



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative



RWANDA

Feed the Future Zone of Influence Baseline Report
December 2013



USAID
FROM THE AMERICAN PEOPLE

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Errata (April 4, 2015)

Feed the Future Rwanda Zone of Influence Baseline Report (April 2014)

These errata clarify the geographic definition of the Feed the Future Rwanda Zone of Influence (ZOI) in the baseline report. The geographic definition should state that the ZOI includes rural, peri-urban, and urban areas. In addition, these errata account for the effects of this clarification of the ZOI definition on the population estimates, sample design, and the indicator estimates in the report completed in 2014.

The required changes to the report appear in the sections below.

Geographic Definition of the Rwanda ZOI

Page viii, Executive Summary, Paragraph 3, Sentences 1 and 2:

Change: “The ZOI in Rwanda encompasses almost the entire country, including all four provinces and all of rural Rwanda. The ZOI comprises 27 of the 30 districts in Rwanda, with the exception of the three districts of Kigali City.”

To: “The ZOI in Rwanda encompasses almost the entire country, including rural, peri-urban and urban areas of four of five provinces of Rwanda. The ZOI comprises 27 of the 30 districts in Rwanda, with the exception of the three districts of the Kigali City province.”

Page 2, Section 1.2.1, Paragraph 1, Sentences 1 and 2:

Change: “In Rwanda, the ZOI covers the entire country, encompassing 27 districts out of 30 total in all four provinces – Northern, Southern, Eastern, and Western. The ZOI excludes only the three districts that comprise Kigali City (Gasabo, Kicukiro, and Nyarugenge districts).”

To: “In Rwanda, the ZOI covers the entire country excluding Kigali, encompassing rural, peri-urban and urban areas in 27 districts out of 30 total. The ZOI includes four provinces – Northern, Southern, Eastern, and Western. The ZOI excludes only the three districts that comprise Kigali City province (Gasabo, Kicukiro, and Nyarugenge districts).”

Population Estimates

Page 6, Section 1.2.4, Paragraph 1:

Change: “Table 1 reports the population figures for the ZOI including the categories that are reported in the FTFMS database. The populations in the age categories have been computed based on the age structure in the ZOI baseline sample, and where data were available from the PBS. The total population of Rwanda is 10,537,222.²² The completely rural population of the ZOI is approximately 9.4 million. The population of the ZOI comprises approximately 2.1 million households. Within the ZOI, there are more than 2 million women of reproductive age and about 1.3 million children age 0-59 months.”

To: “Table 1 reports the population figures for the ZOI including the sub-population categories that are reported in the FTFMS database. The population values presented in Table 1 are counts from the GOR’s National Institute of Statistics (NISR) as well as, when direct counts were not available (e.g., women of reproductive age (WRA) by pregnancy status), sub-population estimates using population distribution information from the 2010 Rwanda DHS. The total population of Rwanda is 10.5 million and the population of the ZOI is approximately 9.4 million. The population of the ZOI comprises approximately 2.1 million households. Within the ZOI, there are about 2.3 million women of reproductive age and about 1.4 million children age 0-59 months.”

Page 6, Section 1.2.4:

Replace the entirety of Table 1 and associated footnotes with Table 1 and footnotes below.

Table 1. ZOI total population

| | ZOI |
|---|-----------|
| Total population ¹ | 9,383,287 |
| Rural | 8,504,935 |
| Urban | 878,352 |
| Population in male and female adults HH | 7,438,967 |
| Population in female adults only HH | 1,698,185 |
| Population in male adults only HH | 237,702 |
| Population in child no adults HH | 8,433 |
| Total households (HH) ² | 2,138,234 |
| Male and female adults HH | 1,492,056 |
| Female adults only HH | 508,091 |
| Male adults only HH | 134,017 |
| Child no adults HH | 4,070 |
| Women of reproductive age (15-49 years) | 2,328,399 |
| WRA rural | 2,098,255 |
| WRA urban | 230,144 |
| WRA nonpregnant | 2,166,596 |
| WRA pregnant | 161,803 |
| Children 0-59 months | 1,384,574 |
| Males 0-59 months | 690,627 |
| Females 0-59 months | 693,947 |

Table 1. ZOI total population (continued)

| | ZOI |
|----------------------|-----------|
| Children 6-59 months | 1,242,294 |
| Males 6-59 months | 619,662 |
| Females 6-59 months | 622,632 |
| Children 0-5 months | 142,280 |
| Males 0-5 months | 70,965 |
| Females 0-5 months | 71,315 |
| Children 6-23 months | 417,662 |
| Males 6-23 months | 208,271 |
| Females 6-23 months | 209,391 |

¹ Source: Counts of ZOI population came largely from the NISR reports of 2012 Population and Housing Census. Where direct population counts were not available, estimates were prepared using population distribution information calculated from the 2010 Rwanda DHS.

² This number is the number of households in the ZOI, and not the number of people living in the household.

Sample Design

Page 14, Section 2.4, Paragraph 1, Sentence 2:

Change: “The ZOI in Rwanda comprises all four provinces, but does not include Kigali City.”

To: “The ZOI in Rwanda comprises urban, as well as rural and peri-urban areas in four provinces, but does not include Kigali City. The sample for the FTF FEEDBACK ZOI baseline survey includes rural and peri-urban areas of the ZOI, thus excluding urban areas from the sample. As shown in Table 1 above, urban areas account for 9.4 percent of the population in the ZOI.”

Page 14, Section 2.4.2, Paragraph 1, Sentence 1:

Change: “A total of 2,000 households in 100 SEAs in the four provinces that comprise the ZOI were targeted for the survey.”

To: “A total of 2,000 households in 100 SEAs in the rural and peri-urban areas of the four provinces that comprise the ZOI were targeted for the survey.”

Page 15, Section 2.4.2, Paragraph 3, Next to last sentence:

Change: “The sample focused on rural areas only.”

To: “The sample focused on rural and peri-urban areas.”

Page 107, Section B.1.1, Paragraph 1, Sentence 1:

Change: “In Rwanda 100 clusters were selected from rural and mixed regions without stratification.”

To: “In Rwanda 100 clusters were selected from rural and peri-urban areas without stratification.”

Indicator Estimates

Page viii, Executive Summary, Paragraph 4, Sentence 4:

Change: “The indicators calculated using primary data are: (1) *Women’s Empowerment in Agriculture Index (WEAI)*; (2) *prevalence of households with moderate or severe hunger (Household Hunger Scale, HHS)*; and (3) *Women’s Dietary Diversity Score*.¹”

To: “The indicators calculated using primary data are: (1) *Women’s Empowerment in Agriculture Index (WEAI)*; (2) *Prevalence of households with moderate or severe hunger (Household Hunger Scale, HHS)*; and (3) *Women’s Dietary Diversity Score*.¹ These indicators represent the rural and peri-urban areas of the Rwanda ZOI. Urban areas are excluded from these indicators, because the sample design for the baseline PBS survey excluded urban areas.”

Page 9, Section 2.1, Paragraph 1, Sentence 2:

Change: “The indicators calculated using primary data are: (1) *Women’s Empowerment in Agriculture Index (WEAI)*; (2) *prevalence of households with moderate or severe hunger (Household Hunger Scale; HHS)*; and (3) *Women’s Dietary Diversity Score*.”

To: “The indicators calculated using primary data are: (1) *Women’s Empowerment in Agriculture Index (WEAI)*; (2) *Prevalence of households with moderate or severe hunger (Household Hunger Scale, HHS)*; and (3) *Women’s Dietary Diversity Score*. These indicators represent the rural and peri-urban areas of the ZOI. Urban areas are excluded from these indicators, because the sample for this survey excluded urban areas.”

Page 9, Section 2.1, Paragraph 2, Sentence 1:

Change: “Secondary data on the remaining 10 indicators were obtained from the GOR’s National Institute of Statistics (NISR).”

To: “Secondary data on the remaining 10 indicators were obtained from the GOR’s National Institute of Statistics (NISR). Indicators based on these data represent all areas (rural, peri-urban and urban) of the ZOI.”

Page 17, Section 3, Paragraph 1, Sentence 2:

Change: “This is followed by a detailed description of individual indicators.”

To: “This is followed by a detailed description of individual indicators. Indicators based on the FTF FEEDBACK ZOI baseline survey represent the rural and peri-urban areas of the ZOI, whereas all other indicators represent the full ZOI, including rural, peri-urban, and urban areas.”

Page 28, Section 3.3, Paragraph 1, Sentence 1:

Change: “The HHS (Module F) is used to calculate the prevalence of households with moderate or severe hunger.”

To: “The HHS (Module F from the PBS survey) is used to calculate the prevalence of rural and peri-urban households in the ZOI with moderate or severe hunger.”

Page 39, Section 3.4.2, Paragraph 1, Sentence 2:

Change: “The Women’s Dietary Diversity Score indicator is a valid proxy measure of the micronutrient adequacy of the women’s diets by reporting the mean number of food groups consumed in the previous day by women of reproductive age (15-49 years).”

To: “The Women’s Dietary Diversity Score indicator is a valid proxy measure of the micronutrient adequacy of the women’s diets by reporting the mean number of food groups consumed in the previous day by women of reproductive age (15-49 years). This indicator is calculated from primary PBS data and is representative of rural and peri-urban areas of the ZOI.”

Page 42, Section 3.5.1, Paragraph 2, Sentence 1:

Change: “For Rwanda, the WEAI score is 0.91.”

To: “For Rwanda, the WEAI score is 0.91. The WEAI indicator is calculated from the PBS baseline survey data, which is representative of rural and peri-urban areas of the Rwanda ZOI.”

Page 48, Section 4, Paragraph 1, Last Sentence:

Change: “Data are also presented for the relationship between women’s decision-making capacity and the prevalence of households with moderate to severe hunger, as well as for the relationship between the level of decision-making capacity for women and Women’s Dietary Diversity Score (Table 39).”

To: “Data are also presented for the relationship between one’s decision-making capacity and the prevalence of households with moderate to severe hunger, as well as for the relationship between the level of decision-making capacity for women and Women’s Dietary Diversity Score (Table 39). These data are from the Rwanda baseline PBS survey, which is representative of rural and peri-urban areas of the ZOI.”

Page 50, Section 5, Paragraph 1, Last Sentence:

Change: “The PBS interviews included 2,000 households across 100 SEAs in the ZOI, and the secondary data were drawn from the EICV3 and the 2010 DHS.”

To: “The PBS interviews included 2,000 households across 100 SEAs in the ZOI, and the secondary data were drawn from the EICV3 and the 2010 DHS. Primary PBS data are representative of rural and peri-urban areas of the ZOI; urban areas in the ZOI were omitted from the baseline PBS survey.”

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List of Acronyms

| | |
|------------|---|
| 5DE | Five Domains of Empowerment |
| BMI | Body Mass Index |
| CAADP | Comprehensive Africa Agriculture Development Programme |
| CESS | Centre for Economic and Social Studies |
| CPC | Center for Population Studies at the University of North Carolina at Chapel Hill |
| CPI | Consumer Price Index |
| DHS | Demographic and Health Survey |
| EICV/EICV3 | Integrated Household Living Conditions Survey or <i>Enquête Intégrale sur les Conditions de Vie des ménages/Round 3</i> |
| FTFMS | Feed the Future Monitoring System |
| GOR | Government of Rwanda |
| GPI | Gender Parity Index |
| HH | Households |
| HHS | Household Hunger Scale |
| IRB | Institutional Review Board |
| IFPRI | International Food Policy Research Institute |
| LSMS | Living Standards Measurement Survey |
| MAD | Minimum Acceptable Diet |
| NISR | National Institute of Statistics of Rwanda |
| ODK | Open Data Kit |
| PBS | Population-Based Survey |
| PPP | Purchasing Power Parity |
| PPS | Probability Proportional to Size |
| PSTA-II | Strategic Plan for the Transformation of Agriculture (of the GOR) |
| SEA | Standard Enumeration Area |
| USD | United States Dollars |
| USAID | U.S. Agency for International Development |
| USG | United States Government |
| WEAI | Women's Empowerment in Agriculture Index |
| WHO | World Health Organization |
| WRA | Women of Reproductive Age |
| ZOI | Zone of Influence |

Executive Summary

This document reports the findings of the Rwanda Feed the Future population-based survey (PBS) and secondary sources that serve as the Rwanda baseline for the United States Government's Feed the Future initiative led by the United States Agency for International Development (USAID). Feed the Future seeks to reduce poverty and undernutrition in 19 developing countries by focusing on accelerating growth of the agricultural sector, addressing root causes of undernutrition, and reducing gender inequality. The baseline seeks to capture data on women's empowerment in agriculture, household food security, consumption, nutrition, and wellbeing of households in the geographic areas targeted by Feed the Future interventions, known as Feed the Future Zone of Influence (ZOI).

The PBS is a product of Feed the Future FEEDBACK (FTF FEEDBACK), which is responsible for performance monitoring and impact evaluation of the Feed the Future initiative. FTF FEEDBACK is implemented by Westat in partnership with TANGO International, the International Food Policy Research Institute (IFPRI), and the Carolina Population Center of the University of North Carolina (UNC) at Chapel Hill. In Rwanda, the PBS fieldwork was conducted by a private firm, the Centre for Economic and Social Studies (CESS), with technical assistance from TANGO International. The fieldwork took place from December 22, 2012 to January 11, 2013.

The ZOI in Rwanda encompasses almost the entire country, including all four provinces and all of rural Rwanda. The ZOI comprises 27 of the 30 districts in Rwanda, with the exception of the three districts of Kigali City. A total of 2,000 households were interviewed for the PBS data collection. These households were spread across 100 standard enumeration areas in each of the four provinces.

The FTF FEEDBACK baseline survey for Rwanda draws on data from both primary and secondary sources. Refer to Annex C for descriptions and calculations of each indicator. The baseline survey reports on 13 Feed the Future indicators: three using primary data and 10 using secondary data. The indicators calculated using primary data are: (1) *Women's Empowerment in Agriculture Index (WEAI)*; (2) *prevalence of households with moderate or severe hunger (Household Hunger Scale, HHS)*; and (3) *Women's Dietary Diversity Score*.¹ Secondary data on the other 10 Feed the Future indicators were obtained from the National Institute of Statistics of Rwanda Integrated Household Living Conditions Survey² and the Demographic and Health Survey (DHS) of 2010. All data collected from the baseline survey have been entered into the internal USAID Feed the Future Monitoring System (FTFMS) database. The PBS data set will be shared with the Government of Rwanda (GOR) and made public after GOR approval. In this report, only differences across subgroups that are statistically significant at the 0.05 level are discussed in the narrative. (The midterm and final surveys will be conducted in 2015 and 2017, respectively.)

¹ Women's Dietary Diversity Score and prevalence of underweight women are measured on women of reproductive age (15-49 years).

² NISR. 2012b-f.

FTF FEEDBACK calculates the prevalence of poverty based on \$1.25 per day at 2005 purchasing power parity (PPP). The baseline survey values show that the prevalence of poverty in the ZOI is 67.0 percent, based on people living on less than \$1.25 per day. The poverty gap is 27.3 percent below the poverty line (\$1.25) for the ZOI (2010 USD), and daily per capita expenditures average \$1.51. It should be noted that the GOR uses a different estimate for the national poverty line, equivalent to \$0.99/day 2005 USD PPP (Rwandan francs, RwF 64,000), in which the prevalence of poverty in the ZOI is 47.8 percent, and the poverty gap is 15.8 percent below the national poverty line. The PBS data collected show that moderate or severe hunger is high, with an average prevalence in the ZOI of 43.1 percent. Female adult only households report significantly more household hunger (49.8 percent) than households with both male and female adults (40.5 percent).

The nutrition data utilized from the DHS shows that the prevalence of stunted children under 5 years of age in the ZOI is higher than national averages, at 46.3 percent. The prevalence of stunting is higher among boys than girls (49.4 and 43.3 percent, respectively); similarly, significant differences were found between boys and girls under 5 for both wasting and anemia. The wasting and underweight prevalences among children under 5 in the ZOI are similar to the national averages. The prevalence of children 6-23 months with a minimum acceptable diet (MAD) is 17.3 percent, with more households able to meet feeding frequency than dietary diversity, particularly those with breastfed children 6-23 months. Most children under 6 months are exclusively breastfed (86.5 percent). More than a third of children under 5 are anemic (38.1 percent), and of the children who are anemic, the majority are mildly anemic.

Primary and secondary data related to the nutrition of women of reproductive age were also utilized. In the ZOI, the prevalence of underweight women is similar to that reported in the 2010 DHS (7.0 percent), which is lower than the prevalence in the East Africa region as a whole. Approximately 78.0 percent of women are considered normal weight, 14.5 are overweight/obese, and 7.4 percent are moderately or severely underweight. On average, women consume 3.3 out of nine food groups, indicating fairly low dietary diversity. Male and female adult households have significantly higher dietary diversity than female adult only households.³ In addition, the prevalence of anemia among women of reproductive age is 17.2 percent, which is equivalent to the national prevalence.

³ As explained in USAID. 2012b. “Feed the Future household (HH) level indicators are disaggregated by ‘gendered household types’ – that is: (1) HH with male and female adults (18+ years), (2) HH with at least one male adult and no female adult, (3) HH with at least one female adult and no male adults, and (4) HH with children and no adults. This categorization is somewhat different than the standard ‘male-headed vs. female-headed’ households, and the distinction and change is very meaningful. The concept of ‘head of household’ is highly loaded, presumes certain characteristics that may or may not be present in household gender dynamics, and often reflects the bias of the researcher or respondent. In addition, the head of household concept may perpetuate existing social inequalities and prioritization of household responsibilities that may be detrimental to women.” **NOTE:** Some of the background data presented in this report were analyzed by household head rather than gendered HH type in the cited reports, and in these cases, the household headship disaggregation is used.

Based on PBS data, the WEAI score in Rwanda's ZOI is 0.91 out of a maximum possible value of 1.0. Nearly three-quarters (70.2 percent) of women in the ZOI have achieved adequate empowerment in agriculture (a score of .80 or greater). The average value for the Five Domains of Empowerment (5DE) subindex, a measure of women's empowerment, is 0.90. The gender parity subindex (GPI), which measures the inequality in 5DE scores between the primary adult male and female in each household (among those households with both an adult male and female), is 0.96. Nearly three-quarters (73.5 percent) of women in the survey have achieved adequate gender parity (i.e., a 5DE score equal to or higher than the man in their household).

The WEAI results presented in this report include data from the primary decision-maker in each household (excluding the male adult only and child adult only households), including but not limited to women of reproductive age. See Section 3.5 and Annex C for a detailed description of the WEAI.

Additional analysis requested by USAID/Rwanda includes examination of the relationship between women's empowerment, decision-making power, household hunger, and the Women's Dietary Diversity Score. Households reporting no hunger have a higher prevalence of women's achievement for four of the 10 WEAI indicators. In addition, the prevalence of moderate or severe household hunger significantly declines with higher decision-making capacity of women. Also, the number of food groups consumed by women of reproductive age who have achieved empowerment, or with higher decision-making capacity, is significantly higher than among women who have not achieved empowerment, or with lower decision-making capacity.

This report will be used to measure changes over time in the Feed the Future indicators in the Rwanda ZOI. It should be noted that the survey was not designed to make conclusions about causality or attribute changes to specific Feed the Future investments.

I. Background

I.1 Feed the Future and FTF FEEDBACK Overview

Feed the Future is a United States Government (USG) initiative that addresses global food insecurity by supporting agriculture sector growth and improving nutritional status in 19 focus countries. The United States Agency for International Development (USAID) is responsible for leading the government-wide effort to implement the Feed the Future initiative. The high-level target of the initiative is “to reduce by 20 percent the prevalence of poverty and the prevalence of stunted children under five years of age in the areas where we work.”⁴

Feed the Future FEEDBACK (FTF FEEDBACK) is a USAID-funded project designed to implement specific monitoring and evaluation activities for Feed the Future. FTF FEEDBACK is implemented by Westat in partnership with TANGO International, the International Food Policy Research Institute (IFPRI), and the Carolina Population Center (CPC) of the University of North Carolina at Chapel Hill.

The main objectives of the FTF FEEDBACK project are to: (1) enable USAID Missions to meet Feed the Future performance-monitoring requirements and maximize the use and benefits of the data collected; (2) provide high-quality empirical evidence to inform program design and investment decisions that will promote sustainable food security; (3) ensure timely availability of high quality data for use in monitoring performance and evaluating impacts of the Feed the Future initiative; and (4) facilitate accountability and learning about what Feed the Future interventions work best, under what conditions, and at what cost.

To measure progress in addressing global food insecurity, USAID is collecting data via large surveys of households in geographic areas targeted by Feed the Future interventions, known as the Feed the Future Zones of Influence (ZOI). These surveys are used along with secondary data for the ZOI to determine baseline values for Feed the Future indicators (see Table 3).

The baseline values will be used to measure changes in the Feed the Future indicators over time in Rwanda. The midterm and final surveys will be conducted in 2015 and 2017, respectively. All baseline values have been entered into the Feed the Future Monitoring System (FTFMS) database for the global Feed the Future initiative. The PBS data set will be shared with the GOR and made public after GOR approval.

Where possible, existing sources of data are utilized if they meet criteria to provide valid baseline estimates of indicators. These criteria include: (1) the data source must have collected the data within the last two years prior to the start of Feed the Future activities; and (2) the data source must have a sample in the ZOI large enough to estimate selected key indicator values with sufficient precision and power to measure change over time.

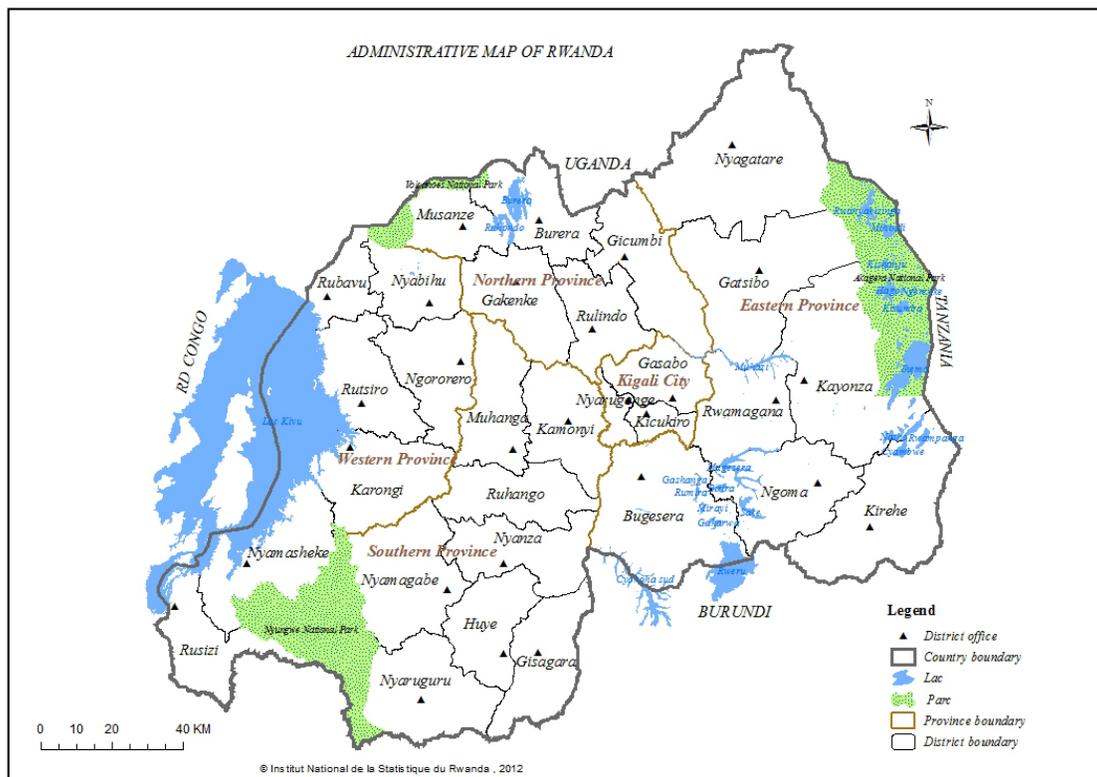
⁴ USAID. 2013. Feed the Future. Progress Scorecard, June.

1.2 Feed the Future ZOI Profile

1.2.1 Feed the Future Intervention Areas Within the ZOI

In Rwanda, the ZOI covers the entire country, encompassing 27 districts out of 30 total in all four provinces – Northern, Southern, Eastern, and Western. The ZOI excludes only the three districts that comprise Kigali City (Gasabo, Kicukiro, and Nyarugenge districts).⁵ See the country map in Figure 1.

Figure 1. Map of the Feed the Future ZOI for Rwanda⁶



Source: NISR. 2012g.

⁵ USAID. 2011b.

⁶ The ZOI includes all of Rwanda except the three districts that comprise Kigali City.

1.2.2 Rationale for ZOI Designation

Rwanda has made significant progress in reducing poverty, particularly between 2005 and 2012, during which time the country saw a reduction in poverty at the national poverty line⁷ from 57 percent to 45 percent of the total population. However, the country continues to face substantial challenges in continuing to reduce poverty as well as improving food security and nutrition. Nearly half of the rural population (47.8 percent) remains poor and 24.1 percent live in extreme poverty, earning less than \$0.90 per day.⁸

Rwanda is a country of high population density with a primarily household-level agrarian economy, and farming households face challenges of poverty and low productivity. Rwanda is the most densely populated country in Africa (415 people per square kilometer)⁹ and nearly all arable land is under cultivation. Agriculture accounts for an estimated 34 percent of the gross domestic product and 71 percent of the working population are subsistence farmers. According to the GOR, “Despite notable increases in economic activity over time in industries such as trade and construction, the majority of Rwandese work in their main job on their own farm.”¹⁰

Although employment in the agriculture sector has grown in recent years, this growth has been in jobs in agricultural labor, not the independent farming sector. Agricultural laborers are amongst the poorest people in the country.¹¹ In addition, agricultural productivity is low, and 90 percent of those who make their living from agriculture remain at a subsistence level. Sixty percent of subsistence farmers live in poverty. Furthermore, households depending on subsistence farming face low productivity because of limited arable land. Nationally, 84 percent of agricultural households cultivate less than 0.9 hectares of land, and there is an indication that in at least one province land-sharing has reached its limit.¹²

Gender

More women than men depend on agriculture for their livelihood. Women are also more likely than men to practice subsistence farming and be impoverished. Nearly half of all Rwandan agricultural households experience food insecurity, and female-headed households, which represent slightly less

⁷ The national poverty line is Rwf 64,000 per adult equivalent per year in January 2001 prices (\$0.99/day) and the extreme poverty line is Rwf 45,000 in the same units.

⁸ National Institute of Statistics Rwanda (NISR). 2012f.

⁹ NISR. 2012e.

¹⁰ NISR. 2012c.

¹¹ Ibid.

¹² NISR. 2012b.

than one-third (28 percent) of all Rwandan households, are more likely to be food insecure.^{13,14} These conditions make increasing agricultural productivity a critical component of reducing poverty and promoting development in Rwanda.

Women's income-earning and employment opportunities are overwhelmingly in the agriculture sector, with 82 percent of women working in agricultural occupations compared with 61 percent of men. Most female adult only households work in agriculture (90 percent) compared with 62 percent of male and female adult households. Women are also much less likely to have paid non-farm work, though the opportunities that are open to them are primarily in sales and commerce. There are almost 2 million female small-scale farm workers compared with just more than 1.1 million men. Since 2005, the number of men working in agriculture has declined while the number of women has risen, indicating that men have benefited more from the growth in non-farm jobs but also may be unemployed, and that there are fewer income-earning opportunities outside of farming for women.¹⁵

Child Malnutrition

Chronic malnutrition in children under 5 years of age remains high at 44 percent in 2010, despite the fact that it decreased compared to the national average of 51 percent in 2005.¹⁶ Although there has been a reduction in malnutrition compared to 2005 due to reduction in poverty and increases in agricultural productivity in recent years, there is still room for improvement in further reductions of child malnutrition. The persistence of chronic child malnutrition is strongly linked to poor feeding practices, shocks, household vulnerabilities, and limited access to quality health care.¹⁷

1.2.3 Strategic Objectives for Feed the Future in the ZOI

The main Feed the Future goal in Rwanda is to “sustainably reduce poverty and hunger.” Under this main goal are two First-Level Objectives: (1) Improved Nutritional Status, especially of women and children, and (2) Inclusive Agriculture Sector Growth.

¹³ NISR. 2012f.

¹⁴ As explained in USAID. 2012b. “Feed the Future household (HH) level indicators are disaggregated by ‘gendered household types’ – that is: (1) HH with male and female adults (18+ years), (2) HH with at least one male adult and no female adult, (3) HH with at least one female adult and no male adults, and (4) HH with children and no adults. This categorization is somewhat different than the standard ‘male-headed vs. female-headed’ households, and the distinction and change is very meaningful. The concept of ‘head of household’ is highly loaded, presumes certain characteristics that may or may not be present in household gender dynamics, and often reflects the bias of the researcher or respondent. In addition, the head of household concept may perpetuate existing social inequalities and prioritization of household responsibilities that may be detrimental to women.” **NOTE:** Some of the background data presented in this report were analyzed by household head rather than gendered HH type in the cited reports, and in these cases, the household headship disaggregation is used.

¹⁵ NISR. 2012d.

¹⁶ NISR. 2012a.

¹⁷ USAID. 2011c.

In Rwanda, these First-Level Objectives have two corresponding strategic objectives:

1. Strengthened capacity for sustained and improved health outcomes; and
2. Expanded economic opportunities in rural areas.¹⁸

The impact that Feed the Future aims to achieve in Rwanda by 2015 are to:

- Assist more than 700,000 vulnerable Rwandan women, children, and family members—mostly smallholder farmers—to escape hunger and poverty.
- Reach nearly 190,000 children, improving their nutrition to prevent stunting and child mortality.
- Leverage strategic policy engagement and institutional investments to improve income and nutritional status in significantly more rural households.¹⁹

To reduce hunger and poverty in Rwanda, Feed the Future is tackling major constraints to agriculture investment. This includes core investments committed to building market linkages, increasing agricultural productivity, and improving infrastructure and nutrition. Core investments are coupled with capacity building and strengthening the policy environment to facilitate the expansion of the private sector and its contribution to the overall growth of the Rwandan economy. Specific Rwandan value chains have been identified including beans, maize, pyrethrum, and dairy.

Aligning With GOR Investments

The GOR has demonstrated a strong commitment to agricultural development and reducing poverty and chronic malnutrition. Rwanda has signed a Comprehensive Africa Agriculture Development Programme (CAADP) agreement, committing itself to generate sustained agricultural growth of 6 percent per year, and work toward increasing the percentage of the national budget allocated to agriculture to 10 percent per year. Since the signing of the CAADP contract in 2007, the national budget for agriculture has grown from 3 to 7 percent.²⁰ The government has also established clear targets for its Strategic Plan for the Transformation of Agriculture (PSTA-II), and the GOR has linked the PSTA-II with its Economic Development and Poverty Reduction Strategy and the long-term Rwanda Vision 2020.²¹

The USAID Feed the Future strategy in Rwanda directly supports the GOR's Rwanda Vision 2020 national development strategy, which is promoting a transformation from subsistence farming to a market-oriented agriculture sector. In all, the Feed the Future strategic approach is coordinated with existing value chains, supports Rwanda's 5-year Strategic Plan for the Transformation of Agriculture III, and is aligned with the CAADP framework and other African Union-driven growth strategies.

¹⁸ Ibid.

¹⁹ USAID. 2011b.

²⁰ USAID. 2011c.

²¹ Ibid.

I.2.4 Demographics

Table 1 reports the population figures for the ZOI including the categories that are reported in the FTFMS database. The populations in the age categories have been computed based on the age structure in the ZOI baseline sample, and where data were available from the PBS. The total population of Rwanda is 10,537,222.²² The completely rural population of the ZOI is approximately 9.4 million. The population of the ZOI comprises approximately 2.1 million households. Within the ZOI, there are more than 2 million women of reproductive age and about 1.3 million children age 0-59 months.

Table 1. ZOI total population

| | ZOI |
|---|-----------|
| Total population ¹ | 9,401,794 |
| Rural | 9,401,794 |
| Urban | 0 |
| Population in male and female adults HH | 7,612,563 |
| Population in female adults only HH | 1,587,287 |
| Population in male adults only HH | 200,782 |
| Population in child no adults HH | 1,162 |
| Total households (HH) ² | 2,097,653 |
| Male and female adults HH | 1,510,309 |
| Female adults only HH | 494,067 |
| Male adults only HH | 92,115 |
| Child no adults HH | 1,162 |
| Women of reproductive age (15-49 years) | 2,197,837 |
| WRA rural | 2,197,837 |
| WRA urban | 0 |
| WRA nonpregnant | - |
| WRA pregnant | - |
| Children 0-59 months | 1,299,575 |
| Males 0-59 months | 645,656 |
| Females 0-59 months | 653,919 |
| Children 6-59 months | 1,184,915 |
| Males 6-59 months | 584,809 |
| Females 6-59 months | 600,105 |
| Children 0-5 months | 114,660 |
| Males 0-5 months | 60,847 |
| Females 0-5 months | 53,813 |
| Children 6-23 months | 343,747 |
| Males 6-23 months | 186,732 |
| Females 6-23 months | 157,016 |

¹ Source: Estimate for ZOI total population was calculated using the 2012 Population and Housing Census for the Rwanda ZOI (from the NISR). Information on proportions of each subpopulation (e.g., children < 5, people in each gendered household type category, etc.) were based on the Rwanda baseline PBS.

² This number is the number of households in the ZOI, and not the number of people living in the household.

²² NISR. 2012e.

1.2.5 Agriculture

The main agricultural activity among farming households in Rwanda is crop production. Most households produce at least one staple crop along with a wide variety of fruits and vegetables. The percentage of households that cultivate staple crops of maize, Irish potatoes, and taro has increased since 2005, while the percentage of those growing sweet potatoes, beer bananas, and sorghum has decreased. The quantity produced by agricultural households for main staple crops, with the exception of sorghum, has also increased over time.²³

Feed the Future supports bean, maize, and dairy value chains through investing in sustainable market linkages, infrastructure, and nutrition. Feed the Future also provides limited support to Rwanda's traditional high-value exports of coffee and pyrethrum. These specific crops supported by Feed the Future are included in Table 2, which shows production, yields, and prices for major staple and export crops in Rwanda.

Table 2. Agricultural yields, marketed volumes, and prices at the national level

| Crop | Production (MT) | | | Yield (kg/ha) | | | Market price-producer (local currency/kg) | | |
|-------------------------------|---------------------|----------------------|----------------------|---------------|----------|-----------|---|--------|---------------------|
| | 2000 | 2005 | 2011 | 2000 | 2005 | 2011 | 2000 | 2005 | 2010 |
| Plantains | 2,212,250 | 2,593,080 | 3,036,270 | 6,137.13 | 7,178.06 | 8,764.94 | 50 | 84.81 | 136.47 ¹ |
| Sweet potatoes | 1,032,920 | 885,648 | 845,099 | 5,913.79 | 5,962.92 | 8,054.09 | 29 | 17.51 | 82.14 |
| Potatoes | 957,202 | 1,314,050 | 2,171,520 | 8,783.04 | 9,689.06 | 12,847.94 | 37 | 51.27 | 141.58 |
| Cassava | 820,992 | 781,639 | 2,579,400 | 6,815.30 | 6,756.09 | 12,352.15 | 76 | 120 | 171.41 |
| Beans, dry | 215,347 | 199,648 | 331,166 | 646.29 | 637.81 | 968.83 | 99 | 108.05 | 291.58 |
| Maize | 62,501 | 97,251 | 525,679 | 701.84 | 888.95 | 2,053.43 | 83 | 57.93 | 176.83 |
| Coffee, green | 16,098 | 18,597 | 21,820 | 699.91 | 627.75 | 583.79 | 231 | 500 | 800 |
| Pyrethrum, dried ² | 1,000 | 1,000 | 16 | 454.55 | 454.55 | 7.27 | N/A | N/A | N/A |
| Cow milk, whole, fresh | 59,083 [^] | 142,511 [^] | 442,337 [^] | 437.30 | 480.00 | 650.70 | 238 | 219.46 | 278.23 |

Source: FAO 2013.

¹ Datum is for 2009 (2010 unavailable).

² No price data in FAO Stat Database.

[^] Source: NISR 2012 Rwanda Statistical Yearbook.

NOTE: Final price column is for 2010.

As detailed in Table 2, the production of dry beans, maize, and cow milk have increased since 2000, along with large increases in market prices since 2005. Better-off farming households that own animals are more likely to sell dairy products, in particular, fresh milk. Only 9 percent of rural households are able to sell fresh milk, while another 2.5 percent sell other milk products. The overall

²³ NISR. 2012b.

production of coffee has increased, while the percentage of rural households producing coffee (11.2 percent) has remained relatively stable since 2005.²⁴

Feed the Future's promotion of agriculture sector growth also includes the expansion of market-oriented crop production. According to Rwanda's Integrated Household Living Conditions Survey or *Enquête Intégrale sur les Conditions de Vie des Ménages* Round 3 (EICV3) from 2010/11, the share of sold crops has increased from 16 percent in 2005 to 21 percent in 2012. This indicates an increase in commercialized crop production. The overall selling ratio for all staple crops increased over time with the exception of Irish potatoes, cassava, and cassava leaves.²⁵ The GOR notes that the percentage of cultivating households that purchase packaging materials increased from approximately 37 percent in 2005 to 48 percent in 2012, an indication of increased commercial sales. Further, 47 percent of rural households were engaged in maize flour processing as a value-added activity. Commercial companies and cooperatives mainly buy export crops, such as coffee and tea, while local traders purchase staple crops.²⁶

1.3 Purpose of This Report

This report presents baseline values established from primary and secondary data collected for 13 Feed the Future indicators in the ZOI in Rwanda. This baseline report will be used as a reference point for measuring changes in the indicators over time in the ZOI. Determining change over time for the indicators will be based on comparing baseline performance-monitoring data to data collected at the midpoint (2015) and endpoint (2017) of the Feed the Future project. The data do not allow for conclusions about attribution or causality.

This report will begin by presenting the methodology used to obtain and analyze the data (Section 2.0), followed by a description of the findings for each Feed the Future indicator (Section 3.0), followed by a further analysis of findings requested by USAID Rwanda (Section 4.0).

2. Methodologies for Obtaining Baseline Values for Feed the Future Indicators

2.1 Data Sources

Where recent and relevant data were available, FTF FEEDBACK utilized secondary sources to report on the Feed the Future indicators. These data sources had to meet two criteria to provide valid baseline estimates of indicators: (1) data were collected in a recent time window, but prior to the start of Feed the Future activities, and (2) the sample size was large enough to estimate indicator values with sufficient precision and power to measure change over time. Where secondary data were not available, FTF FEEDBACK collected primary data through the PBS. The FTF FEEDBACK

²⁴ NISR. 2012b.

²⁵ Ibid.

²⁶ Ibid.

PBS baseline survey in Rwanda reports on the 13 Feed the Future indicators: three using primary data and 10 using secondary data. The indicators calculated using primary data are: (1) *Women’s Empowerment in Agriculture Index (WEAI)*; (2) *prevalence of households with moderate or severe hunger (Household Hunger Scale; HHS)*; and (3) *Women’s Dietary Diversity Score*. The sample for Women’s Dietary Diversity Score and prevalence of underweight women is women of reproductive age (15-49 years).

Secondary data on the remaining 10 indicators were obtained from the GOR’s National Institute of Statistics (NISR). The NISR provided its data files on poverty from the GOR’s EICV3 from 2010/11. The EICV3 is a series of surveys that started in 2000/01 and is designed to monitor poverty and living conditions.²⁷ Data were also obtained from the Demographic and Health Survey (DHS) 2010. Table 3 lists the 13 FTF FEEDBACK indicators and the data source for the Rwanda ZOI.

Table 3. FTF FEEDBACK indicators and data sources

| Indicators | Source | Year collected |
|---|------------------|-------------------|
| Prevalence of poverty | EICV3 | Nov 2010-Oct 2011 |
| Per capita expenditures (as a proxy for incomes)* | EICV3 | Nov 2010-Oct 2011 |
| Prevalence of underweight children under 5 | DHS | Sep 2010-Mar 2011 |
| Prevalence of stunted children under 5 years of age | DHS | Sep 2010-Mar 2011 |
| Prevalence of wasted children under 5 years of age | DHS | Sep 2010-Mar 2011 |
| Prevalence of underweight women of reproductive age | DHS | Sep 2010-Mar 2011 |
| Prevalence of children age 6-23 months receiving a MAD | DHS | Sep 2010-Mar 2011 |
| Prevalence of exclusive breastfeeding | DHS | Sep 2010-Mar 2011 |
| Prevalence of anemia among children age 6-59 months | DHS | Sep 2010-Mar 2011 |
| Prevalence of anemia among women of reproductive age | DHS | Sep 2010-Mar 2011 |
| WEAI | FTF FEEDBACK PBS | Dec 2012-Jan 2013 |
| Prevalence of households with moderate or severe hunger | FTF FEEDBACK PBS | Dec 2012-Jan 2013 |
| Women’s Dietary Diversity Score among WRA | FTF FEEDBACK PBS | Dec 2012-Jan 2013 |

* Provided by the EICV, which collected household income data for the same households in the ZOI as the FTF FEEDBACK Baseline Survey.

2.2 Procedures for Estimating Values From Secondary Sources at the ZOI Level

The Rwanda 2010 DHS and EICV3 are the secondary sources that were utilized for 10 Feed the Future indicators. Data for the EICV3 and the Rwanda DHS were collected for the entire country, but indicators were measured using only data collected in the ZOI, which is the entire country except for Kigali City.

Rwanda 2010 DHS

Where recent secondary data were available, FTF FEEDBACK utilized these secondary sources to calculate PBS baseline indicators for the ZOI. Among the FTF FEEDBACK baseline indicators for Rwanda, six indicators are from the 2010 Rwanda DHS. The indicators calculated with secondary

²⁷ Detailed reports from the EICV Round 3 can be found on the website of the NISR at: <http://www.statistics.gov.rw/>.

DHS data include: prevalence of underweight children, prevalence of stunted children, prevalence of wasted children, prevalence of underweight women, prevalence of children 6-23 months receiving a minimum acceptable diet (MAD), and prevalence of exclusive breastfeeding.

FTF FEEDBACK used the publicly available Rwanda 2010 DHS data sets (specifically, the household members', women's, and children's files) to calculate anthropometric and nutrition indicators for women and children in the Rwanda Feed the Future ZOI. The DHS is a nationally representative survey, covering the entire country. In Rwanda, the FTF FEEDBACK ZOI includes all provinces (South, West, North, and East) except Kigali City. Limiting the DHS secondary analysis to the ZOI only was relatively straightforward because the Rwanda DHS data include a region (province) variable (v024). Cases in Kigali City province (v024=1) were excluded from the baseline indicator analysis and the six indicators were tabulated for the Rwanda ZOI only. (However, as a validation process, indicators were also tabulated for the entire country and compared with the relevant tables in the Rwanda 2010 DHS final report.)

EICV3

The provided data set included an aggregated consumption variable. Consumption categories in the EICV3 include consumption of food from purchases or own production, consumption of non-food goods and services, frequently used health items, education, housing and utilities, and in-kind transfers received by the household.²⁸ Daily per capita expenditures in the ZOI were calculated from the EICV3 data. For FTF FEEDBACK, per capita expenditures are presented in constant 2010 United States dollars (computed by converting RwF to USD using 2005 PPP and adjusting to 2010 U.S. prices using the U.S. CPI).

2.3 Organization of Survey Work

Approval to conduct the survey was obtained from the NISR, per organic law No. 014/2005 of February 14, 2005, which stipulates that the NISR is the coordinating agency of all statistical activities. Refer to Annex A for the survey protocol.

Training

TANGO International and a private Rwandan firm, Centre for Economic and Social Studies (CESS), conducted a training workshop for field supervisors and survey enumerators from December 10-21, 2012. The purpose of the training session was to ensure that all members of the survey team understood the objectives of the study, proper use of the survey tools, and the roles and responsibilities of each team member in data collection. During week one, CESS supervisors were trained by TANGO staff on the survey instruments and the use of computer tablets. During week two, TANGO staff, CESS trainers, and supervisors trained enumerators on the tools, procedures for conducting research on human subjects, and the survey procedures. The PBS and the manuals for

²⁸ NISR. 2012f.

supervisors and enumerators were translated into Kinyarwanda. During the training and pretest period, any problems found in the translations were corrected.

Fieldwork

The in-country data collection was conducted by CESS in conjunction with TANGO International. The PBS data collection activities began December 22, and ended January 11, 2013, with the exception of Christmas (December 24-26) and New Year's holidays (December 31-January 2). Enumerators obtained either verbal or written informed consent from all survey respondents. Interviews were conducted on Google Nexus 7 tablets running Open Data Kit (ODK) data collection software. Interviews took approximately one and one-half hours per household to conduct. Data were backed up in the field and transmitted to secure Westat servers, where data were aggregated and managed.

Data Quality Control

During the fieldwork, data quality was maintained in several ways. The data entry software on the tablet computers contained programmed checks for variable ranges, skip patterns, and consistency. The ODK Archive Tool made copies of the data files and data were backed up on the supervisors' tablets using near field communication tapping. In the field, the team leader checked each questionnaire closely for completeness, consistency, range checks, and skip patterns. The supervisor also checked a subset of questionnaires in the same manner. The fieldwork was planned so that all the field teams were within close proximity during the initial days of the fieldwork, and the teams all stayed at the same location in the evening. In this way, problems that were identified during the first days of fieldwork were shared and resolved with the entire field team.

As the data were being uploaded onto the FTF FEEDBACK server, Westat data management staff ran data quality programs that incorporated the data quality checks on the tablet computers, the checks done by field staff, and other general checks. These data quality programs included range checks: checks of skip patterns, consistency checks, and completeness checks done by the tablet computer software, and the checks by field editors and supervisors. The programs checked for completeness by listing whether all expected questionnaires per standard enumeration area (SEA) had been received, the result of the interview (complete, incomplete, etc.), percent of modules that were completed (by module), and the percentage of missing data for select variables, such as age and gender of respondents. All of these data were analyzed by Westat data management staff to identify data quality problems to be addressed in the field. In addition to producing detailed reports by enumerator, the programs produced summary reports that were used for general data quality control.

Handling of Missing Values

The approach used in this report was to take all "don't know" responses and missing data and recode them to null value—to take the value of "no" (if a yes/no question) or "0" (if a numeric

response is required)—and to include the recoded data in the numerator and denominator of indicators.

This approach was used unless a specific indicator was defined otherwise (e.g., children who were not weighed and measured and children whose values for weight and height were not recorded were excluded from both the denominator and the numerator for anthropometry indicators). Means were computed for questions whose responses were numerical values.

Data Imputation

Missing or “don’t know” values were generally treated as described above and allowed to stay in the data, with the exception of dates missing or “don’t know” values for critical events, which are needed to correctly compute indicators for these individuals:

- Date of birth of women 15-49 years; and
- Date of each birth for living children under 5 years, of women 15-49 years.²⁹

The procedure that was used to impute these dates followed international DHS standards, as described in the DHS Data Editing and Imputation.³⁰

Methods for Data Analysis

Most of the quantitative results in this report are presented as percentages and means, all with two decimal points in tables and one decimal point in the narrative. Representativeness was maintained by weighting any statistics that apply to the survey population (such as percentages and means) by the inverse of the probability of selection of any given survey respondent:

- **Percentages.** For values provided in nominal scales (e.g., yes/no responses), percentages were computed using the weighted number of cases that provided a given response as the numerator, and the total weighted number of cases as the denominator. Single response variables add up to a maximum of 100 percent, while multiple response variables may total more than 100 percent.
- **Means.** For variables collected in a continuous scale format (e.g., number of household members), means were computed using the weighted sum of values as the numerator and the total weighted number of cases as the denominator.

The unweighted sample sizes for the results are presented in each table with a column labeled “n.” To avoid showing unreliable statistics, results are only shown when the unweighted sample size for a column is greater than or equal to 30 cases.

²⁹ The released DHS data had Z-score values already calculated for the child anthropometric indicators.

³⁰ Croft, T. n.d.

Computed Variables and Indicators³¹

International standards were used whenever available to compute analytic variables and indicators:

1. Housing characteristics and health indicators were computed using DHS standards and definitions, as described in:
 - 2012 DHS Guide to Statistics; and
 - 2012 Tabulation Plan for DHS Final Report.
2. Nutrition and food security indicators were computed using international standards as described in:
 - 2012 Feed the Future Indicator Handbook;
 - 2011 Household Hunger Scale: Indicator Definition and Measurement Guide; and
 - 2010 World Health Organization (WHO) Indicators for Assessing Infant and Young Child Feeding Practices (Part 2 Measurement).
3. Anthropometry indicators were calculated using the child growth standards and data processing programs published by the WHO in 2006.³²
4. Data were obtained from the GOR's EICV3 2010/2011³³ and per capita expenditures and poverty rates were calculated on the subset of cases extracted from the national data set that fall within the Feed the Future ZOI. General references on guidance for computing expenditures from the Living Standards Measurement Survey (LSMS) mode include: Deaton & Zaidi³⁴ and Grosh & Muñoz.³⁵
5. The WEAI was calculated with guidance and materials provided via the USAID Feed the Future webinar conducted on November 9, 2012 and the Instructional Guide on the WEAI.^{36,37}

The details for calculations of the ZOI indicators are provided in Annex C.

³¹ Detailed descriptions provided in handling missing values, data imputation, methods for data analysis, and computed variables and indicators are based, in part from P. D Rosell, B. O'Colmain, and H. Howell. Haiti Baseline Survey. Draft Report. ICF Macro Inc., May 2013. Report submitted to USAID/Haiti, p.12-14.

³² WHO. 2006.

³³ NISR. Accessed at: www.statistics.gov.rw.

³⁴ Deaton, A. and Zaidi, S. 2002.

³⁵ Grosh, M. and Muñoz, J. 1996.

³⁶ Alkire, S. et al. 2013.

³⁷ IFPRI. 2013.

2.4 Survey Sample Design

The FTF FEEDBACK ZOI baseline survey was designed and implemented through coordinated efforts between CESS, Westat, and TANGO International. The ZOI in Rwanda comprises all four provinces, but does not include Kigali City.

2.4.1 Sample Size Calculation

The sample size was determined based on comparison of the sample sizes required for the Feed the Future indicators measured by this PBS. For each, the sample size needed to measure change between the baseline and endpoint was used, per FTF FEEDBACK guidance. This represents an expected change during an elapsed time of four to five years.

Table 4 shows the sample size requirements for the key indicator, WEAI. This sample size was large enough to detect change in the other two indicators as well. Calculations were done with Stata software sample size programs with a design effect of 2.0 and Z values corresponding to 95 percent significance and 80 percent power. The columns under “Minimum Required Sample Size” are the sample sizes required for the population for which the indicator will be calculated, not adjusted for nonresponse. The population for the WEAI is women age 18 years and older who are the primary female decision-makers of the household. The last column lists the “Target Sample Size,” which is the number of households required at baseline and endline, including adjustments for nonresponse. The nonresponse rate used was 3 percent, and the sample size was rounded up to 2,000 households to facilitate logistics. The baseline value for the WEAI is based on similar work on the WEAI in Uganda.

Table 4. Required sample size for key population-based indicators

| Indicator | Baseline value | Endpoint target value | Minimum required sample size (No. of HHs) | | Target sample size (No. of HHs adjusted for nonresponse) | |
|-----------|----------------|-----------------------|---|----------|--|----------|
| | | | Baseline | Endpoint | Baseline | Endpoint |
| WEAI | 0.79 | 0.84 | 1,762 | 1,762 | 1,815 | 1,815 |

2.4.2 Sample Design

A total of 2,000 households in 100 SEAs in the four provinces that comprise the ZOI were targeted for the survey. This sample size is more than sufficient to cover the sample size requirements indicated above. To maximize the number of SEAs, while at the same time conforming to the logistics requirement of having a minimum number of interviews in each SEA to fully occupy the time of the field teams when they are within a single SEA, 20 households per SEA were surveyed. The selection of households was based on household lists that are maintained and kept up to date by village heads. In Rwanda, it is common practice for the village heads to keep the list of households and members of the household. These lists are used regularly by NISR and other research companies to sample households in a village. The NISR provided a formal letter, which was used to contact district officials and village heads during the survey.

The NISR provided CESS with a list of all SEAs (14,836 total) from the DHS sampling frame and the number of households in each SEA. TANGO constructed a list of 13,146 SEAs, after eliminating the Kigali City areas, to obtain the complete list of all SEAs within the Feed the Future ZOI. Probability Proportional to Size (PPS) sampling was utilized based on the most recent information on population in the SEAs. Following standard practice, SEAs from game and forest reserves were excluded from the sample list. It was agreed that if any SEAs were replaced, CESS would record this and provide an explanation as to why the SEA was replaced.

Within sampled SEAs, households were selected using the NISR protocol. The total number of households from the household listing was divided by 20 (the number of households to be sampled per SEA). This provided the skip number. The central field supervisor then provided the team supervisors with a random household start number (between one and 20) for each SEA. The household selection began at this random household number, and then skipped by 20 households to select the next household. For example, if a SEA had 280 households, the skip was 28 (280/20). If the random number was 10 then the first selected household was the 10th household on the household listing. The next households selected would have been 38, 66, 94, 122, and onward until 20 households were selected. The sample focused on rural areas only. A household where there was no respondent present was given three call-back visits before being dropped from the survey without replacement.

2.4.3 Sample Weighting

Computations based on the survey sample were weighted so that the results accurately reflected the proportions of the sampled elements within the overall sample frame of the population in the ZOI.

Data required for statistical weighting of survey data were collected throughout the sampling process. These data included, but were not limited to: (1) SEA population sizes used for selection of SEAs, (2) population of strata, from which SEAs are drawn, (3) population of SEAs at the time of listing, and (4) response rates at the household, women's, and men's level.

Sample weights were calculated for households, women, men, and children in the sample. The household sampling weight was calculated by dividing the household design weight by the household response rate. The individual sampling weight was calculated by dividing the household sampling weight by the individual response rate. Additional details of how weights were computed are provided in Annex B.

2.4.4 Questionnaire Design

The PBS questionnaires were developed from the Feed the Future PBS baseline survey guidelines provided in Volume 8 of the Feed the Future M&E Guidance series, "Population-Based Survey Instrument for Feed the Future ZOI Indicators with Revised WEAI Module (October 2011)." The guidelines ensured that the surveys conformed to existing questionnaires such as the DHS, EICV3, LSMS, and WEAI. The questionnaires included the household identification module (Feed the

Future Survey Module A), the informed consent statement (Feed the Future Survey Module B), the household roster (Feed the Future Survey Module C), and the dwelling characteristics module (Feed the Future Survey Module D). The PBS baseline survey instrument also included Modules F, G, and H. See Table 5 below for details on each of these modules.

Table 5. FTF FEEDBACK Rwanda baseline survey indicators

| Survey module | Description of indicator |
|---------------|---|
| F | Prevalence of households with moderate or severe hunger |
| G | WEAI |
| H | Women’s Dietary Diversity Score: Mean number of food groups consumed by women of reproductive age |

The survey questionnaire was translated into Kinyarwanda and loaded onto tablet computers provided by Westat. More information on methodology and fieldwork as well as the survey instrument can be found in Annex A: Survey Protocol.

2.5 Limitations

There are two limitations to consider when interpreting the PBS results. They are related to the timing of the survey for the HHS and the high nonresponse rate for the WEAI.

A baseline estimate of food deprivation should reflect the largest number of households likely to experience food insecurity. Thus, HHS data are optimally collected “during or directly after the worst of the lean season.”³⁸ In Rwanda however, it was not possible to obtain the necessary approvals and organize the survey logistics before the end of the main hungry season in November/early December. By mid-December the main harvest (Season A) of Rwanda’s three harvest seasons begins, allowing farming households to replenish food stocks. Data collection occurred during a normal harvest. In January 2013, the Famine Early Warning Systems Network reported, based on the Season A harvest, that most households would be able to meet essential food needs through June 2013 and face minimal to no food insecurity. Some areas in the far eastern and western parts of the country experienced rainfall anomalies and had adequate supply, but they were expected to face food shortfalls after the survey, from late March 2013.³⁹

Collecting data during the short dry season may not be a limitation per se, but is important to consider when contextualizing the results, particularly the household hunger findings, in which results reflect the adequate harvest of the season during which the data were collected. For future surveys to assess changes in household food security, the HHS should be administered at the same time of the year.⁴⁰

³⁸ Ballard, T., Coates, J., Swindale, A. and Deitchler, M. 2011.

³⁹ FEWS Net and National University of Rwanda. 2013.

⁴⁰ Ballard, T., Coates, J., Swindale, A. and Deitchler, M. 2011.

Relatively high nonresponse for WEAI is due in part to nonresponse in portions of Module G (e.g., nonresponse on some sections in Module G, but not the entire module). For men, nonresponse is primarily due to men's absence from the household despite repeated visits by interviewers.

3. Descriptive Findings

The baseline values for the FTF FEEDBACK indicators are presented in Table 6. This is followed by a detailed description of individual indicators. Only differences across subgroups that are statistically significant at the 0.05 level are discussed in the narrative. No standard deviations were included for indicators that were reported as prevalences because the standard deviation of a proportion or prevalence is implied by the point estimate. Indicators that are reported as prevalences can be contextualized using the 95 percent confidence interval.

It should be noted that the data presented below only comprise a summary of the baseline values for the 13 FTF FEEDBACK indicators. The FTF FEEDBACK indicators of daily per capita expenditures (in 2010 USD) and percent living on less than \$1.25/day (2005 PPP), calculated from secondary data, are shown in Table 6. See Table 13 for more detail on the national poverty line and depth of poverty in Rwanda.

3.1 Household Characteristics

3.1.1 Demographics

Module C of the PBS captured information about size of households and, number of females within a household, data about children, and education achieved by the household. The data are presented in Table 7 and Table 8.

Household Composition

Across the ZOI, the average number of household members is about 4.5 (Table 7). Households with female adults only tend to have fewer members (3.2) than those with male and female adults (5.1). Significantly more females live in households with male and female adults (2.6) than in households with a female adult only (2.4) or male adult only (0.5). Similarly, more children in the under-5 and 5 to 17 years categories live in households with male and female adults (under 5: 0.7 children; 5-17: 1.8) than female adult only (under 5: 0.4 children; 5-17: 1.4) or male adult only (under 5: 0.1 children; 5-17: 0.8) households.

Table 6. FTF FEEDBACK ZOI population-based indicators (13 indicators)

| Feed the Future indicator | Baseline values | | | | | | Source |
|---|-------------------|--------------------|-------------|--------------------|-------------|--------------------------------|--------------|
| | n (unweighted) | Baseline value | SD | 95% CI | DEFF | Non- response rate (PBS) | |
| Prevalence of poverty: Percentage of people living on less than \$1.25/day (2005 USD PPP)⁴¹ | 12,960 | 66.96 | - | 65.34-68.58 | 4.00 | | EICV3 |
| M&F (both male and female adults) | 10,170 | 66.87 ^a | - | 65.08-68.66 | 4.21 | | EICV3 |
| FNM (female adult[s] only) | 2,255 | 71.50 ^a | - | 69.15-73.85 | 1.10 | | EICV3 |
| MNF (male adult[s] only) | 523 | 37.31 ^a | - | 31.83-42.79 | 0.67 | | EICV3 |
| CNA (child no adult) [^] | 12 | - | - | - | - | | EICV3 |
| Per capita daily expenditures of USG targeted beneficiaries (2010 USD) | 12,960 | 1.51 | 1.98 | 1.42-1.61 | 7.70 | | EICV3 |
| M&F (both male and female adults) | 10,170 | 1.50 ^b | 1.76 | 1.40-1.61 | 9.13 | | EICV3 |
| FNM (female adult[s] only) | 2,255 | 1.28 ^b | 1.55 | 1.20-1.35 | 1.36 | | EICV3 |
| MNF (male adult[s] only) | 523 | 3.70 ^b | 10.81 | 3.07-4.34 | 0.47 | | EICV3 |
| CNA (child no adult HHs) [^] | 12 | - | - | - | - | | EICV3 |
| Prevalence of underweight children under 5 | 3,864 | 11.83 | | 10.71-12.95 | 1.23 | | DHS |
| Male | 1,934 | 12.99 | | 11.36-14.62 | 1.19 | | DHS |
| Female | 1,930 | 10.67 | | 9.20-12.13 | 1.15 | | DHS |
| Prevalence of stunting in children under 5 | 3,864 | 46.32 | | 44.34-48.29 | 1.60 | | DHS |
| Male | 1,934 | 49.38 ^c | | 46.83-51.92 | 1.32 | | DHS |
| Female | 1,930 | 43.25 ^c | | 40.66-45.84 | 1.39 | | DHS |
| Prevalence of wasting in children under 5 | 3,864 | 2.66 | | 2.11-3.20 | 1.18 | | DHS |
| Male | 1,934 | 3.10 ^d | | 2.26-3.95 | 1.22 | | DHS |
| Female | 1,930 | 2.21 ^d | | 1.53-2.89 | 1.09 | | DHS |

⁴¹ FTF FEEDBACK calculates poverty at \$1.25 per day (2005 PPP). The GOR calculates the national poverty line equivalent to \$0.99/day (RwF 64,000). The prevalence of poverty in the ZOI is 47.8 percent based on the GOR's national poverty line.

Table 6. FTF FEEDBACK ZOI population-based indicators (13 indicators) (continued)

| Feed the Future indicator | Baseline values | | | | | Non-response rate (PBS) | Source |
|--|-----------------|--------------------|----|--------------------|-------------|-------------------------|-------------------------|
| | n (unweighted) | Baseline value | SD | 95% CI | DEFF | | |
| Prevalence of underweight women of reproductive age | 5,489 | 7.44 | | 6.63-6.63 | 1.39 | | DHS |
| WEAI | | 0.91 | | | | | FTF FEEDBACK PBS |
| Five Domains of Empowerment (5DE) Subindex | 1,481 | 0.90 | | 0.89-0.91 | 1.01 | 19.03 | FTF FEEDBACK PBS |
| Gender Parity Index | 1,103 | 0.96 | | 0.95-0.97 | 1.02 | 20.13 | FTF FEEDBACK PBS |
| Prevalence of households with moderate or severe hunger | 1,910 | 43.08 | | 40.64-45.52 | 1.19 | 2.10 | FTF FEEDBACK PBS |
| M&F (both male and female adults) | 1,368 | 40.53 ^e | | 37.68-43.38 | 1.19 | 2.77 | FTF FEEDBACK PBS |
| FNM (female adult[s] only) | 457 | 49.79 ^e | | 44.90-54.68 | 1.12 | 2.77 | FTF FEEDBACK PBS |
| MNF (male adult[s] only) | 84 | 48.63 | | 37.65-59.61 | 1.05 | 0.00 | FTF FEEDBACK PBS |
| CNA (child no adult HHs) | 1 | - | | - | - | - | FTF FEEDBACK PBS |
| Prevalence of children 6-23 months receiving MAD | 2,087 | 17.28 | | 17.28-19.12 | 1.31 | | DHS |
| Male | 1,016 | 17.19 | | 14.76-19.62 | 1.11 | | DHS |
| Female | 1,071 | 17.36 | | 14.81-19.91 | 1.27 | | DHS |

Table 6. FTF FEEDBACK ZOI population-based indicators (13 indicators) (continued)

| Feed the Future indicator | Baseline values | | | | | Non-response rate (PBS) | Source |
|--|-----------------|--------------------|-------------|--------------------|-------------|-------------------------|-------------------------|
| | n (unweighted) | Baseline value | SD | 95% CI | DEFF | | |
| Women's Dietary Diversity Score: Mean number of food groups consumed by women of reproductive age | 1,825 | 3.34 | 1.37 | 3.27-3.41 | 1.17 | 10.67 | FTF FEEDBACK PBS |
| Urban | - | - | - | - | - | | |
| Rural | 1,825 | 3.34 | 1.37 | 3.27-3.41 | 1.17 | | FTF FEEDBACK PBS |
| Prevalence of exclusive breastfeeding of children under 6 months | 628 | 86.46 | | 83.44-89.48 | 1.29 | | DHS |
| Male | 311 | 83.84 | | 79.30-88.39 | 1.26 | | DHS |
| Female | 317 | 89.04 | | 85.38-92.68 | 1.14 | | DHS |
| Prevalence of anemia among children 6-59 months | 3,583 | 38.13 | | 36.16-40.09 | 1.54 | | DHS |
| Male | 1,795 | 41.60 ^f | | 39.12-44.06 | 1.19 | | DHS |
| Female | 1,788 | 34.66 ^f | | 32.11-37.20 | 1.35 | | DHS |
| Prevalence of anemia among women of reproductive age | 5,985 | 17.16 | | 15.82-18.49 | 1.99 | | DHS |
| Pregnant | 413 | 19.53 | | 15.23-23.82 | 1.31 | | DHS |
| Nonpregnant | 5,572 | 16.98 | | 15.67-18.29 | 1.82 | | DHS |

^{a-f} Subgroups with the same superscript are significantly different at the 0.05 level.

The comparisons are made between rows within each indicator. EICV3 significance likely attributed to the large sample size.

[^] = Results not statistically representative; n<30.

Table 7. Household demographics

| | Household type | | | | |
|--|------------------|--------------------------|--------------------------|--------------------------|-----------------------------|
| | All households | Male and female adults | Female adult only | Male adult only | Child no adult ^a |
| | Mean (SD) | | | | |
| Number of household members | 4.50 (2.06) | 5.06 ^a (1.93) | 3.22 ^a (1.59) | 2.07 ^a (1.40) | - |
| Number of females in household | 2.42 (1.36) | 2.55 ^b (1.34) | 2.37 ^b (1.20) | 0.47 ^b (0.94) | - |
| Number of children (0-5 years) | 0.62 (0.75) | 0.72 ^c (0.77) | 0.38 ^c (0.62) | 0.09 ^c (0.09) | - |
| Number of children (6-23 months) | - | - | - | - | - |
| Number of children (5-17 years) | 1.67 (1.52) | 1.80 ^d (1.59) | 1.43 ^d (1.28) | 0.76 ^d (1.12) | - |
| Number of children attending school (5-17 years) | 1.19 (1.31) | 1.29 ^e (1.38) | 0.99 ^e (1.06) | 0.47 ^e (0.86) | - |
| n (unweighted) | 1,951 | 1,407 | 457 | 86 | 1 |

^{a-e} Subgroups with the same superscript are significantly different at the 0.05 level. The comparisons are across columns.

^a = Results not statistically representative; n<30.

Source: FTF FEEDBACK PBS. Dec 2012–Jan 2013.

Table 8. Highest education level within the household

| Education level | Household type | | | | |
|--|----------------|------------------------|--------------------|--------------------|-----------------------------|
| | All households | Male and female adults | Female adult only | Male adult only | Child no adult ^a |
| | % | | | | |
| Lower primary or none | 21.97 | 16.13 ^{ab} | 36.69 ^a | 38.42 ^b | - |
| Upper primary | 47.43 | 50.11 ^c | 40.67 ^c | 40.07 | - |
| Lower secondary | 13.77 | 14.46 | 12.29 | 10.46 | - |
| Upper secondary | 12.61 | 14.76 ^{de} | 7.22 ^d | 6.12 ^e | - |
| Above secondary/ technical or vocational | 4.23 | 4.54 | 3.13 | 4.92 | - |
| n (unweighted) | 1,950 | 1,407 | 457 | 85 | 0 |

^{a-e} Subgroups with the same superscript are significantly different at the 0.05 level. The comparisons are across columns.

^a = Results not statistically representative; n<30.

Source: FTF FEEDBACK PBS (Dec 2012–Jan 2013).

Education

Across households with school-aged children (5-17 years), the average number of children attending school is 1.2 (of 1.7 school-aged children in the household). Male and female adult households have significantly more children attending school (1.3) compared to female adult only (1.0) and male adult only (0.5) households (Table 7).

Table 8 shows the highest level of education obtained by the households in the ZOI. Overall, most households have attained upper primary school, achieved by 47.4 percent of ZOI households. The results show a general trend of lower education in female adult only and male

adult only households relative to male and female households.⁴² Nevertheless, the greatest share of male and female adult households (50.1 percent), as well as female adult only households (40.7 percent) and male adult only households (40.1 percent) has achieved upper primary education.

3.1.2 Dwelling Characteristics

Direct observation of housing construction materials, whether or not households have electricity, and type of fuels used for cooking were recorded in Module D of the PBS and are presented in the following tables. According to Table 9, household dwellings have an average of 3.2 rooms. Households with male and female adults have more rooms (3.3) than female adult only (3.0) and male adult only (2.7) households. Less than one in 10 of all households have electricity (average of 8.1 percent). There are no statistically significant differences for electricity between household types.

Table 9. Dwelling characteristics

| | Household type | | | | |
|--------------------------------|----------------|--------------------------|--------------------------|--------------------------|-----------------------------|
| | All households | Male and female adults | Female adult only | Male adult only | Child no adult ^a |
| Mean number of rooms (std dev) | 3.17 (1.26) | 3.28 ^a (1.25) | 2.95 ^a (1.22) | 2.65 ^a (1.37) | - |
| % households with electricity | 8.05 | 7.92 | 7.49 | 13.15 | - |
| n (unweighted) | 1,951 | 1,407 | 457 | 86 | 1 |

^a Subgroups with the same superscript are significantly different at the 0.05 level. The comparisons are across columns.

[^] = Results not statistically representative; n<30.

Source: FTF FEEDBACK PBS, Dec 2012–Jan 2013.

Table 10 presents information about housing construction materials. Households, regardless of type, typically use corrugated metal (50.6 percent) and tile (48.6 percent) for roof materials. Walls are constructed primarily with mud or unfired brick (68.5 percent) and, to a lesser extent, with wood (26.0 percent). Similarly, flooring materials are mainly earth or mud (88.1 percent) and about one in 10 households use concrete or stone for floors (10.2 percent).

Table 11 indicates that nearly all households use firewood (95.3 percent) as their main source of fuel for cooking, supplemented by charcoal (2.6 percent). The data compare the usage of each fuel type across household types. Male and female adult households are significantly more likely to use firewood for their main cooking fuel (96.1 percent) than female adult only (93.6 percent) and male adult only (90.1 percent) households. In contrast, female adult only households are significantly more likely to use agricultural crop residue for cooking fuel (1.9 percent) than male and female adult households (0.6 percent), whereas, male adult only households are more likely to use electricity for cooking (2.5 percent) than female adult only and male and female adult households (0.2 percent, both).

⁴² However, those differences may be influenced by differences in the household size since this measure is the highest education of individuals within the household.

Table 10. Housing construction materials

| | Household type | | | | |
|----------------------------------|----------------|------------------------|--------------------|---------------------|-----------------------------|
| | All households | Male and female adults | Female adult only | Male adult only | Child no adult [^] |
| Roof | % | | | | |
| Roof tile | 48.59 | 49.32 ^a | 49.20 ^b | 34.15 ^{ab} | - |
| Corrugated metal | 50.59 | 50.19 ^c | 49.28 ^d | 63.34 ^{cd} | - |
| Plastic sheeting | 0.72 | 0.50 ^e | 1.09 | 2.51 ^e | - |
| Thatched/vegetable matter/sticks | 0.00 | 0.00 | 0.21 | 0.00 | - |
| Other | 0.00 | 0.00 | 0.21 | 0.00 | - |
| Floor | | | | | |
| Mud/unfired brick/manure | 88.1 | 89.01 ^f | 86.86 | 79.69 ^f | - |
| Concrete/stone | 10.21 | 9.66 | 10.71 | 16.70 | - |
| Brick/tile | 1.03 | 0.85 ^g | 1.10 | 3.62 ^g | - |
| Wood | 0.61 | 0.43 ^h | 1.32 ^h | 0.00 | - |
| Other | 0.00 | 0.00 | 0.00 | 0.00 | - |
| Wall | | | | | |
| Mud/unfired brick/manure | 68.45 | 68.15 | 70.83 ⁱ | 60.42 ⁱ | - |
| Concrete/stone | 3.36 | 3.86 ^j | 1.55 ^{jk} | 4.86 ^k | - |
| Brick/tile | 2.02 | 1.92 ^l | 1.56 ^m | 5.99 ^{mn} | - |
| Wood | 26.02 | 26.07 | 25.84 | 27.48 | - |
| Other | 0.11 | 0.00 ⁿ | 0.21 | 1.25 ⁿ | - |
| n (unweighted) | 1,949 | 1,405 | 457 | 86 | 1 |

^{a-n} Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are made across columns.

[^] = Results not statistically representative; n<30.

Source: FTF FEEDBACK PBS, December 2012–Jan 2013.

Table 11. Main source of cooking fuel

| | Household type | | | | |
|---------------------------|----------------|------------------------|--------------------|--------------------|-----------------------------|
| | All households | Male and female adults | Female adult only | Male adult only | Child no adult [^] |
| Fuel type | % | | | | |
| Electricity | 0.31 | 0.21 ^a | 0.22 ^b | 2.48 ^{ab} | - |
| Liquid propane (biogas) | 0.00 | 0.00 | 0.00 | 0.00 | - |
| Kerosene | 0.00 | 0.00 | 0.21 | 0.00 | - |
| Charcoal | 2.55 | 2.37 | 2.69 | 5.04 | - |
| Firewood | 95.25 | 96.09 ^{cd} | 93.57 ^c | 90.13 ^d | - |
| Animal dung | 0.59 | 0.44 | 1.15 | 0.00 | - |
| Agricultural crop residue | 0.98 | 0.58 ^e | 1.94 ^e | 2.35 | - |
| Other | 0.20 | 0.21 | 0.21 | 0.00 | - |
| n (unweighted) | 1,945 | 1,405 | 457 | 82 | 1 |

^{a-e} Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are made across columns.

[^] = Results not statistically representative; n<30.

Source: FTF FEEDBACK PBS, December 2012–Jan 2013.

3.1.3 Water and Sanitation

According to WHO⁴³ standards, sources of improved drinking water include piped water to the house or yard, public taps or standpipes, boreholes, protected dug wells, protected springs and rainwater collection. Improved sanitation facilities include flush or pour-flush toilets connected to a piped sewer system, septic tanks, pit latrines with slab, and composting toilets.

Approximately three-quarters of all households (73.5 percent) use an improved drinking water source. There are no significant differences across household types (Table 12). In addition, more than half of households (55.9 percent) use an improved sanitation facility (excluding all pit latrines, see table note). Households with male and female adults have significantly more access to and use of improved sanitation facilities (59.9 percent) compared to female adult only households (44.2 percent); whereas female adult only households are more likely to use a pit latrine (45.2 percent) than male and female adult households (36.4 percent).

Table 12. Households with improved water and sanitation facilities

| | Household type | | | | |
|---|----------------|------------------------|--------------------|-----------------|-----------------------------|
| | All households | Male and female adults | Female adult only | Male adult only | Child no adult [^] |
| | Percent | | | | |
| Households using improved water source | 73.45 | 72.88 | 73.38 | 80.38 | - |
| Households using improved sanitation facilities (excluding pit latrines) ¹ | 55.85 | 59.87 ^a | 44.17 ^a | 51.69 | - |
| Households using pit latrines | 38.37 | 36.36 ^b | 45.17 ^b | 35.60 | - |
| n (unweighted) | 1,945 | 1,405 | 457 | 82 | 1 |

^{a,b} Subgroups with the same superscript are statistically different at the 0.05 level. The comparisons are across columns.

[^] = Results not statistically representative, n<30.

¹ All pit latrines were excluded because the survey questionnaire did not differentiate between covered pit latrines with slab (improved) and without slab (unimproved).

Source: FTF FEEDBACK PBS Dec 2012–Jan 2013.

3.2 Household Consumption and Expenditures

3.2.1 Prevalence and Depth of Poverty in the ZOI

The prevalence of poverty is defined as the percentage of people living in the ZOI on less than \$1.25 per day at 2005 purchasing power parity (PPP). Refer to Annex C for further description of this indicator as defined through the Millennium Development Goals.

Table 13 shows that 67.0 percent of the population in the ZOI lives in poverty (based on \$1.25/day). It should be noted that the standard Rwandan estimate for the national poverty line is

⁴³ WHO. 2013. Available at: http://www.who.int/gho/phe/water_sanitation/en/index.html.

equivalent to \$0.99/day (RwF 64,000/year), with the prevalence of poverty at the national level at 47.8 percent. The prevalence of extreme poverty in the ZOI is 25.8 percent and the national extreme poverty line is equivalent to \$0.68/day (RwF 45,000/year).

Table 13. Poverty and expenditure indicators for the ZOI

| Feed the Future indicator | Baseline values | | | | |
|--|-------------------|--------------------|--------------|--------------------|-------------|
| | n (unweighted) | Baseline value | SD | 95% CI | DEFF |
| Prevalence of poverty: Percentage of people living on less than \$1.25/day (2005 PPP) | 12,960 | 66.96 | - | 65.34-68.58 | 4.00 |
| M&F (both male and female adults) | 10,170 | 66.87 ^a | - | 65.08-68.66 | 4.21 |
| FNM (female adult[s] only) | 2,255 | 71.50 ^a | - | 69.15-73.85 | 1.10 |
| MNF (male adult[s] only) | 523 | 37.31 ^a | - | 31.83-42.79 | 0.67 |
| CNA (child no adult) [^] | 12 | - | - | - | - |
| Poverty gap at \$1.25 a day 2005 PPP | 12,960 | 27.30 | 25.73 | 26.40-28.20 | 4.14 |
| M&F (both male and female adults) | 10,170 | 27.07 ^b | 24.39 | 26.08-28.06 | 4.37 |
| FNM (female adult[s] only) | 2,255 | 30.86 ^b | 31.94 | 29.45-32.27 | 1.14 |
| MNF (male adult[s] only) | 523 | 12.69 ^b | 33.40 | 10.32-15.06 | 0.69 |
| CNA (child no adult) [^] | 12 | - | - | - | - |
| Prevalence of poverty at the national level (64,000 RwF per year at 2001 price levels, \$0.99/day 2005 PPP) | 12,960 | 47.82 | - | 46.26-49.37 | 3.25 |
| M&F (both male and female adults) | 10,170 | 47.38 ^c | - | 45.68-49.09 | 3.40 |
| FNM (female adult[s] only) | 2,255 | 54.06 ^c | - | 51.50-56.62 | 1.06 |
| MNF (male adult[s] only) | 523 | 23.87 ^c | - | 18.95-28.79 | 0.70 |
| CNA (child no adult) [^] | 12 | - | - | - | - |
| Poverty gap at the national poverty line (64,000 RwF per year at 2001 price levels, \$0.99/day 2005 PPP) | 12,960 | 15.82 | 21.42 | 15.12-16.53 | 3.66 |
| M&F (both male and female adults) | 10,170 | 15.53 ^d | 20.23 | 14.77-16.30 | 3.81 |
| FNM (female adult[s] only) | 2,255 | 19.07 ^d | 27.55 | 17.85-20.30 | 1.16 |
| MNF (male adult[s] only) | 523 | 6.72 ^d | 24.62 | 4.94-8.50 | 0.71 |
| CNA (child no adult) [^] | 12 | - | - | - | - |
| Prevalence of extreme poverty (45,000 RwF per year at 2001 price levels, \$0.68/day 2005 PPP) | 12,960 | 25.81 | - | 24.47-27.15 | 3.16 |
| M&F (both male and female adults) | 10,170 | 25.38 ^e | - | 23.92-26.84 | 3.27 |
| FNM (female adult[s] only) | 2,255 | 30.87 ^e | - | 51.50-56.62 | 1.10 |
| MNF (male adult[s] only) | 523 | 10.51 ^e | - | 7.00-14.01 | 0.69 |
| CNA (child no adult) [^] | 12 | - | - | - | - |

Table 13. Poverty and expenditure indicators for the ZOI (continued)

| Feed the Future indicator | Baseline values | | | | |
|--|-------------------|-------------------|--------------|------------------|-------------|
| | n (unweighted) | Baseline value | SD | 95% CI | DEFF |
| Extreme poverty gap (45,000 RwF per year at 2001 price levels, \$0.68/day 2005 PPP) | 12,960 | 6.81 | 14.70 | 6.37-7.26 | 3.09 |
| M&F (both male and female adults) | 10,170 | 6.61 ^f | 13.80 | 6.13-7.09 | 3.21 |
| FNM (female adult[s] only) | 2,255 | 8.81 ^f | 19.81 | 7.92-9.70 | 1.18 |
| MNF (male adult[s] only) | 523 | 2.55 ^f | 14.82 | 1.45-3.65 | 0.75 |
| CNA (child no adult) [^] | 12 | - | - | - | - |
| Per capita daily expenditures of USG targeted beneficiaries (2010 USD) | 12,960 | 1.51 | 1.98 | 1.42-1.61 | 7.70 |
| M&F (both male and female adults) | 10,170 | 1.50 ^g | 1.76 | 1.40-1.61 | 9.13 |
| FNM (female adult[s] only) | 2,255 | 1.28 ^g | 1.55 | 1.20-1.35 | 1.36 |
| MNF (male adult[s] only) | 523 | 3.70 ^g | 10.81 | 3.07-4.34 | 0.47 |
| CNA (child no adult) [^] | 12 | - | - | - | - |

^{a-g} Subgroups with the same superscript are significantly different at the 0.05 level. The comparisons are across rows.

[^] = Results not statistically representative; n<30.

Source: EICV3. Nov 2011–Oct 2012.

The poverty gap is the mean shortfall from the poverty line (counting the non-poor as having zero shortfall) expressed as a percentage of the poverty line. This measure reflects the depth of poverty as well as its incidence.⁴⁴ As shown in Table 13, the poverty gap in the ZOI is 27.3 percent below the \$1.25 per day poverty line. This, along with the prevalence of poverty indicates that on average the shortfall from the poverty line for those below the \$1.25 per day poverty line is \$0.51.⁴⁵

Similarly, for those below the national poverty line of \$0.99/day (RwF 64,000) the average shortfall is \$0.33 and for those below the national extreme poverty line of \$0.68/day (RwF 45,000), the average shortfall is \$0.18.

At the national level and national poverty line,⁴⁶ female adult only households are more likely to be poor than male adult only households, though the percentage of poor female adult only households has decreased from approximately 66 percent in 2000/01 to 47 percent in 2010/11 (compared to 44.9 percent of all households). The gap between poor female adult only households and poor male adult only households is declining.⁴⁷ Figure 2 maps the prevalence of poverty at the national poverty line by district in 2010/2011.

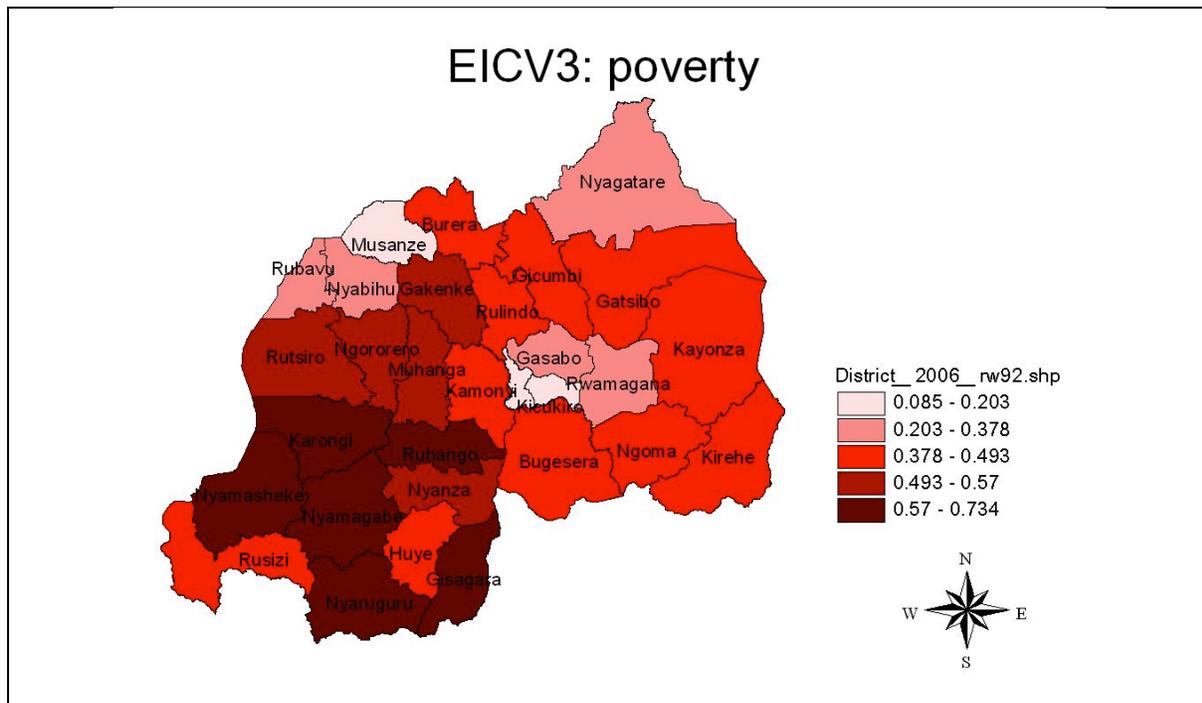
⁴⁴ World Bank. 2013.

⁴⁵ This estimation is calculated as (poverty gap/prevalence of poverty)*poverty line.

⁴⁶ EICV3 poverty data for the ZOI was not available.

⁴⁷ NISR. 2012f.

Figure 2. Percentage of population identified as poor, by district



Source: NISR. 2012f.

Further, at the national level, the majority of the population living in extreme poverty (RwF 45,000/year or \$0.68/day 2005 PPP) are engaged in agriculture: approximately 55 percent of those who derive one-third of their income from farm wages, 52 percent of people whose income depends mostly on farm wages, and 27 percent of those engaged in agriculture for their primary livelihood, live in extreme poverty.⁴⁸

3.2.2 Per Capita Expenditures

Per capita expenditures is an indicator that measures household expenditures as a proxy for income, based on the assumption that increased expenditures are strongly related to increased income. Expenditures are used instead of income because of the difficulty in accurately measuring income and because expenditure data are less prone to error, are easier to recall, and are more stable over time than income data.⁴⁹ Refer to Annex C for further description of this indicator. Table 14 shows that average daily per capita expenditures in the ZOI are approximately \$1.51 (2010 USD). The GOR provided data for this indicator from the EICV3.

⁴⁸ NISR. 2012f.

⁴⁹ Deaton, A. 2008.

Table 14. Prevalence of household hunger

| | Baseline value | n (unweighted) |
|---------------------------|----------------|----------------|
| Little hunger (0-1 HHS) | 56.92 | 1,910 |
| Moderate hunger (2-3 HHS) | 32.19 | 1,910 |
| Severe hunger (>3 HHS) | 10.89 | 1,910 |

Source: FTF FEEDBACK PBS, Dec 2012–Jan 2013.

3.3 Household Hunger

The HHS (Module F) is used to calculate the prevalence of households with moderate or severe hunger. The HHS was developed by the USAID-funded Food and Nutrition Technical Assistance II Project (FANTA-2/FHI 360) and has been cross-culturally validated to allow comparison across different food-insecure contexts. The HHS is used to assess, geographically target, monitor, and evaluate settings affected by substantial food insecurity. The HHS is used to estimate the percentage of households affected by three different severities of household hunger: little to no household hunger (HHS score 0-1); moderate household hunger (HHS score 2-3); and severe household hunger (HHS score 4-6). This indicator should always be measured at the same time each year, ideally at the most vulnerable time of year (right before the harvest, during the dry season, etc.).⁵⁰ As discussed previously in the limitations, it should be noted that the PBS data collection took place during the main harvest (Season A). Thus, the findings presented below show the most optimal results for household hunger status compared to more vulnerable times of the year. Refer to Annex C for further description of this indicator.

Overall, the results of the HHS indicate that 43.1 percent of households in the ZOI experience moderate or severe hunger (Table 6). Male and female adult households report a significantly lower prevalence of moderate and severe hunger (40.5 percent) than female adult only households (49.8 percent) (Table 6). In addition, Table 14 shows the HHS by level of severity. More than half (56.9 percent) of the households in the ZOI report little to no hunger; whereas about one-third of the population (32.2 percent) reports moderate hunger, and 10.9 percent of households in the ZOI report severe hunger.

3.4 Nutrition

Data on anthropometry and anemia in women and children, Women’s Dietary Diversity Score, exclusive breastfeeding, and MAD present information on diet, height, weight, age, and hemoglobin for children under 5 and women of reproductive age (WRA). The GOR provided the data for these indicators from the data collected in the DHS 2010. The information was used to calculate: the prevalence of underweight, stunting, and wasting in children under 5, the prevalence of exclusive breastfeeding, the prevalence of children 6-23 months receiving a MAD, the prevalence of anemia among children 6-59 months, the prevalence of underweight (and overweight) WRA, including the body mass index of women, the mean number of food groups

⁵⁰ Deitchler, M. et al. 2011.

consumed by WRA, the percentage of WRA eating each of the nine food groups, the women's average dietary diversity score by quartile, and the prevalence of anemia among WRA.

3.4.1 Child Nutritional Status

Measures of Nutritional Status (Stunting, Wasting, Underweight)

Stunting, wasting, and underweight are the three nutritional indicators for children under 5 years. Refer to Annex C for further description of these indicators. Stunting is an indicator of linear growth retardation, most often due to prolonged exposure to an inadequate diet and poor health. Reducing the prevalence of stunting among children, particularly age 0-23 months, is important because linear growth deficits accrued early in life are associated with cognitive impairments, poor educational performance, and decreased work productivity among adults. Child nutrition and feeding practice information presented are secondary data from the 2010 DHS.

Stunting is a height-for-age measurement that reflects chronic undernutrition. This indicator measures the percentage of children 0-59 months with stunting, as defined by a height-for-age Z score less than two standard deviations from the median of the 2006 WHO Child Growth Standard.⁵¹ This indicator measures the prevalence of combined moderate (below -2SD and above or equal to -3SD) and severe (below -3SD) stunting. While stunting may be difficult to measure in children 0-6 months and most stunting occurs in the 9-23 month range, data for this indicator will be reported for all children under 5 years to capture the impact of interventions over time and align with DHS data.

Among children under 5 in the ZOI, almost half of the children are stunted (46.3 percent) and 18.0 percent are severely stunted (Table 15). Overall, boys have a significantly higher prevalence of moderate (49.4 percent) and severe (20.6 percent) stunting than girls (43.3 and 15.4 percent, respectively). Analyses by gender and household type indicate a similar trend: moderate and severe stunting is significantly higher for boys than girls in male and female adult households. Male and female adult households and female adult only households reported similar stunting prevalence between household types. Data are not reported for male adult only households because of sample size ($n < 30$).

National trends show that stunting among children under 5 has decreased 7 percent in Rwanda from 2005 to 2010 (from approximately 51 percent in 2005 to 44 percent in 2010). Compared to the national prevalence (44.2 percent), stunting prevalence in the ZOI is slightly higher than the national averages, which include Kigali City, but the five to six percentage point differences for moderate and severe stunting between boys and girls are a comparable trend with the ZOI results.^{52,53} The average stunting prevalence within the Feed the Future ZOI is also comparable to

⁵¹ WHO. 2006.

⁵² NISR. 2012a.

⁵³ Moderate stunting prevalence: 47.4 percent among boys, 41.1 percent among girls; severe stunting: 19.5 among boys, 14.5 percent among girls (2010 DHS).

other East African⁵⁴ national averages collected between 2007 and 2011. The stunting prevalence in East Africa ranges from 32 percent in Zimbabwe (2010-11 DHS) to 58 percent in Burundi (2010 DHS).⁵⁵

Wasting is an indicator of acute malnutrition. Children with wasting have extremely low weight for their height and have a much greater risk of mortality than children without wasting. This indicator measures the percentage of children 0-59 months who are acutely malnourished, as defined by a weight-for-height Z score below -2SD from the median of the 2006 WHO Child Growth Standard.⁵⁶ This indicator also measures the combined prevalence of moderate (below -2SD and above or equal to -3SD) and severe (below -3SD) wasting.

Among all children under 5, 2.7 percent are wasted (Table 15); wasting is significantly higher among boys than girls (3.1 percent of boys versus 2.2 percent of girls). In addition, households with male and female adults have a significantly lower prevalence of wasting among all children (2.4 percent), and boys in particular (2.7 percent), compared to households with female adults only (4.0 percent of all children and 4.9 percent of boys) (Table 15).

Wasting has decreased in Rwanda from 5 percent in 2005 to 3 percent in 2010.⁵⁷ The wasting prevalence in the ZOI is similar to the national averages. Rwanda has the lowest wasting prevalence compared to other countries in the East African region.⁵⁸ Zimbabwe and Ethiopia have the highest wasting prevalence, with 10 percent.⁵⁹

Underweight is a weight-for-age measurement and it is a reflection of acute and/or chronic undernutrition. This indicator measures the percentage of children 0-59 months who are underweight, as defined by a weight-for-age Z score below -2SD from the median of the 2006 WHO Child Growth Standard. This indicator measures the prevalence of both moderate underweight (below -2SD and above or equal to -3SD) and severe (below -3SD) underweight. This indicator is calculated using the percentage of children 0-59 months in the sample who are underweight and the total population of children 0-59 months of age in the ZOI.

⁵⁴ USAID/MEASURE DHS East African countries include: Kenya, Madagascar, Malawi, Mozambique, Rwanda, Sudan, Tanzania, Uganda, Zambia, and Zimbabwe.

⁵⁵ Data abstracted from USAID/MEASURE STATCompiler; limited to DHSs conducted from 2007 to 2012.

⁵⁶ WHO. 2006.

⁵⁷ NISR. 2012a.

⁵⁸ USAID/MEASURE DHS East African countries include: Kenya, Madagascar, Malawi, Mozambique, Rwanda, Sudan, Tanzania, Uganda, Zambia, Zimbabwe.

⁵⁹ Data abstracted from USAID/MEASURE STATCompiler (Zimbabwe DHS 2010 and Ethiopia DHS 2011); limited to DHS, which were conducted from 2007-2012.

Table 15. Nutritional status of children under 5

| | Height-for-age (stunting) | | | Weight-for-height (wasting) | | | Weight-for-age (underweight) | | | Number of children |
|------------------------------------|------------------------------|----------------------------|---------------------------|--------------------------------|----------------------------|-------------------------|---------------------------------|----------------------------|---------------------------|--------------------------|
| | Percent below - 3 SD | Percent below - 2 SD | Mean Z-score (SD) | Percent below - 3 SD | Percent below - 2 SD | Mean Z-score (SD) | Percent below - 3 SD | Percent below - 2 SD | Mean Z-score (SD) | |
| All children under 5 | 17.96 | 46.32 | -1.83 (1.35) | 0.78 | 2.66 | 0.36 (1.14) | 2.40 | 11.83 | -0.80 (1.04) | 3,864 |
| Male children | 20.55 ^a | 49.38 ^c | -1.92 ^e (1.36) | 0.96 | 3.10 ^g | 0.36 (1.16) | 2.66 | 12.99 | -0.84 ⁱ (1.04) | 1,934 |
| Female children | 15.37 ^a | 43.25 ^c | -1.74 ^e (1.34) | 0.61 | 2.21 ^g | 0.35 (1.11) | 2.15 | 10.67 | -0.77 ⁱ (1.04) | 1,930 |
| Household type | | | | | | | | | | |
| Male and female adults | | | | | | | | | | |
| All children | 17.65 | 46.45 | -1.83 (1.35) | 0.73 | 2.36 ^h | 0.37 (1.13) | 0.74 | 11.64 | -0.79 (1.04) | 3,197 |
| Male children | 20.25 ^b | 49.67 ^d | -1.93 ^f (1.34) | 0.87 | 2.74 ⁱ | 0.38 (1.16) | 2.67 | 12.67 | -0.83 ^k (1.04) | 1,579 |
| Female children | 15.12 ^b | 43.31 ^d | -1.74 ^f (1.34) | 0.60 | 2.00 | 0.37 (1.11) | 2.17 | 10.63 | -0.76 ^k (1.05) | 1,618 |
| Female adult only | | | | | | | | | | |
| All children | 19.74 | 46.27 | -1.82 (1.38) | 1.05 | 4.03 ^h | 0.28 (1.14) | 2.17 | 12.66 | -0.85 (1.02) | 652 |
| Male children | 22.06 | 48.53 | -1.87 (1.41) | 1.40 | 4.85 ⁱ | 0.26 (1.17) | 2.24 | 14.02 | -0.89 (1.00) | 348 |
| Female children | 17.11 | 43.71 | -1.76 (1.33) | 0.65 | 3.10 | 0.31 (1.11) | 2.09 | 11.11 | -0.81 (1.03) | 304 |
| Male adult only[^] | | | | | | | | | | |
| All children | - | - | - | - | - | - | - | - | - | 15 |
| Male children | - | - | - | - | - | - | - | - | - | 7 |
| Female children | - | - | - | - | - | - | - | - | - | 8 |
| Child no adult[^] | | | | | | | | | | |
| All children | - | - | - | - | - | - | - | - | - | 0 |
| Male children | - | - | - | - | - | - | - | - | - | 0 |
| Female children | - | - | - | - | - | - | - | - | - | 0 |

^{a-k} Subgroups with the same superscript are significantly different at the 0.05 level. The comparisons are across rows.

[^] = Results not statistically representative; n<30.

Source: DHS. Sept 2010–March 2011.

Among children under five, 11.8 percent are underweight and 2.4 percent are severely underweight (Table 15). There are no significant differences between moderately or severely underweight boys and girls, and no differences between household types. Underweight prevalence in Rwanda's ZOI lies within the range of the East African region;⁶⁰ underweight prevalence ranges from 10 percent in Zimbabwe to 29 percent in Burundi.⁶¹

Infant and Young Child Feeding

Exclusive breastfeeding provides children with significant health and nutrition benefits, including protection from gastrointestinal infections and reduced risk of mortality, due to infectious disease. Exclusive breastfeeding means the infant received breast milk (including milk expressed or from a wet nurse) and may have received oral rehydration salts, vitamins, minerals and/or medicines, but did not receive any other food or liquid. This indicator measures the percentage of children 0-5 months who were exclusively breastfed during the day preceding the survey. Refer to Annex C for further description of this indicator.

Across the East Africa region, there is a large disparity in exclusive breastfeeding practices. National prevalence of exclusive breastfeeding of children under six months ranges from approximately 32 percent in Zimbabwe and Kenya to 85 percent in Rwanda.⁶²

Exclusive breastfeeding is high among respondents in the ZOI, 86.5 percent report exclusively breastfeeding their children until 6 months (boys 83.8 percent and girls 89.0 percent, no significant difference) (Table 16). There are no significant differences found in exclusive breastfeeding by household type (Table 16). The high prevalence of exclusive breastfeeding is strongly associated with reduced mortality and increased immunity to childhood diseases such as diarrhea and upper respiratory illness.⁶³

⁶⁰ USAID/MEASURE DHS East African countries include: Kenya, Madagascar, Malawi, Mozambique, Rwanda, Sudan, Tanzania, Uganda, Zambia, Zimbabwe.

⁶¹ Data abstracted from USAID/MEASURE STATCompiler (Zimbabwe DHS 2010 and Burundi DHS 2010); limited to DHS, which were conducted from 2007-2012.

⁶² Data abstracted from USAID/MEASURE STATCompiler (Zimbabwe DHS 2010-11 and Kenya DHS 2008-09); limited to DHS, which were conducted from 2007-2012.

⁶³ WHO. 2000.

Table 16. Prevalence of exclusive breastfeeding of children under 6 months

| | Baseline value (%) | n (unweighted) |
|------------------------------|--------------------|----------------|
| All households | 86.46 | 628 |
| Household type | | |
| Male and female adults | 86.02 | 538 |
| Female adult only | 88.94 | 89 |
| Male adult only [^] | - | 1 |
| Child no adult [^] | - | 0 |

No differences across subgroups for any of the indicators in the table are statistically significant at the 0.05 level.

[^] = Results not statistically representative; n<30.

Source: DHS. Sept 2010–March 2011.

The *prevalence of children 6-23 months receiving a MAD* is an indicator that measures the proportion of children 6-23 months who receive a MAD apart from breastfeeding. This indicator measures both the minimum feeding frequency and minimum dietary diversity in the past 24 hours. Tabulation of the indicator requires data on:

- Consumption of milk, or milk products (children who are breastfed meet this requirement). Nonbreastfed children's diet should include at least two feedings of commercial infant, fresh, tinned, or powdered animal milk.
- Dietary diversity score (consumption of four or more food groups).
- Frequency of feeding semi-solid/solid feeds and number of milk feeds (minimum time or more).

Dietary diversity for children 6-23 months is defined as four or more food groups out of the following seven groups: (1) dairy products (infant formula, milk other than breast milk, cheese, yogurt); (2) grains, roots, and tubers; (3) vitamin A-rich fruits and vegetables; (4) other fruits and vegetables; (5) eggs; (6) meat, fish, poultry, and organ meats; and (7) legumes and nuts. Feeding frequency varies for breastfed and nonbreastfed children. Refer to Annex C for further description of this indicator.

Overall, 17.3 percent of households report providing a MAD to their child 6-23 months, with no significant differences between boys and girls (Table 17). Furthermore, feeding practices are similar across household type (Table 17).

Table 17. Prevalence of children 6-23 months receiving a MAD

| | Baseline value (%) | n (unweighted) |
|------------------------------|--------------------|----------------|
| All households | 17.27 | 2,087 |
| Household type | | |
| Male and female adults | 17.23 | 1,787 |
| Female adult only | 17.56 | 300 |
| Male adult only [^] | - | - |
| Child no adult [^] | - | - |

No differences across subgroups for any of the indicators in the table are statistically significant at the 0.05 level.

[^] = Results not statistically representative; n<30.

Source: DHS. Sept 2010–March 2011.

The MAD was disaggregated by MAD component and breastfeeding status (Table 18). For all children 6-23 months, slightly less than half of respondents (48.7 percent) were able to follow feeding frequency (providing food a minimum number of times or more to their child); but only 27.5 percent of children 6-23 months have diverse diets (four or more food groups). Households are more successful in following feeding practices than following dietary diversity. The Women's Dietary Diversity Score is discussed later in this section.

Table 18. Components of MAD among children 6-23 months

| | Baseline value (percent) | n (unweighted) |
|--|--------------------------|----------------|
| Breastfed children 6-23 months | | |
| Four or more food groups | 27.22 | 1,955 |
| Minimum times or more | 50.77 ^a | 1,955 |
| MAD | 17.99 ^b | 1,955 |
| Nonbreastfed children 6-23 months | | |
| Milk or milk products | 27.48 | 132 |
| Four or more food groups | 31.21 | 132 |
| Minimum times or more | 18.35 ^a | 132 |
| MAD | 7.07 ^b | 132 |
| All children 6-23 months | | |
| Breast milk, milk, or milk products | 95.30 | 2,087 |
| Four or more food groups | 27.48 | 2,087 |
| Minimum times or more | 48.66 | 2,087 |
| MAD | 17.28 | 2,087 |

^{a-b} Subgroups with the same superscript are significantly different at the 0.05 level.

The comparisons are across rows.

Source: DHS. Sept 2010–March 2011.

There were no differences between breastfed and nonbreastfed children 6-23 months in the ability to provide four or more food groups (Table 16). However, households with breastfed children 6-23 months are significantly more likely to meet the minimum feeding frequency than households with nonbreastfed children. In addition, less than one-third of nonbreastfed children are able to meet the milk and milk product requirements. As a result, breastfed children have significantly higher MAD scores than nonbreastfed children.

Child Anemia

Child anemia is associated with adverse consequences for child growth and development, including increased morbidity and impaired cognitive development. Anemia is measured by hemoglobin concentration in the blood, and for this indicator, is collected among children 6-59 months. Children with a hemoglobin concentration less than 11g/dL are classified as anemic. This indicator measures the prevalence of mild (10.0-10.9 g/dL), moderate (7.0-9.9 g/dL), and severe (<7.0 g/dL) anemia. The data are disaggregated by sex of child and household type.

More than one-third of children under 5 are anemic (38.1 percent) (Table 19); boys have significantly higher rates of anemia than girls (41.6 percent of boys versus 34.7 percent of girls). No significant differences were found across type of household (Table 19).

Table 19. Prevalence of anemia among children 6-59 months

| | Baseline value (%) | n (unweighted) |
|------------------------------|--------------------|----------------|
| All households | 38.13 | 3,583 |
| Household type | | |
| Male and female adults | 38.00 | 2,949 |
| Female adult only | 38.62 | 619 |
| Male adult only [^] | - | 15 |
| Child no adult [^] | - | 0 |

No differences across subgroups for any of the indicators in the table are statistically significant at the 0.05 level.

[^] = Results not statistically representative; n<30.

Source: DHS. Sept 2010–March 2011.

Of the children under 5 who are anemic (38.1 percent), the majority are categorized as mildly anemic (24.3 percent), followed by moderately anemic (13.5 percent) (Table 20). Less than 0.4 percent of children in the ZOI are severely anemic.

Table 20. Prevalence of mild, moderate, and severe anemia among children 6-59 months

| | Baseline value (%) | n (unweighted) |
|-----------------------------------|--------------------|----------------|
| Any anemia (<11.0 g/dl) | 38.13 | 3,583 |
| Mild anemia (10.0-10.9 g/dL) | 24.31 | 3,583 |
| Moderate anemia (7.0-9.9 g/dL) | 13.47 | 3,583 |
| Severe anemia (<7.0 g/dL) | 0.35 | 3,583 |

Source: DHS. Sept 2010–March 2011.

3.4.2 Women's Nutrition

Measures of Nutritional Status

The prevalence of underweight and overweight WRA (15-49 years) are indicators that provide information about the extent to which women's diets meet their caloric requirements. Across all WRA surveyed, the mean body mass index (BMI) is 22.2, or normal weight (Table 21).

Table 21. Women’s body mass index

| | Baseline value | Std dev | n (unweighted) |
|--|----------------|-------------|----------------|
| Mean body mass index (BMI) | 22.16 | 2.92 | 5,489 |
| BMI categories | % | | |
| < 17.0 (moderate/severely underweight) | 1.77 | - | 5,489 |
| 17.0-18.49 (mildly underweight) | 5.67 | - | 5,489 |
| 18.5 – 24.9 (normal) | 78.04 | - | 5,489 |
| 25.0-29.9 (overweight) | 13.07 | - | 5,489 |
| ≥ 30.0 (obese) | 1.45 | - | 5,489 |
| <18.5 (underweight) | 7.44 | - | 5,489 |
| 18.5-24.9 (normal) | 78.04 | - | 5,489 |
| ≥ 25.0 (overweight/obese) | 14.52 | - | 5,489 |

Source: DHS. Sept 2010–March 2011.

Approximately 78.0 percent of women are considered normal weight, 14.5 percent are overweight or obese (BMI greater than 25), and 7.4 percent are mildly or severely underweight (BMI less than 18.5).

Underweight among WRA is associated with increased morbidity and poor food security, and can result in adverse birth outcomes. This indicator measures the percentage of nonpregnant women of reproductive age (15-49 years) who are underweight, as defined by a BMI <18.5. To calculate an individual’s BMI, weight and height measurements are taken: BMI = weight (kg)/height (meters) squared. Data presented are secondary data from the 2010 DHS. Refer to Annex C for further description of this indicator.

In the ZOI, the prevalence of underweight in women (Table 21) is similar to the reported prevalence in the 2010 DHS of 7.3 percent. Compared to other national averages,⁶⁴ Rwanda’s ZOI underweight prevalence is lower than the average East African⁶⁵ national prevalence of underweight women, which ranges from about 12 percent in Zimbabwe to 28 percent in Madagascar. These results also show the double burden of underweight and overweight women that is now common in many developing economies, including rural areas, as the prevalence of overweight in the ZOI is nearly double that of underweight women.⁶⁶

Table 22 shows the distribution of weight prevalence among women by household type. There are no statistically significant differences in the prevalence of underweight women among male and female adult households as compared to female adult only households. Results for the male adult only and child no adult households are not reported due to small sample sizes (n<30).

⁶⁴ Data abstracted from USAID/MEASURE STATCompiler (Zimbabwe DHS 2010-2011 and Madagascar DHS 2008-2009; limited to DHSs conducted from 2007-2012).

⁶⁵ USAID/MEASURE DHS East African countries include: Kenya, Madagascar, Malawi, Mozambique, Rwanda, Sudan, Tanzania, Uganda, Zambia, and Zimbabwe.

⁶⁶ For more info see: Mendez, M.A.; Monteiro, C.A., and Popkin, B.M. (2005). “Overweight exceeds underweight among women in most developing countries.” *American Journal of Clinical Nutrition*, 81, 714-721.

Table 22. Prevalence of underweight women

| | Baseline value (%) | n (unweighted) |
|-------------------------------|--------------------|----------------|
| All households | 7.43 | 5,489 |
| Household type | | |
| Male and female adults | 6.95 | 4,080 |
| Female adult only | 8.61 | 1,390 |
| Male adult only ^{1^} | - | 18 |
| Child no adult ^{1^} | - | 1 |

No differences across subgroups for any of the indicators in the table are statistically significant at the 0.05 level.

[^] = Results not statistically representative; n<30.

¹ Households classified as Child no Adult and Male Adult Only have no female members aged 18 or over, but women's BMI/underweight/overweight includes females aged 15-17, so Child no Adult and Male Adult Only households may have females measured for these indicators.

Source: DHS. Sept 2010–March 2011.

Table 23 shows that the prevalence of households with both underweight women and stunting in children under 5 is 4.5 percent in the ZOI. It is important to note that height and weight measurements were taken from every nonpregnant woman of reproductive age in the household, not necessarily the mother or caregiver of the child. There was no difference observed across household type.

Table 23. Prevalence of households with underweight women and stunting in children under 5

| | Baseline value (%) | n (unweighted) |
|-------------------------------|--------------------|----------------|
| All households | 4.52 | 2,476 |
| Household type | | |
| Male and female adults | 4.43 | 2,008 |
| Female adult only | 4.93 | 467 |
| Male adult only ^{1^} | - | 1 |
| Child no adult ^{1^} | - | 0 |

No differences across subgroups for any of the indicators in the table are statistically significant at the 0.05 level.

[^] = Results not statistically representative; n<30.

¹ Households classified as Child no Adult and Male Adult Only have no female members aged 18 or over, but women's BMI/underweight/overweight includes females aged 15-17, so Child no Adult and Male Adult Only households may have females measured for these indicators.

Source: DHS. Sept 2010–March 2011.

Overweight or obesity is associated with higher risk of hypertension, diabetes, and adverse maternal and neonatal outcomes. The prevalence of overweight/obese women in ZOI households (BMI > 25) is 14.5 percent in the ZOI, with 13.1 percent overweight and 1.5 percent obese (Table 21). There are no significant differences in prevalence of overweight/obese women by household type (Table 24).

Table 24. Prevalence of overweight and obese women

| | Baseline value (%) | n (unweighted) |
|-------------------------------|--------------------|----------------|
| Any overweight | 14.52 | 5,489 |
| Household type | | |
| Male and female adults | 14.63 | 4,080 |
| Female adult only | 14.23 | 1,390 |
| Male adult only ^{1^} | - | 18 |
| Child no adult ^{1^} | - | 1 |

No differences across subgroups for any of the indicators in the table are statistically significant at the 0.05 level.

[^] = Results not statistically representative; n<30.

¹ Households classified as Child no Adult and Male Adult Only have no female members aged 18 or over, but women's BMI/underweight/overweight includes females aged 15-17, so Child no Adult and Male Adult Only households may have females measured for these indicators.

Source: DHS. Sept 2010–March 2011.

At the national level, the prevalence of overweight/obese women of reproductive age is comparable, at 16.3 percent, with overweight/obesity much more common in urban areas (25.2 percent) than in rural areas (14.7 percent) and in higher wealth quintiles.⁶⁷

Further analysis compared the prevalence of households with overweight women and the prevalence of households with stunting in children. It is important to note that height and weight measurements were taken from every nonpregnant woman of reproductive age in the household, not necessarily the mother or caregiver of the child. The ZOI baseline prevalence of households with both women who are overweight/obese and children under 5 with stunting is 7.3 percent. There are no significant differences in the prevalence of overweight/obese women and stunting in children under 5 by household type (Table 25).

Table 25. Prevalence of households with overweight/obese women and stunting in children under 5

| | Baseline value (%) | n (unweighted) |
|-------------------------------|--------------------|----------------|
| All households | 7.32 | 2,476 |
| Household type | | |
| Male and female adults | 7.00 | 2,008 |
| Female adult only | 8.72 | 467 |
| Male adult only ^{1^} | - | 1 |
| Child no adult ^{1^} | - | 0 |

No differences across subgroups for any of the indicators in the table are statistically significant at the 0.05 level.

[^] = Results not statistically representative; n<30.

¹ Households classified as Child no Adult and Male Adult Only have no female members aged 18 or over, but women's BMI/underweight/overweight includes females aged 15-17, so Child no Adult and Male Adult Only households may have females measured for these indicators.

Source: DHS. Sept 2010–March 2011.

⁶⁷ NISR. 2012a.

Women’s Intra-Household Dietary Diversity Score

Women of reproductive age are at risk of multiple micronutrient deficiencies, which can jeopardize their health and ability to care for their children and participate in income-generating activities. The Women’s Dietary Diversity Score indicator is a valid proxy measure of the micronutrient adequacy of the women’s diets by reporting the mean number of food groups consumed in the previous day by women of reproductive age (15-49 years).

To calculate this indicator, nine food groups are assessed: (1) grains, roots, and tubers; (2) legumes and nuts; (3) dairy products; (4) organ meat; (5) eggs; (6) flesh food and small animal protein; (7) vitamin A-rich dark green leafy vegetables; (8) other vitamin A-rich vegetables and fruits; and (9) other fruits and vegetables. The mean number of food groups consumed by women of reproductive age is tabulated by averaging the number of food groups consumed (out of the nine food groups mentioned above) across all women of reproductive age in the sample with data available on dietary diversity (n=1,825). Refer to Annex C for further description of this indicator.

On average, women in the PBS report eating 3.3 out of nine food groups (Table 6; Table 26). Male and female adult households have a significantly higher dietary diversity score (3.4 food groups) than female adult only households (3.1 food groups) (Table 26).

Table 26. Women’s Dietary Diversity Score: Mean number of food groups consumed by WRA

| | Baseline value (mean) | Std dev | n (unweighted) |
|-------------------------------|-----------------------|-------------|----------------|
| All households | 3.34 | 1.37 | 1,825 |
| Household type | | | |
| Male and female adults | 3.42 ^a | 1.37 | 1,436 |
| Female adult only | 3.06 ^a | 1.3 | 386 |
| Male adult only ^{1^} | - | - | 3 |
| Child no adult [^] | - | - | - |

^a Subgroups with the same superscript are significant at the 0.05 level. The comparisons are across rows.

[^] = Results not statistically representative; n<30.

¹ Households classified as Child no Adult and Male Adult Only have no female members aged 18 or over, but the women’s dietary diversity indicator includes females aged 15-17, so Child no Adult and Male Adult Only households may have females measured for this indicator.

Source: FTF FEEDBACK PBS. Dec 2012–Jan 2013.

Further analysis was conducted to identify which food groups were most frequently consumed (Table 27). The overwhelming majority of women eat grain, roots, and tubers (89.8 percent) and legumes and nuts (83.7 percent). More than half of the respondents have diets rich in vitamin A (dark leafy greens and other vitamin A-rich fruits and vegetables). Vitamin A is linked to improved health and immunity, and has generally been shown to reduce anemia.⁶⁸ Approximately 21.1 percent consume other fruits and vegetables. Less than half of the women consume animal by-products, including: dairy (10.8 percent), flesh food and other miscellaneous small animal protein (11.6 percent), organ meat (2.5 percent), and eggs (1.5 percent).

⁶⁸ Semba, R.D., & Bloem, 2002.

Table 27. Percentage of women consuming each food group daily

| Food group | Baseline value (percent) | n (unweighted) |
|--|--------------------------|----------------|
| Grains, roots, and tubers | 89.84 | 1,825 |
| Legumes and nuts | 83.73 | 1,825 |
| Dairy products | 10.75 | 1,825 |
| Organ meat | 2.54 | 1,825 |
| Eggs | 1.48 | 1,825 |
| Flesh foods and other misc. small animal protein | 11.59 | 1,825 |
| Vitamin A-rich dark green leafy vegetables | 58.51 | 1,825 |
| Other vitamin A-rich vegetables and fruits | 54.54 | 1,825 |
| Other fruits and vegetables | 21.07 | 1,825 |

Source: FTF FEEDBACK PBS. Dec 2012–Jan 2013.

This indicator examines the distribution of the Women’s Dietary Diversity Score among respondents. The dietary diversity scores were divided into quartiles; the table reports the average score for each quartile (Table 28). The majority of respondents (quartiles 2-4) report consuming about three or more food groups a day (2.9-5.1). The households in quartile one report eating, on average, two or fewer food groups a day (1.7).

Table 28. Women’s Dietary Diversity Score, by quartile

| | Women’s Dietary Diversity Score | | | |
|--|---------------------------------|-------------|-------------|-------------|
| | Quartile 1 | Quartile 2 | Quartile 3 | Quartile 4 |
| Average number of food groups consumed (std. dev.) | 1.72 (0.52) | 2.93 (0.26) | 3.67 (0.47) | 5.06 (1.04) |
| n (total n=1,825) | 456 | 456 | 456 | 457 |

Source: FTF FEEDBACK PBS. Dec 2012–Jan 2013.

Anemia Among Women of Reproductive Age

The prevalence of anemia among WRA stresses the importance of women’s micronutrient nutrition in both pre-pregnancy and during pregnancy for the growth and development of the child in utero and for a safe delivery and positive birth outcome. Maternal anemia during pregnancy is associated with increased risk of hemorrhage, sepsis, maternal mortality, perinatal mortality, and low birth weight. Anemia is measured by hemoglobin concentration in the blood, and for this indicator, is collected among WRA. Nonpregnant women with a hemoglobin concentration of less than 12g/dL (NP < 12.0 g/dL) and pregnant women with hemoglobin concentration of less than 11g/dL (P < 11.0 g/dL) are classified as anemic. This indicator measures the prevalence of mild, moderate, and severe anemia. The data are disaggregated by physiological status: pregnant (P) and nonpregnant (NP).

Among WRA, 17.2 percent are anemic, among whom most of the anemia is mild (14.2 percent), but it is moderate for 2.7 percent, and severe for 0.2 percent of women with anemia (Table 29). Although there is no statistically significant difference in the overall prevalence of anemia between

pregnant women and nonpregnant women (19.5 and 17.0 percent, respectively), significantly more pregnant WRA (7.0 percent) than nonpregnant WRA (2.4 percent) have moderate anemia.

Table 29. Prevalence of mild, moderate, and severe anemia among women of reproductive age

| | Baseline value (percent) | n (unweighted) |
|--|-----------------------------|----------------|
| Pregnant (P) women | | |
| Any anemia (NP<12.0 g/dL) (P<11.0 g/dL) | 19.52 | 413 |
| Mild anemia (NP 10.0-11.9g/dL, P 10.0-10.9 g/dL) | 12.02 | 413 |
| Moderate anemia (NP 7.0-9.9 g/dL, P 7.0-9.9 g/dl) | 7.01 ^a | 413 |
| Severe anemia (NP and P <7.0 g/dL) | 0.50 | 413 |
| Nonpregnant (NP) women | | |
| Any anemia (NP<12.0 g/dL) (P<11.0) | 16.98 | 5,572 |
| Mild anemia (NP 10.0-11.9g/dL, P 10.0-10.9 g/dL) | 14.37 | 5,572 |
| Moderate anemia (NP 7.0-9.9 g/dL, P 7.0-9.9 g/dl) | 2.38 ^a | 5,572 |
| Severe anemia (NP and P <7.0 g/dL) | 0.22 | 5,572 |
| All women | | |
| Any anemia (NP<12.0 g/dL) (P<11.0) | 17.16 | 5,985 |
| Mild anemia (NP 10.0-11.9g/dL, P 10.0-10.9 g/dL) | 14.21 | 5,985 |
| Moderate anemia (NP 7.0-9.9 g/dL, P 7.0-9.9 g/dL) | 2.70 | 5,985 |
| Severe anemia (NP and P <7.0 g/dl) | 0.24 | 5,985 |

^a Subgroups with the same superscript are significantly different at the 0.05 level. The comparisons are across rows.

Source: DHS Sept 2010–March 2011.

The ZOI anemia prevalence matches the national prevalence of anemia among women, which is 17.3 percent. In Rwanda, anemia prevalence has decreased by eight percentage points from 2005 to 2010.⁶⁹ Anemia has a direct relationship with vitamin uptake, and the recent decrease in anemia may be explained by the increased in diets containing vitamin-rich foods (green leafy vegetables, nuts, seeds, grains, and lentils) for women.⁷⁰

Further analysis shows there is no significant difference in the prevalence of anemia among WRA by household type (Table 30).

⁶⁹ NISR. 2012a.

⁷⁰ For more information see World Health Organization at <http://www.who.int/nutrition/topics/ida/en/>.

Table 30. Prevalence of anemia among women of reproductive age

| | Baseline value (percent) | n (unweighted) |
|-------------------------------|--------------------------|----------------|
| All households | 17.16 | 5,985 |
| Household type | | |
| Male and female adults | 16.83 | 4,518 |
| Female adult only | 18.26 | 1,448 |
| Male adult only ^{1^} | - | 18 |
| Child no adult ^{1^} | - | 1 |

No differences across subgroups for any of the indicators in the table are statistically significant at the 0.05 level.

[^] = Results not statistically representative; n<30.

¹ Households classified as Child no Adult and Male Adult Only have no female members aged 18 or over, but the women's anemia indicator includes females aged 15-17, so Child no Adult and Male Adult Only households may have females measured for this indicator.

Source: DHS. Sept 2010–March 2011.

3.5 Women's Empowerment

Women play a prominent role in agriculture, and because of the persistent economic constraints they face, women's empowerment is a main focus of Feed the Future. Empowering women is particularly important to achieving the Feed the Future objective of inclusive agriculture sector growth. The WEAI was developed to track the change in women's empowerment levels that occurs as a direct or indirect result of interventions under Feed the Future. For more information, the WEAI questionnaires and manual can be found online.⁷¹

3.5.1 WEAI Overview

The WEAI measures the empowerment, agency, and inclusion of women in the agriculture sector in an effort to identify and address the constraints that limit women's full engagement in the agriculture sector.⁷²

For Rwanda, the WEAI score is 0.91. The WEAI is composed of two subindices: the five domains of empowerment subindex (5DE) measures the empowerment of women in five areas, and the Gender Parity Index (GPI) measures the relative empowerment of men and women within the household. The WEAI score is computed as a weighted sum of the ZOI-level 5DE and the GPI (both discussed in the following section). Thus, improvements in either the 5DE or GPI will increase the WEAI score. The total formula for the Index is: $WEAI = 0.9 \times 5DE + 0.1 \times GPI$.

The WEAI is an aggregate index reported at the ZOI level and is based on *individual*-level data on men and women in the same household, as well as data from women living in households with no adult male. The respondents are primary male/female decision-makers in the household. Refer to Annex C for further description of this indicator and explanation of the calculation. See Table 31 for the list and definition of WEAI indicators.

⁷¹ IFPRI. 2013.

⁷² Alkire, S. Malapit, H., et al. 2013.

3.5.2 5DE

The 5DE subindex assesses whether women are empowered across the five domains examined in the WEAI. Each domain is weighted equally, as are each of the indicators within a domain. The five domains, their definitions under the WEAI, the corresponding 10 indicators, and their weights for the 5DE are shown below in Table 31.

Table 31. WEAI indicators

| Domain (each weighted 1/5 of the 5DE subindex) | Definition of domain | Indicators | Weight of indicator in 5DE subindex |
|--|--|---------------------------------------|--|
| Production | Sole or joint decision-making over food and cash-crop farming, livestock, and fisheries, and autonomy in agricultural production | Input in productive decisions | 1/10 |
| | | Autonomy in production | 1/10 |
| Resources | Ownership, access to, and decision-making power over productive resources such as land, livestock, agricultural equipment, consumer durables, and credit | Ownership of assets | 1/15 |
| | | Purchase, sale, or transfer of assets | 1/15 |
| | | Access to and decisions on credit | 1/15 |
| Income | Sole or joint control over income and expenditures | Control over use of income | 1/5 |
| Leadership | Membership in economic or social groups and comfort in speaking in public | Group member | 1/10 |
| | | Speaking in public | 1/10 |
| Time | Allocation of time to productive and domestic tasks and satisfaction with the available time for leisure activities | Workload | 1/10 |
| | | Leisure | 1/10 |

The 5DE is a measure of empowerment rather than disempowerment. As such, the subindex describes women as “empowered” or “not yet empowered,” rather than empowered and disempowered. A woman is defined as empowered in the five domains if she has adequate achievements⁷³ in 80 percent or more of the weighted indicators. Within the 5DE, the 80 percent threshold is also called the empowerment threshold. For women who are not yet empowered, the 5DE captures the percentage of indicators in which those women do not have adequate achievement. The 5DE contributes 90 percent of the weight to the WEAI. The 5DE score ranges from zero to one, where higher values indicate greater empowerment.

The 5DE is calculated by first constructing the disempowerment index (M_0), and then converting M_0 to empowerment. The formula is: $5DE = 1 - M_0$. The disempowerment index is constructed

⁷³ Having “adequate achievement” means an individual score above an adequacy cutoff established for each indicator.

using a multidimensional methodology known as the Alkire Foster Method.⁷⁴ M_0 is calculated by multiplying the disempowered headcount (H) and the average inadequacy score (A). The disempowered headcount reflects the proportion of women who are not yet empowered. The average inadequacy score reflects the average percentage of indicators in which women who are not yet empowered did not yet achieve adequacy.⁷⁵ In sum, the 5DE is expressed as: $5DE = 1 - H \times A$. Of note, Table 32 reports H and A as percentages, but in the 5DE formula, the equivalent proportions are used.

Table 32 shows that the 5DE in Rwanda is 0.90. As reflected in the formula above, this score is calculated with the percent of women in the survey who are not yet empowered (disempowered headcount: H), which is 29.8, and the average inadequacy score (A), which is 33.4 percent.⁷⁶

Table 32. Women’s 5DE subindex

| | Baseline value |
|---|----------------|
| 5DE | 0.90 |
| Percent of women achieving empowerment (score of 0.80 or greater) (1-H _n) | 70.21 |
| Percent of women not achieving empowerment (score below 0.80) (H _n) | 29.79 |
| Average adequacy score for women not yet empowered (1-A) | 66.60 |
| Average inadequacy score for women not yet empowered (A) | 33.40 |
| n | 1,481 |

Source: FTF FEEDBACK PBS. Dec 2012–Jan 2013.

The results presented in this section do not represent the levels of empowerment of all adult women in the population. These results represent the status of primary decision-makers within the household, who are likely to be the most empowered relative to other adults in the household.

In addition to examining the 5DE for the sample as a whole, 5DE scores were analyzed and compared by household type. As shown in Table 33, there are no statistically significant differences in 5DE scores by household type.

Table 33. Women’s 5DE score and household type

| Household type | Baseline value | SD | n (unweighted) |
|------------------------|----------------|------|----------------|
| Male and female adults | 0.90 | 0.16 | 1,140 |
| Female adult only | 0.91 | 0.16 | 340 |

No differences across subgroups for any of the indicators in the table are statistically significant at the 0.05 level.

The comparisons are across rows.

Source: FTF FEEDBACK PBS. Dec 2012–Jan 2013.

⁷⁴ University of Oxford. 2013.

⁷⁵ Alkire, S., Meinzein-Dick, R. et al. 2013.

⁷⁶ These are the results based on the calculations of this indicator, recognizing that most women in agriculture are subsistence farmers. For more information on the WEAI utilization by Feed the Future visit the following site: <http://feedthefuture.gov/article/release-womens-empowerment-agriculture-index>. Retrieved May 20, 2013.

Table 34 reports the percentages of primary decision-making females who are not yet empowered and have inadequacy for the 10 indicators within each of the five domains of empowerment (i.e., the censored headcount). Refer to Annex D for descriptions of each of the 10 indicators including adequacy cutoffs. In Table 34, results are shown for all women from both household types who responded to the WEAI module in the survey. Women who score above the 80 percent empowerment threshold are not counted against the censored headcounts. To compute a censored headcount for each indicator, the number of not-yet-empowered women who did not achieve adequacy on that indicator is divided by the total number of women who responded. The censored headcounts illustrate the profile of inadequate achievements of the not yet empowered. Focusing on women who are not yet empowered is important because it emphasizes specific ways empowerment can be improved. By construction, improvements in the achievements of women who are already empowered do not increase the 5DE score, an important property of the subindex. Discussion of each indicator and domain follows Table 34.

Table 34. Percent of women who are not yet empowered and who have inadequate achievement (censored headcount) in the 5DE indicators

| Domain | Indicator | Censored headcount ¹ (n=1,481) |
|-------------------|---------------------------------------|--|
| Production | Input in productive decisions | 4.77 |
| | Autonomy in production | 4.85 |
| Resources | Ownership of assets | 2.82 |
| | Purchase, sale, or transfer of assets | 9.14 |
| | Access to and decisions on credit | 23.86 |
| Income | Control over use of income | 6.83 |
| Leadership | Group member | 14.22 |
| | Speaking in public | 9.93 |
| Time | Workload | 20.86 |
| | Leisure | 7.36 |

¹ The censored headcount for a particular indicator is the number of not-yet-empowered women who did not achieve adequacy on that indicator divided by the total number of women who responded.

Source: FTF FEEDBACK PBS. Dec 2012–Jan 2013.

Production Domain

Input in Productive Decisions. Results shown in Table 34 indicate that among women in the ZOI, 4.8 percent are not yet empowered and have inadequate input into productive decisions.

Autonomy in Production. Approximately the same percentage of women (4.9 percent) is not yet empowered and has inadequacy in terms of autonomy in production.

Resources Domain

Ownership of Assets. Among women in the Rwanda ZOI, 2.8 percent are not yet empowered and experience inadequacy in ownership of assets.

Purchase, Sale, or Transfer of Assets. The percentages of women who are both not yet empowered and have inadequate achievement in terms of controlling the purchase, sale, or transfer of assets is 9.1 percent.

Access to and Decisions on Credit. The indicator tracking access to and decisions on credit shows the highest percentage of inadequacy among women, with 23.9 percent not yet empowered and not having adequate achievement.

Control Over Use of Income. The percentage of women who both are not yet empowered and lack adequacy in the control over use of income is 6.8 percent.

Leadership Domain

Participation in Formal and Informal Groups. In the ZOI, the percentage of women who are both not yet empowered and experience inadequacy in the group membership indicator is 14.2 percent.

Speaking in Public. A lower percentage of women are both not empowered and lack adequacy in the speaking in public indicator (9.9 percent) compared to the group membership indicator.

Time Allocation Domain

Workload. Compared to all other 5DE indicators, workload exhibits the second highest percentage of women who are both not yet empowered and experience inadequacy, at 20.9 percent.

Leisure Time. The percentage of women in the ZOI who are both not yet empowered and have inadequacy in leisure time is 7.4 percent.

3.5.3 GPI

The second subindex in the WEAI, the GPI, measures women's empowerment relative to that of men by comparing the 5DE profiles of women and men in the same households. A woman is assumed to achieve gender parity if her achievements in the five domains are at least as high as the man in her household. The GPI reflects the percentage of women who have achieved parity and, in cases of gender disparity, the average empowerment gap that women experience relative to their male counterparts. While the 5DE score is calculated using all women in the sample, the GPI score is calculated using only women living in a household with at least one adult man (often her partner).

The GPI is calculated by multiplying two factors. The first is the percent of women without gender parity (H_{GPI}), defined as women with lower achievements in the five domains than that of their male counterparts. Empowered women, meaning those who score above the empowerment threshold of the 5DE, are automatically counted as having parity with their male counterpart. The

second factor is the average empowerment gap (I_{GPI}), which measures the average percentage shortfall in empowerment between women and men living in households without gender parity across all indicators. The GPI is calculated with the formula: $GPI = 1 - (H_{GPI} \times I_{GPI})$. The GPI ranges from zero to one, with higher values indicating greater gender parity.⁷⁷

In Rwanda, the GPI is 0.96, which is calculated with the formula above that is based on the percent of women without gender parity (25.6) and the average empowerment gap (15.4). Table 35 shows the breakdown of baseline values by the GPI variables.

Table 35. GPI

| | Baseline value |
|--|------------------------|
| GPI | 0.96 |
| Percent of women achieving gender parity ($1 - H_{GPI}$) | 73.46 |
| Percent of women without gender parity (H_{GPI}) | 26.54 |
| Average empowerment gap (I_{GPI}) | 15.37 |
| n | 878¹ |

¹ The sample size for the GPI subindex (878) is lower than that reported in Table 33 (1,140) because the GPI requires both a male and a female Module G (WEAI) record from the Male and Female Adult (e.g., dual adult) households.

Source: FTF FEEDBACK PBS. Dec 2012–Jan 2013.

Table 36 presents men’s and women’s censored headcounts, or the percent not yet empowered and inadequate in the 10 indicators of 5DE. Note that, unlike Table 34, which showed percentages for all primary decision-making women in the survey, in Table 36, the percentages reported are based only on primary decision-making males and females in dual households, those households with both a male and a female adult.

Table 36 shows that men and women in dual households report significant differences in seven of the 10 5DE indicators. Significantly more women than men are not yet empowered and have inadequacy in ownership and control of assets; purchase, sale, or transfer of assets; access to and decisions on credit; control of household income; group membership; speaking in public and workload. There are no significant differences between men and women with respect to the input in productive decisions, autonomy in production, and leisure time indicators.

⁷⁷ Alkire, S., Meinzein-Dick, R. et al. 2013.

Table 36. Percent of men and women who are not yet empowered and have inadequate achievement (censored headcount) in the 10 5DE indicators

| Domain | Indicator | Baseline values | |
|-------------------|---------------------------------------|---|---|
| | | Male censored headcount ¹ (n=878) | Female censored headcount ² (n=878) |
| Production | Input in productive decisions | 4.33 | 5.04 |
| | Autonomy in production | 5.48 | 5.49 |
| Resources | Ownership of assets | 0.80 ^a | 3.32 ^a |
| | Purchase, sale, or transfer of assets | 5.24 ^b | 10.25 ^b |
| | Access to and decisions on credit | 12.64 ^c | 23.60 ^c |
| Income | Control over use of income | 2.76 ^d | 5.80 ^d |
| Leadership | Group member | 6.98 ^e | 13.42 ^e |
| | Speaking in public | 1.76 ^f | 9.44 ^f |
| Time | Workload | 10.78 ^g | 21.62 ^g |
| | Leisure | 5.77 | 5.74 |

^{a-g} Subgroups with the same superscript are significantly different at the 0.05 level. The comparisons are across columns. Comparison and estimates for men and women living in male and female adult households.

¹ Male censored headcounts are the percentage of men who are not yet empowered and have inadequate achievement in the indicator.

² Female censored headcounts are the percentage of women who are not yet empowered and have inadequate achievement in the indicator.

Source: FTF FEEDBACK PBS, Dec 2012–Jan 2013.

4. Analysis of Findings

This section presents additional country-specific analyses requested by USAID/Rwanda. Data are presented here on the relationship between women’s empowerment (WEAI score) and the HHS (Table 37), and between women’s empowerment and select indicators, such as the Women’s Dietary Diversity Score (Table 38). Data are also presented for the relationship between women’s decision-making capacity and the prevalence of households with moderate to severe hunger, as well as for the relationship between the level of decision-making capacity for women and Women’s Dietary Diversity Score (Table 39).

4.1 Analysis Requested by USAID/Rwanda

4.1.1 Women’s Empowerment and Feed the Future Indicators

Table 37 presents the relationship between the household hunger scale and women’s achievement for each of the 10 indicators of the 5DE. Households reporting little to no hunger have a significantly higher prevalence of women who have achieved adequacy compared to households with moderate or severe hunger for the following WEAI indicators: purchase, sale, or transfer of assets (90.3 percent versus 83.4 percent); access to and decisions on credit (51.7 versus 45.2 percent); control over use of income (94.0 versus 90.5 percent); and group membership (82.4 versus 75.5 percent).

Table 37. Severity of household hunger according to women’s achievement on the 10 WEAI indicators

| | HHS categories | |
|---------------------------------------|--------------------------------------|----------------------|
| | Moderate to severe hunger (n=603) | No hunger (n=863) |
| 5DE indicator | % | |
| Input into productive decisions | 93.05 | 94.61 |
| Autonomy in production | 91.76 | 92.68 |
| Ownership of assets | 96.83 | 97.24 |
| Purchase, sale, or transfer of assets | 83.37 ^a | 90.28 ^a |
| Access to and decisions on credit | 45.18 ^b | 51.71 ^b |
| Control over use of income | 90.45 ^c | 94.02 ^c |
| Group member | 75.46 ^d | 82.37 ^d |
| Speaking in public | 80.64 | 83.38 |
| Workload | 43.40 | 44.14 |
| Leisure | 86.36 | 88.49 |

^{a-f} Subgroups with the same superscript are significant at the 0.05 level. The comparisons are across columns.

Source: FTF FEEDBACK PBS, Dec 2012–Jan 2013.

Table 38. Values for selected indicators according to women’s empowerment status

| Feed the Future indicator | Empowered | n | Not yet empowered | n |
|---|--------------------------|-------|--------------------------|-----|
| Prevalence (%) of households with moderate or severe hunger | 37.40 ^a | 1,028 | 59.82 ^a | 438 |
| Women’s Dietary Diversity Score: Mean number of food groups consumed by women of reproductive age (std dev) | 3.47 ^b (1.36) | 1,100 | 3.15 ^b (1.28) | 439 |

^{a-b} Subgroups with the same superscript are significant at the 0.05 level. The comparisons are across columns.

Source: FTF FEEDBACK PBS, Dec 2012–Jan 2013.

Table 39. Level of decision-making capacity, by selected indicator

| Feed the Future indicator | Decision-making index | | | | | |
|---|--------------------------|-----|-------------------------|-----|--------------------------|-----|
| | Low (0-3 decisions) | | Medium (4 decisions) | | High (5 decisions) | |
| | Baseline value | n | Baseline value | n | Baseline value | n |
| Prevalence (%) of households with moderate or severe hunger | 49.96 ^a | 248 | 43.76 ^b | 669 | 33.88 ^{ab} | 549 |
| Women’s Dietary Diversity Score: Mean number of food groups consumed by women of reproductive age (std dev) | 3.18 ^c (1.32) | 253 | 3.36 (1.35) | 688 | 3.48 ^c (1.33) | 598 |

^{a-c} Subgroups with the same superscript are significantly different at the 0.05 level. The comparisons are across columns.

Source: FTF FEEDBACK PBS, Dec 2012–Jan 2013.

Table 38 illustrates that the prevalence of moderate or severe hunger is significantly higher in households with not yet empowered women compared to households with women who have achieved empowerment (59.8 versus 37.4 percent, respectively). Similarly, Women’s Dietary Diversity Score among women who have achieved empowerment is significantly higher than among women who have not achieved empowerment (3.5 versus 3.2 food groups).

Each of the five decision-making items in the WEAI was scored such that “one” indicates the respondent has adequate freedom to make decisions and “zero” means she does not. The five items were summed and broken down into three categories: Low, respondent achieved adequacy in zero to three decision-making activities; Medium, respondent achieved adequacy in four decision-making activities; High, respondent achieved adequacy in all five decision-making activities.

Table 39 shows the relationship between the level of women’s decision-making and the prevalence of household hunger or Women’s Dietary Diversity Score. The prevalence of moderate or severe household hunger significantly declines with higher decision-making capacity of women. In addition, women with the highest level of decision-making authority consume significantly more food groups on average (3.5) than women with low decision-making power (3.2 food groups).

5. Summary and Conclusion

This document has reported the Rwanda Feed the Future PBS baseline values. FTF FEEDBACK collected primary and secondary data for 13 Feed the Future indicators: three using primary data and 10 using secondary data. The PBS interviews included 2,000 households across 100 SEAs in the ZOI, and the secondary data were drawn from the EICV3 and the 2010 DHS.

Overall, the population of the Rwanda ZOI faces high levels of poverty and hunger. The prevalence of poverty in the ZOI is 67.0 percent, based on the poverty line of less than \$1.25 per day (2005 PPP), and the poverty gap is 27.3 percent below the poverty line (USD PPP). Daily per capita expenditures are low, with an average \$1.51 (2010 USD). Using GOR estimates for the national poverty line, equivalent to \$0.99/day 2005 PPP (RwF 64,000), 47.8 percent of the residents of the ZOI live in poverty, with a poverty gap of 15.8 percent. The prevalence of hunger is high, with an average prevalence in the ZOI of 43.1 percent. It is worth noting that male and female adult households report significantly less moderate and severe hunger (40.5 percent) compared to other household types.

About three-quarters of households use an improved drinking water source (73.5 percent) and just more than half of households access an improved sanitation facility (55.9 percent, excluding pit latrines). Households with male and female adults have significantly more access to improved sanitation facilities than households with female adults only (59.9 and 44.2 percent, respectively).

The conditions of poverty and hunger have affected the health and nutrition of children, boys in particular. Nearly half of children under 5 years of age have stunting (46.3 percent), which is

higher than the national average and comparable to the regional level. Notably, the prevalence of moderate and severe stunting in children under 5 is significantly higher among boys than girls; the prevalence rates of wasting and anemia are also higher for boys, compared to girls. At the national level, both poverty rates and the stunting of children are declining. In addition, less than one in five children 6-23 months receive a MAD (17.3 percent). Households are more successful in following feeding practices, such as frequency, than following diet diversity, particularly households with breastfed children 6-23 months. There are no differences between breastfed and nonbreastfed children in terms of the family's ability to provide four or more food groups. Yet, less than one-third of nonbreastfed children are able to meet the milk/milk product requirements. As a result, breastfed children have significantly higher MAD scores than nonbreastfed children. Overall, exclusive breastfeeding is high in the ZOI (86.5 percent), with no statistically significant difference between boys and girls (83.8 and 89.0 percent, respectively). The high prevalence of exclusive breastfeeding may be an explanation for the low wasting prevalence among children under 5.

Women's Dietary Diversity Score is low overall; on average, women consume 3.3 out of nine food groups. Although most women (78 percent) in the ZOI are considered normal weight, Rwanda faces the double burden of overweight and underweight common in many developing countries today. More women in the ZOI are overweight/obese (14.5 percent) than underweight (7.4 percent, mildly or severely underweight), which are comparable rates to the national level. Male and female adult households have a significantly higher dietary diversity score than female adult only households. The overwhelming majority of women eat grain, roots, and tubers (89.8 percent) and legumes and nuts (83.7 percent). More than half of the respondents have diets rich in vitamin A, which contributed to the decrease in the prevalence of anemia among women in recent years. The prevalence of anemia among women of reproductive age is 17.2 percent.

The Rwanda data on women's empowerment in agriculture show that the 70.2 percent of primary decision-making women in the ZOI are empowered, defined as a 5DE score of 80 percent or more. The 5DE score among women in the ZOI is 0.90 and their GPI score, a measure of women's empowerment relative to men, is 0.96. There are no significant differences in women's 5DE scores by gendered household type. Analysis of men and women's censored headcounts, or the percentages not yet empowered and inadequate on the 10 indicators of 5DE (Table 36), reveals that significantly more women than men are not yet empowered and inadequate on seven of the 10 indicators of 5DE. It should be noted, however, that these results do not represent the levels of empowerment of all adult women in the population. Rather, these results represent the status of primary decision-makers within the household.

The report also presented additional analyses requested by USAID/Rwanda, including the relationship between women's empowerment or decision-making authority and the select Feed the Future indicators of household hunger and the Women's Dietary Diversity Score. These analyses demonstrate that households with empowered women have lower prevalence of hunger. Households reporting no hunger have a higher prevalence of women's achievement for four of

the 10 WEAI indicators. In fact, the prevalence of moderate or severe household hunger significantly declines with higher decision-making responsibility of women. Also, the number of food groups consumed by women of reproductive age who have achieved empowerment, or with higher decision-making responsibility, is significantly higher than among women who have not achieved empowerment.

Given these findings, further study should explore in more detail the factors affecting women's empowerment in Rwanda as well as the relationship between women's empowerment and household food security. This report will be used to measure changes in the Feed the Future indicators over time in the Rwanda ZOI. It should be noted that the survey was not designed to allow for conclusions about attribution or causality.

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Annex A. Survey Protocol – Rwanda

Protocol for Indicator Calculation in Rwanda Baseline Survey Data Collection for Feed the Future

A.1 Overview

Part of the monitoring and evaluation system for United States Government-supported food security activities is reporting on population-based indicators. These indicators are based on analysis of survey data. The United States Agency for International Development (USAID) Mission in Rwanda will report on 13 indicators in the Feed the Future Zone of Influence (ZOI). In Rwanda, the ZOI covers the entire country except for Kigali City. This encompasses all four provinces (27 districts)—Northern, Southern, Eastern, and Western Provinces—and excludes the three districts that comprise Kigali City. Reporting for the Feed the Future ZOI indicators is for the entire ZOI.

Where possible, indicators will be estimated based on existing sources of data. Use of existing data sources will save time and reduce the cost of generating estimates for the indicators. These data sources must meet criteria to provide valid baseline estimates of indicators. The data sources must have collected the data within the last two years but prior to the start of Feed the Future activities. The data source must have used a sample size large enough to estimate indicator values with sufficient precision and power to measure change over time. Since the ZOI is the entire country, minus Kigali City, the sample size of the Demographic and Health Survey (DHS) will be sufficient for the ZOI. Table A-1 reflects the sources for secondary analysis. One source is the 2010 DHS. The second source is the GOR’s Integrated Household Living Conditions Survey or Enquête Intégrale sur les Conditions de Vie des Ménages (EICV) Round 3 from 2010/11. The EICV is based on the LSMS and provides information on changes in the well-being of the population such as poverty, inequality, employment, living conditions, education, health and housing conditions, and household consumption.

Baseline surveys will be conducted for indicators that cannot be calculated with existing data sources. The Feed the Future ZOI baseline survey will collect data for the following Feed the Future population-based indicators: (1) *Women’s Empowerment in Agriculture Index (WEAI)*; (2) *prevalence of households with moderate or severe hunger (Household Hunger Scale [HHS])*; and (3) *Women’s Dietary Diversity Score*. Table A-1 lists the 13 Feed the Future indicators and the source of data for each type of analysis conducted within the ZOI.

Table A-1. List of indicators

| Indicator | ZOI secondary analysis | ZOI baseline survey |
|--|------------------------|---------------------|
| Prevalence of underweight children | Yes (DHS) | No |
| Prevalence of poverty | Yes (EICV) | No |
| Prevalence of stunted children | Yes (DHS) | No |
| Prevalence of wasted children | Yes (DHS) | No |
| Prevalence of underweight women | Yes (DHS) | No |
| Per capita expenditures (as a proxy for incomes) | Yes (EICV) | No |
| WEAI | No | Yes |
| Prevalence of households with moderate or severe hunger | No | Yes |
| Prevalence of children 6-23 months receiving a minimum acceptable diet (MAD) | Yes (EICV) | No |
| Women's Dietary Diversity Score | No | Yes |
| Prevalence of exclusive breastfeeding | Yes (DHS) | No |
| Prevalence of anemia among children 6-59 months | Yes (DHS) | No |
| Prevalence of anemia among women of reproductive age | Yes (DHS) | No |

The survey will be carried out by a private firm, the Centre for Economic and Social Studies (CESS), which specializes in the design, execution, processing and analysis of statistical surveys.

A.2 Sample Size Estimate for Feed the Future Baseline Survey

Sample size is determined based on comparison of the sample sizes required for indicators to be measured by this survey. For each, measuring change between the baseline and endpoint was used, per Feed the Future guidance.⁷⁸ This represents an expected change during an elapsed time of four to five years. Table A-2 shows the sample size requirements for the key indicator, WEAI. This sample size will be large enough to detect change in the other two indicators as well. Calculations were done with Stata software sample size programs with a design effect of 2.0, Z-values corresponding to 95 percent significance and 80 percent power. The columns under “Minimum Required Sample Size” are the sample sizes required for the population for which the indicator will be calculated, not adjusted for nonresponse. This sample size calculation does not adjust for nonresponse. The last column lists the Target Sample Size, which is the number of households required at baseline and endpoint, including adjustments for nonresponse. The nonresponse rate used is 3 percent, and then the sample size was rounded up to 2,000 households to facilitate logistics.⁷⁹ The baseline value for the WEAI is based on a study in Uganda.

⁷⁸ USAID. 2011a. p. 6 (Paragraph 4).

⁷⁹ The level of nonresponse in the DHS is 1 percent for both men and women, and citizens are strongly encouraged by government to participate in official surveys. Based on Rwanda DHS 2010: Summary of Findings, p. xxi.

Table A-2. Target sample size: Rwanda zone of influence survey – baseline to endpoint

| Indicator | Baseline value | Endpoint target value | Minimum required sample size (no. of households) | | Target sample size (no. of households adjusted for nonresponse) | |
|-----------|----------------|-----------------------|--|----------|---|----------|
| | | | Baseline | Endpoint | Baseline | Endpoint |
| WEAI | 0.789 | 0.836 | 1,762 | 1,762 | 1,815 | 1,815 |

A.3 Survey Design

The design of the Feed the Future ZOI PBS consists of two basic components: questionnaire design and sample design. TANGO will provide technical assistance on questionnaire design. TANGO and Westat will provide technical assistance for sample design. These two components are described below.

A.3.1 Questionnaire Design

The survey questionnaires have been developed from the Feed the Future baseline survey guidelines provided in Volume 8 of the Feed the Future M&E Guidance series. The guidelines ensure that the surveys are designed to conform to existing questionnaires such as the DHS, EICV (LSMS), and WEAI. Each of these questionnaires will include the household identification module (Survey Module A), the informed consent statement (Survey Module B), the household roster (Survey Module C), and the dwelling characteristics module (Survey Module D).

The questionnaire includes modules for indicators not covered by secondary data. The baseline survey will collect information to calculate the following indicators:

| PBS module | Description of indicator |
|------------|---|
| D | Dwelling characteristics |
| F | Prevalence of households with moderate or severe hunger |
| G | WEAI |
| H | Women's Dietary Diversity Score: Mean number of food groups consumed by women of reproductive age |

The survey questionnaire has been translated into Kinyarwanda and loaded onto the tablets. During the training and pretest, any problems found in the translations will be corrected. A copy of the questionnaire in Kinyarwanda with English translation is attached.

A.3.2 Sample Design

The sample size for the Feed the Future FEEDBACK (FTF FEEDBACK) baseline was described in Section 2. A total of 2,000 households in 100 standard enumeration areas (SEAs) in the four provinces that comprise the ZOI will be targeted for the survey. This sample size is more than sufficient to cover the sample size requirements described in Section 2. To maximize the number of SEAs, while at the same time conforming to the logistics requirement of having a

minimum number of interviews in each SEA to fully occupy the time of the field teams when they are within a single SEA, 20 households per SEA will be surveyed.

The selection of households will be based on household lists that are maintained and kept up to date by village heads. In Rwanda, it is common practice for village heads to keep the list of households and members of the household. These lists are used by the National Institute of Statistics and Research (NISR) and other research companies to sample households in a village. The NISR provides a formal letter, which is used to contact the district officials and village heads once the survey starts. Once the formal permission to carry out the survey is granted by the Government of Rwanda (GOR), the Ministry of Local Government can also be requested to provide an additional letter asking local authorities to help.

CESS will obtain from NISR a list of all SEAs in the ZOI from the DHS sampling frame, along with maps and listings (if available). CESS will obtain the number of households in each SEA. CESS will then randomly select the 100 SEAs from the complete list of all SEAs within the ZOI, using Probability Proportional to Size (PPS) sampling, based on the most recent information of population in the SEAs. Following this procedure, the number of SEAs per province will be proportional to the population size of that province. Following standard practice, SEAs from game and forest reserves will be excluded from the sample list. If any SEAs are replaced, CESS will record this and provide an explanation as to why the SEA was replaced.

Within sampled SEAs, households will be selected using NISR protocol. The total number of households from the household listing will be divided by 20 (the number of households to be sampled per SEA). This provides the skip number. The central field supervisor will provide the team supervisors with a random household start number (between 1 and 20) for each SEA. The household selection will begin at this random household number, and then skip by 20 to select the next household. For example, if a SEA has 280 households, the skip will be 28 ($280 / 20$). If the random number is 10 then the first selected household will be the 10th household on the household listing. The next households selected will be 38, 66, 94, 122, and onward until 20 households are selected. The sample will focus on rural areas only. Households where there is no respondent present will be given three call-back visits before being dropped from the survey without replacement.

Data required for weighting of survey data will be collected throughout the sampling process. These data will include, but not be limited to: (1) SEA populations used for selection of SEAs, (2) total number of households in the selected SEAs, (3) population of the ZOI (four provinces), (4) population of sampled SEAs at time of listing from the household lists maintained by village heads, and (5) response rates at the household, women's, and men's level from the survey itself. These weights will be provided in the baseline survey report.

A.4 Fieldwork

The survey fieldwork is the part of the survey process where data are collected in the field. The survey will be carried out by a private firm, CESS, which specializes in the design, execution, processing and analysis of statistical surveys. TANGO International will provide technical assistance during the preparation, training, and implementation of the survey.

CESS will provide 25 teams working full time over the course of the fieldwork. Survey teams will consist of four interviewers (two females, two males), plus a field team supervisor. The allocation of the teams by district will depend on the number of sample villages that fall in a given district, as sampling will be PPS. CESS will contract with and supervise private vendors to procure 31 vehicles and drivers for the exercise. Westat/TANGO will procure plug adaptors for each of the vehicles to enable tablet computers to be recharged.

Enumerators will work in male/female pairs with the male interviewing the primary male in the household and the female interviewing the primary female, according to FTF FEEDBACK standards for each module. Field teams will be responsible to conduct the following activities:

- CESS's field team supervisors and enumerators will obtain a comprehensive listing of households from village heads and conduct a random sampling procedure in every selected SEA, according to agreed specifications (see Section 3.2).
- CESS enumerators will conduct individual household interviews consistent with sampling requirements and procedures presented in FTF FEEDBACK guidance documents, the training workshop, and enumerator and supervisor field manuals.
- CESS field team supervisors, central supervisors, and data editors will provide field-based quality control measures; in accordance with agreed specifications (see Section A-5).
- CESS field team supervisors will provide weekly field reports on progress (EAs/HHs completed, problems, questions, etc.), which will be collected by the central supervisors and summarized by the survey coordinator and reported to TANGO.
- CESS field team supervisors will provide electronic data transfer daily to FTF FEEDBACK servers, depending on Internet access.

A.4.1 Training

TANGO and CESS will conduct a training workshop for survey enumerators, field supervisors, and editors. The purpose of the training sessions is to ensure that all members of the survey team understand the objectives of the study and proper use of the survey tools, as well as the roles and responsibilities of each team member in data collection.

Training will involve a two-week process, including one week of training of CESS trainers and preparation for the larger enumerator training, which would take place in the second week.

Week 1:

- TANGO staff will review with the trainers and supervisors the modules' structure and purpose, technical requirements, and content of the survey manuals.
- TANGO staff, trainers, and supervisors will review, field test, and revise module translations.
- TANGO staff, trainers, and supervisors will finalize training materials for the following week's enumerator training.

Week 2:

CESS staff will lead the Week 2 training for enumerators, editors, and supervisors, which will take place daily over a seven-day period (including Saturday and Sunday). The training will allocate time to each individual module, the SEA sample listing procedure, human subject protection, and the use of tablet computers. Individual training sessions will include a combination of presentations by the CESS trainers, mock interviews, quizzes, and recaps from previous days' activities. After completion of classroom training, the trainees will participate in a field test to practice what was learned in the training with actual respondents and field conditions. TANGO staff will serve as technical resources during the second week as needed.

A.4.2 Field Support/Supervision

During the fieldwork, CESS's survey supervisors will handle the day-to-day management of the field teams. A total of 25 survey teams will be deployed in a manner to cover the entire sample within the given timeframe. The field team supervisors will observe one interview per day for each subteam, and will do spot checks of households that were supposed to be interviewed to ensure that the interview took place. This will ensure the quality of interviews and recording of responses on questionnaires, and will enable field team supervisors to troubleshoot any problems encountered during the fieldwork. Central supervisors will provide another layer of quality control. Central supervisors will oversee the field work of the field team supervisors, and will do spot checks on quality, along with the data editors. The central supervisors will report to the survey coordinator, who will manage the overall survey process.

The field team for the FTF FEEDBACK ZOI baseline survey will be structured as follows: 100 enumerators in 25 teams of four enumerators each. Each team of four enumerators will be subdivided into two-person teams consisting of one female and one male interviewer. The female/male enumerator teams are needed because conducting the WEAI requires that both the primary female and male members of the household be interviewed. The enumerator female/male teams will interview respondents in the same household, with the female enumerator interviewing

the primary female member of the household and the male enumerator interviewing the primary male member of the household.

The survey will have the following positions:

- **100 Enumerators (50 Female, 50 Male).** Will assist the field team supervisor to obtain a comprehensive list of households from village heads, conduct a random sampling procedure in every selected SEA, and conduct the household interviews.
- **25 Field Team Supervisors (One for Each Field Team).** Will obtain a comprehensive list of households from village heads and conduct a random sampling procedure in every selected SEA, with assistance from the enumerators; will observe at least one interview per subteam daily and perform followup to ensure that selected households were visited; will spot check data quality; will review completed questionnaires daily and ensure that all surveys are completed, archived, backed up on the tablet, and transmitted to the Feed the Future server either daily or when the supervisor has Internet access.
- **Five Central Supervisors.** Each central supervisor is responsible for the oversight, support and coordination of five field teams, including ensuring that quality control measures are being carried out.
- **Five Data Editors.** The data editors provide another layer of quality control that is specifically to make spot checks of questionnaires for completeness, consistency, range checks and skip patterns, and to detect any problems or patterns and bring it to the attention of the central supervisor and field team supervisor(s).
- **One Survey Coordinator.** Will be responsible for the overall quality and timeliness of the training and survey procedures and personnel and the delivery of the data according to the agreed upon timeline.

Each supervisor and field team will be assigned separate lists of SEAs to visit. One field team will visit each selected SEA. Within each selected SEA, the supervisors will obtain lists of households maintained by the village heads, who will also assist the enumerators to find the households. The survey team will collect the household lists from the sample village and then select the sample households just prior to data collection. Each day, the supervisor will assign households to both of her/his enumeration teams.

After each interview, the enumeration teams will record the following information into daily control sheets: (1) ID information for each household interviewed; (2) all the modules that were completed for that household; and (3) whether a revisit was required.

At the end of each field day, supervisors will verify and record into daily control sheets: the identification information of households interviewed by the enumerator teams under the control of the field team supervisor; whether the information in the tablets has been reviewed, corrected, and accepted by the field team supervisor; and the total number of complete and incomplete interviews for the day.

Data collection will take place every day, including Saturday and Sunday. With regard to data collected for the WEAI, the survey will sample a large number of households so the sample would represent the distribution of work days and rest days in the population. Accordingly, when we compute the WEAI indices, the distribution of work days and rest days will reflect that of the population.

A.5 Data Management

Data collected in interviews will be recorded directly into tablet computers provided by Westat. In the event that complications using the tablets arise during implementation, CESS will provide a back-up plan for paper data entry and reconciliation and data cleaning.

At the end of each day in the field, each enumerator will make backups of his/her data onto the tablet of the field team supervisors. Whenever the field teams have access to Internet, all completed data files (supervisors mark files as completed only after they have reviewed and accepted the data in each individual interview file) will be uploaded to a FTF FEEDBACK server address created for the country by Westat. Teams are expected to have daily access to the Internet as there is a high level of connectivity in Rwanda.

The field team supervisors will be responsible for uploading the data to the FTF FEEDBACK server whenever they have access to Internet. Each field team will have a Wi-Fi hotspot that can be used to connect the tablets to the Internet via mobile phone connections. These Wi-Fi hotspots are battery operated and rechargeable, and can provide connectivity to up to five devices simultaneously. Each day when the teams have network access, the field team supervisors will upload the data from the tablets of all the (four) field team members onto the FTF FEEDBACK server, where the data from all the field teams will be aggregated and updated over the course of the fieldwork.

Each field team will be provided with multi-socket splitters to fit into vehicle cigarette lighters, along with USB adapters. This equipment will be used to charge the tablets and the Wi-Fi hotspots from the team vehicles as the teams travel, or in the evenings. Each vehicle will have a total of five tablets and one Wi-Fi hotspot to recharge. The teams will be able to charge the equipment in the evening when they are staying in locations where electricity is available.

During the fieldwork, data quality will be maintained in several ways. During the training, the enumerators are trained in the importance of ensuring good data quality, and in the field, the field team supervisors will continue this emphasis on quality in their daily interaction with the enumerators. Also while in the field, the field team supervisors will observe interviews, spot check interviews and selected interviewees, and review each completed questionnaire closely for completeness and consistency across responses. The central supervisors and data editors will make spot checks of questionnaires for completeness, consistency, range checks, and skip patterns. The field team supervisor will also check a subset of questionnaires in the same manner. Because data are entered in the field, these data can be uploaded to FTF FEEDBACK servers, which will allow

FTF FEEDBACK partners (TANGO and Westat) to run data quality checks and review results of these checks shortly after data entry in the field. The faster time for FTF FEEDBACK review will help in the overall monitoring of the survey process and allow for quick corrections of problems found, which will improve the survey process and data quality.

Managing the data in the field involves four separate but related activities at the end of each day or when an enumerator team has completed all assigned households for an SEA:

1. Check the data for completeness and consistency.
2. Archive the data (make a copy of the data files) on the same tablet computer using the ODK Archive tool.
3. Backup the data on another tablet computer using NFC Tapping.
4. Transmit the finalized data to FTF FEEDBACK when Internet access is available.

The majority of this process is performed on the enumerators' tablets. The supervisor and editor will edit all surveys completed by the team at one time. The supervisor would then continue the process by archiving and backing-up all of the data that have been edited. Once all the team's surveys have been edited, finalized, archived, and backed-up, the supervisor would transmit the finalized forms to the FTF FEEDBACK server.

After forms are transmitted to the FTF FEEDBACK server, Westat will convert data on these forms into a format for a secure database for this survey. On a daily basis, Westat will run data quality checks on these data. TANGO will review the results of these checks and communicate with the NSO on data quality issues that need to be addressed by field teams. The NSO will communicate with field teams on these data quality issues and how best to resolve them.

Supervisors and editors will stay in hotels that have stable electricity and good Internet connections, identified through previous surveys. On a daily basis, supervisors and editors will recharge the tablet computers. Car chargers will be provided for situations where electricity is not readily available. Backup procedures have been designed for daily backups, as good practice, and to account for situations where there may be multiple days between when supervisors can send forms to FTF FEEDBACK servers.

A.6 Analysis and Reporting

The analysis and reporting process for each survey will be completed one month after the completion of data entry and cleaning for that survey.

A.7 Institutional Review Board (IRB) Approval

The National Ethics Committee in Rwanda does not require a local IRB process except if biomedical research is being carried out. FTF FEEDBACK has submitted the general plan for

PBSs to the Westat IRB, which has approval on the condition that local IRB requirements are met. Westat requires a formal notification of this in order to satisfy the Westat IRB requirements. TANGO will request this notification from NISR as part of the approval process required by the GOR.

TANGO will provide a signed data confidentiality agreement and certification that data collector human subjects protection training has been provided to all enumerators.

A.8 GOR Approval

The GOR requires that all public or private organizations or individuals undertaking a survey in Rwanda obtain written authorization from the NISR before a survey can be carried out. The government has specified an application process that explains the survey objectives, methodology, sample size and calculation, training materials, survey instruments in Kinyarwanda, instruction manuals, calendar, budget, and credentials of the firm(s) conducting the survey. The application for NISR approval will be submitted in the third week of November. USAID Rwanda will be requested to help expedite the approval process.

A.9 Survey Work Plan

| Activity | Dates of activity | October | | | | November | | | | December | | | | January | | | |
|---|-------------------|---------|---|---|---|----------|---|---|---|----------|---|---|---|---------|---|---|---|
| | | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Administrative | | | | | | | | | | | | | | | | | |
| Translate questionnaire into Kinyarwanda | Oct 29-Nov 5 | | | | X | | | | | | | | | | | | |
| Submit survey protocol to Westat for review and forwarding to BFS | Nov 6 | | | | | X | X | | | | | | | | | | |
| Acquire DHS sampling frame | Nov 16 | | | | X | X | X | | | | | | | | | | |
| Apply to NISR for written authorization to conduct survey; submit package of survey materials | Nov 19 | | | | | | | | X | | | | | | | | |
| Westat IRB approval | Nov 26 | | | | | | | | | X | | | | | | | |
| Obtain written authorization from NISR to conduct survey | Nov 26 | | | | | | | | | | X | | | | | | |
| Finalize MOU and budget with CESS | Nov 15 | | | | | | | X | | | | | | | | | |
| Printing | | | | | | | | | | | | | | | | | |
| Print instruction manuals | Nov 19-23 | | | | | | | X | | | | | | | | | |
| Training | | | | | | | | | | | | | | | | | |
| Recruit master trainers: CESS | Nov 19-23 | | | | | | | X | | | | | | | | | |
| Preliminary version of questionnaire available on tablets for training | Nov 16 | | | | | | | X | | | | | | | | | |
| Master Trainers Training I (5 days) – Instrument vetting, training on use of tablets | Nov 26-30 | | | | | | | | | X | X | | | | | | |
| Questionnaire pretesting | Dec 1 | | | | | | | | | | X | | | | | | |
| Questionnaire review after pretest | Dec 1 | | | | | | | | | | X | | | | | | |
| Westat makes changes in ODK based on training | Dec 3-4 | | | | | | | | | | X | | | | | | |
| Enumerator training (6 days) | Dec 3-8 | | | | | | | | | | X | | | | | | |

| Activity | Dates of activity | October | | | | November | | | | December | | | | January | | | |
|--|-------------------|---------|---|---|---|----------|---|---|---|----------|---|---|---|---------|---|---|---|
| | | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Field practice and review (1 day) | Dec 9 | | | | | | | | | | X | | | | | | |
| Submission of last-minute changes to questionnaire to Westat for modification on tablets | Dec 10-11 | | | | | | | | | | X | | | | | | |
| Final tablet version of questionnaire available on Westat server to be downloaded onto tablets in Rwanda | Dec 11 | | | | | | | | | | X | | | | | | |
| Field Operations | | | | | | | | | | | | | | | | | |
| Deployment of enumerators | Dec 12 | | | | | | | | | | X | | | | | | |
| Data collection | Dec 13-22 | | | | | | | | | | X | X | X | | | | |
| Hand over data to FTF FEEDBACK | Dec 28 | | | | | | | | | | | | X | | | | |
| Supervision of data collection | | | | | | | | | | | | | | | | | |
| Data cleaning, computing indicators, and preparation of descriptive narrative to enter into FTFMS | Jan 2-15 | | | | | | | | | | | | | X | X | | |

A.10 Survey Questionnaire

RWANDA

FEED THE FUTURE M&E Guidance Series



**Volume 8: Population-Based Survey Instrument
for Feed the Future Zone of Influence Indicators
with Revised WEAI Module****

October 2011

IGIKA A. IMBONERAHAMWE Y'IBIRANGA URUGO/ MODULE A. Household identification cover sheet (continued)

| Ibiranga urugo/ <i>Household Identification</i> | Ikirango/ <i>Code</i> | Ibiranga Umukarani w'Ibarura/ <i>Interview details</i> | Ikirango / <i>Code</i> | | | | | | | | | | |
|---|--------------------------|--|---|--|---|---|--|--|---|--|--|--|--|
| A09. Icyiciro cy'urugo/ <i>Type of household:</i> | <input type="checkbox"/> | A24. Itariki y'ishyirwa muri mudasobwa (jj/mm/aaaa)/ <i>Date of data entry(dd/mm/yyyy):</i> | <table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px; text-align: center;">/</td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px; text-align: center;">/</td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> </tr> </table> | | | / | | | / | | | | |
| | | / | | | / | | | | | | | | |
| A10. Amazina & Ikirango by'umuntu wabajijwe (Reba igika C)/ <i>Primary Respondent Name and ID (from Module C)</i> | | A03-A06. Ongerera ibindi biranga niba ari ngombwa/ <i>Create codes if needed</i> | A22 UKO IKIGANIRO CYAGENZE/ OUTCOME OF INTERVIEW Urutonde rw'ibibazwa rwujijwe neza/ <i>Complete</i> 1 Urutonde rw'ibibazwa rwujijwe igice/ <i>Incomplete</i> 2 Abagomba kubazwa ntibahari/ <i>Absent</i> 3 Abagomba kubazwa banze gusubiza/ <i>Refused</i> 4 Nta muntu uri mu rugo rwatoranyijwe/ <i>Could not locate</i> 5 | | | | | | | | | | |
| A11. Amazina & Ikirango by'umuntu wa kabiri wabajijwe (voir Module C)/ <i>Secondary Respondent Name and ID (from Module C)</i> | | | | | | | | | | | | | |
| A09 Ibyiciro by'urugo: Umugabo n'umugore – urugo rugizwe n'umugabo n'umugore bafite cg barengeje imyaka 18 (imyaka ≥ 18) / Male and female adult - household contains at least one male and one female adult ≥ 18 years old 1 Umugore wenyine – urugo rugizwe gusa n'umugore ufite cg urengeje imyaka 18 (imyaka ≥ 18)/ Female adult only - household contains at least one female adult and no male adults ≥ 18 years old..... 2 Umugabo wenyine - urugo rugizwe gusa n'umugabo ufite cg urengeje imyaka 18 (imyaka ≥ 18)/ Male adult only - household contains at least one male adult and no female adults ≥ 18 years old..... 3 Umwana wenyine – urugo rugizwe gusa n'umwana ufite cg urengeje imyaka 18 (imyaka ≥ 18)/ Child only - household contains no adults ≥ 18 years old..... 4 | | | | | | | | | | | | | |

| Ibiranga urugo/ <i>Household Identification</i> | Ikirango/ <i>Code</i> | Ibiranga Umukarani w'Ibarura/ <i>Interview details</i> | Ikirango / <i>Code</i> |
|--|-----------------------|---|------------------------|
| <p>Umuntu w'ingenzi ubazwa wa mbere n'uwa kabiri ni ba bantu basanzwe bafata icyemezo kubijyanye n'ubukungu n'imibereho y'urugo. Mu ngo zigizwe n'umugabo n'umugore bafite cg barengeje imyaka 18 ; ubusanzwe ibyemezo bifatwa n'umugabo n'umugore. Mu ngo ziyoborwa n'abagore bafite imyaka 18 b'abayirengeje, hazabazwa umuntu umwe ni umugore kuko ariwe ufata ibyemezo. Mu ngo ziyoborwa n'umugabo wenyine ndetse n'iziyoborwa n'umwana bafite cg barengeje imyaka 18, nta kwirirwa mushakisha uw'ingenzi n'umuhagararira. Igika G WEAI nti kigomba kubazwa./ The primary and secondary respondents are those who <u>self-identify</u> as the primary male and female (or female only) members responsible for the decision making, both social and economic, within the household. In Male and Female Adult Households, they are usually the husband and wife; however they can also be other household members as long as they are aged 18 and over. In Female Adult Only households, there will only be a primary respondent -- the principal female decision-maker aged 18 or older. Primary and secondary respondents do not need to be noted for Male Adult Only and Child Only Households, and Module G WEAI should not be applied in Male Adult Only and Child Only Households.</p> | | | |

Irangarugo (ku rutonde rw'ibisubizo, buri Gika kijyanye n'irangarugo)/
Household identification (in data file, each module must be matched
with the HH ID)

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| | I D C O D E | Urutonde rw'amazina ya baba mu rugo/ <i>Name of household member</i> | [Izina]/ Afite igitsina ki?/ <i>What is [NAME's] sex?</i> | [Izina] Afitanye iyihe sano n'usubiza wa mbere?/ <i>What is [NAME's] relationship to the primary respondent?</i> | [Izina] Afite imyaka ingahe y'amavuko? Niba ari mu nsi y'imyaka 3, → C05-08 / <i>What is [NAME's] age? (in years)*</i> <i>If <3, skip C05-08</i> | [Izina] Azi gusoma no kwandika?/ <i>Can [NAME] read and write?</i> | [Izina] Ajya ku ishuri?/ <i>Is [NAME] currently attending school?</i> 1 = Yego/ Yes 2 = Oya/ No | [Izina] Yigeze agera mu ishuri/ yarize? / <i>Has [NAME] ever attended school?</i> 1= Yego/ Yes 2= Oya/ No | [Izina] Ni ikihe cyiciro cya nyuma cy'amashuri yarangije? / <i>What is the highest grade of education completed by [NAME]?</i> |
|--|----------------------------|---|---|--|---|---|--|---|---|
| | | C01 | C02 | C03 | C04 | C05 | C06 | C07 | C08 |
| | 01 | | | | | | | | |
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|----------------------------|--|--|--|---|---|---|---|---|
| I D C O D E | Urutonde rw'amazina ya baba mu rugo/ <i>Name of household member</i> | [Izina]/ Afite igitsina ki?/ <i>What is</i> [NAME's] sex? | [Izina] Afitanye iyihe sano n'usubiza wa mbere?/ <i>What is</i> [NAME's] relationship to the primary respondent? | [Izina] Afite imyaka ingaha y'amavuko? Niba ari mu nsi y'imyaka 3, → C05-08 / <i>What is</i> [NAME's] age? (in years)* If <3, skip C05-08 | [Izina] Azi gusoma no kwandika?/ <i>Can</i> [NAME] <i>read and</i> <i>write?</i> | [Izina] Aja ku ishuri?/ <i>Is</i> [NAME] <i>currently</i> <i>attending</i> <i>school?</i> | [Izina] Yigeze agera mu ishuri/ yarize? / <i>Has</i> [NAME] <i>ever</i> <i>attended</i> <i>school?</i> | [Izina] Ni ikihe cyiciro cya nyuma cy'amashuri yarangije? / <i>What is</i> <i>the highest grade of</i> <i>education completed</i> <i>by</i> [NAME]? |
| | C03: Isano afitanye n'usubiza w'ingenzi / Relationship to primary respondent 1. Usubiza wa mbere/ <i>Primary respondent</i> 9. umwiishywa/umwisengeneza b'uwo bashakanye/ <i>Nephew/niece of spouse</i> 2. Umufasha/Uwo bibanira / <i>Spouse/partner</i> 10. mubyara w'usubiza wa mbere/ <i>Cousin of primary respondent</i> 3. umuhungu/umukobwa we / <i>Son/daughter</i> 11. Muramu/muramukazi/ <i>Brother/sister-in-law</i> 4. Umukwe/umukazana / <i>Son/daughter-in-law</i> 12. Se bukwe/nyirabukwe a/ <i>Mother/father-in-law</i> 5. umwuzukuru / <i>Grandson/granddaughter</i> 13. Mubyara w'uwashakanye n'usubiza wa mbere/ <i>Cousin of primary respondent's spouse</i> 6. Nyina/se / <i>Mother/Father</i> 14. Undi mwene wabo/ <i>Other relative</i> 7. Uwo bavukana / <i>Brother/sister</i> 15. Umukozi wo mu rugo/ <i>Servant/Maid</i> 8. Abishywa/abisengeneza / <i>Nephew/niece</i> 16 Umukozi wo ku isambu/ <i>Laborer</i> 17. Indi sano / <i>Other relationship</i> | | | C05: Kumenya gusoma no kwandika/ Literacy 1. Ntazi gusoma no kwandika./ <i>Cannot read and write</i> 2. Azi kwandika gusa/ <i>Can sign (write) only</i> 3. Azi gusoma gusa/ <i>Can read only</i> 4. Azi gusoma no kwandika / <i>Can read and write</i> | | C08: Ibyiciro by'amashuri / Education level 1. Ntiyageze mw'ishuri/ <i>Less than P1 (or no school)</i> 2. Amashuri abanza 1-3 / <i>Primary level 1-3</i> 3. Amashuri abanza 4-6 / <i>Primary level 4-6</i> 4. Amashuri yisumbuye 1-3/ <i>Secondary 1-3</i> 5. Ayisumbuye hejuru ya O-level/ <i>Tertiary after O-level</i> 6. Amashuri yisumbuye 4-6/ <i>Secondary 4-6</i> 7. Amashuri makuru / <i>University or above</i> 8. Amashuri y'imyuga / <i>Technical or vocational</i> 9. Yize gusoma no kwandika gusa / <i>Adult literacy only (no formal education)</i> 10. Yize ikorowani/bibiliya cg izindi nyigisho z'idini gusa/ <i>Koranic/religious only (no formal education)</i> 11 Ntabizi/Nta gisubizo/Ntibimureba / <i>Don't know (DK)/Non response (NR)/Not applicable (NA).....</i> | | |

***Icyitonderwa :** Si ngombwa ko twandika mu mezi igihe cy'amavuko y'abana bataruzura imyaka 5. Abana bose bataruzura imyaka 6 bazagaragara mu gika I aho imyaka y'abo izagereranywa muburyo bw'ikoranabuhanga hitahweho kureba niba ibipimo by'imirire n'imikurire yabo bifitanye isano. Niyo mpamvu abana bose bataruzura imyaka 6 bari muri urwo rugo rubaruwe bagomba kwandikwa ahabigenewe kugira ngo bigaragare neza ko abana bataruzura amezi 60 y'amavuko bakorewe ibipimo birebana n'imirire n'imikurire./ **Note, it is not necessary to collect age in months for children under 5 years of age. All children under 6 years of age will be screened and their age in months will be determined in Module I to identify those to whom the child feeding and anthropometry modules apply. All children identified as under 6 years of age in the household roster are screened to ensure those under 60 months are accurately captured for anthropometry and anemia, if applicable.*

IGIKA CYA D. IBIREBANA N'IMITURIRE/ MODULE D. Dwelling characteristics

Umukarani: Irangarugo (ku rutonde rw'ibisubizo, buri Gika kijyanye n' irangarugo)/ Household identification (in data file, each module must be matched with the HH ID)

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Baza umuntu

ushinzwe guteka/gutegura ibyo kurya / Enumerator: Ask the person primarily responsible for food preparation

| | Igisubizo/ Response | Ibirango n'ibisubizo bishoboka/ Response codes |
|---|------------------------|--|
| D01. UMUKARANI: Itegereze (ntubaze) ibisakaye inzu batuyemo / ENUMERATOR: OBSERVE (DO NOT ASK) Roof top material (outer covering): | | D01: Ibikoresho bishoboka bisakara inzu/ Type of roof 1. Amategura / Tile 2. Ibiti / Wood 3. Amabati / Corrugated metal 4. Shitingi / Plastic sheeting 5. Ibyatsi / Thatched/vegetable matter sticks 6. Itaka/Amase / Mud/cow dung 7. Ikindi / Other |
| D02. UMUKARANI: Itegereze (ntubaze) igishashe hasi mu nzu batuyemo/ ENUMERATOR: OBSERVE (DO NOT ASK) Floor material: | | D02: Ibikoresho bishoboka bisaswa mu nzu / Type of floor 1. ibitaka/icyondo / Earth/mud 2. Beto/amabuye /sima/ Concrete/flag stone/cement 3. Amakaro/ amatofari / Tile/bricks 4. Imbaho// Wood 5. Ikindi / Other |
| D03. UMUKARANI: Itegereze (ntubaze) ibyubatse inkuta zo hanze z'inzu/ ENUMERATOR: OBSERVE (DO NOT ASK) Exterior Walls: | | D03. Ibikoresho bishoboka byubaka inkuta zo hanze z'inzu / Type of walls 1. Igitaka / Earth/mud 2. Beto/amabute/ isima / Concrete/flag stone/cement 3. Amakaro/Amatofari ahiye / Tile/bricks 4. Imbaho / Wood 5. Ikindii / Other |
| D04. Iyi nzu mutuyemo ifite ibyumba bingahe? (Ntubariremo Ubwiherero, koridoro, igaraji, aho biyuhagirira, kave n'aho batekera)/ How many rooms are there in this dwelling? (Do not count bathrooms, hallways, garage, toilet, cellar, kitchen) | | |

| | Igisubizo/ Response | Ibirango n'ibisubizo bishoboka/ Response codes | | | | | | | | | | | | |
|---|--|---|---|---|---|--|--|---|---|--|--|--|---|--|
| <p>D05. Ni ubuhe bwoko bw'umusarane urugo rwanyu rukunze rukoresha? / <i>What is the main type of toilets your household uses?</i></p> | | <p>D05: Ubwoko bw'umusarani / Type of toilet</p> <table border="0"> <tr> <td>1. Umusarani wa kizungu asangiye n`abandi, / <i>Flush, shared</i></td> <td>5. Umusarani rusange / <i>Community toilet</i></td> </tr> <tr> <td>2. Umusarani wa kizungu yihariye/ <i>Flush, private</i></td> <td>6. Ibase/indobo/ <i>Pan / bucket</i></td> </tr> <tr> <td>3. Umusarani w`umwobo wubakiye/ <i>Ventilated improved pit latrine (VIP)</i></td> <td>7. Nta musarani/ <i>No toilet</i></td> </tr> <tr> <td>4. Umusarani w`umwobo utubakiye/ <i>Pit latrine</i></td> <td>8. ubundi buryo/ <i>Other.</i></td> </tr> </table> | 1. Umusarani wa kizungu asangiye n`abandi, / <i>Flush, shared</i> | 5. Umusarani rusange / <i>Community toilet</i> | 2. Umusarani wa kizungu yihariye/ <i>Flush, private</i> | 6. Ibase/indobo/ <i>Pan / bucket</i> | 3. Umusarani w`umwobo wubakiye/ <i>Ventilated improved pit latrine (VIP)</i> | 7. Nta musarani/ <i>No toilet</i> | 4. Umusarani w`umwobo utubakiye/ <i>Pit latrine</i> | 8. ubundi buryo/ <i>Other.</i> | | | | |
| 1. Umusarani wa kizungu asangiye n`abandi, / <i>Flush, shared</i> | 5. Umusarani rusange / <i>Community toilet</i> | | | | | | | | | | | | | |
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| 3. Umusarani w`umwobo wubakiye/ <i>Ventilated improved pit latrine (VIP)</i> | 7. Nta musarani/ <i>No toilet</i> | | | | | | | | | | | | | |
| 4. Umusarani w`umwobo utubakiye/ <i>Pit latrine</i> | 8. ubundi buryo/ <i>Other.</i> | | | | | | | | | | | | | |
| <p>D06. Ni hehe h'ingenzi urugo rwanyu rukura amazi meza yo kunywa / <i>What is the main source of drinking water for your household ?</i></p> | | <p>D06: Ni hehe h'ingenzi mukura amazi mukoresha mu rugo /Drinking water source</p> <table border="0"> <tr> <td>1. Robine mu nzu/ <i>Piped into dwelling</i></td> <td>7. Amazi y'imvura/ <i>Rain water collection</i></td> </tr> <tr> <td>2. Robine mu rugo/ <i>Piped into plot/yard</i></td> <td>8. Iriba/ isoko idatunganyije/ <i>Unprotected dug well/springs</i></td> </tr> <tr> <td>3. Robine rusange cg yo ku muturanyi/ <i>Public tap (someone else's private tap)</i></td> <td>9. Umugezi/kinamba/icyuzi/ikiyaga/ <i>River/ponds/streams</i></td> </tr> <tr> <td>4. Kano/ <i>Tube well/borehole</i></td> <td>10. Ikamyo igurisha amazi/ <i>Tankers-truck/vendor</i></td> </tr> <tr> <td>5. Iriba ritunganyije/ <i>Protected dug well</i></td> <td>11. Amazi yo mu macupa/ <i>Bottled water</i></td> </tr> <tr> <td>6. Isoko itunganyije/ <i>Protected spring</i></td> <td>12. Ahandi (sobanura) / <i>Other (specify)</i></td> </tr> </table> | 1. Robine mu nzu/ <i>Piped into dwelling</i> | 7. Amazi y'imvura/ <i>Rain water collection</i> | 2. Robine mu rugo/ <i>Piped into plot/yard</i> | 8. Iriba/ isoko idatunganyije/ <i>Unprotected dug well/springs</i> | 3. Robine rusange cg yo ku muturanyi/ <i>Public tap (someone else's private tap)</i> | 9. Umugezi/kinamba/icyuzi/ikiyaga/ <i>River/ponds/streams</i> | 4. Kano/ <i>Tube well/borehole</i> | 10. Ikamyo igurisha amazi/ <i>Tankers-truck/vendor</i> | 5. Iriba ritunganyije/ <i>Protected dug well</i> | 11. Amazi yo mu macupa/ <i>Bottled water</i> | 6. Isoko itunganyije/ <i>Protected spring</i> | 12. Ahandi (sobanura) / <i>Other (specify)</i> |
| 1. Robine mu nzu/ <i>Piped into dwelling</i> | 7. Amazi y'imvura/ <i>Rain water collection</i> | | | | | | | | | | | | | |
| 2. Robine mu rugo/ <i>Piped into plot/yard</i> | 8. Iriba/ isoko idatunganyije/ <i>Unprotected dug well/springs</i> | | | | | | | | | | | | | |
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| 5. Iriba ritunganyije/ <i>Protected dug well</i> | 11. Amazi yo mu macupa/ <i>Bottled water</i> | | | | | | | | | | | | | |
| 6. Isoko itunganyije/ <i>Protected spring</i> | 12. Ahandi (sobanura) / <i>Other (specify)</i> | | | | | | | | | | | | | |
| <p>D07. Urugo rwanyu rufite amashanyarazi ? / <i>Does this household have electricity?</i></p> | | <p>1 = Yego / <i>Yes</i> 2 = Oya / <i>No</i></p> | | | | | | | | | | | | |

| | Igisubizo/ Response | Ibirango n'ibisubizo bishoboka/ <i>Response codes</i> | | | | | | | | |
|---|--|---|---------------------------------------|---------------------------|---|----------------------------------|------------------------------|--|-----------------------------|--------------------------|
| <p>D08. Ni iki cy'ingenzi urugo rwanyu rukoresha guteka ? / <i>What is the main source of cooking fuel for your household?</i></p> | | <p>D07: Ni hehe h'ingenzi haturuka ibyo utekesha mu rugo / <i>Cooking fuel</i></p> <table border="0"> <tr> <td>1. Amashanyarazi / <i>Electricity</i></td> <td>5. Inkwi/ <i>Firewood</i></td> </tr> <tr> <td>2. Biyogaze / <i>Piped or liquid propane gas (biogas)</i></td> <td>6. Ibisheshe/ <i>Animal dung</i></td> </tr> <tr> <td>3. Peteroli/ <i>Kerosene</i></td> <td>7. Ibisigazwa byo mu buhinzi/ <i>Agricultural crop residue</i></td> </tr> <tr> <td>4. Amakara/ <i>Charcoal</i></td> <td>8. Ahandi / <i>Other</i></td> </tr> </table> | 1. Amashanyarazi / <i>Electricity</i> | 5. Inkwi/ <i>Firewood</i> | 2. Biyogaze / <i>Piped or liquid propane gas (biogas)</i> | 6. Ibisheshe/ <i>Animal dung</i> | 3. Peteroli/ <i>Kerosene</i> | 7. Ibisigazwa byo mu buhinzi/ <i>Agricultural crop residue</i> | 4. Amakara/ <i>Charcoal</i> | 8. Ahandi / <i>Other</i> |
| 1. Amashanyarazi / <i>Electricity</i> | 5. Inkwi/ <i>Firewood</i> | | | | | | | | | |
| 2. Biyogaze / <i>Piped or liquid propane gas (biogas)</i> | 6. Ibisheshe/ <i>Animal dung</i> | | | | | | | | | |
| 3. Peteroli/ <i>Kerosene</i> | 7. Ibisigazwa byo mu buhinzi/ <i>Agricultural crop residue</i> | | | | | | | | | |
| 4. Amakara/ <i>Charcoal</i> | 8. Ahandi / <i>Other</i> | | | | | | | | | |

IGIKA CYA / MODULE F. INTERA Y'INZARA MU RUGO / Household hunger scale

Ibiranga urugo (*ku rutonde rw'ibibazwa buri gika kigomba kujyana n'ibiranga urugo*) / Household identification (*in data file, each module must be matched with the HH ID*)

| | | | | | |
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Umukarani : Baza umuntu ushinzwe guteka/gutegura ibyo kurya / Enumerator: Ask of the person responsible for Household Food Preparation.

| No. | Ibibazo / Question | Ibisubizo uhawe /Response | Ibirango by'ibisubizo biteganyijwe / Response code |
|------------|---|---------------------------|---|
| F01 | Muri ibi byumweru bine 4 bishize/Iminsi 30 haba hari igihe higeze kubura ibyo kurya kubera kubura ubushobozi bwo kubihaha ? / <i>In the past [4 weeks/30 days] was there ever no food to eat of any kind in your house because of lack of resources to get food?</i> | | 1 = Yego / Yes 2 = Oya / No → F03 |
| F02 | ? Ni kangaha ibyo byabaye muri ibi byumweru 4 bishize, ni ukuvuga mu minsi 30 ishize. / <i>How often did this happen in the past [4 weeks/30 days]?</i> | | 1 = Gake cyane (inshuro1-2) / <i>Rarely (1-2 times)</i> 2 = Rimwe na rimwe (inshuro 3-10) / <i>Sometimes (3-10 times)</i> 3 =Kenshi (inshuro zirenze 10) / <i>Often (more than 10 times)</i> |
| F03 | Mu byumweru 4 bishize/ iminsi 30 wowe cg undi muntu wo muri uru rugo yaba yaragiye kuryama ashonje kubera ko ntabyo kurya bihagije byari bihari ? / <i>In the past [4 weeks/30 days] did you or any household member go to sleep at night hungry because there was not enough food?</i> | | 1 = Yego / Yes 2 = Oya / No →F05 |
| F04 | Mu byumweru 4 bishize cg iminsi 30 ishize ibyo byabaye inshuro zingaha ? / <i>How often did this happen in the past [4 weeks/30 days]?</i> | | 1 = Gake (inshuro1-2) / <i>Rarely (1-2 times)</i> 2 = Rimwe na rimwe (inshuro 3-10) / <i>Sometimes (3-10 times)</i> 3 =Kenshi (inshuro zirenze 10) / <i>Often (more than 10 times)</i> |

| No. | Ibibazo / Question | Ibisubizo uhawe /Response | Ibirango by'ibisubizo biteganyijwe / Response code |
|------------|--|---------------------------|---|
| F05 | Mu byumweru 4 bishize / iminsi 30 , haba hari ubwo wowe cg undi muntu wo muri uru rugo yaba yaramaze umunsi wose n'ijoro ntacyo ariye kubera ko ntabyo kurya bihagije byari bihari ? / <i>In the past [4 weeks/30 days] did you or any household member go a whole day and night without eating anything at all because there was not enough food?</i> | | 1 = Yego / Yes 2 = Oya → rangiza Igika / No >>end of module |
| F06 | Mu byumweru 4 bishize cg iminsi 30 ishize ibyo byabaye inshuro zingahe ? / <i>How often did this happen in the past [4 weeks/30 days]?</i> | | 1 = Gake (inshuro1-2) / <i>Rarely (1-2 times)</i> 2 = Rimwe na rimwe (inshuro 3-10) / <i>Sometimes (3-10 times)</i> 3 =Kenshi (inshuro zirenze 10) / <i>Often (more than 10 times)</i> |

IGIKA CYA G / MODULE G. UBUSHOBOZI BW'ABAGORE MU BIYANYE N'UBUHINZI-BWOROZI / Women's Empowerment in Agriculture Index

Icyitonderwa : Ibikenewe byo mu gika cya G1 bishobora kuboneka hakoreshejwe uburyo bwinshi, ariko usabwe : a) Guhitamo neza umuntu wo muri urwo rugo mugirana ikiganiro, b) Kumenya neza isano uwo muntu afitanye n'abari ku rutonde rw'ububushakashatsi, c) Kuzuza neza ibivuye mu kiganiro, cyane cyane kugira ngo habeho itandukaniro hagati y'urutonde rutujwe kubera umuntu adahari n'urutujwe kuko yanze gusubiza. D) Vuga niba hari undi muntu wari mu rugo mu gihe cyo kuganira / **NOTE:** *The information in Module G1 can be captured in different ways; however there must be a way to a) identify the proper individual within the household to be asked the survey, b) link this individual from the module to the household roster, c) code the outcome of the interview, especially if the individual is not available, to distinguish this from missing data, d) record who else in the household was present during the interview. This instrument must be adapted for country context including translations into local languages when appropriate.*

Umukarani : Uru rutonde rw'ibibazwa rugomba kuzuzwa n'usubiza wa mbere n'uwa kabiri batoranijwe mu gika cya C. Wuzuzura urupapuro rubanza kuri buri muntu watoranyijwe mu gika cyo gutoranya usubiza kabone n'ubwo usubiza yaba adahari ngo mugirane ikiganiro.

Enumerator: This questionnaire should be administered separately to the primary and secondary respondents identified in the household roster (Section C) of the household level questionnaire. You should complete this coversheet for each individual identified in the "selection section" even if the individual is not available to be interviewed for reporting purposes.

Usabwe, gusuzuma neza ko : / Please double check to ensure:

- *Wujuje neza urutonde rw'abari mu rugo ushingiyeye ku rutonde rw'ibibazwa mu rugo kugira ngo hatanywe neza umuntu wa mbere uri bubazwe n'uwa kabiri ./ You have completed the roster section of the household questionnaire to identify the correct primary and/or secondary respondent(s);*
- *Wujuje neza ibiranga urugo n'ibiranga 'umuntu muza kugirana ikiganiro./ You have noted the household ID and individual ID correctly for the person you are about to interview;*
- *Wahawe/wabonye icyemezo kigaragaza ko wemerewe kugirana ikiganiro n'umuntu wo muri urwo rugo / You have gained informed consent for the individual in the household questionnaire;*
- *Wagiranye ikiganiro n'Usubiza mwiherereye ku buryo nta wundi cg abandira bantu bo muri urwo rugo bagiye bamwunganira mu bisubizo bye. / You have sought to interview the individual in private or where other members of the household cannot overhear or contribute answers.*
- *Ntugomba gushakisha cg kugerageza kureba isano hagati y'ibisubizo by'uwasubije wa mbere n'ibisubizo by'uwa kabiri. Birashoboka cyane ko ibisubizo byabo byaba bitandukanye / Do not attempt to make responses between the primary and secondary respondent the same—it is ok for them to be different.*

IGIKACYA GI/ MODULE GI. IBIRANGA UBAZWA / Individual identification

| | Ikirango / Code | | Ikirango / Code |
|--|---|--|---|
| G1.01. Ibiranga urugo:/ <i>Household Identification:</i> | <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> | G1.05. Ibyavuye mu kiganiro / <i>Outcome of interview</i> | <input type="checkbox"/> |
| G1.02. Amazina y'Usubiza (Ikirango gituruka k'urutonde mu gika C kijyanye n'ababa mu rugo) : <i>/ Name of respondent currently being interviewed (ID Code from roster in Section C Household Roster):</i> | <input type="text"/> <input type="text"/> | G1.06. Ubushobozi bwo gusubiza ibibazo wenyine: / <i>Ability to be interviewed alone:</i> | <input type="checkbox"/> |
| Amazina / Surname, First name: | | G05 | G06 |
| G1.03. Igitsina cy'Usubiza:/ <i>Sex of respondent:</i> | <input type="checkbox"/> | Urutonde rwujujwe neza/ <i>Completed</i> 1 | Wenyine/ <i>Alone</i> 1 |
| G1.04. Abatuye urugo / <i>Type of household</i> Umugabo n'umugore bakuze <i>/ Male and female adult</i>1 Umugore ukuze gusa / <i>Female adult only</i>2 | <input type="checkbox"/> | Urutonde rwujujwe igice/ <i>Incomplete</i> 2 | Hari abagore bakuze/ <i>With adult females present</i>2 |
| | | Nta bahari/ <i>Absent</i> 3 | Hari abagabo bakuze/ <i>With adult males present</i>3 |
| | | banze gusubiza/Refused4 | Hari abantu b'ibitsina byombi bakuze/ <i>With adults mixed sex present</i>4 |
| | | Ntibashobora kuboneka/ <i>Could not locate</i> 5 | Hari abana/ <i>With children present</i>5 |
| | | | Hari abantu b'ibitsina byombi bakuze n`abana/ <i>With adults mixed sex and children present</i>6 |

IGIKA CYA G2/ MODULE G2. URUHARE MU IFATWA RY'IBYEMEZO BY'URUGO MU BYEREKEYE GUSHAKA UMUSARURO N'UMUTUNGO / Role in household decision-making around production and income generation

Ibiranga urugo (ku rutonde rw'ibibazwa buri cyiciro cy'igika « G2-G6 » kijyana n'ikirango cy'urugo, n'icy'usubiza) Household identification (in data file, each submodule (G2-G6) must be linked with HH and respondent ID) /

Ikirango y'usubiza / Respondent ID Code

| | | | | | |
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|----------------------------|---|--|---|
| <p>Igikorwa / Activity</p> | <p>Mu mezi 12 ashize, mu gihe cyi'gihembwe cg ibihembwe bibiri by'isarura bishize, waba warakoze [IGIKORWA] ?/ Did you (singular) participate in [ACTIVITY] in the past 12 months (that is during the last [one/two] cropping seasons)?</p> <p>Yego / Yes.....1 Oya / No.....2 → igikorwa gikurikiyeho / next activity</p> | <p>Uruhare rwawe mu gufata icyemezo cyo gukora [IGIKORWA] rwabaye uruhe? / How much input did you have in making decisions about [ACTIVITY]?</p> | <p>Uruhare rwawe mu gufata ibyemezo ku mikoreshereze y'umusaruro cg amafaranga avuye mu [IGIKORWA] rwabaye uruhe? / How much input did you have in decisions on the use of income generated from [ACTIVITY]</p> |
|----------------------------|---|--|---|

| Ikirango cy'igikorwa/ Activity Code | Imiterere y'ibikorwa / Activity Description | G2.01 | G2.02 | G2.03 |
|--|--|-------|---|-------|
| A | Ubuhinzi ngengarugo: Ibihingwa byo kwirira gusa / <i>Food crop farming: crops that are grown primarily for household food consumption</i> | | | |
| B | Ubuhinzi ngengabukungu: Ibihingwa bigenewe kugurishwa gusa / <i>Cash crop farming: crops that are grown primary for sale in the market</i> | | | |
| C | Ubworozi / <i>Livestock raising</i> | | | |
| D | Ibikorwa ngengabukungu bitari iby'ubuhinzi : ubucuruzi butoya, uwikorera ku giti cye, urangura-akagurisha. / <i>Non-farm economic activities: Small business, self-employment, buy-and-sell</i> | | | |
| E | Gukorera umushahara: byaba guhembwa amafaranga cyangwa ibintu aho waba ukora hose (mu buhinzi cg ahandi). / <i>Wage and salary employment: in-kind or monetary work both agriculture and other wage work</i> | | | |
| F | Ubuho byo cy'ibikorwa by'ibikorwa by'amafi / <i>Fishing or fishpond culture</i> | | | |
| | | | <p><u>G2.02/G2.03: Uruhare mu gufata icyemezo / Input into decision making</u></p> <p>Nta ruhare / No input 1</p> <p>Uruhare mu byemezo bike/ <i>Input into very few decision</i> 2</p> <p>Uruhare mu byemezo bimwe na bimwe/ <i>Input into some decisions</i> 3</p> <p>Uruhare mu byemezo byinshi/ <i>Input into most decisions</i>..... 4</p> <p>Uruhare mu byemezo byose/ <i>Input into all decisions</i>..... 5</p> <p>Nta cyemezo cyafashwe / <i>No decision made</i> 6</p> | |

IGIKA CYA G/ MODULE G. KUGIRA IBINTU/UMUTUNGO BYABYAZWA UMUSARURO / Access to productive capital

| Umutungo wabyazwa umusaruro / Productive Capital | Hari umuntu mu rugo rwanyu ufite / (IZI RY`IKINTU KURI LISITI) / <i>Does anyone in your household currently have any [ITEM]?</i> | Ubu urugo rwanyu rufite bingahe?/ <i>How many of [ITEM] does your household currently have?</i> | Ni nde ufite byinshi kurusha abandi muri mwese? / <i>Who would you say owns most of the [ITEM]?</i> | Ni nde ukunze gufata icyemezo cyo kugurisha? / <i>Who would you say can decide whether to sell [ITEM] most of the time?</i> | Ni nde ukunze gufata icyemezo cyo gutanga? / <i>Who would you say can decide whether to give away [ITEM] most of the time?</i> | Ni nde ukunze gufata icyemezo cyo gukodesha /gutangaho ingwate?/ <i>Who would you say can decide to mortgage or rent out [ITEM] most of the time?</i> | Ni nde ukunze kugira uruhare mu gufata icyemezo cyo kugura gishya? / <i>Who contributes most to decisions regarding a new purchase of [ITEM]?</i> |
|--|--|---|---|---|--|---|---|
| Ibyabyazwa umusaruro / Productive Capital | G3.01a | G3.01b | G3.02 | G3.03 | G3.04 | G3.05 | G3.06 |
| A Ubutaka buhingwa / <i>Agricultural land (pieces/plots)</i> | | | | | | | |
| B Inka (bovins) / <i>Large livestock (oxen, cattle)</i> | | | | | | | |
| C Amatungo magufi (ihene, ingurube, intama) / <i>Small livestock (goats, pigs, sheep)</i> | | | | | | | |
| D Ibiguruka/Ibinyamababa (inkoko, ibishuhe, dindons, , inuma) / <i>Chickens, Ducks, Turkeys, Pigeons</i> | | | | | | | |
| E Ibyuzi n'ibikoresho by'uburobyi / <i>Fish pond or fishing equipment</i> | | | | | | | |
| F Ibikoresho byo mu buhinzi-bworozi (bitari imashini) / <i>Farm equipment (non-mechanized)</i> | | | | | | | |
| G Imashini zo mu buhinzi / <i>Farm equipment (mechanized)</i> | | | | | | | |

| Umutungo wabyazwa umusaruro / Productive Capital | Hari umuntu mu rugo rwanyu ufite / (IZI RY`IKINTU KURI LISITI) / Does anyone in your household currently have any [ITEM]? Yego /Yes 1 Oya/No 2 → JYA KU GIKURIKIYE / next item | Ubu urugo rwanyu rufite bingahe?/ How many of [ITEM] does your household currently have? | Ni nde ufite byinshi kurusha abandi muri mwese? / Who would you say owns most of the [ITEM]? | Ni nde ukunze gufata icyemezo cyo kugurisha? / Who would you say can decide whether to sell [ITEM] most of the time? | Ni nde ukunze gufata icyemezo cyo gutanga? / Who would you say can decide whether to give away [ITEM] most of the time? | Ni nde ukunze gufata icyemezo cyo gukodesha /gutangaho ingwate?/ Who would you say can decide to mortgage or rent out [ITEM] most of the time? | Ni nde ukunze kugira uruhare mu gufata icyemezo cyo kugura gishya? / Who contributes most to decisions regarding a new purchase of [ITEM]? |
|--|--|--|--|--|---|--|--|
| Ibyabyazwa umusaruro / Productive Capital | G3.01a | G3.01b | G3.02 | G3.03 | G3.04 | G3.05 | G3.06 |
| H Ibikoresho byo mu bucuruzi na serivisi bitari byo mu buhinzi-bworozi / Nonfarm business equipment | | | | | | | |
| I Inzu (n`izindi nyubako) / House (and other structures) | | | | | | | |
| J Ibintu biramba binini (nka refirijerateri, televiziyo, intebe zo muri salo) / Large consumer durables (fridge, TV, sofa) | | | | | | | |
| K Ibintu biramba bitoya (radiyo, amasafuriya) / Small consumer durables (radio, cookware) | | | | | | | |
| L Telefoni igendanwa / Cell phone | | | | | | | |
| M Ubutaka butari ubwo guhingaho (iki(bi)banza cyo(byo) guturaho, gucururizaho) / Other land not used for agricultural purposes (pieces, residential or commercial land) | | | | | | | |

| | | | | | | | |
|--|---|--|---|---|--|---|---|
| <p>Umutungo wabyazwa umusaruro / Productive Capital</p> | <p>Hari umuntu mu rugo rwanyu ufite / (IZI RY`IKINTU KURI LISITI) / Does anyone in your household currently have any [ITEM]?</p> <p>Yego /Yes 1 Oya/No 2 → JYA KU GIKURIKIYE / next item</p> | <p>Ubu urugo rwanyu rufite bingahe?/ How many of [ITEM] does your household currently have?</p> | <p>Ni nde ufite byinshi kurusha abandi muri mwese? / Who would you say owns most of the [ITEM]?</p> | <p>Ni nde ukunze gufata icyemezo cyo kugurisha? / Who would you say can decide whether to sell [ITEM] most of the time?</p> | <p>Ni nde ukunze gufata icyemezo cyo gutanga? / Who would you say can decide whether to give away [ITEM] most of the time?</p> | <p>Ni nde ukunze gufata icyemezo cyo gukodesha /gutangaho ingwate?/ Who would you say can decide to mortgage or rent out [ITEM] most of the time?</p> | <p>Ni nde ukunze kugira uruhare mu gufata icyemezo cyo kugura gishya? / Who contributes most to decisions regarding a new purchase of [ITEM]?</p> |
| <p>Ibyabyazwa umusaruro / Productive Capital</p> | <p>G3.01a</p> | <p>G3.01b</p> | <p>G3.02</p> | <p>G3.03</p> | <p>G3.04</p> | <p>G3.05</p> | <p>G3.06</p> |
| <p>N Ibinyabiziga (igare, moto/ipikipiki, imodoka) / Means of transportation (bicycle, motorcycle, car)</p> | | | | | | | |
| | | <p>G3.02-G3.06: Gufata ibyemezo no kugira ijamba ku mutungo wabyazwa umusaruro / Decision-making and control over productive capital</p> <p>Usubiza/ Self..... 1 Umugabo/Umugore/uwibanira n’ubazwa / Partner/Spouse 2 Usubiza afatanyije n’umugabo /Umugore we /uwo bibanira / Self and partner/ spouse jointly..... 3 Undi muntu wo mu rugo rw’ubazwa / Other household member 4 Usubiza afatanyije n’abandi bantu bo mu rugo rw’ubazwa / Self and other household member(s)..... 5 Umugabo/Umugore/uwibanira n’ubazwa n’abandi bantu bo mu rugo rw’ubazwa/ Partner/Spouse and other household member(s)..... 6 Umuntu (abantu) utari/batari abo mu rugo rw’ubazwa / Someone (or group of people) outside the household 7 Usubiza afatanyije n’abandi bantu batari abo mu rugo rw’ubazwa / Self and other outside people 8 Umugabo/Umugore/uwibanira n’ubazwa n’abandi bantu batari abo mu rugo rw’ubazwa / Partner/Spouse and other outside people 9 Usubiza afatanyije n’umugabo /Umugore we /uwo bibanira n’abandi bantu batari abo mu rugo rw’ubazwa / Self, partner/spouse and other outside people 10</p> | | | | | |

IGIKA CYA G3 ibikurikira: KUBONA INGUZANYO / MODULE G3. Access to credit (continued)

| Aho inguzanyo ituruka / <i>Lending sources</i> | | Mu mezi 12 ashize, hari umuntu wo mu rugo rwanyu waba waragurijwe amafaranga cg ibintu na [Genda umusomera aho inguzanyo ituruka]? / <i>Has anyone in your household taken any loans or borrowed cash/in-kind from [SOURCE] in the past 12 months?</i> | Ni nde wafashe icyemezo cyo kuguza cg gufata umwenda ku [Genda umusomera aho inguzanyo ituruka]? / <i>Who made the decision to borrow from [SOURCE]?</i> | Ni nde ufata icyemezo cy'icyo inguzanyo yafashwe muri [Genda umusomera aho inguzanyo ituruka] ikoreshwa? / <i>Who made the decision to borrow from [SOURCE]?</i> |
|--|--|--|--|--|
| Amazina y'aho inguzanyo ituruka/ <i>Lending source names</i> | | G3.07 | G3.08 | G3.09 |
| A | Umuryango utegamiye kuri Leta (ONG) / <i>Non-governmental organization (NGO)</i> | | | |
| B | Uguriza mu buryo budateganywa n'amategeko/ <i>Informal lender</i> | | | |
| C | Uguriza mu buryo buteganywa n'amategeko (Banki/ikigo cy'imari)/ <i>Formal lender (bank/financial institution)</i> | | | |
| D | Inshuti cg umuryango / <i>Friends or relatives</i> | | | |
| E | Amashyirahamwe yo kugurizanya nka VSLA, SACCO, ibimina / <i>Group based micro-finance or lending including VSLAs / SACCOs/ merry-go-rounds</i> | | | |

| | | | |
|---|---|--|---|
| <p>Aho inguzanyo ituruka / Lending sources</p> | <p>Mu mezi 12 ashize, hari umuntu wo mu rugo rwanyu waba waragurijwe amafaranga cg ibintu na [Genda umusomera aho inguzanyo ituruka]? / <i>Has anyone in your household taken any loans or borrowed cash/in-kind from [SOURCE] in the past 12 months?</i></p> | <p>Ni nde wafashe icyemezo cyo kuguza cg gufata umwenda ku [Genda umusomera aho inguzanyo ituruka] ? / <i>Who made the decision to borrow from [SOURCE]?</i></p> | <p>Ni nde ufata icyemezo cy'icyo inguzanyo yafashwe muri [Genda umusomera aho inguzanyo ituruka] ikoresheya? / <i>Who made the decision to borrow from [SOURCE]?</i></p> |
| <p>Amazina y'aho inguzanyo ituruka/ <i>Lending source names</i></p> | <p>G3.07</p> | <p>G3.08</p> | <p>G3.09</p> |
| | <p>G3.07 Inguzanyo yahawe/ Taken loans</p> <p>Yego, amafaranga / <i>Yes, cash</i>1 Yego, ibintu/ <i>Yes, in-kind</i>2 Yego amafaranga n`ibintu/ <i>Yes, cash and in-kind</i>.....3 Oya / <i>No</i>.....4 → G3.11A Ntabizi / <i>Don't know</i>.....5 → G3.11A</p> | <p>G3.08/G3.09: Gufata icyemezo no kugira ijambo ku nguzanyo / Decision-making and control over credit</p> <p>Usubiza / <i>Self</i> 1 Uwashakanye n`usubiza/ <i>Partner/ Spouse</i>..... 2 Usubiza n`uwo bashakanye bafatanyije/ <i>Self and partner/spouse jointly</i> 3 Undi muntu wo mu rugo / <i>Other household member</i> 4 Usubiza n`undi/abandi bantu bo mu rugo/ <i>Self and other household member(s)</i> 5 Uwashakanye n`usubiza n`undi/abandi bantu bo mu rugo / <i>Partner/Spouse and other household member(s)</i>..... 6 Umuntu/abantu batari abo mu rugo/ <i>Someone (or group of people) outside the household</i> 7 Usubiza n`undi/abandi bantu batari abo mu rugo/ <i>Self and other outside people</i>..... 8 Uwashakanye n`usubiza n`undi/abandi bantu batari abo mu rugo/ <i>Partner/Spouse and other outside people</i> 9 Usubiza, uwo bashakanye n`abandi bantu batari abo mu rugo / <i>Self, partner/spouse and other outside people</i> 10</p> | |

IGIKA CYA G4: UBUVUGA-RIKIYANA RY'UMUNTU KU GITI CYE N'URUHARE MU MURYANGO MUGARI / MODULE G4. Individual leadership and influence in the community

| Nomero y'ikibazo / QNo. | Ibibazo/ Question | Ibisubizo / Response | Ibirango by'ibisubizo / Response codes |
|-------------------------|--|----------------------|--|
| G4.01 | Wumva bikoroheye gutanga ibitekerezo byawe mu ruhamwe bigamije gufasha mu gufata ibyemezo byerekeye ibikorwa-remezo by'aho mutuye (ivomero/amariba, imihanda, kwegerezwa amazi)? / <i>Do you feel comfortable speaking up in public to help decide on infrastructure (like small wells, roads, water supplies) to be built in your community?</i> | | Oya, ndabangamiwe/ <i>No, not at all comfortable</i> 1 Yego, ariko bigoranye cyane/ <i>Yes, but with a great deal of difficulty</i> 2 |
| G4.02 | Wumva bikoroheye gufata ijamba mu ruhamwe kugira ngo umenye neza ko imishahara igomba gutangwa ku bikorwa- remezo cg gahunda zimeze nkabyo yatanzwe uko bigomba ? / <i>Do you feel comfortable speaking up in public to ensure proper payment of wages for public works or other similar programs?</i> | | Yego, ariko bigoranye gahoro/ <i>Yes, but with a little difficulty</i> 3 Yego, ariko n`utubazo turinganiye / <i>Yes, fairly comfortable</i> 4 |
| G4.03 | Wumva bikoroheye gutanga ibitekerezo byawe mu ruhamwe wiyamirira imyitwarire mibi y'abayobozi cg abantu mwareye inzego zinyuranye? / <i>Do you feel comfortable speaking up in public to protest the misbehavior of authorities or elected officials?</i> | | Yego, nta kibazo na mba/ <i>Yes, fairly comfortable</i> 5 |

IGIKA CYA G4 gikurikira: KUBA URI UMUNYAMURYANGO W'ITSINDA N'URUHARE URIFITEMO / MODULE G4. Group membership and influence in the group (continued)

| Kuba umunyamuryango w'itsinda / <i>Group membership</i> | | Iwanyu hari itsinda rya [musomere ubwoko bw'amatsinda] ? / <i>Is there a [GROUP] in your community?</i> | Waba uri umunyamuryango witabira itsinda [musomere ubwoko bw'amatsinda] ? / <i>Are you an active member of this [GROUP]?</i> |
|---|---|---|---|
| | | Yego / Yes1 Oya / No.....2 → itsinda rikurikiyeho / next group | Yego / Yes1 Oya / No2 → G4.07 |
| | Ubwoko bw'amatsinda / <i>Group Categories</i> | G4.04 | G4.05 |
| A | Itsinda ry'abahinzi/aborozi/abarobyi (n'ababyamamaza barimo) / <i>Agricultural / livestock/ fisheries producer's group (including marketing groups)</i> | | |
| B | Itsinda ry'abahurira ku ivomero / <i>Water users' group</i> | | |
| C | Itsinda ry'abakoresha amashyamba/ ibintu byo mu mashyamba / <i>Forest users' group</i> | | |
| D | Itsinda rihuzwa n'imari iciriritse nka SACCO, VSLA, ibimina / <i>Credit or microfinance group (including SACCOs/merry-go-rounds/ VSLAs)</i> | | |
| E | Itsinda ry'abazigama mu bwisungane magirirane ('itsinda ry'ingobyi, iryo gutabarana mu gihe cyo gushyingura) / <i>Mutual help or insurance group (including burial societies)</i> | | |
| F | Ishyirahamwe ry'ubucuruzi cg ry'ikigo kibyara inyungu / <i>Trade and business association</i> | | |
| G | Itsinda ry'abakorerabushake bagamije guteza imbere aho batuye n'itsinda rigamije gutanga ubufasha ku babukeneye aho mutuye / <i>Civic groups (improving community) or charitable group (helping others)</i> | | |
| H | Itsinda ry'ubuyobozi bw'ibanze / <i>Local government</i> | | |
| I | Itsinda rishingiye ku idini / <i>Religious group</i> | | |
| J | Irindi tsinda ry'abagore (mu gihe batari mu matsinda abanza A-I) / <i>Other women's group (only if it does not fit into one of the other categories)</i> | | |
| K | Irindi, ryandike / <i>Other (specify)</i> | | |

IGIKA CYA G5. GUFATA ICYEMEZO / MODULE G5. Decision making

| | | |
|--|--|---|
| <p>Umukarani: Baza ikibazo G5.01 umanuka ku bikorwa byose byo muri kolone ibanza ibumoso mbere yo kubaza G5.02. Ntubaze ikibazo G5.02 niba igisubizo kuri G5.01 ari 1 kandi uwo murimo kuganira ari umugabo, ntukibaza nanone iyo igisubizo kuri G5.01 ari 2 kandi uwo muganira ari umugore . / ENUMERATOR: Ask G5.01 for all categories of activities before asking G5.02. Do <u>not</u> ask G5.02 if G5.01 response is 1 and respondent is male OR G5.01 response is 2 and respondent is female.</p> <p>[Niba muri urwo rugo igikorwa muganiraho kidakorwa andika 98 ujye ku gikorwa gikurikiyeho]. / If household does not engage in that particular activity, enter 98 and proceed to next activity.</p> | <p>Mu rugo rwanyu, iyo hari ibyemezo bifashwe ku byerekeye (Musomere urutonde rw'ibyemezo bifatwa biteganyijwe mu buzima bw'urugo, aguhe aguhe igisubizo kuri buri kibazo), ni nde ukunze gufata icyo cyemezo ? / <i>When decisions are made regarding the following aspects of household life, who is it that normally takes the decision?</i></p> | <p>Utekereza ko uramutse ushatse gufata ibyemezo ku byerekeye (Musomere urutonde rw'ibyemezo bifatwa mu buzima bw'urugo biteganyijwe), wumva byakorohera mu kihe kigero : / <i>To what extent do you feel you can make your own personal decisions regarding these aspects of household life if you want(ed) to?</i></p> <p>Iki kibazo kibazwa gusa iyo igisubizo kuri G5.01 = 1 kandi uwashubije ari umugore cg G5.01 = 2 kandi uwashubije ari umugabo, cyangwa G5 01 = 03-7 <i>Ask only if G5.01 is 1 and respondent is female, G5.01 is 2 and respondent is male, or G5.01 is 3-7.</i></p> |
|--|--|---|

| | | G5.01 | G5.02 |
|----------|--|-------|-------|
| A | Kugura imbuto, ifumbire n'ibindi bikenerwa mu buhinzi / <i>Getting inputs for agricultural production</i> | | |
| B | Guhitamo ikigiye guhingwa / <i>The types of crops to grow for agricultural production</i> | | |
| C | Kujyana ibyasaruwe ku isoko (cg kutabijyana) / <i>Taking crops to the market (or not)</i> | | |
| D | Korora amatungo manini/ <i>Livestock raising</i> | | |
| E | Kugira umurimo uhemberwa / <i>Your own (singular) wage or salary employment</i> | | |
| F | Kugura ibikoresho binini by'urugo nka firigo / <i>Major household expenditures (such as a large appliance for the house like refrigerator)</i> | | |
| G | Kugura ibintu bito bito by'urugo (nk'ibyo kurya n'utudni tuntu duto) / <i>Minor household expenditures (such as food for daily consumption or other household needs)</i> | | |

| | G5.01 | G5.02 |
|--|---|--|
| | <p>G5.01: Ni nde ufata ibyemezo ? / Who makes decision</p> <p><i>Umugabo w'ingenzi cg nyiri urugo/ Main male or husband 1</i></p> <p><i>Umugore w'ingenzi cg umufasha wa nyiri urugo/ Main female or wife..... 2</i></p> <p><i>Nyir'urugo n'umufasha we / Husband and wife jointly 3</i></p> <p><i>Undi muntu wo muri urwo rugo / Someone else in the household 4</i></p> <p><i>Bafatanyije n'undi wo muri urwo rugo/ Jointly with someone else inside the household 5</i></p> <p><i>Bafatanyije n'undi utari uwo muri urwo rugo/ Jointly with someone else outside the household..... 6</i></p> <p><i>Undi utari uwo muri urwo rugo/ Someone outside the household/other 7</i></p> <p><i>Nta byemezo nk'ibyo urugo rufata / Household does not engage in activity/Decision not Made..... 98</i></p> | <p>G5.02: Ikigero mu gufata ibyemezo / Extent of participation in decision making</p> <p><i>Nta na gato / Not at all..... 1</i></p> <p><i>Gake cyane / Small extent..... 2</i></p> <p><i>Ku buryo buringaniye / Medium extent 3</i></p> <p><i>Ku buryo buhagije / To a high extent..... 4</i></p> |

IGIKA CYA G5 ibikurikira: IGITUMA AFATA ICYEMEZO / MODULE G5. Motivation for decision making (continued)

| | | | |
|---|--|---|---|
| <p>UBAZA : Ibyo tugiye kuganiraho na byo ni iby'ingenzi cyane. Ngiye kugusomera impamvu zinyuranye zishobora kuba zituma mugira uko mwitwara ku bikorwa byo mu rugo rwanyu tumaze kuganiraho. Birumvikana ko mufite impamvu zituma mubikora mutyo, ntimugire ikibazo rero cyo kunsubiza uko byifashe ku giti cyawe. Urambwira urugero ubyemeraho. / <i>ENUMERATOR: This set of questions is very important. I am going to give you some reasons why you act as you do in the aspects of household life I just mentioned. You might have several reasons for doing what you do and there is no right or wrong answer. Please tell me how true it would be to say:</i></p> <p><i>[Niba muri urwo rugo igikorwa muganiraho kidakorwa andika 98 ujye ku gikorwa gikurikiyeho].</i> / <i>[If household does not engage in that particular activity, enter 98 and proceed to next activity.]</i></p> | <p>Ukora ibintu biringaniye ku byerekeye (IGIKORWA MURI KOLONE IBANZA IBUMOSO), kuko urengejeho byagutera ingorane? / <i>My actions in [ASPECT] are partly because I will get in trouble with someone if I act differently.</i></p> <p>[MUSOMERE IBISUBIZO biri hasi kuri G5.03 byose bishoboka] / [READ OPTIONS: Always True, Somewhat True, Not Very True, or Never True]</p> | <p>Ku byerekeye (IGIKORWA MURI KOLONE IBANZA IBUMOSO), ibyo ukora ubikorera kugira ngo abandi batagufata nk'umuntu utagize icyo ashoboye? / <i>Regarding [ASPECT] I do what I do so others don't think poorly of me.</i></p> <p>[MUSOMERE IBISUBIZO biri hasi kuri G5.03 byose bishoboka] / [READ OPTIONS: Always True, Somewhat True, Not Very True, or Never True]</p> | <p>Ku byerekeye (IGIKORWA MURI KOLONE IBANZA IBUMOSO), ibyo ukora ubikora kuko ubona aribyo bikwiriye gukorwa ? / <i>Regarding [ASPECT] I do what I do because I personally think it is the right thing to do.</i></p> <p>[MUSOMERE IBISUBIZO biri hasi kuri G5.03 byose bishoboka] / [READ OPTIONS: Always True, Somewhat True, Not Very True, or Never True]</p> |
|---|--|---|---|

| | | G5.03 | G5.04 | G5.05 |
|----------|---|--|--------------|--------------|
| A | Kugura imbuto, ifumbire n'ibindi bikenerwa mu buhinzi / <i>Getting inputs for agricultural production</i> | | | |
| B | Guhitamo ikigiye guhingwa / <i>The types of crops to grow for agricultural production</i> | | | |
| C | Kujyana ibyasaruwe ku isoko (cg kutabijyana) / <i>Taking crops to the market (or not)</i> | | | |
| D | Korora / <i>Livestock raising</i> | | | |
| | | G5.03/G5.04/G5.05: Ikigero ariho mu gufata icyemezo / <i>Motivation for activity</i> Si ukuri na gato/ <i>Never true</i> 1 Si ukuri cyane/ <i>Not very true</i> 2 Bisa n`ukuri/ <i>Somewhat true</i> 3 Ni ukuri igihe cyose/ <i>Always true</i> 4 Urugo ntirukora icyo gikorwa/Nta cyemezo kijya gifatwa / <i>Household does not engage in activity/Decision not made</i> 98 | | |

IGIKA CYA G6 ibikurikira: KUNOGERWA CG KUTANOGERWA N'IMIKORESHEREZE Y'IGIHE / MODULE G6. Satisfaction with time allocation (continued)

| QNo. | Ikibazo / Question | Igisubizo / Response | Ibisubizo bishoboka/amabwiriza ku mukarani w'ibarura / Response options/Instructions |
|-------|--|----------------------|---|
| G6.02 | Wumva wishimiye igihe ufite cyo gukoresha mu kwidagadura haba mu gusura abaturanyi, kureba televiziyo, kumva radiyo, kureba filimi cg gukora siporo (imyitozo ngororangingo) ? / <i>How satisfied are you with your available time for leisure activities like visiting neighbors, watching TV, listening to the radio, seeing movies or doing sports?</i> | | <p>MUSOMERE : Mbwira uko bikunogeye ubishyize ku manota guhera kuri 1 ukageza ku 10: / <i>READ: Please give your opinion on a scale of 1 to 10</i></p> <p>ni ukuvaga ko niba utishimiye icyo gihe na gato uragiha inota 1, niba ucyishimiye cyane uragiha amanota 10. Niba ari hagati na hagati, uragiha amanota 5 ku icumi. / <i>1 means you are not satisfied and 10 means you are very satisfied. If you are neither satisfied or dissatisfied this would be in the middle or 5 on the scale.</i></p> |

IGIKA H: INDYO INYURANYE YABA YARAFASHWE N'ABAGORE/Women's Dietary Diversity

Nomero y'ubazwa k'urutonde rw'urugo/ Household identification (in data file, each respondent must be matched with the HH ID)

| | | | | | |
|--|--|--|--|--|--|
| | | | | | |
|--|--|--|--|--|--|

Amabwirirza ku mukarani w'ibarura: Baza ibibazo bikurikira buri mugore wese wo mu rugo uri mu kigero cyo kubyara, ni ukuvuga ufite imyaka 15-49. Banza urebe mu gika cya B niba buri mugore yiyemereye ubwe kubazwa. Niba uwo mugore ugomba kubazwa atari yemeye kubazwa mu gika cya B, subira ku gika cya B wongere ugoragoze umusabeko yakwemerera mukaganira. Muzitwaze kopi (copies) nyinshi z'iki gika cya H mu gihe muhuye n'abagore barenze 5 mu rugo mugomba kubaza/ Ask these questions of each woman of reproductive age (15-49 years) in the household. Check to see if EACH women has given consent to be interviewed in Module B. If a woman has not yet given consent, return to Module B and gain her consent before proceeding. You should carry duplicate copies of this module in case there are more than 5 women of reproductive age in the household.

| No. | Question/Ikibazo | Ibirango by ibisubizo/ Response codes | Umugore wa 1/ Woman 1 | Umugore wa 2/ Woman 2 | Umugore wa 3/ Woman 3 | Umugore wa 4/ Woman 4 | Umugore wa 5/ Woman 5 |
|-----|--|--|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| H01 | IKIRANGO CY`UMUDAMU GITURUKA K`URUTONDE RW`URUGO/ WOMAN'S ID CODE FROM THE HOUSEHOLD ROSTER/ | | <input type="text"/> |
| H02 | Wavutse mu kuhe kwezi n`umwaka/ In what month and year were you born? | <p>NIBA UKWEZI KUTAZWI ANDIKA 98/ IF MONTH IS NOT KNOWN, ENTER '98'</p> <p>NIBA UMWAKA UTAZWI ANDIKA "9998"/ IF YEAR IS NOT KNOWN, ENTER '9998'</p> | <p><input type="text"/></p> |
| H03 | Wambwira imyaka yawe. Ku isabukuru yawe ishize wari wujuje imyaka ingahe? ANDIKA IMYAKA Y`AMAVUKO YUZUYE/ Please tell me how old you are. What was your age at your last birthday? RECORD AGE IN COMPLETED YEARS | <p>NIBA USUBIZA ATIBUKA IMYAKA Y`AMAVUKO ANDIKA "98" HANYUMA UBAZE IKIBAZO HO4. NIBA USUBIZA AZI IMYAKA YE Y`AMAVUKO JYA KURI H05 /IF RESPON-DENT CANNOT REMEMBER HOW OLD SHE IS, ENTER '98' AND ASK QUESTION H04.</p> <p>IF RESPONDENT KNOWS HER AGE >> H05</p> | <p><input type="text"/></p> |
| H04 | Waba ufite hagati y`imyaka 15 na 49?/Are you between the ages of 15 and 49 years old? | <p>1= Yego/1 = Yes</p> <p>2= Oya >> Rangiza igika/ 2= No >> end module</p> <p>9= Ntabizi >> Rangiza igika</p> <p>9 = Don't know >> end module</p> | | | | | |

| No. | Ikibazo/Question | Ibirango cy'igisubizo/Response codes | Umugore wa 1/ Woman 1 | Umugore wa 2/ Woman 2 | Umugore wa 3/ Woman 3 | Umugore wa 4/ Woman 4 | Umugore wa 5/ Woman 5 |
|---|---|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| H05 | REBA H02, H03 NA H04 (NIBA YAMENYE IMYAKA) : ESE USUBIZA AFITE HAGATI Y'IMYAKA 15 NA 49? NIBA IBISUBIZO BYO KURI H02, H03 NA H04 BITANDUKANYE, REBA IGISUBIZO CY'UKURI/ CHECK H02, H03 AND H04 (IF APPLICABLE): IS THE RESPONDENT BETWEEN THE AGES OF 15 AND 49 YEARS? IF THE INFORMATION IN H02, H03, AND H04 CONFLICTS, DETERMINE WHICH IS MOST ACCURATE. | 1= Yego/ 1 = Yes 2= Oya >> rangiza igika/ 2 = No >> end module | | | | | |
| H. IMIRIRE INYURANYE Y'ABAGORE /WOMEN'S DIETARY DIVERSITY | | | | | | | |
| <p>Wambwira mu magambo arambuye ibintu byose wariye ejo ku manywa cyangwa ninjoro, waba warabiririyeye imuhira cyangwa ahandi hatari imuhira? / <i>Please describe everything that you ate yesterday during the day or night, whether at home or outside the home.</i></p> <p>(A) Ibuka ejo umaze kubyuka, hari ikintu wariye ukimara kubyuka? Think about when you first woke up yesterday. Did you eat anything at that time? NIBA ARI YEGO: Wambwira buri kintu wariye icyo gihe? KOMEZA UMUBAZE UTI : nta kindi ? KUGEZA IGIHE AKUBWIRIYE ATI NTA KINDI NIBA ARI OYA, KOMEZA KU GICE GIKURIKIRA CYA B. / If yes: Please tell me everything you ate at that time. Probe: Anything else? Until respondent says nothing else, then continue to part b. If no, continue to part B.</p> <p>(B) Nyuma yo kubyuka wakoze iki?/What did you do after that? Hari icyo wariye icyo gihe? / <i>Did you eat anything at that time?</i></p> <p>NIBA ARI YEGO: Wambwira buri kintu wariye icyo gihe? KOMEZA UMUBAZE UTI : nta kindi ? KUGEZA IGIHE AKUBWIRIYE ATI NTA KINDI / Until respondent says nothing else.</p> <p>KOMEZA UMUBAZE NK'IKI KIBAZO CYA B KUGEZA IGIHE UBABAZWA AKUBWIRIYE KO YAGIYE KURYAMA KUGEZA KU MUNSI UKURIKIYEHO/ Repeat question B above until respondent says she went to sleep until the next day.</p> <p>ubabazwa nakubwira ibiryo by'IMVANGE nka porici, isosl cg AGATOGO (stew), komeza umubaze uti: / If respondent mentions mixed dishes like a PORRIDGE, sauce, or stew, probe:</p> <p>C) Ni ibiki byari bigize iyo mvange wariye? KOMEZA UMUBAZE UTI: Nta kindi? KUGEZA IGIHE AKUBWIRIYE KO NTA KINDI /What ingredients were in that [mixed dish]? Probe: Anything else? Until respondent says nothing else.</p> | | | | | | | |

| No. | Ikibazo/Question | Ibirango cy`igisubizo/Response codes | Umugore wa 1/ Woman 1 | Umugore wa 2/ Woman 2 | Umugore wa 3/ Woman 3 | Umugore wa 4/ Woman 4 | Umugore wa 5/ Woman 5 |
|-----|--|--|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| | <p>UKO UBAZWA AGENDA YIBUKA IBYO YARIYE CA AKAZIGA KU BWOKO BW'IKIRIBWA AKUBWIYE HANYUMA WANDIKE 1 MURI KOLONE IREBANA N'UBWOKO ICYO KIRIBWA KIBARIZWAMO/ NIBA ICYO KIRYO KITARI KU RUTONDE RW'IBIRYO RWATEGANYIJWE HASI AHA CYANDIKE MU KAZU K'IBINDI. NIBA ICYO KIRYO GIKORESHWA ARI GIKEYA MU KURYOSHYA IBINDI BIRYO CYANDIKE MURI ICYO CYICIRO CY'IBIRYOSHYA IBIRYO/ As the respondent recalls foods, underline the corresponding food and enter '1' in the column next to the food group. If the food is not listed in any of the food groups below, write the food in the box labeled 'other foods.' If foods are used in small amounts for seasoning or as a condiment, include them under the condiments food group.</p> <p>UBAZWA NARANGIZA KUKUBWIRA IBYO YARIYE MUSOMERE UBWOKO BW'IBIRYO BYOSE AHO "1" ITATANZWE NK`IGISUBIZO. BAZA IKIBAZO GIKURIKIRA HANYUMA WANDIKE 1 NIBA USUBIZA AVUZE YEGO, CG WANDIKE 0 NIBA AVUZE OYA NA 9 NIBA ATABIZI./ Once the respondent finishes recalling foods eaten, read each food group where '1' was not entered, ask the following question and enter '1' if respondent says yes, '0' if no, and '9' if don't know.</p> <p>Ejo hashize ku manywa cyangwa ninjoro wariye cyangwa wanyoye kimwe mur ibi bikurikira? /Yesterday during the day or night, did you drink/eat any [food group items]?</p> | | | | | | |

| No. | IKIBAZO / Question | IBIRANGO BY'IBISUBIZO / Response codes | UMUGORE WA 1 / Woman 1 | UMUGORE WA 2 / Woman 2 | UMUGORE WA 3 / Woman 3 | UMUGORE WA 4 / Woman 4 | UMUGORE WA 5 / Woman 5 |
|------------|---|--|--|--|--|--|--|
| | IBINDI BIRYO: IBINDI BIRYO UBAZWA AKUBWIYE ATARI YAVUZE MBERE BYANDIKE IBURYO BWA KOLONE IKURIKIRA IKI KIBAZO. IBI BIZAFASHA NYUMA MU GUSHYIRA IBYO BIRYO MU BWOKO BWABYO. PLEASE WRITE DOWN OTHER FOODS TO THE RIGHT OF THIS BOX THAT RESPONDENT MENTIONED BUT ARE NOT IN THE LIST BELOW. THIS WILL ALLOW THE SURVEY SUPERVISOR OR OTHER KNOWLEDGEABLE INDIVIDUAL TO CLASSIFY THE FOOD LATER. | | ANDIKA IBIRYO YARIYE HANO:/ WRITE FOODS EATEN HERE: | ANDIKA IBIRYO YARIYE HANO:/ WRITE FOODS EATEN HERE: | ANDIKA IBIRYO YARIYE HANO:/ WRITE FOODS EATEN HERE: | ANDIKA IBIRYO YARIYE HANO:/ WRITE FOODS EATEN HERE: | ANDIKA IBIRYO YARIYE HANO:/ WRITE FOODS EATEN HERE: |
| H14 | Ibiry bikoze mu binyampeke, nk'umugati, umuceri, makaroni, porici, gahunga, umutsima w'amasaka/ingano/uburo, igikoma cy'amasaka/ibigori,,/ingano/uburo, n'ibindi / Food made from grains, such as bread, rice, noodles, porridge, or [other local grain food] | 1 = YEGO / Yes 2 = OYA / No 9 = NTABIZI / Don't Know | | | | | |
| H15 | Igihaza, karoti, squash, betera, ibijumba cg ibindi binyabijumba bitukura cg by'umuhondo imbere / Pumpkin, carrots, squash, or sweet potatoes that are yellow or orange inside or [other local yellow/orange foods] | 1 = YEGO / Yes 2 = OYA / No 9 = NTABIZI / Don't Know | | | | | |
| H16 | Ibijumba cg ibikoro by'umweru imbere, imyumbati, amateke, n'ibindi binyabijumba bidatukura / White potatoes, white yams, manioc, cassava, [other local root crops] or any other foods made from roots | 1 = YEGO / Yes 2 = OYA / No 9 = NTABIZI / Don't Know | | | | | |
| H17 | Imboga z'icyatsi kibisi cyijimye nka epinari, umushogoro, isombe, dodo, imbwija, rengarenga n'izindi nkazo / Any dark green leafy vegetables such as [local dark green leafy vegetables] | 1 = YEGO / Yes 2 = OYA / No 9 = NTABIZI / Don't Know | | | | | |

| No. | IKIBAZO / Question | IBIRANGO BY'IBISUBIZO / Response codes | UMUGORE WA 1 / Woman 1 | UMUGORE WA 2 / Woman 2 | UMUGORE WA 3 / Woman 3 | UMUGORE WA 4 / Woman 4 | UMUGORE WA 5 / Woman 5 |
|-----|--|--|------------------------|------------------------|------------------------|------------------------|------------------------|
| H18 | Amapapayi, imyembe, amapera, ibinyomoro, Water melon, amatunda cg marakuja n'izindi mbuto zikungahaye muri vitamini A / Ripe mangoes, ripe papayas or [other local vitamin A-rich fruits] | 1 = YEGO / Yes 2 = OYA / No 9 = NTABIZI / Don't Know | | | | | |
| H19 | Ubundi bwoko bw'imbutu n'imboga nk'amacunga, indium, inanasi imineke, amashu n'ibindi nkabyo / Any other fruits or vegetables | 1 = YEGO / Yes 2 = OYA / No 9 = NTABIZI / Don't Know | | | | | |
| H20 | Inyama z'umwijima, impyiko, umutima, cg izindi nyama zo mu nda / Liver, kidney, heart, or other organ meats | 1 = YEGO / Yes 2 = OYA / No 9 = NTABIZI / Don't Know | | | | | |
| H21 | Inyama izo arizo zose z'inika, ingurube, intama, ihene, inkoko, igishuhe /Any meat, such as beef, pork, lamb, goat, chicken, or duck | 1 = YEGO / Yes 2 = OYA / No 9 = NTABIZI / Don't Know | | | | | |
| H22 | Amagi / Eggs | 1 = YEGO / Yes 2 = OYA / No 9 = NTABIZI / Don't Know | | | | | |
| H23 | Ifi mbisi cyangwa yumye, ibindi biribwa baroba mu mazi / Fresh or dried fish, shellfish, or seafood | 1 = YEGO / Yes 2 = OYA / No 9 = NTABIZI / Don't Know | | | | | |
| H24 | Ibiryo bikoze mu binyamisogwe nk'ibishyimbo, amashaza, lantiye n'ibindi... /Any foods made from beans, peas, lentils, nuts, or seeds [add any local names] | 1 = YEGO / Yes 2 = OYA / No 9 = NTABIZI / Don't Know | | | | | |

| No. | IKIBAZO / Question | IBIRANGO BY'IBISUBIZO / Response codes | UMUGORE WA 1 / Woman 1 | UMUGORE WA 2 / Woman 2 | UMUGORE WA 3 / Woman 3 | UMUGORE WA 4 / Woman 4 | UMUGORE WA 5 / Woman 5 |
|-----|--|---|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| H25 | Foromaji, ikivuguto, inshyushyu, yaourt n'ibindi biribwa bituruka ku mata /Cheese, yogurt, or other milk products | 1 = YEGO / Yes 2 = OYA / No 9 = NTABIZI / Don't Know | | | | | |
| H26 | Amavuta ayo ariyo yose cyangwa ibiryo bikoze nayo nk'ubunyobwa n'ibindi.... /Any oil, fats, or butter, or foods made with any of these | 1 = YEGO / Yes 2 = OYA / No 9 = NTABIZI / Don't Know | | | | | |
| H27 | Ibiryo ibyo aribyo byose bikoze mu binyasukari nka shokola, ibisuguti, keke n'ibindi biryohera / Any sugary foods such as chocolates, sweets, candies, pastries, cakes, or biscuits | 1 = YEGO / Yes 2 = OYA / No 9 = NTABIZI / Don't Know | | | | | |
| H28 | Ibyatsi n'ibindi nkabyo byongerwa mu biryo ngo byongere uburyohe nk'urusenda, seleri, puwavoro, ifu y'ifi n'ibindi... /Condiments for flavor, such as chilies, spices, herbs, or fish powder | 1 = YEGO / Yes 2 = OYA / No 9 = NTABIZI / Don't Know | | | | | |
| H29 | Udusimba nk'isenene, n'utundi turibwa /Grubs, snails, or insects | 1 = YEGO / Yes 2 = OYA / No 9 = NTABIZI / Don't Know | | | | | |
| H30 | Ibiryo bitekeshejwe amamesa atukura, ubunyobwa butukura /Foods made with red palm oil, red palm nut, or red palm nut pulp sauce | 1 = YEGO / Yes 2 = OYA / No 9 = NTABIZI / Don't Know | | | | | |

A.II Enumerator Team Daily Control Sheet

Rwanda FTF FEEDBACK Baseline Survey

Enumerator Team Daily control sheet

Date _____
 Supervisor Code _____
 Enumerator 1 Code _____
 Enumerator 2 Code _____
 Province Code _____
 Cluster Code _____

| Ward Code | Village Name | HH name | Re-visit Required Y/N | Sections completed (tick completed) | | | | | | |
|-----------|--------------|---------|-----------------------|-------------------------------------|---|---|---|---|---|---|
| | | | | A | B | C | D | F | G | H |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Instructions: Each day, the enumerator team will receive fill out the top section of this form. The supervisor will assign households for each supervisor to visit each day. The first 3 columns of the table will be provided to the enumerator team by the supervisor. If the interviewed HH must be revisited, code "Y" in the 4th column. Tick all sections completed in columns 5 – 11.

A.12 Supervisor Daily Control Sheet

Rwanda FTF FEEDBACK Baseline Survey

Supervisor Daily Control Sheet

Date: _____

Supervisor Code: _____

Province Code: _____

Cluster Code: _____

| Enumerator team | Households assigned | Modules completed <i>0=No</i> <i>1=Yes</i> | | | | | | | | Reviewed by Supervisor <i>0=No</i> <i>1=Yes</i> | Corrected <i>0=No</i> <i>1=Yes</i> | Accepted <i>0=No</i> <i>1=Yes</i> |
|-----------------|---------------------|--|---|---|---|---|---|---|--|---|--|---|
| | | A | B | C | D | F | G | H | | | | |
| Team 1 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Team 2 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

Total number interviews accepted

| | Number |
|---|--------|
| Complete (<i>all modules are completed</i>) | |
| Incomplete | |

Annex B. Weight Calculation

B.1 Design Weight

B.1.1 Rwanda

In Rwanda 100 clusters were selected from rural and mixed regions without stratification. The design weight for each household in cluster i was calculated as:

$$W_i = \frac{1}{p_i} = \frac{N}{m \times n_i}$$

where

p_i = probability of selection for the sample household within the i -th sample cluster.

m = number of sample clusters selected in the frame.

N = total number of households in the frame.

n_i = number of sample households selected for the i -th sample cluster.

B.2 Sampling Weight

The sampling weight was calculated with the design weight corrected for nonresponse for each of the selected clusters. Response rates were calculated at cluster level as ratios of the number of interviewed units over the number of eligible units, where units could be household or individual (woman, child, or male decision-maker or female decision-maker).

B.2.1 References

Demographic and Health Survey Sampling and Household Listing Manual. 2012. ICF International. Calverton MD. September.

Megill, David J. 2004. Recommendations on Sample Design for Post-Harvest Surveys in Zambia Based on the 2000 Census. Working Paper No. 11. Food Security Research Project. Lusaka, Zambia. February.

Annex C. Indicator Descriptions and Calculations

INDICATOR TITLE: Prevalence of Poverty: Percent of people living on less than \$1.25/day* (R)

**The Millennium Development Goals (MDGs) define this level as those living in —extreme poverty. Although we do not use the word —extreme in this title, we are referring to the same measure used by the United Nations for the MDGs.*

DEFINITION:

This indicator measures MDG Target 1a. Halving extreme poverty refers to the period 1990 to 2015. The applicable poverty line has been updated to \$1.25 per person per day, converted into local currency at 2005 Purchasing Power Parity (PPP) exchange rates. The use of PPP exchange rates ensures that the poverty line applied in each country has the same real value. Measurement is based on the value of average daily consumption expenditure per person, where food and other items that a household consumes out of its own production are counted as if the household purchased those items at market prices. For example, all members of a household of four people are counted as poor if its average daily consumption expenditures are less than \$5 per day at 2005 PPP after adjusting for local inflation since 2005. The poverty rate is estimated by dividing the measured number of poor people in a sample of households by the total population in the households in the sample.

Data for this indicator must be collected using the Consumption Expenditure methodology of the Living Standards Measurement Survey (LSMS). Missions are encouraged to use the LSMS Integrated Survey in Agriculture Consumption Expenditure module, which has been incorporated in the Feed the Future M&E Guidance Series Volume 8: Population-Based Survey Instrument for Feed the Future Zone of Influence Indicators. FTF FEEDBACK will collect consumption-expenditure data in order to calculate prevalence of poverty for this indicator, as well as per capita expenditures to be used as a proxy for income. Expenditures are used instead of income because of the difficulty in accurately measuring income and because expenditure data are less prone to error, are easier to recall, and are more stable over time than income data.

RATIONALE:

This measures the first goal of the Feed the Future Initiative as well as an MDG . It is the purpose of the Feed the Future Initiative. All objectives, program elements, and projects are designed to reduce poverty.

UNIT: Percent

DISAGGREGATE BY:

1. Percentage of people from sample living on <\$1.25/day

Gendered Household Type: Adult Female no Adult Male (FNM), Adult Male no Adult Female Adult (MNF), Male and Female Adults (M&F), Child no Adults (CNA)

2. Total population of people in zone of influence (ZOI)

TYPE: Impact

DIRECTION OF CHANGE: Lower is better

DATA SOURCE: MDG database for national level; PBSs conducted by the M&E contractor in the Feed the Future ZOI.

INDICATOR TITLE: Per capita expenditures (as a proxy for income) of USG targeted beneficiaries (R)

DEFINITION:

This indicator will measure the expenditures of rural households as a proxy for income, based on the assumption that increased expenditures are strongly correlated to increased income. Data for this indicator must be collected using the Consumption Expenditure methodology of the Living Standards Measurement Survey (LSMS). Missions are encouraged to use the LSMS Integrated Survey in Agriculture Consumption Expenditure module, which has been incorporated in the Feed the Future M&E Guidance Series Volume 8: Population-Based Survey Instrument for Feed the Future Zone of Influence Indicators. FTF FEEDBACK will collect consumption-expenditure data to calculate the prevalence of poverty as well as per capita expenditures to be used as a proxy for income.

This indicator is a proxy instead of measuring income directly because of the difficulty in accurately measuring income. Expenditures are used instead of income because of the difficulty in accurately measuring income and because expenditure data are less prone to error, easier to recall, and are more stable over time than income data.

RATIONALE:

There is a relationship between increased incomes and improved food security, reduced poverty, and improved nutrition. The usefulness of an income proxy methodology derives from the importance of a change in household income and its impact on the overarching Feed the Future goal of reducing poverty and hunger. Thus, measurement of household income (through this proxy) is one logical choice for monitoring the effects of policies and programs oriented towards accomplishing this goal.

UNIT:

United States Dollar

Please enter these two data points:

1. Average per capita expenditures (in USD) of sample
2. Total population in the zone of influence (ZOI)

DISAGGREGATE BY:

Gendered Household type: Adult Female no Adult Male (FNM), Adult Male no Adult Female (MNF), Male and Female Adults (M&F), Child No Adults (CNA)

TYPE: Outcome

DIRECTION OF CHANGE: Higher is better

DATA SOURCE: PBSs conducted by M&E contractor in the ZOI or UN for national level.

INDICATOR TITLE: Prevalence of underweight children under 5 years of age (R)

DEFINITION:

Underweight is a weight-for-age measurement. Underweight is a reflection of acute and/or chronic undernutrition. This indicator measures the percentage of children 0-59 months who are underweight, as defined by a weight-for-age Z score < -2. Although different levels of severity of underweight can be measured, this indicator measures the prevalence of all underweight, i.e., both moderate and severe underweight combined.

The numerator for this indicator is the total number of children 0-59 months in the sample with a weight-for-age Z score < -2. The denominator is the total number of children 0-59 months in the sample with weight-for-age Z score data.

RATIONALE:

Reducing the prevalence of underweight children under 5 is a goal of the Feed the Future initiative. The prevalence of underweight children is also an indicator to monitor the Millennium Development Goal (MDG)1.8 —halving the number of people who are hungry. Monitoring the prevalence of underweight children 0-59 months therefore allows USAID and its partners to show the contribution of Feed the Future programs to the MDG.

UNIT:

1. Percentage of children 0-59 months of age in the sample who are underweight

2. Total population of children 0-59 months of age in the zone of influence (ZOI)

DISAGGREGATE BY:

Sex: Male, Female

TYPE: Impact

DIRECTION OF CHANGE: Lower is better

DATA SOURCE: Population-based survey and official DHS data.

INDICATOR TITLE: Prevalence of stunted children under 5 years of age (R)

DEFINITION:

Stunting is a height-for-age measurement that is a reflection of chronic undernutrition. This indicator measures the percentage of children 0-59 months who are stunted, as defined by a height-for-age Z score < -2. Although different levels of severity of stunting can be measured, this indicator measures the prevalence of all stunting, i.e., both moderate and severe stunting combined. While stunting is difficult to measure in children 0-6 months and most stunting occurs in the -9-23 month range (1,000 days), these indicator data will still be reported for all children under 5 to capture the impact of interventions over time and align with DHS data.

The numerator for this indicator is the total number of children 0-59 months in the sample with a height-for-age Z score < -2. The denominator is the total number of children 0-59 months in the sample with height-for-age Z score data.

RATIONALE:

Stunted, wasted, and underweight children under 5 years of age are the three major nutritional indicators. Stunting is an indicator of linear growth retardation, most often due to prolonged exposure to an inadequate diet and poor health. Reducing the prevalence of stunting among children, particularly age 0-23 months, is important because linear growth deficits accrued early in life are associated with cognitive impairments, poor educational performance, and decreased work productivity among adults. Better nutrition leads to increased cognitive and physical abilities, thus improving individual productivity in general, including agricultural productivity.

UNIT:

DISAGGREGATE BY:

1. Percentage of children 0-59 months of age in the sample who are stunted Sex: Male, Female
2. Total population of children 0-59 months of age in the zone of influence (ZOI)

TYPE: Impact

DIRECTION OF CHANGE: Lower is better

DATA SOURCE: PBS and official DHS data.

INDICATOR TITLE: Prevalence of wasted children under 5 years of age (R)

DEFINITION:

This indicator measures the percentage of children 0-59 months who are acutely malnourished, as defined by a weight-for-height Z score < -2. Although different levels of severity of wasting can be measured, this indicator measures the prevalence of all wasting, i.e., both moderate and severe wasting combined.

The numerator for the indicator is the total number of children 0-59 months in the sample with a weight for height Z score < -2. The denominator is the total number of children 0-59 months in the sample with weight-for-height Z score data.

RATIONALE:

Stunted, wasted, and underweight children under 5 years of age are the three major nutritional indicators. Wasting is an indicator of acute malnutrition. Children who are wasted are too thin for their height, and have a much greater risk of dying than children who are not wasted.

UNIT:

1. Percentage of children 0-59 months of age in the sample who are wasted

2. Total population of children 0-59 months of age in the zone of influence (ZOI)

DISAGGREGATE BY:

Sex: Male, Female

TYPE: Impact

DIRECTION OF CHANGE: Lower is better

DATA SOURCE: Population-based survey and official DHS data.

INDICATOR TITLE: Prevalence of underweight women (R)

DEFINITION:

This indicator measures the percent of nonpregnant women of reproductive age (15-49 years) who are underweight, as defined by a body mass index (BMI) < 18.5. To calculate an individual's BMI, weight and height data are needed: BMI = weight (in kg) height (in meters) squared.

The numerator for this indicator is the number of nonpregnant women 15-49 years in the sample with a BMI < 18.5. The denominator for this indicator is the number of nonpregnant women 15-49 years in the sample with BMI data.

RATIONALE:

This indicator provides information about the extent to which women's diets meet their caloric requirements. Adequate energy in the diet is necessary to support the continuing growth of adolescent girls and women's ability to provide optimal care for their children and participate fully in income-generation activities. Undernutrition among women of reproductive age is associated with increased morbidity and poor food security, and can result in adverse birth outcomes in future pregnancies. Improvements in women's nutritional status are expected to improve women's work productivity, which may also have benefits for agricultural production, linking the two strategic objectives of Feed the Future.

UNIT:

1. Percentage of women of reproductive age in the sample who are underweight
2. Total population of women of reproductive age in the zone of influence

DISAGGREGATE BY:

None

TYPE: Impact

DIRECTION OF CHANGE: Lower is better

DATA SOURCE: PBS and official DHS data.

INDICATOR TITLE: Women's Empowerment in Agriculture Index (WEAI) Score (R)

DEFINITION:

TWEAI measures the empowerment, agency, and inclusion of women in the agriculture sector in an effort to identify and address the constraints that hinder women's full engagement in the agriculture sector. The WEAI is composed of two subindexes; the Five Domains of Empowerment subindex (5DE) measures the empowerment of women in five areas; and the Gender Parity subindex (GPI) measures the average level of equality in empowerment of men and women within the household. The WEAI is an aggregate index reported at the Zone of Influence (ZOI) level and is based on individual-level data on men and women within the same households and data on women living in households with no adult male.

The 5DE subindex assesses whether women are empowered across the five domains examined in the WEAI. Each domain is weighted equally, as are each of the indicators within a domain. The five domains, their definitions under the WEAI, the corresponding indicators, and their weights for the 5DE are:

| Domain (each weighted 1/5 of the 5DE subindex) | Definition of domain | Indicators | Weight of indicator in 5DE subindex |
|--|--|---------------------------------------|-------------------------------------|
| Production | Sole or joint decision-making over food and cash-crop farming, livestock, and fisheries, and autonomy in agricultural production | Input in productive decisions | 1/10 |
| | | Autonomy in production | 1/10 |
| Resources | Ownership, access to, and decision-making power over productive resources such as land, livestock, agricultural equipment, consumer durables, and credit | Ownership of assets | 1/15 |
| | | Purchase, sale, or transfer of assets | 1/15 |
| | | Access to and decisions on credit | 1/15 |
| Income | Sole or joint control over income and expenditures | Control over use of income | 1/5 |
| Leadership | Membership in economic or social groups and comfort in speaking in public | Group member | 1/10 |
| | | Speaking in public | 1/10 |
| Time | Allocation of time to productive and domestic tasks and satisfaction with the available time for leisure activities | Workload | 1/10 |
| | | Leisure | 1/10 |

The 5DE is a measure of achieving adequate empowerment. A woman is defined as empowered in the 5DE if she reaches the threshold of empowerment in 80 percent or more of the weighted indicators. For not-yet-empowered women, the 5DE shows the percentage of indicators in which those women meet the threshold of empowerment. The 5DE contributes 90 percent of the weight to the WEAI.

The GPI reflects the percentage of women who are as empowered as the men in their households. It is a relative equality measure that demonstrates the equality in 5DE profiles between the primary adult male and female in each household. In most cases, these are husband and wife, but they can be the primary male and female decision-makers regardless of their relationship to each other. For households that have not achieved gender parity, the GPI shows the gap that needs to be closed for women to reach the same level of empowerment as men. By definition, households without a primary adult male are excluded from this measure, and thus the aggregate WEAI uses the mean GPI value of dual-adult households. The GPI contributes 10 percent of the weight to the WEAI.

The 5DE score ranges from zero to one, where higher values indicate greater empowerment. It is constructed using a robust multidimensional methodology known as the Alkire Foster Method (see <http://www.ophi.org.uk/research/multidimensional-poverty/alkire-foster-method/> for information on the method). The score has two components. First, it reflects the percentage of women who are empowered (He). Second, it reflects the percentage of domains in which those women who are not yet empowered (Hn) still have adequate achievements (Aa). The 5DE formula is: $5DE = \{He + (Hn \times Aa)\}$, where $He + Hn = 100$ percent and $0 < Aa < 100$ percent.

The GPI also ranges from zero to one, with higher values indicating greater gender parity, and is constructed with two factors. First, it shows the percentage of women whose empowerment scores are lower than the men's in the household (HwgP). Second, the GPI shows the percentage shortfall in empowerment scores (IGPI) for those women who do not have gender parity. The overall formula is the product of these two numbers, following the Foster Greer Thorbecke — poverty gap measure: $GPI = \{1 - (HwgP \times IGPI)\}$.

The WEAI score is computed as a weighted sum of the ZOI-level 5DE and the GPI. Thus, improvements in either the 5DE or GPI will increase the WEAI. The total WEAI score = $0.9\{He + (Hn \times Aa)\} + 0.1\{1 - (HGPI \times IGPI)\}$.

RATIONALE:

Feed the Future supports the inclusion of poorer and more economically vulnerable populations in economic growth strategies in the agriculture sector to have a transformational effect on regional economies and restructure local production, distribution, and consumption patterns for long-term, sustainable development. Because women play a prominent role in agriculture and due to the persistent economic constraints they face, women's empowerment is a main focus of Feed the Future. Empowering women is particularly important to achieving the Feed the Future objective of inclusive agriculture sector growth. The WEAI was developed to track the change in women's empowerment levels that occurs as a direct or indirect result of interventions under Feed the Future.

UNIT:

1. Score for 5DE subindex
2. Score for GPI subindex
3. Total population in ZOI

DISAGGREGATE BY:

None

TYPE: Impact

DIRECTION OF CHANGE: Higher is better

DATA SOURCE: PBSs conducted by an M&E contractor in the ZOI.

INDICATOR TITLE: 3.1.9.1-3 and 4.7-4 Prevalence of households with moderate or severe hunger (RiA)

DEFINITION:

This indicator measures the percentage of households experiencing moderate or severe hunger, as indicated by a score of 2 or more on the household hunger scale (HHS). To collect data for this indicator, respondents are asked about the frequency with which household members experienced three events in the last four weeks:

1. No food at all in the house;
2. Went to bed hungry, and
3. Went all day and night without eating. For each question, four responses are possible (never, rarely, sometimes or often), which are collapsed into the following three responses: never (value=0), rarely or sometimes (value=1), often (value=2). Values for the three questions are summed for each household, producing a HHS score ranging from 0 to 6.

The numerator for this indicator is the total number of households in the sample with a score of 2 or more on the HHS. The denominator is the total number of households in the sample with HHS data.

RATIONALE:

Measurement of household hunger provides a tool to monitor global progress of USG- supported food security initiatives. A decrease in household hunger is also a reflection of improved household resilience. The indicator has been validated to be meaningful for cross-cultural use using data sets from seven diverse sites.

UNIT:

1. Percentage of households in sample with moderate to severe hunger
2. Total population of households in the zone of influence (ZOI)

DISAGGREGATE BY:

Gendered Household type: Adult Female no Adult Male (FNM), Adult Male no Adult Female (MNF), Male and Female Adults (M&F), Child No Adults (CNA)

TYPE: Impact

DIRECTION OF CHANGE: Lower is better

DATA SOURCE: PBS and official DHS data. USAID/W will work to get these HHS questions incorporated into the DHS in applicable countries. Then, the DHS will also be able to show these data at the national level.

INDICATOR TITLE: Prevalence of children 6-23 months receiving a minimum acceptable diet (MAD) (RiA)

DEFINITION:

This indicator measures the proportion of children 6-23 months of age who receive a MAD, apart from breast milk. The MAD indicator measures both the minimum feeding frequency and minimum dietary diversity, as appropriate for various age groups. If a child meets the minimum feeding frequency and minimum dietary diversity for his/her age group and breastfeeding status, then the child is considered to receive a MAD.

Tabulation of the indicator requires that data on breastfeeding, dietary diversity, number of semi-solid/solid feeds and number of milk feeds be collected for children 6-23 months the day preceding the survey. The indicator is calculated from the following two fractions:

1. Breastfed children 6-23 months of age in the sample who had at least the minimum dietary diversity and the minimum meal frequency during the previous day/Breastfed children 6-23 months of age in the sample with MAD component data; and
2. Nonbreastfed children 6-23 months of age who received at least two milk feedings and had at least the minimum dietary diversity not including milk feeds and the minimum meal frequency during the previous day/Nonbreastfed children 6-23 months of age in the sample with MAD component data.

Minimum dietary diversity for breastfed children 6-23 months is defined as four or more food groups out of the following seven food groups (refer to the WHO IYCF operational guidance document cited below):

1. Grains, roots, and tubers
2. Legumes and nuts
3. Dairy products (milk, yogurt, cheese)
4. Flesh foods (meat, fish, poultry, and liver/organ meats)
5. Eggs
6. Vitamin-A rich fruits and vegetables
7. Other fruits and vegetables

Minimum meal frequency for breastfed children is defined as two or more feedings of solid, semi-solid, or soft food for children 6-8 months and three or more feedings of solid, semi-solid or soft food for children 9-23 months.

For the MAD indicator, minimum dietary diversity for non breastfed children is defined as four or more food groups out of the following six food groups:

1. Grains, roots, and tubers
2. Legumes and nuts
3. Flesh foods (meat, fish, poultry and liver/organ meats)
4. Eggs
5. Vitamin-A rich fruits and vegetables
6. Other fruits and vegetables.

Minimum meal frequency for nonbreastfed children is defined as four or more feedings of solid, semisolid, or soft food, or milk feeds for children 6-23 months. For nonbreastfed children to receive a MAD, at least two of these feedings must be milk feeds.

RATIONALE: Appropriate feeding of children 6-23 months is multidimensional. The MAD indicator combines standards of dietary diversity (a proxy for nutrient density) and feeding frequency (a proxy for energy density) by breastfeeding status; and thus provides a useful way to track progress at simultaneously improving the key quality and quantity dimensions of children's diets.

UNIT:

1. Percentage of children 6-23 months in sample receiving MAD
2. Total population of children 6-23 months in the ZOI

DISAGGREGATE BY:

Sex: Male, Female

INDICATOR TITLE: 3.1.9.1-2 Women's Dietary Diversity Score: Mean number of food groups consumed by women of reproductive age (S)

DEFINITION:

This validated indicator aims to measure the micronutrient adequacy of the diet and reports the mean number of food groups consumed in the previous day by women of reproductive age (15-49 years). To calculate this indicator, nine food groups are used:

1. Grains, roots and tubers;
2. Legumes and nuts;
3. Dairy products (milk, yogurt, cheese);
4. Organ meat;
5. Eggs;
6. Flesh foods and other misc. small animal protein;
7. Vitamin A dark green leafy vegetables;
8. Other vitamin A-rich vegetables and fruits;
9. Other fruits and vegetables

The *Mean number of food groups consumed by women of reproductive age* indicator is tabulated by averaging the number of food groups consumed (out of the nine food groups above) across all women of reproductive age in the sample with data on dietary diversity.

RATIONALE:

Women of reproductive age are at risk for multiple micronutrient deficiencies, which can jeopardize their health and ability to care for their children and participate in income generating activities. Maternal micronutrient deficiencies during lactation can directly impact child growth and development but the potential consequences of maternal micronutrient deficiencies are especially severe during pregnancy, when there is the greatest opportunity for nutrient deficiencies to cause long term, irreversible developmental consequences for the child in utero. Dietary diversity score (assessed here as the number of food groups consumed) is a key dimension of a high-quality diet with adequate micronutrient content; and thus, important to ensuring the health and nutrition of both women and their children.

UNIT: Number

DISAGGREGATE BY:

1. Mean number of food groups consumed by women 15-49 years in the sample Location: Urban, Rural

2. Total population of women of reproductive age (15-49 years) in the zone of influence (ZOI)

TYPE: Outcome

DIRECTION OF CHANGE: Higher is better

DATA SOURCE: PBS and official DHS data.

INDICATOR TITLE: 3.1.9-4 and 3.1.9.1-4 Prevalence of exclusive breastfeeding of children under 6 months of age (RiA)

DEFINITION:

This indicator measures the percentage of children 0-5 months of age who were exclusively breastfed during the day preceding the survey. Exclusive breastfeeding means that the infant received breast milk (including milk expressed or from a wet nurse) and may have received oral rehydration salts, vitamins, minerals and/or medicines, but did not receive any other food or liquid.

The numerator for this indicator is the total number of children 0-5 months in the sample exclusively breastfed on the day and night preceding the survey. The denominator is the total number of children 0-5 months in the sample with exclusive breastfeeding data.

RATIONALE:

Exclusive breastfeeding for 6 months provides children with significant health and nutrition benefits, including protection from gastrointestinal infections and reduced risk of mortality, due to infectious disease.

UNIT:

Please enter these two data points:

1. Percentage of children 0-5 months of age in sample who are exclusively breastfed
2. Total population of children 0-5 months of age in the zone of influence (ZOI)

DISAGGREGATE BY:

Sex: Male, Female

TYPE: OUTPUT/OUTCOME

Outcome

DIRECTION OF CHANGE: Higher is better

DATA SOURCE: PBS and official DHS data.

Annex D. The Domains, Indicators, Survey Questions, Aggregation Method, Inadequacy Cut-Offs and Weights in the Women's Empowerment in Agriculture Index

| Dimension | Indicator name | Survey questions | FTF variables | Aggregation method | Inadequacy cut-off | Weight |
|-------------------|-------------------------------|--|-----------------------|--------------------|--|--------|
| Production | Input in productive decisions | How much input did you have in making decisions about: food crop farming, cash crop farming, livestock raising, fish culture To what extent do you feel you can make your own personal decisions regarding these aspects of household life if you want(ed) to: agriculture production, what inputs to buy, what types of crops to grow for agricultural production, when or who would take crops to market, livestock raising | G2.02-A-C, FG5.02-A-D | Achievement in two | Inadequate if individual participates BUT does not has not at least some input in decisions; or she does not make the decisions nor feels she could. | 1/10 |
| | Autonomy in production | My actions in [DOMAIN] are partly because I will get in trouble with someone if I act differently. Regarding [DOMAIN] I do what I do so others don't think poorly of me. Regarding [DOMAIN] I do what I do because I personally think it is the right thing to do. Agricultural production, inputs to buy, crops to grow, take to market, livestock. | G5.03-G5.05-A-D | Achievement in any | Inadequate if RAI below 1 | 1/10 |

| Dimension | Indicator name | Survey questions | FTF variables | Aggregation method | Inadequacy cut-off | Weight |
|------------------|---------------------------------------|---|--------------------------------|--|---|--------|
| Resources | Ownership of assets | Who would you say owns most of the [ITEM]? Agricultural land, Large livestock, Small livestock, Chicks etc; Fish pond/equip; Farm equip (non-mech); arm equip (mechanized) Nonfarm business equipment House; Large durables; Small durables; Cell phone; Non-ag land (any); Transport | G3.02-A-N | Achievement in any if not only one small asset (chickens, non-mechanized equipment and no small consumer durables) | Inadequate if household does not own any asset or if household owns the type of asset BUT she/he does not own most of it alone | 1/15 |
| | Purchase, sale, or transfer of assets | Who would you say can decide whether to sell, give away, rent/mortgage [ITEM] most of the time? Who contributes most to decisions regarding a new purchase of [ITEM]? Ag land; Lg livestock, Sm livestock; Chicks etc; Fish pond; Farm equip (non); Farm equip (mech) | G3.03-G3.05 A-GG3.06 A-G | Achievement in any if not only chickens and farming equipment non-mechanized | Inadequate if household does not own any asset or household owns the type of asset BUT she does not participate in the decisions (exchange or buy) about it | 1/15 |
| | Access to and decisions on credit | Who made the decision to borrow/what to do with money/item borrowed from [SOURCE]? Non-governmental organization (NGO); Informal lender; Formal lender (bank); Friends or relatives; ROSCA (savings/credit group) | G3.08-G3.09 A-E | Achievement in any | Inadequate if household has no credit OR used a source of credit BUT she/he did not participate in ANY decisions about it | 1/15 |

| Dimension | Indicator name | Survey questions | FTF variables | Aggregation method | Inadequacy cut-off | Weight |
|------------|----------------------------|--|------------------------|---|---|--------|
| Income | Control over use of income | How much input did you have in decisions on the use of income generated from: Food crop, Cash crop, Livestock, Non-farm activities, Wage & salary, Fish culture; To what extent do you feel you can make your own personal decisions regarding these aspects of household life if you want(ed) to: Your own wage or salary employment? Minor household expenditures? | G2.03 A- FG5.02 E-G | Achievement in any if not only minor household expenditures | Inadequate if participates in activity BUT has no input or little input on indecisions about income generated | 1/5 |
| | Group member | Are you a member of any: Agricultural / livestock/ fisheries producer/mkt group; Water; Forest users'; Credit or microfinance group; Mutual help or insurance group (including burial societies); Trade and business association; Civic/charitable group; Local government; Religious group; Other women's group; Other group | G4.05-A-K | Achievement in any | Inadequate if is not part of AT LEAST ONE group | 1/10 |
| Leadership | Speaking in public | Do you feel comfortable speaking up in public: To help decide on infrastructure (like sm wells, roads) to be built? To ensure proper payment of wages for public work or other similar programs? To protest the misbehavior of authorities or elected officials? To intervene in case of a family dispute? | G4.01-G4.03 | Achievement in any | Inadequate if not comfortable speaking in public | 1/10 |

| Dimension | Indicator name | Survey questions | FTF variables | Aggregation method | Inadequacy cut-off | Weight |
|-----------|----------------|---|---------------|--------------------|--|--------|
| Time | Workload | Worked more than 10.5 hours in previous 24 hours. | G6 | | Inadequate if works more than 10.5 hours a day | 1/10 |
| | Leisure | How would you rate your satisfaction with your available time for leisure activities like visiting neighbors, watching TV, listening to radio, seeing movies or doing sports? | G6.02 | | Inadequate if not satisfied (<5) | 1/10 |

Source: Alkire, S. et al. (2013).