the researchers selecting households for the study and will not be shared with anyone else. We will destroy the lists after the study is over.

You do not have to agree to be listed. However, if you refuse to be listed, your household cannot be selected to participate in the study. If you agree to be listed, and your household is selected and visited by an interviewer, we will give you more information about the study at that time, and you can choose whether you want to participate in the interviews.

Do you have any questions?

Do you agree to have your household listed?

1. Depending of trainee’s mapping experience, one day of additional field practice may be required. [↑](#footnote-ref-1)
2. IRB clearance may be required [↑](#footnote-ref-2)
3. This number is different from the household number later given to all of the households listed in the whole cluster just prior to household selection. [↑](#footnote-ref-3)
4. The random number may also be communicated by the mapping coordinator upon selecting the segment to map. [↑](#footnote-ref-4)
5. This assumes that one dwelling corresponds to a household. [↑](#footnote-ref-5)
6. Percentage of dwellings is obtained by dividing the number of dwellings in each segment by the total number of dwellings in the EA. [↑](#footnote-ref-6)
7. Cumulative percentage corresponds to the sum of the percentage of dwellings in a given segment plus the percentages of dwellings in sequentially preceding segments. [↑](#footnote-ref-7)
8. Number of women 15-49 years old in the household [↑](#footnote-ref-8)
9. Number of men 15-49 years old in the household

   3 Number of children under 5 years old in the household [↑](#footnote-ref-9)