Annex 10:
Detailed survey methodology

Survey coordination

This Comprehensive Food Security and Vulnerability Analysis & Nutrition Survey 2012 (CFSVA and Nutrition Survey 2012) is a joint initiative between the Rwandan National Institute of Statistics and the Ministry of Agriculture and Animal Resources.

It was possible thanks to funding from the Swiss Agency for Development and Cooperation (SDC), One UN, WFP (via the Bill and Melinda Gates foundation), Canadian International Development Agency (CIDA), and World Vision Rwanda (WVR). Famine Early Warning Systems Network (FEWS NET) and the Ministry of Agriculture and Animal Resources (MINAGRI) contributed in kind to the supervision and team's transportation. It was coordinated by the CFSVA and Nutrition Survey technical committee composed of and chaired by the National Institute of Statistics of Rwanda (NISR), and MINAGRI in partnership with the Ministry of Local Government (MINALOC), Ministry of Disaster Management and Refugee Affairs (MIDIMAR), Ministry of Health (MINISANTE) and Ministry for Gender and Family promotion (MIGEPROF).

An agreement between the Government of Rwanda and development partners specified the distribution of responsibilities between partners; all partners agreed to nominate a focal point to regularly participate to the 'CFSVA and Nutrition Survey 2012 Technical Committee' (TC) meetings. All focal points collaborated to

- Develop a detailed survey implementation and logistical plan
- Develop indicators to be included in the data collection instruments
- Develop the sampling strategy and procedures
- Participate in the training and supervision of survey data collection and management
- Participate in data analysis and reporting
- Facilitate required survey authorizations and clearances
- Disseminate the final report

NISR was technically responsible for all statistical related components of the assessment.

MINAGRI was responsible for all food security related components of the assessment.

WFP was in charge of technical, logistical and financial project coordination through the 'CFSVA and Nutrition Survey technical committee'

Sampling procedures[1]

Rwanda is administratively divided into four provinces (Northern Province, Southern Province, Eastern Province and Western Province) plus Kigali City and a total of 30 districts. Districts are further divided in sectors and cells.

The sampling frame was based on the data from the recent EICV 3 (2010/2011). To facilitate comparison with existing studies, the CFSVA and Nutrition Survey 2012 was designed to provide

---

[1] Refer to annex for more details

statistically representative and precise information at the district level. In addition, it was decided to include both urban and rural households and not to exclude the capital province Kigali. The sampling frame was organized according to 30 districts. Subsequently, a two-stage cluster sample procedure was applied.

In the first stage, 25 villages per district were randomly selected with probability proportional to population size. In the second stage, ten households in each of the 25 villages in the 30 provinces were selected for participation in the survey. A systematic random sampling technique was chosen for this stage. The team leader, together with the village head, listed all households in the village. Based on this list, a systematic random sample was utilized to pick ten households to be interviewed and three reserve households should any of the first ten households be missing at the time of the interview. Households were eligible for participation in the assessment if living in the selected villages at the time of the interviews.

Thus ten households, from 25 villages, from 30 provinces were chosen to participate in the survey, amounting up to 7,500 households.

Survey Instruments

Two instruments were used for primary data collection: a community survey administered to key informants and a household survey administered to randomly selected households.

Key informant interviews

For each visited village, the head of the village was interviewed as key informant with a structured questionnaire. 748 Key informant interviews were conducted. Topics covered included community infrastructure, market information, agricultural crop calendar, shocks and received assistance. This information was then used to contextualize the results from the household questionnaire.

Household questionnaire

The study gathered information through household questionnaires that included sections on demographics, housing and facilities, assets and access to credit, agriculture, livelihoods, expenditures, food consumption and sources, shocks, and women and child health and nutrition. Some questions in the housing facilities section were replicated from the recent EICV 3 and DHS. This was done to be able to compare the results with those two studies.

Out of the 7500 households sampled for the survey, 7498 households actually participated in the survey.

Anthropometric measurements

Anthropometric measurements were also taken such as height, weight, mid-upper arm circumference (MUAC) for children between 6 and 59 months old and women between 15 and 49 years old. This information was used to calculate nutritional indices based on Z-scores, and women's body mass index (BMI). In addition a module on Infant and Young Child Feeding practices (IYCF) was administered for children between 6 and 24 months.

In total valid anthropometric measurements were taken for 7418 women and 4651 children. Data for the IYCF module collected for to 1613 children between 6 and 24 months.

Data analysis

Statistical analysis was conducted by WFP in Rwanda and in Rome, under the supervision of the CFSVA and Nutrition Survey technical committee chaired by the NISR. SPSS and ADDAWIN were used to conduct principal component analysis (PCA) and cluster analysis. Z-scores for wasting, stunting and underweight were calculated using ENA. All other analyses were done using SPSS.

Weights

Taking into consideration the sampling methodology summarized above, adjustment weights were computed to provide results representative at country level. The household probability of selection is equal to the product of a household's probability of being selected in a village by the probability of the village of being sampled. The inverse of this probability is the design weight. The design weight was adjusted for the expected and actual number of households in the surveyed villages and was used in the complex sample calculations. The design weight was divided by the product of the total number of households in the population divided by the number of sampled households.[2] The resulting normalized weights which were used in all non-complex sample analyses.

Nutrition

Z-scores for wasting (WHZ), stunting (HAZ) and underweight (WAZ) were computed using ENA and were imported into SPSS for the analysis. Z-scores are based on the 2006 WHO Child Growth Standards. Plausibility checks were conducted on the data. Age and sex distribution of measured children was compared to the expected distribution, standard deviation, skewness and kurtosis of the z-scores were calculated; heaping of age and weight were examined to understand the magnitude and distribution of bias (e.g., in particular areas or teams). Children whose ages were not properly recorded or flagged for invalid entries (who-flags) were excluded from the analysis after checking for data entry errors.

Survey Quality assurance

Quality assurance measures were taken at all steps in the from the selection of the enumerators until the data cleaning and analysis.

Survey preparation: The survey protocol was cleared by the National Ethics Committee, and a visa request was approved by the National Institute of Statistics.

Selection of enumerators and team leaders: Survey team members all had previous experience in similar food security and nutrition surveys. The training included 20-30% more personnel than finally recruited for the actual data collection this allowed the coordination team to select the best enumerators based on their performance during the training. Also reserve enumerators could be called upon if any selected enumerators defaulted.

The training consisted of 8 full days of classroom instruction and practice and 1 day of pre-testing of all survey procedures. Separate training sessions were offered to those trainees selected as team leaders on common mistakes made during survey data collection and how to supervise teams. The assessment managers ensured that all enumerators were fully aware of the enrolment and consent process as well as of inclusion and exclusion criteria for households.

---

[2] The number of households in the population was estimated using the EICV 3 population figures provided by NISR

During data collection: For each selected village, Team leaders recorded the following information, 1) number of households in the village, reasons (if any) for skipping the households, contact details of village authorities and number of women/children measured in each household. These data will allow calculation of response rates and the determination of reasons for non-response and facilitate the linking of the food security and nutrition questionnaires.

A mobile phone communication system was put in place between each team leader, survey supervisor and the survey coordination team. Tips and revised procedures were communicated immediately to all survey teams by sms.

Data cleaning and analysis: Data was downloaded directly from the PDA to an access database and exported to SPSS for analysis. Data cleaning consisted of examining frequency distributions for all variables in order to detect those values which are not logical or possible. Each participating household, child, and woman had a unique identification number made up of the cluster number and household number and, for individuals, an individual number. For some variables, specifically anthropometric z-scores, standard criteria were applied to delete z-scores which were judged to be impossible and most likely due to error in measurement.