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FINSCOPE RWANDA 2015/2016 SURVEY

Detailed Methodology

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ABBREVIATIONS AND ACRONYMS

AFR	Access to Finance Rwanda
AFRIC	Access to Finance Rwanda Investment Committee
BNR	National Bank of Rwanda
CESS	Centre for Economic and Social Studies
CSPro	Census and Survey Processing System
DFID	Department Fund for International Development
EA	Enumeration Area
EDPRS	Economic Development and Poverty Reduction Strategy
FSDP	Financial Sector Development Programme
KfW	Kreditanstalt für Wiederaufbau
KPMG	Klynveld Peat Marwick Goerdeler
MINECOFIN	Ministry of Finance and Economic Planning
NISR	National Institute of Statistics of Rwanda
QC	Quality Control
QCI	Quality Control Interviewer
QCS	Quality Control and Support teams
SIM	Subscriber Identity Module
UK	United Kingdom

I. INTRODUCTION

1.1. BACKGROUND

The Rwandan economy has grown significantly over the past decade. However, Rwanda faces challenges relating to continued poverty, particularly in rural areas where more than 80% of the population lives. Achieved economic gains have to some extent excluded rural areas, and high levels of financial exclusion still exist throughout the country, which diminishes economic prospects. The last FinScope Survey (2012) revealed that 72% of the adult population had access to financial services (42% of adults use formal financial services whilst 30% of adults rely only on informal mechanisms) and 28% of the adult population had no access to financial services.

Access to Finance Rwanda (AFR) is a Rwandan investment company established in 2010 by the UK government, the Ministry of Finance and Economic Planning (MINECOFIN) and the National Bank of Rwanda (BNR). AFR is funded by DFID, the World Bank and KfW and it is operated as an independent company trust under the supervision of professional trustees and KPMG East Africa, with strategic policy guidance from Access to Finance Rwanda Investment Committee (AFRIC).

AFR works as a catalyst for financial inclusion by stimulating financial sector stakeholders to provide better products and adequate services. To ensure long-term sustainability and consistency of its achievements, AFR supports the Government of Rwanda's development objectives as well as all interventions are aligned to the national policy frameworks including the Financial Sector Development Programme (FSDP) II and the Economic Development and Poverty Reduction Strategy (EDPRS).

In pursuit of its objectives, the AFR will be funding the FinScope Rwanda 2015/2016 Survey. The FinScope Survey is a research tool that was developed by FinMark Trust¹. It is a nationally representative study which provides insights and understanding with regard to how individuals generate money and how they manage their financial lives.

The FinScope Rwanda 2015/2016 Survey will be the third FinScope Survey conducted in Rwanda. The first survey was conducted by FinMark Trust in 2008 under the auspices of the National Bank of Rwanda. The main objective with this survey was to provide baseline data on access to financial services in Rwanda and to provide insights and understanding in assistance to the Rwandan Government in terms of the Economic Development and Poverty Reduction Strategy I (EDPRS I).

The FSDP II underscores the need to continuously assess the progress made towards achieving the financial inclusion objectives/targets for Rwanda, and the FinScope Survey is suggested as the main reliable way to do assess progress. It is against this background that AFR conducted the FinScope Rwanda 2012 Survey. The results of the 2012 survey have been widely used by government for policy and strategic guidance of the financial sector through the Financial Sector Development Program II (FSDP II), and have been used by the private financial institutions for strategic decisions. AFR will therefore once again be funding the implementation of the FinScope Rwanda 2015 Survey.

CESS Ltd was awarded the FinScope Rwanda Survey contract in 2012 by AFR, and has been contracted again to do the fieldwork for the FinScope Rwanda 2015/2016 Survey by planning and conducting primary data collection, which includes drawing sample, subcontracting the in-country survey organization, developing the protocol and manuals, training the survey staff, overseeing data collection, and managing data.

¹FinMark Trust is an independent trust based in Johannesburg, South Africa, established in March 2002 with funding from the UK's Department for International Development (DfID), and whose purpose is 'Making financial markets work for the poor, by promoting financial inclusion and regional financial integration'.

1.2. SURVEY OBJECTIVES

The broad objective of the FinScope Rwanda 2015/2016 Survey is to track trends within the financial sector, to provide information on how the landscape of access has changed since 2012, and to provide insights into what can be done at both the policy and market level to increase financial inclusion further. AFR and other stakeholders will use the findings to support the development and delivery of services for lower income households, and to assist policy makers to ensure an enabling environment within which these services can be delivered.

The information gathered from the survey will provide a better understanding of the adult population in terms of:

- Their demographic and geographic distribution
- Their livelihoods and how they generate their income
- Their financial needs and/or demands
- Their financial perceptions, attitudes, and behaviors
- Current levels of access to, and utilization of, financial services and products (formal and/or informal)
- The landscape of access (i.e. types of products used in terms of transactions, savings, credit, insurance and remittances)
- Drivers of financial product uptake and service utilization
- Barriers to uptake and utilization of financial products and services
- The size of the market²
- The commonalities and differences between different market segments.

² Market - Adults 16 years and above - The market that could potentially be served, the market that is currently served, and the unserved market.

2. METHODOLOGY

2.1. SAMPLING FRAME FOR FINSCOPE RWANDA 2015/2016 SURVEY

The administrative structure of entities of the Republic of Rwanda is divided into 5 provinces and 30 districts which will be the geographic domain of analysis for FinScope 2015. The districts are further subdivided into 416 sectors and each sector is subdivided into cells, and the lowest administrative units are the villages (imidugudu). There are 416 sectors, 2,148 cells and 14,837 villages in the country. The villages are fairly homogeneous in size, with an average of 164 households each (2012 Census).

The sampling frame for FinScope 2015 will be provided by NISR based on the master sample of EAs (villages) of the 2012 Population and Housing Census. The number of households per sample village will be based on the list of households as provided by the last updated Ubudehe categories at village level. NISR will also provide high quality maps of all sample villages, whose boundaries will be verified during the listing operation.

2.2. STRATIFICATION OF THE SAMPLING FRAME

The main objective of the FinScope survey is to estimate the level of access to financial services by adults aged 16 and above in Rwanda. The sampling frame for the FinScope 2015/2016 will be based on the frame of villages using the Rwanda Population Census 2012 dataset. In this sampling frame there is the number of households for each village. The FinScope 2015/2016 will be based on a stratified three-stage sample design while the sampling frame will be stratified by all 30 districts of Rwanda. In each district, the primary sampling units (PSUs) will be defined as a village, and a sample of PSUs will be selected systematically with probability proportional to size (PPS).

2.3. SAMPLE SIZE AND ALLOCATION FOR RWANDA FINSCOPE SURVEY 2015

Within the sample village, households will be selected from the list of all households which contain at least one adult and finally one member will be selected among those aged 16 years and above to be respondent to FinScope questionnaire. The households sample size is determined using the following formula:

$$n = DEFF * \left[\frac{z_{\alpha/2} \sqrt{p(1-p)}}{w} \right]^2$$

where:

$z_{\alpha/2}$ = coefficient dependent on the degree of confidence (1.96 for the 95 % threshold)

p = proportion for interest characteristics (here, $p = 0.42$)³

w = allowable margin of error (here, $w = 5\%$)

DEFF = effect design as coefficient of adjustment of the size when the sample is drawn at many levels (here $D=1.11$)

³The value of $p = 0.42$ (or 42%) is the proportion of adult population having access to formal financial services as found in FinScope Rwanda 2012.

$$n = 1.11 * \left[\frac{1.96 \sqrt{0.42(1-0.42)}}{0.05} \right]^2 = 415.52 \approx 416$$

Thus, we have a sample size of 416 households and a sample of 26 villages will be selected in each of 30 districts of the country. With 16 selected households in each sample village (cluster), the total sample size at national level is 780 villages (clusters) and 12,480 households for FinScope 2015/2016. The sample will be distributed as shown in the table below.

Table1: Distribution of the sample villages and households by District

District	Number of villages	Number of Households
Nyarugenge	26	416
Gasabo	26	416
Kicukiro	26	416
Nyanza	26	416
Gisagara	26	416
Nyaruguru	26	416
Huye	26	416
Nyamagabe	26	416
Ruhango	26	416
Muhanga	26	416
Kamonyi	26	416
Karongi	26	416
Rutsiro	26	416
Rubavu	26	416
Nyabihu	26	416
Ngororero	26	416
Rusizi	26	416
Nyamasheke	26	416
Rulindo	26	416
Gakenke	26	416
Musanze	26	416
Burera	26	416
Gicumbi	26	416
Rwamagana	26	416
Nyagatare	26	416
Gatsibo	26	416
Kayanza	26	416

Kirehe	26	416
Ngoma	26	416
Bugesera	26	416
RWANDA	780	12,480

2.4. SAMPLE SELECTION PROCEDURES

Within the stratum (district) the sample selection methodology will be based on a three-stage sample design. The procedures used for each sampling stage are briefly described as follows.

2.4.1. First Stage Selection of Sample Villages

In each district, at the first sampling stage villages will be selected from the sampling frame systematically with probability proportional to size (PPS) from the ordered list of villages in the sampling frame. The measure of size for each village is his total number of households. The villages will be ordered together by urban and rural areas and geographically by sectors and cells in order to provide an implicit stratification of the sample.

The following first stage sample selection procedures will be used:

1. Cumulate the measures of size (number of households) down the ordered list of villages within the district. The final cumulated measure of size will be the total number of households in the frame for the district (M_h)
2. Obtain the sampling interval for district h (I_h) dividing M_h by the total number of villages to be selected in district h (n_h). Here, n_h is equal to 26
3. Select a random number (R_h) between 0.01 and I_h , then sample villages in district h will be identified by the following selection numbers:

$$S_{hi} = R_h + [I_h \times (i - 1)], \text{ where } i = 1, 2, \dots, n_h$$

The i-th selected village is the one with the first cumulated measure of size that is greater than or equal to S_{hi} .

2.4.2. Second Stage Selection of Sample Households within a Sample Village

For each sample Village, a systematic sample of households will be selected from the households' listing.

1. All the households should be assigned a serial number from 1 to M'_{hi} , the total number of households listed (having at least on adult)
2. To obtain the sampling interval for the selection of households within the sample village (I_{hi}), we divide M'_{hi} by m_{hi} , total number of households to be selected in village i. Here, $m_{hi} = 16$ households
3. Select a random number (R_{hi}) between 0.01 and I_{hi} . The sample households within the sample village will be identified by the following selection numbers:

$$S_{hij} = R_{hi} + [I_{hi} \times (j - 1)], \text{ where } j = 1, 2, 3, \dots, m_{hi}$$

The j -th selected household is the one with a serial number equal to S_{hij} .

In order to maintain the initial sample size some backup households (8 households in each sample village) will be selected to replace any sample household unavailable to respond for either, the selected member is absent or for an unusual case of refusal.

2.4.3. Third Stage Selection of Qualified member for interview within a Sample Household

In each sample household a member aged 16 years or above will be selected to be interviewed. After the listing of sample household members, a Kish Grid (see Table 2 below) will be used to select the qualified household member. Only adult persons (16 years old and above) are eligible for the FinScope 2015/2016 Survey. Therefore, only one adult person will be selected from each sample household. The units of analysis for the FinScope 2015/2016 Survey will be the adult persons in these households. The following procedures will be used to identify who will be interviewed from the sample household listing.

- Find the number running down the left side of the table that matches the last 2 digits of the questionnaire number, and the total number of household members that qualify running across the top of the table
- Circle the number where these two numbers meet in the table
- This is the number of the person that will be interviewed.

For this selection there are needed the last two digits of the questionnaire number, and the number of qualifying adults (16+) in the sample household.

Table 2: Kish Grid

Questionnaire Number Ends In				Number of qualifying adults in household the qualified respondent must be drawn from																								
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
01	26	51	76	1	1	1	3	2	4	1	3	5	8	6	5	12	10	1	6	8	7	19	19	13	21	13	24	25
02	27	52	77	1	2	3	4	3	1	2	2	3	4	8	3	7	2	5	14	4	15	4	8	6	16	14	22	19
03	28	53	78	1	1	2	1	4	2	7	6	9	3	5	11	2	1	3	11	7	10	16	16	10	5	2	2	3
04	29	54	79	1	2	3	2	1	3	5	8	6	2	4	2	4	8	11	10	16	6	9	10	15	11	12	11	18
05	30	55	80	1	1	1	4	5	6	3	5	7	5	9	8	13	3	2	13	5	18	1	4	1	20	11	5	24
06	31	56	81	1	2	2	2	3	5	6	7	8	7	1	4	9	14	8	2	17	17	14	12	14	22	10	3	14
07	32	57	82	1	2	1	1	4	1	4	1	4	6	3	6	5	7	13	9	2	3	13	14	8	2	7	20	4
08	33	58	83	1	1	2	3	2	5	1	4	2	1	7	10	6	5	4	15	10	5	2	13	4	17	5	17	8
09	34	59	84	1	1	3	2	5	6	2	2	1	9	10	1	10	4	6	6	1	9	10	1	5	6	9	1	12
10	35	60	85	1	2	2	4	1	3	3	6	9	10	11	12	3	9	15	7	8	11	6	3	9	4	3	10	1
11	36	61	86	1	1	1	3	1	4	5	3	1	6	2	9	13	11	14	4	11	4	15	15	17	1	1	23	2
12	37	62	87	1	2	3	1	3	2	7	5	6	5	7	7	8	6	10	3	3	1	12	20	7	13	22	12	16
13	38	63	88	1	1	2	1	5	3	6	4	3	4	6	2	11	13	12	1	15	8	7	2	12	15	21	13	7
14	39	64	89	1	2	3	2	4	1	4	7	8	2	5	6	11	12	9	16	13	16	11	18	18	14	16	18	23
15	40	65	90	1	2	1	4	2	4	3	8	7	7	11	1	3	5	7	12	14	13	8	17	20	19	20	19	11
16	41	66	91	1	1	3	3	1	6	5	1	5	9	10	3	2	11	13	8	12	12	5	6	21	8	8	4	15
17	42	67	92	1	1	2	3	4	2	6	4	2	3	2	12	5	2	10	13	5	8	18	9	16	10	17	16	20
18	43	68	93	1	2	1	4	2	6	4	1	4	8	9	10	7	9	3	12	12	9	7	20	19	9	19	21	13
19	44	69	94	1	2	2	1	3	5	2	8	9	10	4	9	8	13	1	1	14	10	19	10	11	18	15	7	6
20	45	70	95	1	1	3	2	5	4	1	3	8	1	3	8	6	6	9	5	7	13	4	15	1	7	22	15	21
21	46	71	96	1	1	1	2	5	1	7	2	3	2	1	11	4	7	5	3	2	1	3	12	18	5	19	14	9
22	47	72	97	1	2	1	3	1	3	2	6	2	1	8	7	1	4	2	11	8	2	17	4	17	21	16	3	5
23	48	73	98	1	2	3	4	2	2	6	7	7	8	3	4	9	3	6	2	11	11	16	2	8	11	23	6	22
24	49	74	99	1	1	2	1	4	6	3	5	5	3	1	5	13	1	14	8	14	6	15	9	14	3	6	9	17
25	50	75	00	1	1	2	3	3	2	4	6	4	7	5	3	12	12	12	4	6	2	17	11	2	12	4	8	10

2.5. SURVEY INSTRUMENT

The FinScope Survey is conducted face-to-face using a structured questionnaire (with mainly closed questions – *see Annex*) which takes, on average, approximately one hour and a half to administer.

CESS will work closely with the AFR/FinMark Trust research team to adapt and refine the FinScope 2015/2016 questionnaire to take into account changes and developments in the financial sector since the 2012 Survey, at the same time ensuring that the questionnaire includes core questions to enable comparison with the 2008 and 2012 FinScope findings as well as cross-country comparisons.

The modules of the questionnaire to be collected in the FinScope Rwanda 2015/2016 Survey are as follows:

- Module A Localization and Identification of the Household
- Module B Household Register
- Module C Household Information and Demographics
- Module D Access to Infrastructure
- Module E Financial Capacity
- Module F E-Payments and Mobile Money
- Module G Money Management – Saving/Investment
- Module H Money Management – Borrowing
- Module I Money Management – Risk and Risk Management
- Module J Money Management – Remittances
- Module K Banking
- Module L Informal Products
- Module M Farming
- Module N Income and Expenditures
- Module O General Information

The survey instrument has been translated into Kinyarwanda, and is attached as part of this Inception Report. Data will be collected using GSM enabled android tablets, however, a paper-based questionnaire will also be implemented in-country during the pre-test and training sessions to ensure that the questionnaire and the translation can be clearly understood.

2.6. LOGISTICS AND SUPPLIES

The CESS Field Manager will be responsible for making logistical arrangements for the field teams. These include ensuring the availability of working vehicles to transport the field teams within and between clusters, providing advances to field staff to cover field expenses, providing alternative sources of electrical supply to charge tablets, addressing any emergency needs that arise during field work, and ensuring the security of field teams. CESS will follow its standard procedures for providing this logistical support. All field teams will be supplied with the following:

2.6.1. Fieldwork documents:

- Interviewer's Manual
- Maps and lists of selected households for all clusters in the assigned area
- Letters of introduction
- Translated questionnaires and additional questionnaires for use in emergency
- Supervisor Control Sheets
- Interviewer Control Sheets
- Household roster forms

2.6.2. Supplies:

- Clipboards, briefcases, backpacks
- Identification for the interviewers
- Paper clips, scissors, string, staplers and staples, tape, pens and pencils
- Tablet devices (pre-configured) with updated survey questionnaire for interviewers
- Equipment for ensuring tablets are charged at all times
- Waterproof containers and envelopes to store paperwork and, if appropriate, completed questionnaires
- Cell phone with SIM card and charger
- Internet transmission router devices (in-case tablet onboard GSM antenna fails)

2.7. DATA ENTRY PROGRAMMING AND TESTING

CESS will capture survey data on GSM android tablets, the data entry program used is CSPro. Data entry programming and testing is a multi-stage process that starts approximately a few months prior to field work. The CSPro programmed instrument will be tested, and, if changes are required, the specifications, program and codebook will be modified until the programmed instrument passes testing and is agreed upon with the AFR/FinMark team.

The above mentioned version will then be translated to Kinyarwanda to be used during the training of trainers (ToT) which will be followed by a pre-test exercise including data transmission to CESS servers and generation of the QC reports will enable us to filter out any errors and bottlenecks in the whole system. Furthermore a pilot survey will be carried out after the enumerators training and will give us a second tier opportunity to refine any issues we may have encountered in the pre-test. To address any errors found at these levels we will revise the programming specifications, programming, and the codebook, and we will retest the program until it passes the testing procedures. The final revised program will be available for download from CESS's web server and loaded onto all of the tablets by the IT Specialist at the express instruction of the Survey Director after agreement and discussion with AFR/FinMark team. Hence CESS will share with AFR/FinMark team two versions of the CAPI program for comments and feedback before the ToT and the second one before the data collection.

2.8. PRE-FIELD ACTIVITIES

Three major activities will be completed for each cluster prior to fieldwork: community sensitization, household listing, and household selection. CESS will send an advance team to each cluster to complete the pre-fieldwork activities. The advance team will comprise an experienced field supervisor and a lister/cartographer.

2.8.1. Community Sensitization

The advance team will meet with the village head to explain the purpose of the survey and to request community cooperation. The advance team will provide the village head with a letter from MINECOFIN describing the survey and the benefits that will accrue to the country and community from survey findings, and a copy of NISR Visa authorizing CESS team to collect data in the selected clusters.

While in the community and surrounding area, the advance team will identify options for accommodation and meals, and ascertain availability of electricity and internet access in the area.

2.8.2. Household Listing

Prior to the FinScope survey interviews the listing operation of households will be conducted in each sample village in order to provide the sampling frame for selection of sample households and household

members to be interviewed. Indeed, for each household the listing form will provide the total number of household members and the total number of household members aged 16 years and above.

The supervisor of the listing operation will work closely with local authorities. He should verify the boundaries of the sample village in order to ensure good coverage of the sample households. The number of households listed in each village should be compared to the corresponding number from the frame, and any large differences should be investigated using the maps which will be provided by NISR. This will facilitate the quality control of the listing coverage.

The household listing exercise will be completed in about five weeks prior to the start of the pilot survey. The advance team will visit each of the selected enumeration areas (EAs) to collect names of all household members of the village based on the last updated Ubudehe categories for each village. The advance team will also verify boundaries of the village using EAs maps of the 2012 Census as provided by NISR. The name of the household head will also be recorded for each household.

Upon receipt of complete listing information for a selected EA, CESS headquarter staff will enter the information into an excel spreadsheet, which will be encrypted and sent through a secure file transport protocol to a dedicated CESS server.

2.8.3. Household Selection

Once listing information from all EAs (villages) has been received by CESS, the CESS statistician will implement the household selection procedure. The final lists of randomly selected households along with cluster and household identification numbers will be sent to the Field Manager, who will assign clusters and provide the lists of selected households in those clusters to the Field Supervisors. The lists of selected households will be used in field management tasks, and will be programmed into the CSPro instrument loaded onto each interviewer's tablet computer.

2.9. TRAINING, PRE-TEST AND PILOT

Training, pre-test and pilot activities will occur over a five week period preceding the start of fieldwork, as follows:

- Weeks 1-2: Training of trainers, field supervisors, editors and quality control Interviewers (QCI), including pre-testing the data entry program, data transmission, and data receipt and quality control (QC) procedures.
- Weeks 3-4: Training of interviewers
- Week 5: Pilot

2.9.1. Training of Trainers

In weeks 1 and 2, the AFR and FinMark Trust will work with the CESS to train the QC staff selected as trainers for the main field staff training; these staff will also serve as rotating Quality Control and Support team members (QCS). To the extent allowed by the structure and standard procedures of the CESS, Editors, Field Supervisors and Quality Control Interviewers will be trained alongside the QCS. Training will be based on both the Interviewer's and the Supervisor's Manuals, and will cover:

Introduction to the survey: survey objectives, sample, survey modules, survey implementation, confidentiality, field supervisor role

Preparing for fieldwork: collecting materials, monetary advances for field expenses, arranging transportation and accommodations, contacting local authorities

Questionnaire content: location identifiers, household roster, survey modules details

Organizing and supervising fieldwork: assigning households to field teams and tracking completion, observing interviews, monitoring and evaluating interviewer performance, systematic spot checking of household composition, reducing non-response, maintaining motivation and morale, completing work in a cluster

Data management: checking questionnaires for completeness and correct identifiers, archiving data, backing up files, transmitting data

Reporting/communications: schedule and procedures for reporting to the Field Manager and issues that require immediate communication

There will be hands-on training and practice sessions for the use of all technical equipment required for survey implementation, including tablet computers.

2.9.2. Pre-Test

Towards the end of the first week of training of trainers, CESS will conduct a pre-test of the programmed survey instrument. The pre-test will be conducted in rural areas near the training site, and will include individuals who are similar to the planned survey respondents. The pre-test will focus on the survey instrument – whether the flow between modules works well, whether all questions are comprehended, and whether the full range of appropriate responses are available. (Note these issues will have been first considered during the initial pre-test of the hard copy questionnaire and translations.) Simultaneously, the pre-test will identify any problems with the translations and with using the tablet (e.g., skip patterns, navigation between modules).

Any issues with the survey instrument and program will be communicated to the CESS Data Manager, who will see that corrections are made, documented, and tested during the second half of the supervisor's training.

As soon as the survey instrument has been corrected, the revised version will be translated. As soon as the revisions to the program have passed testing, the revised program will be downloaded from CESS's servers and loaded onto all of the tablets by the supervisory staff of the survey organization, at the express instruction of the Survey Director.

The pre-test also will entail testing data transmission, extraction and generation of QC reports at CESS. The CESS Data Manager will closely monitor the success of these systems, procedures, and activities and have any issues resolved.

The IT Specialist will review procedures for addressing issues identified in the QC reports with the Data Manager.

2.9.3. Training of Interviewers

In weeks 3 and 4, the AFR and FinMark Trust will work with the CESS training team to train the Interviewers. Training will be based on the interviewer's manual and will cover:

Introduction to the survey: survey objectives, sample, survey modules, survey implementation, confidentiality, interviewer's role

Conducting the interview: approaching the household, ensuring privacy, asking questions, differences between the printed questionnaire and the tablet screens

Questionnaire content: location identifiers, household roster, survey modules details.

Fieldwork procedures: field team members' roles and responsibilities, reporting to the field supervisor, ensuring high data quality

Entering and managing data on the tablet: tablet and screen components, starting a record on the tablet, general navigation, advancing through modules and groups, entering responses

Completing modules: general instructions, how to administer each module/ask questions/enter responses (question by question)

Hands-on training: Hands-on-training with survey instrument on tablets complete with mock interviews and practice sessions and the use of all technical equipment required for survey implementation.

2.9.4. Pilot Test

At the conclusion of the interviewers' training, the entire field team will conduct a pilot test of all survey procedures, logistics, systems, the revised instrument, and the translations. The pilot test will be conducted in urban rural areas that are not part of the sample. The pilot test will last about one week. At the end of each day, everyone participating in the pilot test will meet to discuss issues and challenges and to identify solutions. Proposed solutions will be tested on subsequent days.

At the conclusion of the pilot, all proposed changes to the survey instrument, translations, procedures, logistics, and systems will be documented and prioritized. The AFR and FinMark Trust will work with the CESS Survey Director, Field Manager and QCS specialists to revise the survey instruments.

Proposed revisions to the survey instrument and data entry program will be communicated to the Data Manager, who will coordinate implementation, documentation, and testing of the final changes. The IT Specialist will ensure the survey instrument, translations, and translated data entry program labels align. Revisions to the instrument and data entry program will take several days, so there will be a hiatus between the pilot and the initiation of field work. Once the program has passed testing, the revised program will be downloaded from CESS's servers and loaded onto all of the tablets by the supervisory staff of the survey organization, at the express instruction of the Survey Director.

2.10. FIELDWORK

This section describes how fieldwork will be implemented.

2.10.1. Management of Field Staff

In order to complete 12,480 interviews with adults aged 16 years and above in their respective households distributed in all the districts (30) of Rwanda, CESS plans to use 60 Enumerators during 52 days of data collection. This is based on the assumption that each enumerator will conduct four (4) interviews per day. The fieldwork will last for 54 days, including 52 days of data collection, one (1) day dedicated for teams' deployment, and another (1) day for redeployment of teams in districts.

For practical and logistical purposes, two pair teams (one team of 4 enumerators) will be deployed together moving from one area to another using one vehicle. Each field team deployed will comprise one (1) Field Supervisor, one (1) QC interviewer, and four (4) Interviewers. In total there will be 15 teams, 15 Field Supervisors, 15 QC Interviewers, and 60 Enumerators to complete the work.

2.10.2. Field Support

Each field team will be visited regularly by a field QCS team. The field QCS team will ensure that field teams have the supplies that they need and that any problems in the field needing support from the central administration are dealt with promptly. They will provide also moral support to the teams, and provide an additional layer of field supervision and quality assurance.

2.10.3. Field Quality Assurance Systems

- ***Remote Supervision and Monitoring of Progress***

CESS will use two quality assurance systems to ensure documentation of sample completion and the quality of data entry. These are a data management system and QC reports.

The data management system will combine case and data management systems as traditionally used in surveys. It will be used to assign and track completion of selected households (i.e. cases) in each cluster. The Field Manager will provide lists of selected households to the Field Supervisor that includes all of the households selected for interviewing in the cluster. The Field Supervisor will assign cases to interviewing teams from among these selected households. The QC Interviewer will review household records in the interviewing teams' tablets to verify that all appropriate modules have been completed, that the location identifiers are accurate, and that the identifiers for eligible respondents are correct and consistent across all modules. The Field Supervisor will send field teams back to households to complete or correct interviews as necessary.

QC reports will be generated by CESS using aggregated data. QC reports will identify data collection problems at the interviewer, team, and cluster level. The QC reports will allow the Field Supervisor to evaluate his/her team's performance in terms of response rates, missing data, outliers, age displacement, and value heaping.

- ***Field Supervision***

Rigorous field supervision will be provided throughout the course of fieldwork by several layers of supervisory staff in order to ensure the quality of the data. The front line for data quality assurance in the field will be the Field Supervisors. The Field Supervisor and the QC Interviewer each will observe interviews conducted by interviewers. The QC Interviewer will review each questionnaire summary closely and will present findings to the Field Supervisor prior to the latter's transmission of the data. The Field Supervisors also will observe all interviewers as they conduct some interviews, spot check a random sample of interviewed households, and provide additional instruction to Interviewers as needed. Field QCS teams will visit the field teams during the course of fieldwork to provide supervision and additional quality assurance.

2.10.4. Data Transmission

Once the QC Interviewer has completed a final review of the questionnaire, the Field Supervisor will send data from the tablet to a web server at CESS, where all survey data are stored. Data transmission will be accompanied by a report listing all data being transmitted. During transmission, data will be protected by sending encrypted files over secure channels to a secure server [using GSM or WiMax technology](#). The Field Supervisors will gain experience transmitting data from the tablets to the web server during the trainings.

Problems can occur during the process of transmitting data from the field that can prevent successful transmission, such as low Internet bandwidth or problems on the tablets, including damaged tablet devices and screens. A number of procedures will be in place to address these challenges. Regarding internet access, the Survey Director will work closely with the IT Specialist to identify the most reliable approaches to accessing the internet, as well as several back-up methods, to ensure frequent and regular submission of data from the field.

Damaged tablets will be sent back to CESS for data extraction. The IT Specialist will make extensive efforts to recover data from any tablets that were damaged; these data will then be subjected to additional testing processes.

2.11. DATA MANAGEMENT

2.11.1. Receipt of Data

Data will be received on a daily basis from the field on a secure [web server](#) at CESS. A report will be generated of the data received that will be compared with a field report of data sent. On a daily basis, the Editors will review the report from the field against the report generated with data on the CESS server. Discrepancies in these reports will be noted and sent for review to the Data Manager, the Survey Director and other team members as appropriate. The Editors will work with the Data Manager to review and, where possible, address the discrepancies in household records received.

2.11.2. Quality Control

Computerized QC reports will be generated on data received by CESS and will check value ranges, skip patterns and consistency across variables; identify missing data, outliers, heaping, and age displacement; and calculate response rates. Of particular interest will be checks of household and respondent identifiers, in order to ensure that data can be linked across modules. The Editors will review QC reports generated on data received on a daily basis. Key issues will be identified and noted on the reports, which will be sent to the Survey Director and the Data Manager.

The Survey Director will work with the Field Manager to ensure re-training to address other issues, where indicated.

2.12. WEIGHTING PROCEDURES FOR SAMPLE HOUSEHOLDS

For the three-stage sample design, the formula for the probability can be expressed as follows:

$$P_{hij} = \frac{n_h \times M_{hi}}{M_h} \times \frac{m_{hi}}{M'_{hi}} \times \frac{1}{m_{hij}},$$

where:

P_{hij} = probability of selection for one eligible member in the j-th sample households in the i-th in the district h

n_h = number of sample villages selected in the district

M_h = total number of households in the district

M_{hi} = total number of households in the i-th sample village

m_{hi} = number of sample households selected in the i-th village in district h

M'_{hi} = total number of households listed in the i-th sample village in district h

m_{hij} = number of eligible members in the j-th sample household in the i-th sample village in district h

The sampling weight is the inverse of this probability of selection. Then, based on the previous expression for the probability, the weight can be simplified as follows:

$$W_{hij} = \frac{M_h \times M_{hi}' \times m_{hij}}{n_h \times M_{hi} \times m_{hi}},$$

where:

W_{hij} = weight for the sample household members selected for FinScope 2015/2016 in the j-th sample household in the i-th sample village in district h.

3. ANALYSIS PLAN & INDICATORS

4.1. ANALYZING FINANCIAL INCLUSION (Analysis plan)

a. Financial inclusion

The concept ‘financial inclusion’ is core to the FinScope methodology. Based on financial product usage, the adult population is firstly segmented into two groups: the ‘financially excluded’ and the ‘financially included’:

Financially excluded individuals are those who manage their financial lives without the use of any financial products or mechanisms external to their personal relationships. If they borrow, they rely on family/friends; and if they save, they save at home.

Financially included individuals are those who have/use formal and/or informal financial products and mechanisms. **Note:** That does not mean that these individuals have the products in their name. They could also, for example, use someone else’s bank account or be covered by some else’s insurance. That includes following indicators:

- **Formally served:** Individuals who have or use products or services from financial institutions that are regulated through an Act of law (formal financial institutions).
- **Informally served:** Individuals who have or use products or services from financial institutions that are not regulated (informal financial institutions and mechanisms) and/or use community based organisations/mechanisms to save or borrow money.
- Those individuals who have or use **both** formal and informal products and services.

Types of financial services: Financial services may be provided formally or informally. Formal financial services are those offered by government regulated financial institutions such as commercial banks, insurance companies, and microfinance institutions. As such, it includes banking products (e.g. bank accounts, debit and credit cards, home loan from a bank), as well as products/services offered by other formal non-bank institutions (e.g. education policy, income payment channels such as Western Union, car insurance, medical aid, etc.). Informal financial services are provided by individuals and/or associations which are not regulated by government, such as private money lenders and savings clubs. While it is easy to distinguish whether a financial product/service is formal or informal for the vast majority of products and services, some country-specific differences might occur. Cooperatives, for example, are generally classified as informal. In South Africa however, cooperatives are classified as formal (i.e. Cooperative Bank).

b. Determinant of financial inclusion

Understanding their demographic landscape as well as the realities and challenges that people face in their daily lives is important as it is likely to affect how people interact with financial services. Therefore, it is imperative to measure the following characteristics and socio-economics information of individuals, household and communities in Rwanda.

This section captures basic demographic and socio-economic information of individuals, households, and communities. It looks at who they are (age, gender, geographical distribution), what they have (education, infrastructure), and what they do with what they have (income generating activities, role of money, coping strategies). All these factors influence the financial lives of people to varying degrees and hence affect financial inclusion.

The rural nature of the population, for example, should be taken into account when considering the overall financial access picture and developing strategies to expand inclusion, as the realities of rural life (e.g. insufficient access to water, sanitation, electricity, physical access to financial services institutions, generally low levels of salaried workers, and higher dependency on irregular income sources such as farming) are important driving forces/barriers to uptake. Note that FinScope uses country-specific classifications for rural and urban areas as provided by the respective national statistics offices.

Low levels of education among the majority of the population also need to be considered when attempting to address issues of financial inclusion. As show here, there is often a direct relationship between education levels as well as financial behaviour and literacy. Further, there is a relationship between education levels, income sources, and levels of income.

In addition to assessing the demographic landscape, it is also important to have a good understanding of what the realities and challenges are that people face in their daily life, e.g. in terms of access to amenities and infrastructure, income and wealth profiles. All of these aspects are likely to affect how people interact with financial services. People who struggle to survive on a daily basis, who do not have access to basic amenities, or who live in an entirely cash-based economy are unlikely to prioritise usage of financial services within their limited means.

Furthermore, it is vital to understand how people generate their income and what the income distribution is. Without knowing the income realities, it will be difficult to understand their financial services usage choices and constraints as income is one of the primary determinants of affordability and, hence, financial inclusion. Understanding the course, regularity and consistency of earned income can also inform the optimal way that financial inclusion services should be structured to unlock usage. This includes:

1. Age
2. Gender
3. Geographical distribution
4. Education levels
5. Sources of income
6. Personal and Household monthly income
7. Infrastructure
8. Housing
9. Agriculture

c. Dimensions of financial inclusion across all types of financial products/services (formal and informal)

Banking, savings and investments, credit and borrowing, remittances, insurance and payments/transactions are some of the financial products and services related to dimensions of financial inclusion. ‘Dimensions of financial inclusion’ refers to the access methodology (Porteous, 2010) which identifies four dimensions, namely uptake, access, usage, and impact. As the latter two are difficult to measure with the available FinScope datasets, this book focuses on uptake and access to financial products/services.

This section provides insight into usage/access, attitudes and perceptions regarding financial products and services, including the following:

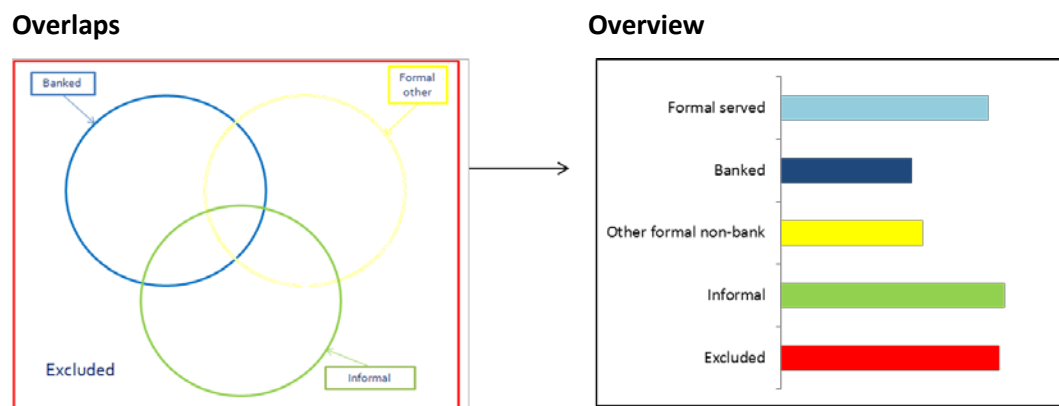
1. Banking penetration
2. Risks and insurance
3. Savings and investments
4. Borrowing and credit/loans
5. Mobile money
6. Financial capabilities
7. Informal mechanism penetration

4.2. FINSCOPE RWANDA 2015 INDICATORS

FinScope tools: Main analytical tools used here include the Overview, Financial Access Strand and the Landscape of Access.

- i. The **Overview** is a bar graph which depicts the total uptake of different types of financial products/services. As this graph includes the overlaps, it adds up to more than 100%. The Overview illustrates total product uptake, the uptake of savings/investment products/services, credit/loan products/services, insurance products/services, as well as remittance products/services.

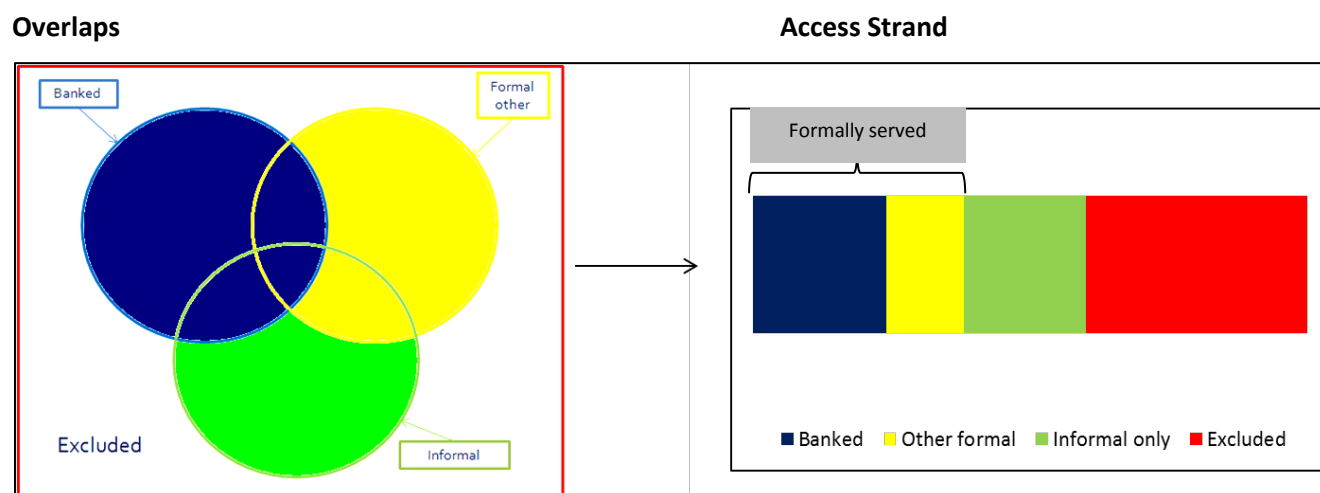
Figure 1: Overview of financial inclusion



- ii. The **Access Strand** is a 100% stacked bar graph which depicts the uptake of different types of financial products/services using a hierarchical approach (without overlaps):
 - The percentage of adults who are banked (**banked**) – identifying adults using commercial bank products. This is not necessarily exclusive usage – these individuals could also be using financial products from other formal financial institutions and/or informal products as well as bank products.
 - The percentage of adults who are formally served but who are not banked (**other formal**) – adults using financial products from formal financial institutions which are not commercial banks such as microfinance institutions or insurance companies. This excludes bank usage, but is not exclusive in terms of informal usage – these individuals could also be using informal products.

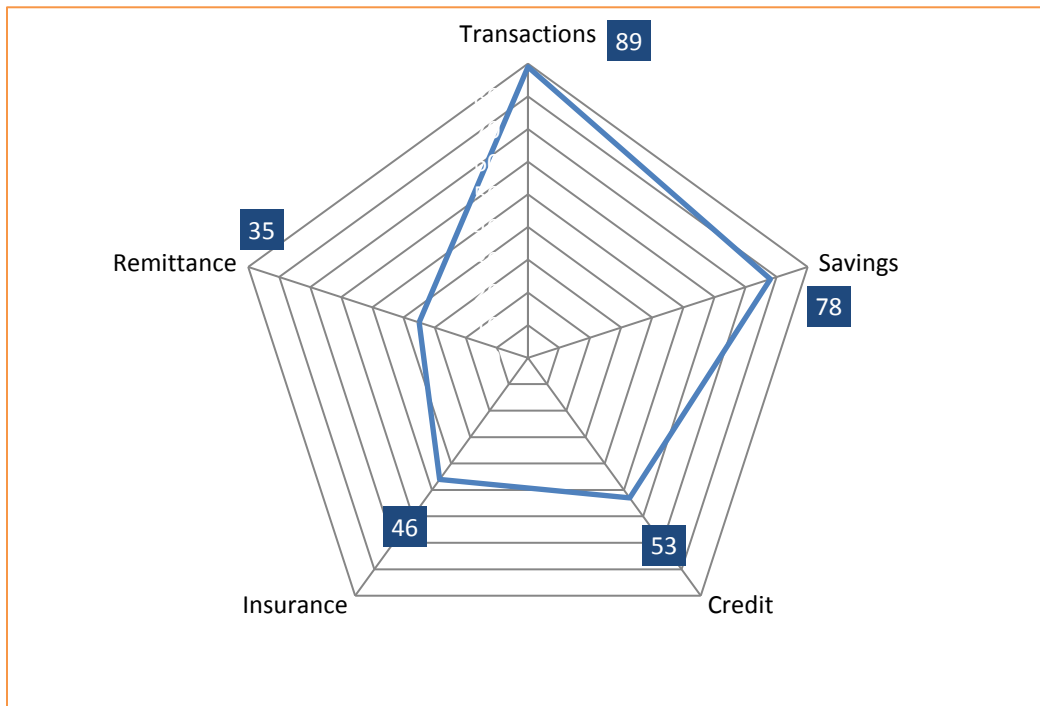
- The percentage of adults who are not formally served but who are informally served (**informal only**) – adults using informal financial products or mechanisms only. This is exclusive informal usage and does not include individuals who are within the banked or other formal categories of the Access Strand that also use informal services.
- The percentage of adults who are excluded/unserved (**excluded**) – adults who do not use any financial products/services to manage their financial lives – neither formal nor informal and depend only on family/friends for borrowing and save at home if they save.

Figure 2: Overlaps removed through Access strand



- iii. The **Landscape of Access** is used to illustrate the extent to which financially included individuals have or use financial products and services (both formal and informal). The web diagram depicts, on its five axes, the percentage of the financially included adults that have or use:
- **Transactional** products/services: secure mechanisms in which funds can be deposited, transmitted, and withdrawn to meet regular transaction needs, e.g. transaction account
 - **Savings/investment** products/services: mechanisms which are used to accumulate funds for future use (short- and/or long-term), whether it is on a contractual or discretionary basis, e.g. savings account, savings group membership
 - **Credit** products/services: mechanisms which are used for the provision of funds in advance against a committed payment stream. This may be further subdivided into secured and personal (unsecured) credit, e.g. bank loan, house mortgage, loan from an informal money lender, taking goods on credit
 - **Insurance** products/services: mechanisms which are used to cover a certain defined risk event in return for a premium, e.g. life insurance, medical aid, burial society membership
 - **Remittance** products/services: mechanism which is used to remit money (sending/receiving) to or from family members, friends, family etc. – which could be considered as a sub-category of transactional product. Given its importance, however, it is featured separately.

Figure 3: Landscape of Access example



4. IMPLEMENTING ORGANIZATION KEY STAFF AND FIELDWORK ORGANIZATION

5.1 IMPLEMENTING FIRM

CESS will direct field implementation of the FinScope 2015/2016 Survey in Rwanda. Created in 2005, CESS is one of Rwanda's leading providers of surveys and statistics consultancy services, with extensive experience in conducting large-scale household surveys. For the FinScope Rwanda 2015/2016 Survey, CESS will plan and conduct primary data collection, which includes drawing the sample, subcontracting the in-country survey organization, developing the protocol and manuals, training field staff, oversee data collection, and managing data.

5.2 KEY STAFF

The key staff (*see Annex 2: CVs*) from CESS who are involved in the FinScope Rwanda 2015/2016 Survey are:

Desire NKEZABAHIZI, PhD

He holds a PhD in Biometrics and Data analysis. He has over 10 years of experience in statistical surveys and censuses, data processing and analysis. As Survey Director, he will oversee administrative and technical activities of the survey.

Prosper NKAKA MUTIJIMA

He holds a Bachelor's Degree in Demography. He has over 20 years of experience in censuses and surveys, and analysis. As Field Manager of the survey, he will be the lead consultant on fieldwork, analysis and reporting activities.

Philippe NGANGO GAFISHI

He holds a Master's Degree in Economic Policy Management and Statistics. He has over 15 years of experience in statistical surveys and analysis. As Statistician of the survey, he will lead sample selection, weighting, data quality control and analysis.

Ananias MUKIZA GICHONDO

He holds a Master's Degree in Economics. He has over 10 years of experience in censuses, statistical surveys and data processing. As Data Manager of the survey, he will be the lead consultant on data processing and analysis.

Mike NDIMURUKUNDO

He holds a Master's Degree in Business and Information Technology. He has over 8 years of experience in managing IT systems, support and training. As IT Specialist of the survey, he will be the lead consultant on development of survey program, training of users and support on tablets.

5.3 FIELDWORK ORGANIZATION

5.3.1 Design fieldwork programme

The design of the programme of allocating enumeration areas to survey teams should be done as soon as the enumeration areas are known. The logistics of transporting teams and materials around the country, and allowances for flooding or climatic difficulties should be taken account of.

5.3.2 Listing of households

All households within the boundaries of the enumeration area should be listed using the agreed procedures. All households will be listed – the only exclusions are institutional households (hospitals, schools, monasteries, hotels, prisons etc.) and refugee camps which have been excluded from the coverage of the 2008 and 2012 FinScope Surveys.

5.3.3 Selection of households

The household selection procedures to be used in the field will be determined by CESS sampling expert. It is recommended that the enumeration areas will be listed prior to the interview of each EA (village) operation by each team, rather than in a single national operation. This is advantageous as the listing will be more up-to-date at the time of enumeration, and so provide more accurate size measures of each area are obtained. In addition selected households will be less likely to have moved and the number of replacements will be reduced.

5.3.4 Survey interviews

Interviews of eligible respondents in the selected households are expected to last for a maximum of 54 days, using 60 Interviewers controlled by 15 Quality Control Interviewers (QCI) and 15 Field Supervisors. Each team (4 Interviewers, 1 QCI and 1 Supervisor) will cover 2 Districts and will spend 26 days in each district plus one day of deployment and one day for moving from a district to another.

A data collection schedule will be designed in advance and supervision will be done by supervisors to ensure the quality of collected data. Quality control and support teams (QCS) will visit interviewed households to verify the accuracy of data collected by interviewers. CESS will ensure that the statistics ethic (Confidentiality) is respected in the whole process of the survey as stipulated by the organic law N° 01/2005 of 14/02/2005 on organization of statistics activities in Rwanda, especially in its Chapter VI.

5. Work Plan

Table 4: Work Schedule for FinScope Rwanda 2015/2016 Survey

Activity	Dates of activity	September 2015				October 2015					November 2015				December 2015					January 2016			
		1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	4	5	1	2	3	4
1. Resumption of activities																							
1.1. Revision of the contract according to the increase of the sample from 6,150 to 12,480 households	31/08/2015–04/09/2015	X																					
1.2. Submission of Work plan to AFR for approval	31/08/2015–04/09/2015	X																					
1.3. Resubmission of Survey instruments by AFR to NISR for Visa and Sample	31/08/2015–04/09/2015	X																					
1.4. Sampling frame to be provided by NISR, including size and distribution, and maps	07/09/2015 – 25/09/2015		X	X	X																		
2. Pretest																							
2.1. Pretest of survey instruments in the field (questionnaire and other forms)	07/09/2015–18/09/2015		X	X																			
2.2. Review of survey instruments (questionnaire and other forms)	07/09/2015–18/09/2015		X	X																			
2.3. Review of data entry application (data dictionary, template, labels, hints, error messages, values)	07/09/2015–18/09/2015		X	X																			
2.4. Design and programming of questionnaire in CSPro to be used on Android Tablets with full functionalities, and draft	31/08/2015 – 18/09/2015	X	X	X																			

Activity	Dates of activity	September 2015				October 2015					November 2015				December 2015					January 2016			
		1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	4	5	1	2	3	4
data collection guide																							
2.5. Design and development of backend system to allow synchronization of all collected data for aggregation and data analysis	14/09/2015 – 25/09/2015			X	X																		
3. Listing																							
3.1. Listing of households (HH) in selected enumeration areas (EAs)	21/09/2015–02/10/2015				X	X																	
3.2. Sampling of HH to be enumerated	28/09/2015 – 02/10/2015					X																	
4. Training																							
4.1. Printing of survey instruments and training manuals for training	21/09/2015 – 25/09/2015				X																		
4.2. Training of trainers (QCS teams, Editors, and Supervisors)	21/09/2015 – 02/10/2015				X	X																	
4.3. Selection and training of Interviewers	05/10/2015 – 16/10/2015						X	X															
5. Pilot																							
5.1. Pilot survey outside the "Selected EAs", Feedback, Review of survey instruments	19/10/2015 – 23/10/2015								X														
5.2. Printing of survey instruments, and Logistic organization	19/10/2015 – 23/10/2015								X														
5.3. Finalization of data entry template on the electronic tablets and the synchronization system	12/10/2015 – 23/10/2015							X	X														
6. Fieldwork																							

Activity	Dates of activity	September 2015				October 2015					November 2015				December 2015					January 2016			
		1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	4	5	1	2	3	4
6.1. Deployment of field staff (Quality Control and Support Team, Supervisors, and Interviewers)	26/10/2015									X													
6.2. Selection of respondents using Kish grid, Fieldwork data collection, and Overall field supervision and Data quality control	26/10/2015 – 01/01/2016									X	X	X	X	X	X	X	X	X	X				
7. Delivery of completed data sets to FinMark Trust and AFR by CESS team																							
7.1. Data cleaning	09/01/2016 – 08/01/2016											X	X	X	X	X	X	X	X	X			
7.2. Merging datasets and final control checks	11/01/2016 – 15/01/2016																				X		
7.3. Reporting	11/01/2016 – 22/01/2016																				X	X	
7.4. Documentation	18/01/2016– 29/01/2016																					X	X

Annex 1. Household Questionnaires (Kinyarwanda and English versions)
(see attached document)

Annex 2. Curriculum Vitae (CV) for the Survey Director

PERSONAL INFORMATION

- Name : Desire NKEZABAHIZI.
- Sex : Male.
- Nationality : Burundian.
- Date of Birth : 30th November 1966.
- Marital Status : Married with three children.
- Career : Senior Statistician, Consultant in Statistics, Biostatistics
Biometrics, Experimental Design, Survey and Census,
Rural Development, Food and Nutrition security.
- Languages : French, English, Swahili, Kirundi, Kinyarwanda
- Current position : Dean of Institute of Statistics and Computers Sciences
Université du Lac Tanganyika

B.P 5403 Mutanga

Bujumbura – BURUNDI

Tél + 257 79 918 581

desirenkeza@yahoo.fr
- Previous Institution : Institut des Sciences Agronomiques du Rwanda (ISAR)
Senior Scientist – Biometrics, Data Management and Analysis
Unit

1. Academic qualifications

1. Ph D. in Agricultural Sciences (Option – Biometrics and Data Analysis) at Université Catholique de Louvain at Louvain-la-Neuve, Belgium **(2001)**.
2. Post graduate Degree at Institute of Cooremans (Haute Ecole Francisco Feller, Brussels Belgium) in Computers Sciences – Information Management **(2003)**.
3. MSc in Agricultural Sciences – Biometrics, at Université Catholique de Louvain at Louvain-la-Neuve, Belgium **(1995)**.
4. Enrolled at the University of Burundi and graduated as an Agricultural Engineering **(1992)**.

Other relevant training

Attended and completed following training:

- **Using SAS on data management and analysis** organized by SAS Institute for Belgium and Luxembourg, Brussels Belgium, March 19-25, 2001
- **Best practices and Guidelines for Water Harvesting and Small Scale Irrigation** organized by Nile Basin Initiative: Efficient Water use for Agricultural Production Project. Bujumbura, Burundi, February 2009.
- **Introductory Course on Organic Production and Certification.** Bujumbura, Burundi. Agro Eco Louis Bolk, UNCTAD, UNEP and Burundi Bureau of Standards and certification.

Ph D/Master of Sciences Supervision

Mentorship of young researchers in Biometrics for ISABU (Burundi Agronomic Sciences Research Institute). *Nepomuscene NTUKAMAZINA (2011). Improving Research methods on bean Breeding at Burundi Agronomic Research Institute.* JomoKenyata University of Agriculture and Technology.

2. Employment experience

1. **World Bank Stakeholders Opinion Country Survey – 2015.** Team leader for IDEC- Burundi team. Bujumbura, January-February 2015
2. **Assessment of Burundi's Agricultural Production, Climate Change, Agricultural Trade and Food security.** Regional Study (East Africa, Burundi team). Consultant Bujumbura September 2014 to April 2015.
3. **Clinical Monitoring Survey of "AGASHI": Socially-Themed Radio Drama of Population Media Center in Burundi.** Team leader of DevCo – CANADA: Methodology, training of enumerators and data clerks, sampling strategy, data field coordinator, data entry and processing, report, team management. Bujumbura, Burundi. September – October 2014
4. **Technical Advisor for Support Project to Burundi Seeds Value Chain. Assessment of seed's demand and supply. Tools to fix seed's prices and plan seed's demand in time. Staff's training.** PAIOSA – Ministry of Agriculture and Livestocks. Bujumbura, Burundi. October 2012 to April 2014.

5. Strategy and plan for financing the Sustainable Land Management in Burundi. Ministry of Water, Environment, Land Management and Urbanism, UNDP, FEM. Bujumbura, Burundi, August- October 2012.

6. Validation Survey of tree's plantations during 2010-2012 for IFDC CATALYST/SEW Project. *Team leader. Methodology of validation, sampling strategy, training of staff, data processing, management of the team* Kigali, Rwanda. July-August 2012.

7. FINSCOPE Survey Rwanda 2012. Access to Finance Rwanda Team Leader CESS and Yakini Consulting Group, Kigali, May – June 2012

8. Validation Survey of tree's plantations during 2010-2011 for IFDC CATALYST/SEW Project. *Team leader. Methodology of validation, sampling strategy, training of staff, data processing, management of the team.* Bujumbura, Burundi. March 2012.

9. Protocol Design analysis for technology transfer in farms by ISABU in KIRUNDO. Bujumbura, Burundi. November 2011

10. Value chains analysis pineapple for Cibitoke province and Citrus for Rumonge. Caritas International Belgique, Bujumbura Burundi, July –August 2011.

11. Training of scientist in Data analysis and management, Experimental Design and Survey, Report writing for SOSUMO (Sugar Industry of Moso), Rutana, Burundi. June 2011.

12. Second survey of stakeholders of PDRT (Transitory Demobilization and Reintegration Project). World Bank Project. *Responsibilities: Development of methodology, sampling strategy, Data weighting and processing. Report writing. Management of the team.* May 2011. Bujumbura. Burundi

13. Data analyst for SPREAD (USAID and National University of Rwanda Project). Analyzing of experiments of coffee eco processing and fermentation time. Butare, Rwanda. **January to December 2011.**

14. Impact Assessment of SP-SPAT (Support Project to Strategic Plan for Agriculture Transformation – IFAD Program as Consultant (November to January, 2010), Kigali, Rwanda. Responsibilities: Sampling strategy, Training of enumerators, data entry, data processing and analysis. Write report.

15. *General Census of Population and Settlement, August 2008, Burundi. – UNFPA Program as Consultant. Analysis of Households and Settlement characteristics. Data processing and report writing. Bujumbura, September 2010*

16. *Baseline study of PAIGELAC (Project of Integrated Management of Inland Lakes) as statistician and data processing expert. Responsibilities: Sampling strategy, Training of enumerators, data entry, data processing and analysis. Participate on report writing. July – august, 2010, Kigali, Rwanda.*

17. *Statistician and Data processing expert for National Agricultural Survey – Preliminary study. Responsibilities: Development of methodology, sampling strategy, Data weighting and processing. Participate on report writing. Ministry of agriculture and Livestock. May to august 2010. Bujumbura, Burundi.*

18. *First survey of stakeholders of PDRT (Transitory Demobilization and Reintegration Project). World Bank Project. Responsibilities: Development of methodology, sampling strategy, Data weighting and processing. Participate on report writing. Management of the team. March to may 2010. Bujumbura. Burundi*

19. *Impact Assessment of Program for Revival and Development of Rural Sector – IFAD. Team leader. Responsibilities : Methodology of evaluation, Sampling strategy, Training of enumerators, data entry, data processing and analysis. Management of the team Write report. (September to December, 2009), Bujumbura, Burundi*

20. *United Nations System as Consultant (April to June, 2009), Bujumbura, Burundi*

Responsibilities: Data base development of UN activities

21. *Ministry of Agriculture and Livestock Resources as Consultant (Mars to May, 2009), Kigali, Rwanda. Baseline Survey for PAPSTA II (Transformation de l'Agriculture au Rwanda). Responsibilities: Sampling strategy, Training of enumerators, data entry, data processing and analysis. Participate on report writing*

22. *Oxfam Québec Project as Consultant (November to December 2008), Bujumbura, Burundi. Impact Assessment of Socioeconomic Reintegration of demobilized with disable Project. Responsibilities: Methodology of evaluation, Sampling strategy, Training of enumerators, data entry, data processing and analysis, Report writing.*

23. *Ministry of Agriculture and Livestock Resources as Consultant (November to December 2008), Kigali, Rwanda. Baseline Survey for KireheWAtershed community based Management Project (KWAMP)*

Responsibilities: Sampling strategy, Training of enumerators, data entry, data processing and analysis. Participate on report writing

24. Institut des Sciences Agronomiques du Burundi. Technical Advisor for Biometrics Unit (May to August 2008). Responsibilities: training of researchers/technicians in data collection, management, processing and interpretation, planning of experiments and surveys, Data management, analysis and interpretation.

25. Institut des Sciences Agronomiques du Rwanda as Senior scientist in Biometrics based at Rubona Station (October 2006 to April 2008).

Responsibilities:Head of Biometrics and Data analysis service, experiment planning and surveys, Sampling strategy, Data management and analysis, interpretation and publication of research findings, training of researchers/technicians in data collection, management, analysis and interpretation. Member of rice program team : design of experiment, data collection, analysis and interpretation. Capacity building – Statistics, Survey methodology, Design of experiment, Data Management and Interpretation

Member of the organizing committee of the Regional Conference on Agricultural Research Outputs, Serena Kigali Hotel, 25-28th, March 2007. Scientists from different countries presented scientific papers and conference proceedings have been published. I reviewed about ten papers.

26. Ministry of Agriculture and Livestock Resources in Rwanda as Statistician and Data Processing expert (2004 – 2006) in charge of

- *National Agricultural Survey 2005 and 2006 with collaboration of the National Institute of Statistics of Rwanda. Sampling Strategy in rural community, Survey methodology, Training of enumerators, data processing and interpretation.*
- *Baseline survey (2005) for PAPSTA (Projet d'Appui au Plan Stratégique de Transformation de l'Agriculture) with IFAD consultant. Sampling Strategy in project area, Survey methodology, Training of enumerators, data processing and interpretation.*
- *Data base development of Human Resources in rural sector*
- *Data management and Analysis of agricultural data (2004) from General Census of Population and Settlement august 2002 as FAO expert.*
- *Food security analysis in Gisenyi, Ruhengeri and Kigali Ngali Province as FAO expert*
- *Development of project data base and food security analysis, Forecasting (2004 to 2020) of agriculture production as GECAD consultant.*

27. Senior Lecturer in

- Biometrics, University of Burundi.
- Multivariate Statistics, Probability, Data base management and Inferential Statistics, Lake Tanganyika University, Bujumbura.
- Biometrics and Applied Statistics, Catholic University of Bukavu, RDC
- Statistics, Probability and Biometrics, University of Kibungo, Rwanda.
- Introduction to Computers Sciences and Inferential Statistics, National University of Rwanda, Huye Rwanda.

28. Data Base Manager and Analyst (2003- 2004) Origin Group, Brussels

- Website development
- Data analysis for CRO based in BerchemSteAgathe, Brussels.

29. Worked at Université Catholique de Louvain – la- Neuve (2001-2003), as researcher.

- Unit of Biometrics, development of a data base for literature review
- Unit of Ecology and Biogeography, analyzing of entomological data.

29. Lecturer in Biometrics at University of Burundi(1992-1994).

Responsibilities included: lecturing and conducting practical sessions and supervision of graduate students in Statistics and Probability, Biometrics, Introduction to Computers Sciences, Operational Research, Agricultural Planning, Data base management.

- In charge of research activities, consultancies and examinations within the Biometrics and Computers Service.
- Capacity building of researchers for 'Institut des Sciences Agronomiques du Burundi' and staffs of Ministry of Agriculture and Animal husbandry in Data Analysis, Computers

3. PUBLICATIONS

Niyongere C., Losenge T., Ateka E. M, **Nkezabahizi D**, BlommeG.andLepoint P., 2011. Occurrence and Distribution of Banana Bunchy Top Disease in the Great Lakes Region of Africa. *Tree and Forestry Science and Biotechnology* 6 (Special Issue 1): 102-107.

G.Night, P. Asimwe, G. Gashaka, **D. Nkezabahizi**, J.P. Legg, G. Okao-Okuja, R. Obonyo, C.Nyirahorana, C. Mukakanyana, F. Mukase, I. Munyabarenzi, M. Mutumwinka.(2011). Occurrence and distribution of cassava pests and diseases in Rwanda. *Agriculture, Ecosystems and Environment* 140 :492-497.

Akinyemi S.O.S, A.A. Kintomo, T. Ojurongbe, P.Y.K Sallah, T. Ndabamenye, and **D. Nkezabahizi.2009**. Effects of fertilizer, organic mulch and sucker hot water treatment on nematode populations and productivity of plantain. *Journal of Applied Biosciences*, 16: 887-893.

R. W Njeru, M.C Bagabe, **D. Nkezabahizi**, D Kayiranga, J Kajuga, L Butare and J Ndirigue. 2008. Viruses infecting sweetpotato in Rwanda: Occurrence and distribution. *Annals of Applied Biology*.vol. 153, n°2, pp. 215-221

Minagri and NISR, 2007.RWANDA National Agricultural Survey 2006. *Ruzindaza E, Gatera E, Rwamasirabo S, Nkezabahizi D, late ShingiroE, Nyabyenda J M V, Semucyo P.*

Republic of Rwanda, MINAGRI/FAO 2005. Main findings on Agriculture from General Census of Population and Settlement, August 2002. Nkezabahizi, Désiré

Bizimana C et **Nkezabahizi, D, 2004**. Strategic Plan for Agriculture Transformation. Data base on projects. Minagri, IFAD and GECAD

Nkezabahizi, D, 2001. Spatial Statistics Applied to Epidemiological Data. Ph D Thesis, Université catholique de Louvain la Neuve, Belgique

4. Editing of Books

Njeru R. W, Kagabo D. M, **Nkezabahizi D**, Ndairangije A, Ndiramiye L, Night G, Akinyemi S.O.S, Kanuya N, Bagabe M. C and Mugabe J., 2007. *Sustainable Agricultural Productivity for Improved Food Security and Livelihoods*” proceedings of ISAR national conference on research outputs, *Kigali Serena Hotel, Rwanda 25 to 29th March 2007*.

5. Associations and Organizations

- Member of Economic Development Institute of Burundi as reviewer, Bujumbura, Burundi.
- Member of Burundi Organic Agriculture Movement (BOAM)
- Burundi Organic Supplies and Services (BOSS)
- Member of Burundi Development Agency (BDA)

6. Presentation as resource person in Workshops and Trainings

Ministry of Agriculture and Livestock. Seed demand Assessment and Projection. PAIOSA/VSEM et AGRER, Bujumbura, Burundi, July 2013.

Ministry of Agriculture and Livestock and ISABU. Prebasic Seed demand Assessment and Projection and Price determination. PAIOSA/VSEM et AGRER, Bujumbura, Burundi, July 2013.

ISAR, EAPGREN Project, 2007.

Training in Germoplasm Collection, Identification and Utilization – Sampling and experimental Design, Data base Management. **Desire NKEZABAHIZI**, Ruhande, RWANDA, October 2007,

ISAR, Soil and Water Management Unit, 2007.

Training in Statistics for Soil and Water Management – Descriptive Statistics, Inferential Statistics, ANOVA, Regression, General Linear Model and Mixed Model. Discrete Data analysis, Sampling and experimental Design, Data base Management. **Desire NKEZABAHIZI**, Rubona, RWANDA October and December 2007

MINAGRI, 2006.

Agricultural Statistics – Sampling design and data processing. **Nkezabahizi Desire**, Nyabyenda Jean Marie et Shingiyo Emmanuel, Kigali, RWANDA April 2006

Review of EDPRS indicators/AGRICULTURE JOINT SECTOR (2002-2005), May 29-30, 2006, **Nkezabahizi Désiré**. Methodology of National Agricultural Survey. NOVOTEL, Kigali, RWANDA

Gérard G., Dahhaoui, M and Nkezabahizi, D, (1995).

The situation of Biometrics in Under Developing Country. Case of Morocco and Burundi. Cours Meta métis, Louvain-la-Neuve, BELGIQUE, 1995.

7. References

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I hereby testify that the above given pieces of information are true to the best of my knowledge.



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