FEED THE FUTURE

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

# MOZAMBIQUE

## Feed the Future Zone of Influence Baseline Report

July 2014

USAID

FROM THE AMERICAN PEOPLE

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# Acronyms

| | |
|---|---|
| 5DE | Five Domains of Empowerment |
| ANSA | Associação de Nutrição e Segurança Alimentar (Association of Nutrition and Food Security) |
| BMI | body mass index |
| DHS | Demographic and Health Survey |
| FAO | Food and Agriculture Organization of the United Nations |
| G8 | Group of Eight |
| GPI | Gender Parity Index |
| HHS | Household Hunger Scale |
| INE | Instituto Nacional de Estatística (National Statistics Institute) |
| MAD | minimum acceptable diet |
| PBS | Population-Based Survey |
| PPP | purchasing power parity |
| SEA | Standard Enumeration Area |
| WEAI | Women's Empowerment in Agriculture Index |
| WHO | World Health Organization |
| WRA | women of reproductive age |
| ZOI | Zone of Influence |

# Executive Summary

This report presents the findings of the Mozambique Feed the Future Population-Based Survey (PBS) and secondary sources that serve as the baseline for the United States Government's Feed the Future initiative in Mozambique. 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 well-being of households in the geographic areas targeted by Feed the Future interventions, known as Feed the Future Zones of Influence (ZOI).

The PBS, including this baseline report, is a product of Feed the Future FEEDBACK (FEEDBACK), which is responsible for supporting performance monitoring and impact evaluation of the Feed the Future initiative. FEEDBACK is implemented by Westat in partnership with TANGO International and the Carolina Population Center of the University of North Carolina at Chapel Hill. In Mozambique, the PBS fieldwork was conducted by the Association of Nutrition and Food Security (ANSA) with input from Westat and TANGO International. The main fieldwork took place from February 5 to May 6, 2013, for districts in the three provinces in the original ZOI, Manica, Nampula, and Zambezia. A second round of data collection took place from November 22, 2013, to January 3, 2014, in three districts in the province of Tete, which were added to the ZOI in June 2013.

The Feed the Future ZOI baseline values for Mozambique draw on data from both primary and secondary sources. Of the 13 Feed the Future indicators reported, six were calculated using data gathered in the PBS:

- Prevalence of poverty: Percentage of people living on less than $1.25/day
- Daily per capita expenditure (income) in U.S. Government-assisted areas
- Prevalence of households with moderate or severe hunger (Household Hunger Scale, or HHS)
- Prevalence of children 6-23 months receiving a minimum acceptable diet (MAD)[1]
- Women's Dietary Diversity Score[2]
- Women's Empowerment in Agriculture Index (WEAI)

The remaining seven indicators utilized secondary data from the Mozambique 2011 Demographic and Health Survey (DHS), specifically: prevalence of stunting among children under 5; prevalence of wasting among children under 5; prevalence of underweight among children under 5; prevalence of

[1] MAD was collected by the PBS, although children's feeding data is also available in the Mozambique 2011 DHS. When the baseline PBS was being prepared, only preliminary results from the DHS were available. These preliminary results did not provide all the information about children's consumption of the different food groups needed to compute the MAD. Based on the information available in the preliminary DHS report at that time, it was decided that the MAD information needed to be collected in the baseline PBS survey. In addition, in the DHS, the child feeding sample is limited to only the youngest child living with the mother; the PBS, in contrast, collects child feeding information for all children age 6-23 months.

[2] Women's Dietary Diversity Score, prevalence of underweight women, and prevalence of anemia are measured on women of reproductive age (15-49 years).

exclusive breastfeeding of children under 6 months; prevalence of anemia among children 6-59 months; prevalence of anemia among women of reproductive age (WRA); and prevalence of underweight among WRA.

All Mozambique Feed the Future ZOI baseline values calculated with both primary (PBS) and secondary (DHS) data have been entered into the Feed the Future Monitoring System database for the global Feed the Future initiative. In addition to the Feed the Future indicators, USAID/Mozambique requested that an additional module be included to collect data on the use of mobile phones and mobile money services. This report addresses only differences across subgroups that are statistically significant at the $p<0.05$ level.

The ZOI in Mozambique comprises 23 districts across four provinces: Nampula, Zambezia, Manica, and Tete. A total of 2,864 households in the ZOI were interviewed for the PBS data collection. These households were spread across 96 standard enumeration areas (SEAs) in the targeted districts. The sample frame of SEAs for the 2011 DHS was used as the sample frame for selection of SEAs in the ZOI. The selection of households was also stratified into two program intervention areas: those with both agriculture and nutrition programming (Zambezia and Nampula provinces), and those with agricultural programming only (Manica and Tete provinces).

The household demographic findings show that ZOI households with both a male and a female adult have significantly more household members, more females, and more children of every age bracket than other household types (i.e., male adult only, female adult only, or child no adult).[3] Regarding dwelling characteristics, 5.8 percent of households in the ZOI have electricity. Male and female adult households are more likely to have electricity than female adult only households (6.3 and 2.7 percent, respectively). Similarly, male and female adult households also have more rooms (2.6) compared with other household types. Overall, about one-third (34.8 percent) of households have access to an improved water source. More male and female adult households (36.2 percent) than female adult only households (28.0 percent) use an improved water source. Only 21.5 percent of households in the ZOI have access to improved sanitation facilities.

Feed the Future calculates the prevalence of poverty based on $1.25 per capita, per day at 2005 purchasing power parity (PPP). The prevalence of poverty among the population in the ZOI is 62.0 percent. The poverty gap (at $1.25 per day) is 22.8 percent and average daily per capita expenditures in 2010 parity is $1.42. It should be noted that the Government of Mozambique uses a different estimate for the national poverty line, which varies by region and urban/rural setting, and is expressed in the local currency, the metical.[4] Using this national poverty line and data from the PBS, the prevalence of poverty in the ZOI is 47.3 percent and the poverty gap is 15.2 percent.

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[3] As explained in USAID. 2012b. "Feed the Future household level indicators are disaggregated by 'gendered household types' – that is: (1) those with male and female adults (18+ years), (2) those with at least one male adult and no female adult, (3) those with at least one female adult and no male adults, and (4) those 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 household type in the cited reports. In these cases, the household headship disaggregation is used.

[4] Poverty lines by region and urban/rural, meticais/day presented at 2013 price levels, $/day presented at 2005 PPP levels for comparability to international line of $1.25/day:

PBS data show that moderate or severe hunger is high in the ZOI, with an average prevalence of 23.0 percent of households. Female adult only households report significantly more household hunger (37.5 percent) than households with both male and female adults (20.0 percent). The DHS nutrition data shows that the prevalence of stunting in children under 5 in the ZOI (51.6 percent) is higher than the national average of 42.6 percent. Nearly three-quarters of children under 5 are anemic (72.3 percent); of those, the majority is mildly or moderately anemic. The prevalence of wasting (6.1 percent) and underweight (14.2 percent) among children under 5 in the ZOI are similar to the national averages. Less than half of all children under 6 months are exclusively breastfed (40.9 percent). The prevalence of children 6-23 months with a MAD is 9.2 percent.

In the ZOI, the prevalence of WRA who are underweight (8.1 percent) is similar to the national level (8.6 percent) reported in the 2011 DHS. The majority of WRA (79.2 percent) are considered normal weight, with 12.6 percent overweight/obese and 8.1 percent underweight, which includes moderate and severe 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 (3.4) than female adult only households (3.1). The prevalence of anemia among WRA age is 52.4 percent, which is similar to the national level.

The WEAI uses two subindices to measure the empowerment, agency, and inclusion of women in the agriculture sector. Based on PBS data, the WEAI score in Mozambique's ZOI is 0.83 out of a possible value of 1.0. The average value for the Five Domains of Empowerment (5DE) subindex, a measure of women's empowerment, is 0.82. Slightly more than half (51.1 percent) of women in the ZOI have achieved adequate empowerment (a score of 0.80 or greater). The Gender Parity Index (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 0.89. More than half (51.2 percent) of women in the survey have achieved adequate gender parity (i.e., a 5DE score of .80 or greater or 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 adult male and primary adult female decision-maker in each household (excluding the male adult only and child only households), including WRA. See Subsection E1 in Chapter 3 on page 43 for a detailed description of the WEAI.

Additional analysis requested by USAID/Mozambique includes examination of the relationship between women's empowerment, decision-making power, household hunger, and the Women's Dietary Diversity Score, as well as the use of mobile phones and mobile money services. There are no significant differences regarding women's achievement for the 10 WEAI indicators between households reporting no hunger and those reporting moderate to severe hunger. Surprisingly, the prevalence of moderate or severe household hunger does not significantly decline when women have higher decision-making capacity. Similarly, the number of food groups consumed by WRA who have achieved empowerment or have higher decision-making capacity is not significantly higher than among women who have not achieved empowerment or have lower decision-making capacity.

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Manica/Tete Urban: 29.0 meticais/day ($1.33/day)
Manica/Tete Rural: 26.2 meticais/day ($1.20/day)
Nampula Urban: 22.6 meticais/day ($1.03/day)
Nampula Rural: 19.3 meticais/day ($0.88/day)
Zambezia Urban: 25.8 meticais/day ($1.88/day)
Zambezia Rural: 19.5 meticais/day ($0.89/day)

Prevalence of poverty (i.e., people living on less than $1.25 per day) is significantly lower among women with higher decision-making power than among women with lower decision-making power.

Indicators were also compared by program strata. In general, differences between program strata indicated that the agriculture and nutrition districts were worse off than agriculture only districts. This included higher prevalence of poverty, lower daily per capita expenditure, lower women's dietary diversity, higher rates of anemia for women and children, higher stunting of children, and higher household hunger (moderate or severe).

Only 24.9 percent of all households use a mobile phone. Use differs by the sex of the respondent (27.7 percent for males and 17.8 percent for females) and by the socio-economic status of the household (16.9 percent for households below the poverty line and 34.9 for those above the poverty line). Nearly all of the households that use mobile phones are phone owners (96 percent), indicating relatively low levels of borrowing. Currently, few of the respondents are aware of mobile money (7.1 percent), though there is a small difference between households below (5.6 percent) and above (9.4 percent) the poverty line. Nearly 92 percent of the informants who have heard of mobile money would be willing to use the services.

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

# Chapter 1. Background

## A. Feed the Future and FEEDBACK Overview

Feed the Future is a United States Government initiative that addresses global food insecurity by supporting agriculture sector growth and improving nutritional status in 19 developing countries. USAID is responsible for leading the government-wide effort to implement the initiative. The core investment areas are women's empowerment, diet quality and diversification, post-harvest infrastructure, high-quality inputs, and financial services. The high-level target of the initiative is "to reduce by 20 percent the prevalence of poverty and the prevalence of stunted children under 5 years of age in the areas where we work."[5]

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

The main objectives of FEEDBACK are to enable USAID Missions to meet Feed the Future performance monitoring requirements and maximize the use and benefits of the data collected; provide high-quality empirical evidence to inform program design and investment decisions that will promote sustainable food security; ensure timely availability of high-quality data for use in monitoring performance and evaluating impacts of the initiative; and facilitate accountability and learning about what interventions work best, under what conditions, and at what cost.[6]

To measure progress in addressing global food insecurity, USAID is collecting data via large surveys of households in ZOIs. Survey results are combined with secondary data for the ZOI to determine baseline values for Feed the Future indicators (see Table 3, p.10). The baseline values will be used to measure changes in indicators over time. All baseline values have been entered into the Feed the Future Monitoring System database for the global initiative. The midterm and final surveys will be conducted in 2015 and 2017, respectively. Feed the Future will share the PBS dataset with the Government of Mozambique; it will be made public after government approval.

Where possible, existing sources of data were utilized if they met criteria to provide valid baseline estimates of indicators: The data source must have collected the data within the last two years prior to the start of Feed the Future activities, and 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. The 2011 Mozambique DHS met these criteria and was used as a secondary data source for several indicators.

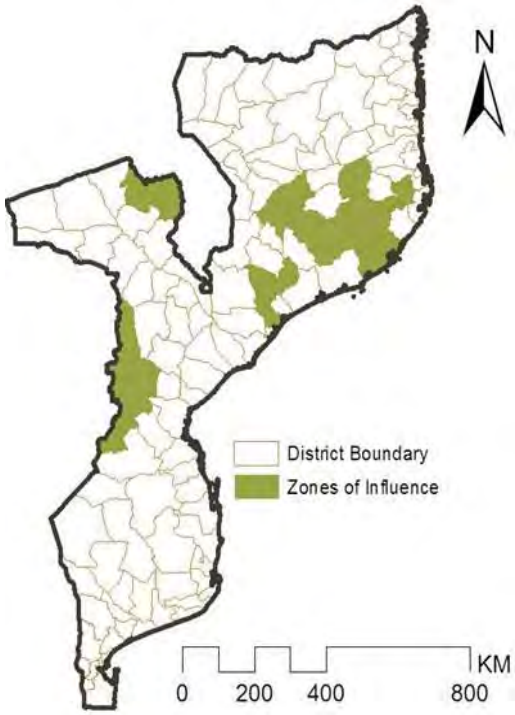
[5] USAID. 2013b.
[6] Agrilinks. 2013.

## B. Feed the Future ZOI Profile

## B1. Feed the Future Intervention Areas Within the ZOI

In Mozambique, the ZOI covers 23 districts across four provinces: Nampula (nine districts), Zambezia (five districts), Manica (six districts), and Tete (three districts). Figure 1 below indicates the geographic zones of Feed the Future interventions.

**Figure 1. Feed the Future ZOI for Mozambique**




Source: USAID 2014

## B2. Rationale for ZOI Designation

Mozambique is a strategic priority for Feed the Future investments due to the following challenges: low agricultural productivity, underdeveloped markets, poor nutritional options and behaviors, and weak government capacity and policy.[7] The country has made significant progress in economic growth, sustaining an average of 8 percent growth annually over the previous decade, which is among the best in Africa. However, Mozambique continues to face high rates of poverty and food insecurity, compounded by high vulnerability to natural disasters. An estimated 54 percent of the national population is poor, living on less than $1.25 per day (2008).[8] Approximately 69 percent of the population lives in rural areas; about 57 percent of that population lives below the national

[7] USAID. 2011b.
[8] USAID. 2012c.

poverty line (18 meticais/day, $1.13/day 2005 PPP).[9] Since 2005, the top 10 natural disasters ranked by number of people affected, including multiple droughts, floods, and tropical storms, affected approximately 4 million people.[10, 11] Climate change is also expected to increase the risk of natural disasters in the future.[12]

Mozambique has the potential to become the regional "breadbasket" due to land availability and high fertility combined with its strategic geographic location, which includes major trade corridors and ports. The agriculture sector contributes to more than 24 percent of gross domestic product, led by a primarily household-level agrarian economy. Approximately 80 percent of the working population is involved in agriculture, making it a crucial area for economic development. Yet, farming households face challenges of poverty and food insecurity due to low yields and inadequate access to markets.[13] In addition, high prevalence rates of HIV influence agricultural productivity and household food security. Nearly one in 10 farming households is affected by HIV.[14]

Mozambique experienced a period of development progress following its 25-year war (1969-1994); yet, since 2003, achievements in reducing poverty and undernutrition have slowed,[15] even with steady increases in gross domestic product and gross national income per capita over the last two decades.[16] It is critical to address the challenges cited above—low agricultural productivity, underdeveloped markets, poor nutritional options and behaviors, and weak government capacity and policy—in order for Mozambique to meet its Millennium Development Goal targets on poverty (40 percent of people living in poverty by 2015) and chronic malnutrition in children under 5 (30 percent in 2015 and 20 percent in 2020).[17]

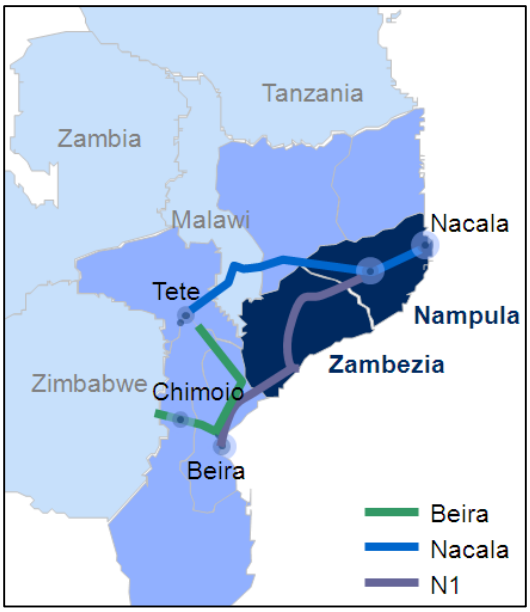
The ZOI for the Feed the Future investments is selected based on high levels of need, the potential to achieve the most impact, and the synergy that exists with other investments, such as by U.S. Government agencies, donors, and the private sector. In the eastern provinces of Zambezia and Nampula, 44 percent of the population is poor, 43 percent of children under 5 are stunted, and 51 percent are underweight.[18] In addition, 42 percent of the population of these provinces is involved in farming and 38 percent are female-headed households. The provinces also account for about 30 percent of national cereal and groundnut production, with concentration of soybeans and cashews in these areas. However, coastal communities experience poor soil and high vulnerability to food insecurity.

Nampula and Zambezia are closely linked to Mozambique's three most important trade corridors: Beira, connecting to Zimbabwe through Manica province in the west; Nacala, which links Mozambique to Zambia; and the N1 trade corridor, a key road connecting the Nacala and Beira

[9] Filipe and Kring. 2011.
[10] EM-DAT. 2014.
[11] Cumulative total.
[12] USAID. 2011c.
[13] USAID. 2012c.
[14] USAID. 2011c.
[15] Ibid.
[16] FAO. 2014.
[17] USAID. 2011c.
[18] USAID. 2014.

corridors (Figure 2, next page).[19] USAID/Mozambique requested that the province of Tete be included in the ZOI; that request was approved in June 2013.

**Figure 2. Main Trade Corridors**




Source: USAID. 2011c.

## B3. Strategic Objectives for Feed the Future in the ZOI

The main Feed the Future objectives in Mozambique are to "increase equitable growth in the agriculture sector and improve the nutritional status of Mozambicans, especially women and children under 5."[20] To meet these objectives, Feed the Future Mozambique has worked to align and promote coordination between agriculture and nutrition programming.

In Mozambique, these objectives correspond to three program areas:[21,22]

- **Improving Nutrition.** Activities to improve nutrition among children under 5 and pregnant women focus on targeted nutrition interventions, social and behavior change communication, as well as promotion of and innovations in the supply of nutritious foods. Targeted nutrition interventions are connected with core agricultural programs for better access and use of diverse, high-quality foods. Social and behavior change communication activities promote change at the community level, specifically between pregnancy and a child's first two years of life. Other activities include monitoring growth of and promoting innovative agro-processing of nutritious foods.

[19] USAID. 2011c.
[20] USAID. 2012c.
[21] USAID. 2011c.
[22] USAID. 2012c.

- **Transforming Agricultural Value Chains.** The oilseed, pulse (grain legume), cashew, and fruit value chains are the focus due to their high income-generating potential for smallholder farmers and nutrition supplementation for vulnerable households. These value chains will be enhanced by expanding access to finance, public-private partnerships, business development services, and the business enabling environment, such as by facilitating international and local agribusinesses investment.

- **Enhancing Policy, Research, and Technology.** Feed the Future supports engagement with relevant agriculture, business, and nutrition policies, crop research, and technology transfer to farmers. This includes the crosscutting theme of agricultural adaptation to climate change. (See the next section for more detail on aligning with Government of Mozambique policy and strategy and with international investments.)

Another crosscutting focus is gender integration and women's empowerment. Feed the Future recognizes that supporting women in agriculture and household nutrition is critical to success. Activities will strengthen women's participation and leadership roles in farmer organizations, incorporate women in value chain activities, target women with nutrition interventions, and train women to be trainers of other women.[23]

By 2015, the intended impacts of Feed the Future in the Mozambique ZOI are to:[24]

- Assist an estimated 207,000 vulnerable Mozambican women, children, and family members, mostly smallholder farmers, to escape hunger and poverty.
- Reach more than 346,000 children, improving their nutrition to prevent stunting and child mortality.
- Leverage a strategic policy environment and institutional investments to improve income and nutritional status in significantly more rural households.

Feed the Future Mozambique will also contribute to national-level impacts by:[25]

- Creating an enabling policy environment for agricultural productivity, private sector investment, agribusiness and trade, and improved nutrition.
- Developing higher-yielding, disease-resistant crop varieties alongside better production technologies for use beyond the initiative's geographic focus areas.
- Validating innovative private-sector led models that increase productivity and competitiveness of smallholder farmers, emerging farmers, and agro-enterprises.
- Strengthening the capacity of agricultural research and technology systems.

To reduce hunger and poverty in Mozambique, Feed the Future is addressing major constraints to agriculture development. This includes focusing on key value chains and promoting 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 expansion of the private sector and its contribution to the overall growth of the economy.

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[23] USAID. 2011c.
[24] USAID. 2014.
[25] USAID. 2011c.

The Feed the Future strategy builds upon the foundation in agriculture and nutrition of P.L. 480 Title II programs, the Millennium Challenge Corporation and the United States Department of Agriculture's Food for Progress programs, nutrition assessment and counseling by the Centers for Disease Control and Prevention, and work by other U.S. Government agencies and assistance.[26]

### *Aligning with the Government of Mozambique and International Investments*

The Feed the Future strategy aligns with both Government of Mozambique and international investments, promoting sustainability and good governance through the following:[27]

- **Fostering Research and Development.** Innovations in research and development and strengthening local capacity are important to support long-term agricultural productivity. The U.S. Government works with Mozambique's National Agricultural Research Institute, international agricultural research centers, and the Brazilian Organization for Agricultural Research to develop higher-yielding, disease-resistant, drought-tolerant crop varieties and to enhance agricultural practices.

- **Promoting Policy Analysis and Advocacy.** The initiative promotes policies that improve opportunities for private investment in agriculture, modernize techniques, open trade in agricultural goods, and promote gender equity and household nutrition. This approach aligns with the Government of Mozambique's policy strategy under the Comprehensive Africa Agriculture Development Program and to coordinate with other donors.

- **G8 New Alliance for Food Security and Nutrition.** Mozambique is also part of the Group of Eight (G8) New Alliance for Food Security and Nutrition, which includes G8 members, African countries, and private sector partners. Accordingly, the Government of Mozambique has committed to specific policy actions that will improve the environment for private investment in agriculture and increased agricultural productivity. G8 donors have pledged funding for Mozambique's Country Investment Plan, and private sector partners have signed Letters of Intent for their investments in the agricultural sector.

## B4. Demographics

Table 1 (next page) reports 2013 population estimates for the Mozambique ZOI, including Tete districts. These estimates are also reported in the Feed the Future Monitoring System database. The population estimates for sub-groups were calculated with population projection information from the National Statistics Institute (Instituto Nacional de Estatística, or INE) and, where sub-group information was not available from INE, with age composition information from the 2011 DHS. (The footnotes to Table 1 show further methodological details.)

[26] Ibid.
[27] USAID. 2014.

The population of Mozambique is a little more than 24 million (24,366,112). In the ZOI, there are approximately 6.5 million[28] people living in approximately 1.6 million households. There are more than 1.5 million WRA and about 1.2 million children age 0-59 months in the ZOI.

[28] INE. 2010. http://www.ine.gov.mz/en/ResourceCenter (accessed 22 March 2014).

**Table 1. ZOI Population Estimates (2013)**

| | ZOI |
|---|---|
| **Total Population[1]** | **6,484,199** |
| Rural[1] | 4,522,639 |
| Urban[1] | 1,961,560 |
| **Population in Male and Female Adults Households[2]** | **4,996,078** |
| **Population in Female Adults Only Households[2]** | **1,097,652** |
| **Population in Male Adults Only Households[2]** | **363,411** |
| **Population in Child No Adults Households[2]** | **27,058** |
| **Total Households[3]** | **1,573,862** |
| Male and female adults households[3] | 1,020,557 |
| Female adults only households[3] | 359,768 |
| Male adults only households[3] | 174,048 |
| Child no adults households[3] | 19,489 |
| **WRA (15-49 years)[1]** | **1,536,242** |
| Rural[1] | 1,042,321 |
| Urban[1] | 493,921 |
| Nonpregnant[2] | 1,339,482 |
| Pregnant[2] | 196,760 |
| **Children 0-59 Months[1]** | **1,156,750** |
| Males 0-59 months[1] | 578,243 |
| Females 0-59 months[1] | 578,507 |
| **Children 6-59 Months[4]** | **1,026,982** |
| Males 6-59 months[4] | 513,229 |
| Females 6-59 months[4] | 513,753 |
| **Children 0-5 Months[4]** | **129,768** |
| Males 0-5 months[4] | 65,014 |
| Females 0-5 months[4] | 64,754 |
| **Children 6-23 Months[4]** | **354,348** |
| Males 6-23 months[4] | 177,280 |
| Females 6-23 months[4] | 177,068 |

[1] Source: Original INE projections of the 2007 census to 2013, http://www.ine.gov.mz/en/ResourceCenter (accessed March 22, 2014).

[2] Source: Original INE projection disaggregated according to the distribution of subpopulation variables in the 2011 Mozambique DHS.

[3] Source: The 2011 DHS was used to determine the average household size for each gendered household type category. The estimated number of individuals (see footnote 2) living in each household type was divided by the average household size to determine the number of households of each category. Note that this number is the number of *households* in the ZOI, and not the number of people living in the household.

[4] Source: Original INE projection of male and female children age 0-59 months and Kaplan Meier survival curve derived from 2011 DHS birth histories. Survival probabilities were used to determine the proportion of children 0-5, 6-23, and 6-59 months.

## B5. Agriculture

Agriculture is both the foundation of Mozambique's economy and the beacon for future development, poverty alleviation, and food security. Although land under production increased by

45 percent between 1999-2000 and 2009-2010, just 16 percent of available arable land is cultivated.[29] More than three-quarters of the labor force work in agriculture.[30] Smallholder farms of 10 ha or less account for 99 percent of all farms; 72 percent of all farms have 2 ha or less.[31] The growth in land under production is due to a rise in the average farm size (from 1.3 to 1.5 ha) and an increase in number of small farms.[32] The agriculture sector has grown around 8 percent since 2001, but this is mostly due to increases in land area rather than productivity.[33] Food availability is limited because average yields are just one-third of what they could be if improved inputs and practices were used.[34] It is estimated that less than 5 percent of smallholder farmers use chemical fertilizers or pesticides, and less 9 percent use improved maize seed or animal traction.[35]

Food access is constrained by weak farm-to-market linkages. On average, just one in five (20 percent) smallholder farmers sell their crops in the market, and one-third (34 percent) of these farmers receive price information.[36] Furthermore, farmers are not usually organized: Only seven percent belong to a farmer-based organization, and the infrastructure around markets is typically weak.[37]

Mozambique has the potential to address hunger domestically and play an integral part in regional food security. It is the second largest formal food exporter in the region and the biggest informal exporter of maize and beans, but imports three times more food (in value) than it exports.[38] The Food and Agriculture Organization (FAO) reports that the value added per agricultural worker, an indicator of productivity, has increased substantially between 2000 and 2010, from approximately $125 to nearly $250 per worker.[39] The crop production value for each hectare in use also increased from 2001 to 2011, particularly in regard to increased value of food crops.[40]

Feed the Future in Mozambique focuses on the oilseed (groundnut, sesame, and soybean), pulse (bean, cowpea, and pigeon pea), cashew, and fruit (mango, banana, and pineapple) value chains because of their high income potential and nutritional importance.[41] The crops supported by Feed the Future are included in Table 2 on the next page (where data are available), which also shows production, yields, and prices for major staple and export crops in Mozambique.

As detailed in Table 2, the top five crops in terms of production in 2012 were cassava, sugar cane, maize, sweet potatoes, and beans. Only maize production has not increased substantially since 2000. Although production of most of the Feed the Future value chain crops has increased since 2000, only banana and cowpea yields had increased by 2011-2012. Interestingly, total cowpea production steadily decreased in between 2002 and 2012 (53,600-35,000 metric tons); yet, the overall cowpea

[29] UNDP. 2011.
[30] USAID. 2011c.
[31] USAID. 2011c.
[32] UNDP. 2011.
[33] USAID. 2011c.
[34] Ibid.
[35] Ibid.
[36] USAID. 2011c.
[37] Ibid.
[38] USAID. 2011c.
[39] FAO. 2014.
[40] Ibid.
[41] USAID. 2012c.

yield has increased (227-350 kg/ha). For most of the listed crops, the market price per kilogram has also increased. (It should be noted that the local currency was redenominated in 2006.)

**Table 2. Agricultural Yields, Marketed Volumes, and Prices at the National Level**

| Crop | Production (Metric Tons) | | | Yield (kg/ha) | | | Market Price - Producer (Local Currency/kg) | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2000 | 2005 | 2012 | 2000 | 2005 | 2012 | 2000 | 2005 | 2008[4] |
| Cassava* | 5,361,974 | 4,782,420 | 10,051,364 | 5,791 | 4,316 | 13,180 | 500 | 3,000 | 6.06 |
| Sugar cane* | 397,276 | 2,246,985 | 3,393,904 | 14,714 | 64,200 | 73,914 | 147 | N/A | N/A |
| Maize* | 1,180,432 | 942,000 | 1,177,390 | 940 | 509 | 749 | 800 | 3,500 | 6.79 |
| Sweet potatoes* | 430,000 | 508,840 | 900,000 | 7,167 | 7,187 | 7,500 | 5,710 | 7,510 | 7.68 |
| Beans, dry*[5] | 89,900[1] | 95,700 | 281,922 | 402[1] | 207 | 371 | N/A | N/A | N/A |
| Banana | 90,000 | 142,000 | 340,674[2] | 6,429 | 8,875 | 7,571[2] | 7,440 | 10,060 | 11.47[3] |
| Sesame seed | 5,000 | 20,088 | 117,000 | 625 | 279 | 532 | N/A | N/A | 25 |
| Groundnuts, with shell | 124,290 | 93,000 | 112,913 | 461 | 219 | 290 | 3,700 | 10,500 | 10.43 |
| Cashew nuts with shell[5] | 57,894 | 104,337 | 112,796[2] | 839 | 870 | 806[2] | N/A | N/A | N/A |
| Pineapple | 13,000 | 16,000 | 54,000[2] | 6,842 | 6,154 | 6,353[2] | 27,310 | 50,000 | 83 |
| Cowpea, dry[5] | 53,600[1] | 48,800 | 35,000 | 227[1] | 132 | 350 | N/A | N/A | N/A |
| Mangoes, mangosteens, guavas | 24,000 | 25,000 | 29,000[2] | 6,487 | 6,410 | 6,042[2] | 7,970 | 24,380 | 25.85[3] |

* Indicates top five production crops for 2012. Note: For 2011 sorghum was included in the top five, replacing beans.
1 Source: FAO 2014. Datum is for 2002 (2000 and 2001 unavailable).
2 Source: FAO 2014. Datum is for 2011 (2012 unavailable).
3 Source: FAO 2014. Datum is for 2011 (2012 unavailable).
4 On July 1, 2006, Mozambique redenominated the metical at a rate of 1,000 to 1.
5 No price data in FAO Statistics Database. Source: FAO. 2014.

## C. Purpose of This Report

This report presents baseline values calculated from primary and secondary data for the 13 Feed the Future indicators collected in the ZOI. This baseline was designed to measure changes in the indicators over time and does not allow for conclusions about attribution or causality. This report will first present the methodology used to obtain and analyze the data (Chapter 2, p. 10). This is followed by a description of the findings for each Feed the Future indicator (Chapter 3, p. 18) and additional analysis requested by USAID/Mozambique (Chapter 4, p. 49).

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

## A. Data Sources

The USAID Mission in Mozambique will report on all 13 of the population-based Feed the Future indicators in the ZOI. The data for seven indicators are obtained from existing secondary data and six indicators are from the PBS data. Secondary data sources must meet two criteria to provide valid baseline estimates of indicators: The data source must be collected in a recent time window (last two years) prior to the start of Feed the Future activities and the data source must include a sample size large enough to estimate selected key indicator values in the ZOI with sufficient precision and power to measure change over time. The 2011 DH) data, with a sample size of 2,700 households in the ZOI, meet these criteria. Table 3 lists the 13 indicators and the data source for the Mozambique ZOI.

**Table 3. Feed the Future Indicators and Data Sources**

| Indicators | Source | Year Collected |
|---|---|---|
| Prevalence of poverty: percentage of people living on less than $1.25/day | FEEDBACK PBS | Feb. 2013-Jan. 2014* |
| Daily per capita expenditures (as a proxy for incomes) | FEEDBACK PBS | Feb. 2013-Jan. 2014* |
| Prevalence of households with moderate or severe hunger | FEEDBACK PBS | Feb. 2013-Jan. 2014* |
| Prevalence of underweight children under 5 | DHS | June-Nov. 2011 |
| Prevalence of stunted children under 5 | DHS | June-Nov. 2011 |
| Prevalence of wasted children under 5 | DHS | June-Nov. 2011 |
| Prevalence of children age 6-23 months receiving a MAD | FEEDBACK PBS | Feb. 2013-Jan. 2014* |
| Prevalence of exclusive breastfeeding | DHS | June-Nov. 2011 |
| Prevalence of anemia among children age 6-59 months | DHS | June-Nov. 2011 |
| Prevalence of underweight WRA | DHS | June-Nov. 2011 |
| Prevalence of anemia among WRA | DHS | June-Nov. 2011 |
| Women's Dietary Diversity Score among WRA | FEEDBACK PBS | Feb. 2013-Jan. 2014* |
| WEAI | FEEDBACK PBS | Feb. 2013-Jan. 2014* |

* Most of the FEEDBACK PBS primary data collection took place from February 2013 to May 2013. A second round of data was collected from November 2013 to January 2014 for the additional 419 households in Tete province.

Women age 15-49 comprised the sample for the women's dietary diversity, women's underweight, and women's anemia indicators. For the women's underweight indicator, the data are further limited to nonpregnant women only. Please see Annex C for a description of the indicators.

## B. Procedures for Estimating Values from Secondary Sources at the ZOI Level

The 2011 DHS was the secondary source of data for seven Feed the Future indicators. The DHS program has conducted nationally representative DHS in 90 countries since 1984. In Mozambique, DHS surveys were conducted in 1997, 2003, and 2011. Data for the 2011 DHS were collected across the entire country, but indicators were calculated using only data from the ZOI. Analysis was done using Stata Version 12 software.

Geographic information systems data available for the Mozambique DHS were used to identify the ZOI within the DHS data; FEEDBACK identified district boundaries. Using global positioning system information for each cluster, FEEDBACK identified the district names for all clusters in the DHS dataset. Next, the clusters in the ZOI districts were flagged, and the DHS indicator analysis was limited to only those cases within the ZOI. However, as a validation step, indicators were also tabulated for the entire country and compared with the relevant tables in the Mozambique 2011 DHS final report.

## C. Organization of Survey Work

The PBS survey was managed by TANGO International and implemented by ANSA, a local consulting firm, which has extensive experience conducting rural household surveys in Mozambique and with using electronic recording devices in the field. Institutional review board approvals were received from Westat and the Government of Mozambique prior to both rounds of data collection. Please see Annex A for the survey protocol.

## C1. Training

Two training events took place in preparation for the baseline survey. First, TANGO International conducted a workshop for field supervisors (master trainers) from October 22 to 27, 2013. The supervisors were trained on the Feed the Future survey objectives, the survey instrument, and the use of computer tablets. Training included instrument testing for skip pattern and programming concerns. Enumerator training was scheduled to start two weeks later but was delayed because the tablets arrived late and processing by the Mozambique customs office was slow. The purpose of the enumerator training session was to ensure that all survey team members understood the objectives of the study, proper use of the survey tools, and their roles and responsibilities in data collection. ANSA staff and fieldwork supervisors conducted training from January 25 to February 2, 2013, and included a pre-test of the survey instrument. The PBS tools and the manuals for supervisors and enumerators were translated into Portuguese; any problems found in the translations were corrected during the training and pre-test period. The second round of training (November 11–19, 2013) followed the same procedures as the first round. The supervisors were trained again on the survey objectives, survey instruments, and the use of computer tablets. The enumerators were then trained on the questionnaire and the computer tablets, and conducted a pre-test to ensure the proper functioning of the survey instruments.

## C2. Fieldwork

ANSA, contracted by TANGO International, conducted in-country data collection. The PBS data collection activities for Manica, Nampula, and Zambezia began February 5, 2013, and ended May 6, 2013. The data collection took longer than expected. In Nampula, it had to be stopped for nearly three weeks due to heavy rains, flooding, and a cholera outbreak that prohibited the survey teams

from accessing the communities. The second round of data collection occurred in the three districts of Tete from November 22, 2013, to January 3, 2014. Interviews were conducted on Google Nexus 7 tablets running Open Data Kit data collection software. Interviews lasted approximately one-and-a-half hours in each household. Data were backed up in the field and transmitted to secure Westat servers for aggregation and management.

## C3. Data Quality Control

Data quality was maintained in several ways during fieldwork. The data entry software on the tablets contained programmed checks for variable ranges, skip patterns, and consistency. The Open Data Kit Archive Tool generated copies of the data files, which were backed up on the supervisors' tablets using near-field communication tapping. In the field, the team leader checked each questionnaire for completeness, consistency, range checks, and skip patterns. The supervisor also checked a subset of questionnaires in the same manner. Initial fieldwork was designed so all the field teams were close to one another, and all the teams stayed at the same location in the evening. This way, the entire field team could share and resolve problems identified during the first days of fieldwork.

As the data were being uploaded onto the 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 SEA had been received, the result of the interview (e.g., complete or incomplete), percent of modules that were completed (by module), and the percentage of missing data for select variables (e.g., the age and sex of respondents). Westat data management staff analyzed all of these data to identify 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.

## C4. Handling of Missing Values

The general approach was to recode "don't know" and missing responses to the null value—to take the value of "no" (if a yes/no question) or "0" (if a numeric response was 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. (For example, 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 with responses that were numerical values.

## C5. Data Imputation

Generally, missing or "don't know" values were allowed to stay in the data, with the exception of dates for critical events, which were needed to correctly compute indicators for WRA and children under 5 (i.e., date of birth of women 15-49 and date of birth of children under 5).[42] The procedure

[42] The publicly available DHS data already had Z-score values calculated for the child anthropometric indicators.

to impute these dates followed international DHS standards, as described in the DHS Data Editing and Imputation, and was done by DHS.[43]

[43] Croft, T. 2004.

## C6. Methods for Data Analysis

Most of the quantitative results in this report are presented as percentages and means. 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. 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 shown only when the unweighted sample size for an indicator is greater than or equal to 30 cases.[44]

## C7. Computed Variables and Indicators[45]

Whenever available, international standards were used to compute analytic variables and indicators:

1. Housing characteristics and nutrition indicators were computed using DHS standards and definitions, as described in the 2012 DHS Guide to Statistics and the 2012 Tabulation Plan for DHS Final Report.

2. Nutrition and food security indicators were computed using international standards as described in the 2012 Feed the Future Indicator Handbook, the 2011 Household Hunger Scale: Indicator Definition and Measurement Guide, and the 2010 World Health Organization (WHO) Indicators for Assessing Infant and Young Child Feeding Practices (Part 2 Measurements).

3. Anthropometry indicators were calculated using the child growth standards and data processing programs published by the WHO in 2006.[46]

4. General references on guidance for computing expenditures include Deaton & Zaidi[47] and Grosh & Muñoz.[48]

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[44] Per the NCHS, "A minimum sample size of 30 is recommended for reporting any mean, proportion, percentile, and variance under the simple random sample assumption." http://www.cdc.gov/nchs/data/nhanes/nhanes3/nh3gui.pdf.

[45] Detailed descriptions provided in handling missing values, data imputation, methods for data analysis, and computed variables and indicators are based, in part, from Rosell, et al. (2013). p.12-14. Haiti Baseline Survey. Draft Report. ICF Macro Inc. May 2013. Report submitted to USAID/Haiti.

[46] WHO and UNICEF. 2006.

[47] Deaton. and Zaidi. 2002.

[48] Grosh and Muñoz. 1996.

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.[49,50]

Annex A provides details for calculations of the ZOI indicators.

## D. Survey Sample Design

The ZOI in Mozambique comprises 23 districts across four provinces. Reporting for the Feed the Future indictors is for the entire ZOI. In addition, the results are presented for two programmatic strata:

- The districts in Manica and Tete provinces, and the Malema, Mecuburi, and Nampula districts in Nampula province where only agricultural interventions will be implemented

- The districts in Nampula (except for Malema, Mecuburi, and Nampula) and Zambezia provinces in which both agricultural and nutrition interventions will take place

Although results are broken down by programmatic strata (see Table 40, p. 52), the sample size of the survey was established to be able to detect specified minimal differences in key indicators only at the level of the entire ZOI.

## D1. Sample Size Calculation

The sample size was determined based on a comparison of the sample sizes required for the Feed the Future key indicator following Feed the Future guidance. Table 4 (next page) shows the sample size requirements for the key indicator, prevalence of poverty.[51] 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 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 is 3 percent, which is based on experience with similar rural household surveys in Mozambique. The actual sample size was then rounded up from the target sample size to provide an equal number of households to be interviewed per cluster.[52]

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[49] Alkire et al. 2013.

[50] International Food Policy Research Institute. 2013.

[51] Feed the Future Monitoring and Evaluation Guidance Series Module 9: Target Setting for Reduction in Prevalence of Poverty, Stunting and Underweight in Feed the Future Zones of Influence, identifies three key variables and target values to use for setting sample size. In Mozambique, only one of these key indicators was collected in the PBS—prevalence of poverty. This was the only indicator used to determine sample size.

[52] The actual sample size ended up being larger than the original target sample size because of the inclusion of Tete province in the ZOI, which increased the sample by 419 households.

**Table 4. Required Sample Size for Key Population-Based Indicators**

| Indicator | Baseline Value (%) | Endline Target Value (%) | Minimum Required Sample Size (No. of Households) | | Target Sample Size (No. of Households Adjusted for Nonresponse) | |
|---|---|---|---|---|---|---|
| | | | Baseline | Endline | Baseline | Endline |
| Prevalence of poverty | 59.50 | 54.50 | 2,416 | 2,416 | 2,488 | 2,488 |

## D2. Sample Design

For this survey, the clusters are the SEAs that have been created INE to conduct the national census. The survey was carried out in two phases with 2,864 households in 96 SEAs. (Two phases were required because the geographic and administrative scope of the ZOI was increased after the first phase of data collection was complete.) During the first phase, data were collected from 2,445 households in 20 districts in the provinces of Zambezia, Manica, and Nampula. This initial sample was large enough to meet the minimum required sample size. During the second phase, data were collected from 419 households in three districts in Tete province. The size for the sample from the districts in Tete was calculated so that the ratio of the Tete sample to the original ZOI sample would be the same as the ratio of the population in Tete to the population in the original ZOI. An average of 30 households per SEA were surveyed. This was done to maximize the number of SEAs and to meet the logistics requirement of having enough interviews in each SEA to fully occupy the time of the field.

INE drew the sample of SEAs in a two-stage selection process that was based on the 2010 Agriculture and Livestock Census. In the first stage, the urban and rural SEAs were selected according to Probability Proportional to Size. During the first phase of data collection, 11 SEAs in Nampula and Zambezia were replaced because the research team could not access the region due to flooded roads and cholera outbreaks. Two other SEAs could not be replaced because there were no additional SEAs in the sample frame. Overall, 96 SEAs were surveyed, including 82 in the first round. No SEAs were resampled in the second stage.

In the second stage, the data collection teams developed a list of households when they arrived in each SEA; households were then randomly selected for interview. A household where there was no respondent present was given three call-back visits before being dropped from the survey without replacement.

## D3. 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 SEA population sizes used for selection of SEAs; total number of households in the selected SEAs; population of the ZOI (23 districts in Nampula, Zambezia,

Manica, and Tete provinces); population of SEAs at the time of listing; and response rates at the household, women's, and men's levels.

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 A.

## D4. 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 Monitoring and Evaluation Guidance series, "Population-Based Survey Instrument for Feed the Future ZOI Indicators with Revised WEAI Module" (October 2012). The guidelines ensured that the surveys conformed to existing questionnaires such as the DHS, WEAI, and the Living Standards Measurement Survey. The questionnaire included the household identification module (Module A), the informed consent statement (Module B), the household roster (Module C), and the dwelling characteristics module (Module D). The PBS baseline survey instrument also included Modules E through I, which provided the data for specific Feed the Future indicators, as shown in Table 5.

**Table 5. Baseline Survey Indicators**

| Survey Module | Description of Indicator |
|---|---|
| E | Prevalence of Poverty: Percent of people living on less than $1.25/day (2005 PPP) |
| E | Daily per capita expenditures of U.S.-Govt.-assisted areas (2010 U.S.$) |
| F | Prevalence of households with moderate or severe hunger |
| G | WEAI |
| H | Women's Dietary Diversity Score: Mean number of food groups consumed by WRA |
| I | Prevalence of children 6-23 months receiving a MAD |

At the request of USAID/Mozambique, the PBS questionnaire also included a country-specific module (Module J) to assess respondents' knowledge of mobile money and mobile phone ownership and usage. The data from Module J will inform the design and implementation of a mobile money program.

The survey questionnaire was translated into Portuguese and loaded onto tablet computers provided by Westat. It is available on USAID's Open Data Listing (www.usaid.gov/data).

## E. Limitations

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

Ideally, 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."[53]

A potential issue for data interpretation exists due to the timing of the two rounds of survey data collection, which were conducted almost six months apart. The first round was conducted from February 5 to May 6, 2013, the second from November 22, 2013, to January 3, 2014. Both rounds were conducted primarily during the lean season (recommended), October through February in the south and central parts of Mozambique, and December through early March in the north.[54] Furthermore, the HHS calculated for the two separate surveys were compared, and no significant differences were found. In future assessments of household food security, the HHS should be administered at the same time of the year.[55]

The representativeness of the data for the GPI portion of the WEAI may be compromised by high nonresponse rates by men. They were either absent from the household when interviewers visited (multiple times) or unwilling to be interviewed.

[53] Ballard et al. 2011.
[54] FEWS Net. 2014.
[55] Ballard et al. 2011. Preferably, *all* indicators would be collected at the same time of year.

# Chapter 3. Descriptive Findings

Table 6, which begins on the next page, presents a summary of the baseline values for the 13 Feed the Future indicators, including daily per capita expenditures (in 2010 U.S. dollars) and percent living on less than $1.25/day (2005 PPP), calculated from PBS data. See Table 13 on page 27 for more detail on the prevalence of poverty using Mozambique national poverty lines and the depth of poverty in the country. For the baseline values reported by programmatic strata, see Table 40 on page 52.

A detailed description of individual indicators follows Table 6. Household-level indicators are disaggregated by gendered household types:

- Households with male and female adults (labeled as male and female adults)
- Households with one or more male adults, no female adult (labeled as male adult only)
- Households with one or more female adults, no male adult (labeled as female adult only)
- Households with children only, no adults (labeled as child no adult).

Only differences across sub-groups that are statistically significant at the 0.05 level or lower are discussed in the narrative.

## Table 6. 13 Feed the Future ZOI Population-Based Indicators

| Feed the Future Indicator | Baseline Values | | | | | | |
|---|---|---|---|---|---|---|---|
| | *n* (Unweighted) | Baseline Value | Std Dev | 95% CI | DEFF | Nonresponse Rate (PBS) | Source |
| **Prevalence of Poverty: Percentage of People Living on < $1.25/day (2005 PPP)** | ***2,807*** | **62.00** | **-** | **57.59-66.40** | **5.86** | **1.99** | **FEEDBACK PBS** |
| M&F (both male and female adults) | *2,131* | 62.37[a] | - | 57.78-66.96 | 5.36 | 2.25 | FEEDBACK PBS |
| FNM (female adult(s) only) | *464* | 67.46[b] | - | 61.23-73.68 | 1.49 | 1.07 | FEEDBACK PBS |
| MNF (male adult(s) only) | *192* | 38.24[ab] | - | 25.97-50.52 | 1.77 | 1.54 | FEEDBACK PBS |
| CNA (child no adult)^ | *20* | - | - | - | - | - | FEEDBACK PBS |
| **Per Capita Daily Expenditures of U.S. Govt.-Assisted Areas (2010 U.S.$)** | ***2,807*** | **1.42** | **1.13** | **1.32-1.53** | **5.94** | **1.99** | **FEEDBACK PBS** |
| M&F (both male and female adults) | *2,131* | 1.42 | 1.08 | 1.31-1.53 | 5.22 | 2.25 | FEEDBACK PBS |
| FNM (female adult(s) only) | *464* | 1.26 | 0.95 | 1.15-1.36 | 1.34 | 1.07 | FEEDBACK PBS |
| MNF (male adult(s) only) | *192* | 1.99 | 2.03 | 1.68-2.30 | 1.14 | 1.54 | FEEDBACK PBS |
| CNA (child no adult HHs)^ | *20* | - | - | - | - | - | FEEDBACK PBS |
| **Prevalence of Underweight Children Under 5** | ***1,903*** | **14.22** | | **11.98-16.46** | **2.77** | | **DHS** |
| Male | *943* | 15.70 | | 12.55-18.86 | 2.46 | | DHS |
| Female | *960* | 12.82 | | 10.16-15.47 | 2.18 | | DHS |
| **Prevalence of Stunting in Children Under 5** | ***1,903*** | **51.55** | | **48.01-55.09** | **3.38** | | **DHS** |
| Male | *943* | 54.06 | | 49.29-58.83 | 3.00 | | DHS |
| Female | *960* | 49.17 | | 44.31-54.03 | 3.27 | | DHS |
| **Prevalence of Wasting in Children Under 5** | ***1,903*** | **6.10** | | **4.84-7.36** | **1.87** | | **DHS** |
| Male | *943* | 7.50 | | 5.15-9.84 | 2.60 | | DHS |
| Female | *960* | 4.78 | | 3.19-6.37 | 1.93 | | DHS |
| **Prevalence of Underweight WRA** | ***2,032*** | **8.11** | | **6.32-9.89** | **3.29** | | **DHS** |

| Feed the Future Indicator | Baseline Values | | | | | | |
|---|---|---|---|---|---|---|---|
| | *n* (Unweighted) | Baseline Value | Std Dev | 95% CI | DEFF | Nonresponse Rate (PBS) | Source |
| **WEAI** | ***1,829*** | **0.83** | | | | | **FEEDBACK PBS** |
| 5DE subindex | *1,829* | 0.82 | 0.21 | 0.81-0.84 | 2.84 | 11.25 | FEEDBACK PBS |
| GPI subindex | *1,047* | 0.89 | 0.17 | 0.87-0.91 | 2.91 | 30.00 | FEEDBACK PBS |
| **Prevalence of Households with Moderate or Severe Hunger** | ***2,826*** | **22.99** | | **19.21-26.76** | **5.77** | **1.12** | **FEEDBACK PBS** |
| M&F (both male and female adults) | *2,151* | 20.03[c] | | 16.41-23.66 | 4.48 | 1.19 | FEEDBACK PBS |
| FNM (female adult(s) only) | *462* | 37.47[cd] | | 31.04-43.89 | 2.06 | 1.07 | FEEDBACK PBS |
| MNF (male adult(s) only) | *193* | 19.98[d] | | 13.04-26.92 | 1.45 | 0.51 | FEEDBACK PBS |
| CNA (child no adult households)^ | *20* | - | | - | - | - | FEEDBACK PBS |
| **Prevalence of Children 6-23 Months Receiving a MAD** | ***553*** | **9.18** | | **5.69-12.68** | **2.05** | **13.75** | **FEEDBACK PBS** |
| Male | *264* | 11.30 | | 6.05-16.55 | 1.88 | 14.95 | FEEDBACK PBS |
| Female | *289* | 7.16 | | 2.89-11.44 | 1.97 | 12.61 | FEEDBACK PBS |
| **Women's Dietary Diversity Score: Mean Number of Food Groups Consumed by WRA** | ***2,413*** | **3.33** | **1.42** | **3.17-3.49** | **7.94** | **9.97** | **FEEDBACK PBS** |
| Urban | *391* | 3.66 | 1.65 | 3.16-4.16 | 9.01 | 9.49 | FEEDBACK PBS |
| Rural | *2,022* | 3.28 | 1.38 | 3.12-3.44 | 7.30 | 10.07 | FEEDBACK PBS |
| **Prevalence of Exclusive Breastfeeding of Children Under 6 Months** | ***219*** | **40.88** | | **33.07-48.69** | **1.76** | | **DHS** |
| Male | *105* | 39.53 | | 29.41-49.64 | 1.53 | | DHS |
| Female | *114* | 42.32 | | 30.24-54.40 | 2.02 | | DHS |
| **Prevalence of Anemia Among Children 6-59 Months** | ***973*** | **72.29** | | **67.51-77.07** | **3.84** | | **DHS** |
| Male | *483* | 71.96 | | 66.89-77.02 | 2.07 | | DHS |
| Female | *490* | 72.60 | | 66.68-78.53 | 3.07 | | DHS |
| **Prevalence of Anemia Among WRA** | ***2,411*** | **52.39** | | **48.22-56.56** | **6.26** | | **DHS** |
| Pregnant | *312* | 44.33[e] | | 36.24-52.42 | 3.11 | | DHS |

| Feed the Future Indicator | Baseline Values | | | | | | |
|---|---|---|---|---|---|---|---|
| | *n* (Unweighted) | Baseline Value | Std Dev | 95% CI | DEFF | Nonresponse Rate (PBS) | Source |
| Nonpregnant | *2,099* | 53.60[e] | | 48.95-58.25 | 6.77 | | DHS |

# A. Household Characteristics

## A1. Demographics

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

### *Household Composition*

Across the ZOI, the average number of household members is 4.6 (Table 7). Households with female adults only tend to have fewer members (3.3) than those with male and female adults (5.1). Significantly more females live in households with male and female adults (2.5) than in households with a female adult only (2.3) or male adult only (1.0). Similarly, more children in the under-5 and 5-17 categories live in households with male and female adults (0.9 and 1.9, respectively) than female adult only (0.6 and 1.5, respectively) or male adult only (0.4 and 1.1, respectively) households.

**Table 7. Household Demographics**

| | Household Type | | | | |
|---|---|---|---|---|---|
| | All Households | Male and Female Adult | Female Adult Only | Male Adult Only | Child No Adult^ |
| | Mean (SD) | | | | |
| Number of household members | 4.61 (2.20) | 5.10[a] (2.10) | 3.29[a] (1.80) | 2.64[a] (1.64) | - |
| Number of females in household | 2.33 (1.35) | 2.48[b] (1.31) | 2.25[b] (1.30) | 0.97[b] (1.02) | - |
| Number of children (0-5 years) | 0.81 (0.86) | 0.89[c] (0.87) | 0.61[c] (0.82) | 0.40[c] (0.70) | - |
| Number of children (6-23 months) | 0.20 (0.4) | 0.21[d] (0.42) | 0.15[d] (0.37) | 0.16 (0.37) | - |
| Number of children (5-17 years) | 1.79 (1.56) | 1.91[e] (1.60) | 1.53[e] (1.39) | 1.07[e] (1.24) | - |
| Number of children attending school (5-17 years) | 1.15 (1.32) | 1.26[f] (1.35) | 0.97[f] (1.13) | 0.44[f] (1.09) | - |
| ***n* (Unweighted)** | **2,864** | **2,180** | **469** | **195** | **20** |

[a-f] 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: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

### *Education*

Across households with school-aged children (5-17 years), the average number of children attending school is 1.2 (of 1.8 school-aged children in the household). Male and female adult households have significantly more children attending school (1.3) than female adult only (1.0) and male adult only (0.4) households.

Table 8 (next page) shows the highest level of education achieved by household members in the ZOI. Overall, most households have members who attended lower primary or completed no schooling (56.7 percent of ZOI households). The results show a general trend of lower education in female adult only households relative to male adult only and male and female households.[56]

**Table 8. Highest Education Level Within the Household**

| | Household Type | | | | |
|---|---|---|---|---|---|
| | All Households | Male and Female Adult | Female Adult Only | Male Adult Only | Child No Adult^ |
| **Education Level** | | | % | | |
| Lower primary or none | 56.70 | 52.43[a] | 77.88[ab] | 49.39[b] | - |
| Upper primary | 24.27 | 26.10[c] | 15.81[cd] | 25.54[d] | - |
| Lower secondary | 14.72 | 16.54[e] | 5.09[ef] | 19.57[f] | - |
| Upper secondary | 3.81 | 4.26[g] | 1.22[gh] | 5.50[h] | - |
| Above secondary/technical or vocational | 0.50 | 0.66 | 0.00 | 0.00 | - |
| ***n* (Unweighted)** | **2,864** | **2,180** | **469** | **195** | **20** |

[a-h] 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: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

## A2. Dwelling Characteristics

Information about 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. As shown in Table 9, household dwellings have an average of 2.5 rooms. Households with male and female adults have more rooms (2.6) than female adult only (2.0) and male adult only (2.2) households. Approximately one in 20 of all households have electricity (average of 5.8 percent); a significantly smaller percentage of female adult only households (2.7 percent) have electricity compared with male adult only households (8.3 percent) and male and female adult households (6.3 percent).

**Table 9. Dwelling Characteristics**

| | Household Type | | | | |
|---|---|---|---|---|---|
| | All Households | Male and Female Adult | Female Adult Only | Male Adult Only | Child No Adult^ |
| Mean number of rooms (std dev) | 2.49 (1.30) | 2.63[a] (1.36) | 2.01[a] (0.94) | 2.21[a] (1.05) | - |
| % Households with electricity | 5.83 | 6.31[b] | 2.70[bc] | 8.30[c] | - |

[56] However, those differences may be influenced by differences in the household size because this measure is the highest education of individuals within the household.

| *n* (Unweighted) | 2,847 | 2,165 | 467 | 195 | 20 |
|---|---|---|---|---|---|

[a-c] 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: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

Table 10 (next page) presents information about housing construction materials. Households, regardless of type, typically use thatched/vegetable matter/sticks (82.5 percent) for roof materials. Walls are constructed primarily with mud or unfired brick (78.3 percent). Similarly, flooring materials are mainly earth or mud (90.0 percent) and only about one in 12 households use concrete or stone for floors (8.0 percent). Significant differences in construction materials are observed across household types.

**Table 10. Housing Construction Materials**

| | Household Type | | | | |
|---|---|---|---|---|---|
| | All Households | Male and Female Adult | Female Adult Only | Male Adult Only | Child No Adult^ |
| **Roof** | | | % | | |
| Roof tile | 0.59 | 0.70 | 0.00 | 0.86 | - |
| Corrugated metal | 15.21 | 17.43[a] | 6.79[ab] | 12.61[b] | - |
| Plastic sheeting | 0.30 | 0.30 | 0.41 | 0.00 | - |
| Thatched/vegetable matter/ sticks | 82.45 | 79.92[c] | 91.89[cd] | 85.68[d] | - |
| Mud/cow dung | 1.00 | 1.04 | 0.91 | 0.84 | - |
| Other | 0.46 | 0.61 | 0.00 | 0.00 | - |
| **Floor** | | | | | |
| Mud/unfired brick/manure | 90.01 | 89.32[e] | 95.30[ef] | 84.58[f] | - |
| Concrete/stone | 7.97 | 8.82[g] | 2.85[gh] | 11.75[h] | - |
| Brick/tile | 1.08 | 1.09 | 0.52 | 1.61 | - |
| Wood | 0.01 | 0.00[i] | 0.00 | 0.90[i] | - |
| Wattle and daub | 0.63 | 0.64 | 0.39 | 1.17 | - |
| Other | 0.23 | 0.01[j] | 0.94[j] | 0.00 | - |
| **Wall** | | | | | |
| Mud/unfired brick/manure | 78.34 | 78.01[k] | 84.07[kl] | 71.16[l] | - |
| Concrete/stone | 7.13 | 8.03[m] | 2.15[mn] | 9.98[n] | - |
| Brick/tile | 4.51 | 4.82 | 3.22 | 3.88 | - |
| Wood | 0.13 | 0.01[o] | 0.00 | 0.90[o] | - |
| Wattle and daub | 8.46 | 8.01 | 8.37 | 11.28 | - |
| Other | 1.43 | 1.05 | 2.19 | 2.79 | - |
| ***n* (Unweighted)** | **2,853** | **2,171** | **467** | **195** | **20** |

[a-o] 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: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

Table 11 (next page) shows that nearly all households use firewood (96.3 percent) as their main source of fuel for cooking. Significantly more female adult only households use firewood for their main cooking fuel (98.5 percent) than male adult only households (93.3 percent). Charcoal usage was significantly different across all household types. Male adult households showed the highest charcoal

use (6.7 percent) followed by male and female adult households (3.2 percent) and female adult only households (1.1 percent).

### 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** | | | % | | |
| Charcoal | 3.07 | 3.21[a] | 1.10[a] | 6.67[a] | - |
| Firewood | 96.29 | 96.04 | 98.49[b] | 93.33[b] | - |
| Animal dung | 0.54 | 0.63 | 0.41 | 0.00 | - |
| Other | 0.01 | 0.01 | 0.00 | 0.00 | - |
| ***n* (Unweighted)** | **2,852** | **2,171** | **467** | **194** | **20** |

[a-b] 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: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

## A3. Water and Sanitation

According to WHO[57] 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 toilet with flush, toilet without flush, ventilated improved pit latrine, and pit latrine with slab.

Approximately one-third of all households (34.8 percent) use an improved drinking water source (Table 12). A significantly higher proportion of male and female adult households (36.2 percent) use an improved water source compared with female adult only households (28.0 percent). Because the PBS questionnaire did not distinguish between the use of covered pit latrines with slab (improved) and those without slab (unimproved), DHS data for the ZOI was used to tabulate the percentage of households with improved sanitation facilities. Per WHO/UNICEF guidelines, improved categories include toilet with flush, toilet without flush, ventilated improved pit latrine, and pit latrine with slab. About one in five households in the ZOI–21.5 percent–have access to improved sanitation facilities.

### Table 12. Households with Improved Water and Sanitation Facilities

| | Household Type | | | | |
|---|---|---|---|---|---|
| | All Households | Male and Female Adult | Female Adult Only | Male Adult Only | Child No Adult^ |
| | | | % | | |
| Households using improved water source[2] | 34.82 | 36.21[a] | 27.98[a] | 36.89 | - |
| ***n* (Unweighted)** | **2,853** | **2,171** | **467** | **195** | **20** |
| Households using improved sanitation facilities [1,3] | 21.46 | 21.42 | 21.29 | 21.91 | 21.07 |
| ***n* (Unweighted)** | **2,700** | **1,717** | **653** | **291** | **38** |

[a-c] Subgroups with the same superscript are statistically different at the 0.05 level. The comparisons are across columns.

[57] WHO. 2013.

^ = Results not statistically representative, n<30.

[1] Improved categories include toilet-flush, toilet-no flush, ventilated improved pit latrine, pit latrine with slab, per WHO/UNICEF calculations in Joint Monitoring Program for Water Supply and Sanitation.

[2] Source: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

[3] Source: DHS June-November 2011.

## B. Household Consumption and Expenditures

## B1. Prevalence and Depth of Poverty in the ZOI

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

Table 13 (next page) shows that 62.0 percent of the population in the ZOI lives in poverty (based on $1.25/day). It should be noted that the Mozambican poverty line varies by region and urban/rural setting in order to take into account geographic differences in cost of living[58]. Within the ZOI, the highest poverty line is $1.33/day (29.0 meticais/day at 2013 price levels) in Manica and Tete urban settings. The lowest poverty line in the ZOI is $0.88/day (19.3 meticais/day at 2013 price levels) in Nampula rural setting.[59,60] Poverty levels are set by province, separately for rural and urban areas, to account for differences in estimated cost of living. The prevalence of poverty within the ZOI at the national poverty line is 47.3 percent. The food portion of the consumption basket was used to define the national extreme poverty line which ranges from $0.68 (11.1 meticais/day at 2009 price levels) in Nampula rural settings to $0.96/day (15.6 meticais/day at 2009 price levels) in Manica and Tete urban settings. The prevalence of extreme poverty in the ZOI is 30.3 percent. Male adult only households have the lowest prevalence of poverty for all three poverty lines, and male and female adult households have a lower prevalence of poverty than female adult only households at the national poverty line.

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. As shown in Table 13, the poverty gap in the ZOI is 22.8 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 $0.46.[61] The poverty gap at the national poverty line is 15.2 percent and at the extreme national poverty line the poverty gap is 9.0 percent.

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[58] Mozambique Ministry of Planning and Development. 2010. Poverty and Wellbeing in Mozambique: Third National Poverty Assessment.

[59] Mozambique Ministry of Planning and Development. 2010. Poverty and Wellbeing in Mozambique: Third National Poverty Assessment.

[60] Poverty lines by region and urban/rural, meticais/day presented at 2013 price levels, $/day presented at 2005 PPP levels for comparability to international line of $1.25/day:
Manica/Tete Urban: 29.0 meticais/day ($1.33/day)
Manica/Tete Rural: 26.2 meticais/day ($1.20/day)
Nampula Urban: 22.6 meticais/day ($1.03/day)
Nampula Rural: 19.3 meticais/day ($0.88/day)
Zambezia Urban: 25.8 meticais/day ($1.88/day)
Zambezia Rural: 19.5 meticais/day ($0.89/day)

[61] This estimation is calculated as (poverty gap/prevalence of poverty)*poverty line.

## Table 13. Poverty and Expenditure Indicators for the ZOI

| Feed the Future Indicator | Baseline Values | | | | |
|---|---|---|---|---|---|
| | *n* (Unweighted) | Baseline Value | Std Dev | 95% CI | DEFF |
| **Prevalence of Poverty: Percent of People Living on Less Than $1.25/day (2005 PPP)** | ***2,807*** | **62.00** | **-** | **57.59-66.40** | **5.86** |
| M&F (both male and female adults) | *2,131* | 62.37[a] | - | 57.78-66.96 | 5.36 |
| FNM (female adult(s) only) | *464* | 67.46[b] | - | 61.23-73.68 | 1.49 |
| MNF (male adult(s) only) | *192* | 38.24[ab] | - | 25.97-50.52 | 1.77 |
| CNA (child only HHs)^ | *20* | - | - | - | - |
| **Prevalence of Poverty: National Poverty Line[62]** | ***2,807*** | **47.25** | **-** | **42.73-51.76** | **5.82** |
| M&F (both male and female adults) | *2,131* | 47.24[c] | - | 42.47-52.01 | 5.44 |
| FNM (female adult(s) only) | *464* | 53.93[c] | - | 47.44-60.43 | 1.43 |
| MNF (male adult(s) only) | *192* | 26.97[c] | - | 15.03-38.92 | 2.01 |
| CNA [child only HHs)]^ | *20* | - | - | - | - |
| **Prevalence of Extreme Poverty: National Extreme Poverty Line[63]** | ***2,807*** | **30.28** | **-** | **25.80-34.76** | **6.77** |
| M&F (both male and female adults) | *2,131* | 30.63[d] | - | 25.79-35.47 | 6.57 |
| FNM (female adult(s) only) | *464* | 32.35[e] | - | 25.41-39.30 | 1.86 |
| MNF (male adult(s) only) | *192* | 17.27[de] | - | 7.85-26.69 | 1.73 |
| CNA (child only HHs)^ | *20* | - | - | - | - |
| **Poverty Gap at $1.25/day (2005 PPP)** | ***2,807*** | **22.80** | **24.53** | **19.83-25.77** | **10.46** |
| M&F (both male and female adults) | *2,131* | 22.56[f] | 23.17 | 19.42-25.69 | 9.91 |
| FNM (female adult(s) only) | *464* | 26.99[f] | 30.19 | 23.01-30.96 | 2.04 |
| MNF (male adult(s) only) | *192* | 14.78[f] | 30.18 | 7.66-21.9 | 2.71 |
| CNA (child only HHs)^ | *20* | - | - | - | - |
| **Poverty Gap at National Poverty Line** | ***2,807*** | **15.20** | **21.14** | **12.87-17.52** | **8.63** |
| M&F (both male and female adults) | *2,131* | 15.11 | 19.95 | 12.63-17.58 | 8.33 |
| FNM (female adult(s) only) | *464* | 17.54[g] | 26.85 | 13.90-21.19 | 2.17 |
| MNF [male adult(s) only] | *192* | 9.70[g] | 25.04 | 3.77-15.63 | 2.73 |
| CNA (child only HHs)^ | *20* | - | - | - | - |
| **Poverty Gap at National Extreme** | ***2,807*** | **9.01** | **17.16** | **7.32-10.69** | **6.87** |

[62] National poverty lines come from Poverty and Wellbeing in Mozambique: Third National Poverty Assessment. 2010. Ministry of Planning and Development. The poverty line differs by region and by rural/urban settings. Therefore, it is not possible to provide a single local currency threshold. See Table 12-1 in the Third National Poverty Assessment.

[63] The food portion of the consumption basket is what defines the extreme poverty line. Refer to Poverty and Wellbeing in Mozambique: Third National Poverty Assessment. 2010. Ministry of Planning and Development.

| Feed the Future Indicator | Baseline Values | | | | |
|---|---|---|---|---|---|
| | *n* (Unweighted) | Baseline Value | Std Dev | 95% CI | DEFF |
| **Poverty Line** | | | | | |
| M&F (both male and female adults) | *2,131* | 8.81 | 15.87 | 6.99-10.63 | 7.13 |
| FNM (female adult(s) only) | *464* | 11.42[h] | 24.41 | 8.28-14.56 | 1.95 |
| MNF (male adult(s) only) | *192* | 5.82[h] | 19.37 | 1.22-10.42 | 2.74 |
| CNA (child only HHs)^ | *20* | - | - | - | - |
| **Daily Per Capita Expenditures of U.S. Govt.-Assisted Areas (2010 U.S. dollars)** | ***2,807*** | **1.42** | **1.13** | **1.32-1.53** | **5.94** |
| M&F (both male and female adults) | *2,131* | 1.42[i] | 1.08 | 1.31-1.53 | 5.22 |
| FNM (female adult(s) only) | *464* | 1.26[i] | 0.95 | 1.15-1.36 | 1.34 |
| MNF (male adult(s) only) | *192* | 1.99[i] | 2.03 | 1.68-2.30 | 1.14 |
| CNA (child only HHs)^ | *20* | - | - | - | - |

[a]-i Subgroups with the same superscript are significant at the 0.05 level. Comparisons are between rows.
^ = Results not statistically representative; n<30.
Source: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

## B2. Daily per Capita Expenditures

Daily per capita expenditures (Module E) 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 and because of the difficulty in accurately measuring income. Expenditure data are less prone to error, easier to recall, and more stable over time than income data.[64] Please see Annex B for further description of this indicator.

Table 13 shows that the daily per capita expenditure in the ZOI is $1.42 (2010 U.S. dollars). Households with male adults only have higher daily per capita expenditure ($1.99) than both male and female adult households ($1.42) and female adult only households ($1.26). Moreover, male and female adult households have a significantly higher daily per capita expenditure than female adult only households ($1.42 and $1.26, respectively).

## C. Household Hunger

The HHS (Module F) is used to calculate the prevalence of households with moderate or severe hunger. Developed by the USAID-funded Food and Nutrition Technical Assistance II Project in collaboration with FAO, it has been cross-culturally validated to allow comparison across different food-insecure contexts. The approach is based on the idea that the experience of food insecurity causes predictable reactions that can be captured through a survey and summarized in a scale. The HHS is used to assess, geographically target, monitor, and evaluate in settings affected by substantial food insecurity. When administered in a population-based household survey, the HHS is used to estimate the percentage of households affected by three different severities of household hunger:

[64] Deaton. 2008.

little to no household hunger (HHS score 0-1), moderate household hunger (HHS score 2-3), and severe household hunger (HHS score 4-6).

Respondents are asked about the frequency that household members experienced three events in the preceding four weeks: no food at all in the house, went to bed hungry, and went all day and night without eating. Each question has four possible responses, which are collapsed into three categories and assigned numeric values: never (value=0), rarely or sometimes (value=1), or often (value=2). The HHS score is computed by summing the values for the three questions for each household to produce a HHS score ranging from 0 to 6. A decrease in the HHS score is a reflection of improved food security. This indicator should always be measured at the same time each year, ideally at the most vulnerable time of year (e.g., right before the harvest or during the dry season).[65] There were two rounds of surveys, one in Manica, Nampula, and Zambezia provinces from December 14, 2012, to January 18, 2013, and one in Tete province from November 22, 2013, to January 3, 2014. Although the survey was generally conducted in the lean season as recommended, there may be issues related to having two different rounds of surveys (see "Limitations" in Chapter 2, p. 17).

The Mozambique PBS data indicate that 23.0 percent of households experience moderate or severe hunger (Table 6, p. 19). Female adult only households have a higher prevalence of moderate or severe hunger (37.5 percent) than male and female adult households (20.0 percent) or male adult only households (20.0 percent).

Table 14 shows the HHS by level of severity, broken down by gendered household type and survey round. Female adult households are more likely to have both moderate and severe hunger (31.3 percent and 6.2 percent, respectively) than male and female adult households (18.9 percent and 1.2 percent, respectively) or male adult only households (19.4 percent and 0.6 percent, respectively). Table 14 also shows the HHS by survey round. Round 1 of the data collection occurred in Manica, Nampula, and Zambezia from February 5, 2013, to May 6, 2013. Round 2 took place in Tete from November 22, 2013, through January 3, 2014. There are no significant differences in the HHS indicator by survey round.

### Table 14. Household Hunger Broken Down by Household Type and Survey Round

| | Little to No Hunger | Moderate Hunger | Severe Hunger | *n* (Unweighted) |
|---|---|---|---|---|
| | | % | | |
| **All Households** | **77.01** | **21.04** | **1.95** | ***2,826*** |
| **Household Type** | | | | |
| Male and female adult | 79.97[a] | 18.86[c] | 1.18[e] | *2,151* |
| Female adult(s) only | 62.53[ab] | 31.29[cd] | 6.18[ef] | *462* |
| Male adult(s) only^ | 80.02[b] | 19.37[d] | 0.61[f] | *193* |
| Child only^ | - | - | - | *20* |
| **Survey Round[1]** | | | | |
| Manica, Nampula, Zambezia | 76.65 | 21.27 | 2.08 | *2,407* |
| Tete | 79.63 | 19.42 | 0 .95 | *419* |

[a-f] Subgroups with the same superscript are significant at the 0.05 level.
^ = Results not statistically representative, n<30.

[65] Deitchler et al. 2011.

[1] The first round of data collection was done in Manica, Nampula and Zambezia, and second round was done in Tete.
Source: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

## D. Nutrition

Data on height, weight, age, diet, and hemoglobin for children under 5 and WRA was used to calculate the women's and children's nutrition indicators for the ZOI. Secondary data, specifically the 2011 DHS, was used to calculate the prevalence of underweight, stunting, and wasting among children under 5; the prevalence of exclusive breastfeeding among infants 0-5 months; the prevalence of anemia among children 6-59 months; the prevalence of underweight (and overweight) among WRA; and the prevalence of anemia among WRA. Primary data from the baseline PBS, specifically Module H, was used to calculate the mean number of food groups consumed by WRA (and the mean number by quartile), as well as the percentage of WRA eating each of the nine food groups. Data from the PBS Module I was used to calculate MAD among children 6-23 months.

## D1. Child Nutritional Status

### *Measures of Nutritional Status (Stunting, Wasting, Underweight)*

This section reports three important anthropometric measurements of undernutrition among children under 5 in the ZOI: stunting (height-for-age), wasting (weight-for-height), and underweight (weight-for-age). Each indicator is calculated by taking anthropometric measurements of children under 5 in the sample and dividing it by the total number of children under 5 in the sample (for which measurement data are available). For example, stunting prevalence is calculated by the number of children who are stunted divided by the number of children with valid height and age data. The tabulations presented below are disaggregated by the sex of the child and by gendered household type.

*Stunting* is a height-for-age measurement that reflects chronic undernutrition. It is an indicator of linear growth retardation, most often due to a prolonged inadequate diet and poor health. Reducing the prevalence of stunting among children, particularly for children 0-23 months, is important because linear growth deficits accrued early in life are associated with cognitive impairment, poor educational performance, and decreased work productivity as adults.

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.[66] This indicator measures the prevalence of combined moderate (below -2SD and above or equal to -3SD) and severe (below -3SD) stunting. Although 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 to capture the impact of interventions over time and to align with DHS methods.

Among children under 5 in the ZOI, a little more than one-half (51.6 percent) are stunted and one-quarter (25.5 percent) are severely stunted (Table 15, next page). In male and female adult households, boys have a higher prevalence of moderate (54.7 percent) and severe (28.9 percent)

[66] WHO and UNICEF. 2006.

stunting than girls (47.0 and 21.7 percent, respectively). Boys in male and female adult households also have a lower average height-for-age Z score (-2.0) than girls in male and female adult households (-1.8). Girls in female adult only households have a higher prevalence of moderate (59.3 percent) and severe (33.5 percent) stunting than girls in male and female adult households (47.0 and 21.7 percent). Girls in female adult only households also have a lower average height-for-age Z score (-2.1) than girls in male and female adult households (-1.8). Data are not reported for children in male adult only households or child only households because of sample size (n<30).[67] Subsection D2 (p. 37) on women's nutrition provides further analysis examining households with underweight

[67] Per the NCHS, "A minimum sample size of 30 is recommended for reporting any mean, proportion, percentile, and variance under the simple random sample assumption." http://www.cdc.gov/nchs/data/nhanes/nhanes3/nh3gui.pdf.

## 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** | **25.45** | **51.55** | **-1.90** | **2.62** | **6.10** | **0.23** | **4.01** | **14.22** | **-0.95** | ***1,903*** |
| Male children | 27.30 | 54.06 | -1.98 | 3.25 | 7.50 | 0.15 | 4.86[a] | 15.70 | -1.04[b] | *943* |
| Female children | 23.70 | 49.17 | -1.82 | 2.03 | 4.78 | 0.31 | 3.20[a] | 12.82 | -0.86[b] | *960* |
| **Household Type** | | | | | | | | | | |
| **Male and Female Adult** | | | | | | | | | | |
| All children | 25.20 | 50.71 | -1.88 | 2.39 | 5.56 | 0.27 | 3.65[c] | 13.56[d] | -0.92[e] | *1,501* |
| Male children | 28.89[f] | 54.70[g] | -2.01[h] | 2.41[i] | 5.90[j] | 0.26[k] | 4.16[l] | 14.55[m] | -0.99[no] | *748* |
| Female children | 21.73[pf] | 46.95[qg] | -1.76[rh] | 2.39 | 5.24 | 0.27 | 3.18 | 12.62 | -0.84[n] | *753* |
| **Female Adult Only** | | | | | | | | | | |
| All children | 27.87 | 55.16 | -1.98 | 3.89 | 8.28 | 0.05 | 6.01[c] | 18.41[d] | -1.13[e] | *372* |
| Male children | 22.08 | 50.92 | -1.86 | 7.21[is] | 13.44[jt] | -0.31[ku] | 8.41[l] | 22.29[m] | -1.29[ov] | *182* |
| Female children | 33.45[p] | 59.25[q] | -2.09[r] | 0.70[s] | 3.30[t] | 0.39[u] | 3.69 | 14.66 | -0.98[v] | *190* |
| **Male Adult Only^** | | | | | | | | | | |
| All children^ | - | - | - | - | - | - | - | - | - | *27* |
| Male children^ | - | - | - | - | - | - | - | - | - | *13* |
| Female children^ | - | - | - | - | - | - | - | - | - | *14* |
| **Child No Adult^** | | | | | | | | | | |
| All children^ | - | - | - | - | - | - | - | - | - | *3* |
| Male children^ | - | - | - | - | - | - | - | - | - | *0* |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Female children^ | - | - | - | - | - | - | - | - | - | *3* |

[a-v] 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 June-November 2011.

and child stunting (Table 23, p. 38) as well as overweight/obese women and child stunting (Table 25, p. 39).

Stunting prevalence in the ZOI (51.6 percent) is more than the national stunting prevalence from the 2011 Mozambique DHS (42.6 percent).[68] This trend also holds when disaggregating by sex: Stunting for boys and girls is higher in the ZOI (54.1 percent and 49.2 percent, respectively) than the national average (44.7 percent and 40.5 percent, respectively). However, the average stunting prevalance reported in the baseline PBS falls within the range of other East African national averages reported in the DHS between 2007 and 2011.[69] The stunting prevalence range in East Africa was between an estimated 32 percent in the Zimbabwe 2010-2011 DHS 2010-11 to 58 percent in the 2010 Burundi DHS.[70]

*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.[71] This indicator also measures the prevalence of moderate (below -2SD and above or equal to -3SD) and severe (below -3SD) wasting.

The prevalence of wasting among children under 5 in the ZOI is 6.1 percent (Table 15). Boys in households with male and female adults have lower prevalence of moderate (5.9 percent) and severe (2.4 percent) wasting than boys in households with female adults only (13.4 and 7.2 percent, respectively). In addition, within female adult only households, boys have a higher prevalence of moderate (13.4 percent) and severe (7.2 percent) wasting than girls (3.3 and 0.7 percent, respectively). Boys in female adult only households also have a lower average weight-for-height Z score (-0.3) than girls in female adult only households (0.4).

Wasting prevalence in the ZOI (6.1 percent) is comparable to the reported national wasting prevalence from the Mozambique 2011 DHS (5.9 percent).[72] In addition, the average wasting prevalance in the baseline PBS falls within the range of other East African national averages reported in the DHS between 2007 and 2011.[73] The East African prevalence of wasting ranges from 3 percent (Rwanda and Zimbabwe DHS 2010) to 10 percent (Ethiopia DHS 2011).[74]

*Underweight* is a weight-for-age measurement and reflects 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 (below -2SD and above or equal to -3SD) and severe (below -3SD) underweight.

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[68] Mozambique DHS. 2011.
[69] USAID/MEASURE Evaluation DHS East African countries include Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Rwanda, Sudan, Tanzania, Uganda, Zambia, and Zimbabwe.
[70] Data abstracted from USAID/MEASURE STAT Compiler; limited to DHS surveys conducted from 2007-2012.
[71] WHO and UNICEF. 2006.
[72] Mozambique DHS. 2011.
[73] USAID/MEASURE Evaluation DHS East African countries include Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Rwanda, Sudan, Tanzania, Uganda, Zambia, and Zimbabwe.
[74] Data abstracted from USAID/MEASURE Evaluation STATCompiler; limited to DHS which were conducted from 2007-2012.

Among children under 5 in the ZOI, 14.2 percent are underweight and 4.0 percent are severely underweight (Table 15). Significant differences are found in prevalence of severe underweight by the sex of child: More boys (4.9 percent) than girls (3.2 percent) are severely underweight. Further analysis by household type shows that children in female adult only households have higher prevalence of moderate and severe underweight (18.4 and 6.0 percent) than children in male and female adult households (13.6 and 3.7 percent, respectively), which is mostly driven by large differences among boys in those household types. Within all households, the average weight-for-age Z-scores are lower among boys (-1.0) than girls (-0.9). In addition, the average weight-for-age Z-scores are also lower among all children (both sexes) in female adult only households (-1.1) than children (both sexes) in male and female adult households (-0.9).

Underweight prevalence in the ZOI as calculated from the 2011 DHS data (14.2 percent) is comparable to underweight prevalence at the national level (14.9 percent). This is also true for prevalence of underweight boys in the ZOI (15.7 percent) and at the national level (16.6 percent) and prevalence of underweight girls in the ZOI (12.8 percent) and at the national level (13.2 percent). Furthermore, the prevalence of underweight in the Mozambique ZOI falls within the range of other East African countries, where children's underweight prevalence ranges from 10 percent in Zimbabwe (2010 DHS) to 29 percent in Burundi (DHS 2010).[75,76]

### *Infant and Young Child Feeding*

Exclusive breastfeeding for the first six months of life 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. Secondary data from the 2011 DHS were used to tabulate the exclusive breastfeeding indicator for the Mozambique ZOI. Please see Annex B for a further description of this indicator.

The prevalence of exclusive breastfeeding of children under 6 months in the ZOI is 40.9 percent (Table 16, next page). This result is comparable to the national prevalence of exclusive breastfeeding (42.8 percent) as reported in the 2011 DHS.[77] There are no significant differences in exclusive breastfeeding by gendered household type.

Across the East Africa region, there is a large disparity in exclusive breastfeeding practices. National prevalence of exclusive breastfeeding of children under 6 months ranges from approximately 32 percent in Zimbabwe and Kenya to 85 percent in Rwanda.[78]

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[75] USAID/MEASURE Evaluation DHS East African countries include Kenya, Madagascar, Malawi, Mozambique, Rwanda, Sudan, Tanzania, Uganda, Zambia, and Zimbabwe.

[76] Data abstracted from USAID/MEASURE Evaluation STATCompiler; limited to DHS conducted from 2007-2012.

[77] Mozambique DHS. 2011.

[78] Data abstracted from USAID/MEASURE Evaluation STATCompiler (Zimbabwe DHS 2010-11 and Kenya DHS 2008-09); limited to DHS conducted from 2007-2012.

## Table 16. Prevalence of Exclusive Breastfeeding of Children Under 6 Months

| | Baseline Value (%) | *n* (Unweighted) |
|---|---|---|
| **All Households** | **40.88** | ***219*** |
| **Household Type** | | |
| Male and female adults | 40.85 | *162* |
| Female adult only | 45.98 | *47* |
| Male adult only^ | - | *8* |
| Child no adult^ | - | *2* |

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 June-November 2011.

MAD measures the proportion of children 6-23 months who receive a MAD apart from breastfeeding. This composite indicator measures the minimum feeding frequency and minimum dietary diversity given to the child in the 24 hours prior to the survey. Tabulation of the indicator requires data from the following components:

- Consumption of milk or milk products
- Dietary diversity (consumption of four or more food groups)
- Frequency of feeding semisolid/solid feeds and number of milk feeds (minimum times or more)

Consumption of milk is important in development and promotion of strong bones. Children who are breastfed meet the milk consumption requirement. The diet of nonbreastfed children should include at least two feedings of commercial infant, fresh, tinned, or powdered animal milk.

Minimum dietary diversity for breastfed children 6-23 months is defined as four or more food groups out of the following seven groups: dairy products (infant formula, milk other than breast milk, cheese, yogurt); grains, roots and tubers; vitamin A-rich fruits and vegetables; other fruits and vegetables; eggs; meat, fish, poultry, and organ meats; and legumes and nuts.

The minimum necessary feeding frequency varies for breastfed and nonbreastfed children. The minimum times for feeding breastfed children (not including breastfeeds) is at least twice a day for infants 6-8 months and three times a day for children 9-23 months. For nonbreastfed children 6-23 months, the child should be fed four times or more.

Among breastfed children, MAD is met if the child consumes four or more food groups and is fed solid, semisolid, or soft foods the minimum number of times or more. For nonbreastfed children, MAD is met if a child receives at least two milk feeds, four or more feedings, and at least four food groups (not including dairy). Data in this report are presented across the ZOI, disaggregated by sex (Table 6, p. 19), by gendered household type (Table 17, next page), and by breastfeeding status (Table 18, next page).

PBS baseline survey results indicate that 9.2 percent of children 6-23 months in the ZOI have received a MAD (Table 17). There are no significant differences in this indicator by gendered household type.

### Table 17. Prevalence of Children 6-23 Months Receiving a MAD

| | Baseline Value (%) | *n* (Unweighted) |
|---|---|---|
| **All Households** | **9.18** | ***553*** |
| **Household Type** | | |
| Male and female adults | 10.22 | *458* |
| Female adult only | 5.18 | *67* |
| Male adult only^ | - | *28* |
| 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: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

The MAD indicator was also disaggregated by component and breastfeeding status (Table 18). Among all children, more than one-third (39.9 percent) receive the minimum feeding frequency, and close to one-fifth (18.8 percent) receive minimum dietary diversity (i.e., four or more food groups). Significant differences are found between breastfed and nonbreastfed children 6-23 months by component (Table 18). A higher percentage of breastfed children (43.0 percent) than nonbreastfed children (15.1 percent) are fed the minimum number of times. In addition, a higher percentage of breastfed children (10.0 percent) receive a MAD than nonbreastfed children (2.3 percent). (Note that the sample of nonbreastfed children is very small, just 66 cases.)

### Table 18. Components of MAD Among Children 6-23 Months

| | Baseline Value % | *n* (Unweighted) |
|---|---|---|
| **Breastfed Children 6-23 Months** | | |
| Four or more food groups | 17.66 | *487* |
| Minimum times or more | 42.97[a] | *487* |
| MAD | 10.02[b] | *487* |
| **Nonbreastfed Children 6-23 Months** | | |
| Milk or milk products | 4.81 | *66* |
| Four or more food groups | 28.53 | *66* |
| Minimum times or more | 15.12[a] | *66* |
| MAD | 2.33[b] | *66* |
| **All Children 6-23 Months** | | |
| Breast milk, milk or milk products | 89.64 | *553* |
| Four or more food groups | 18.84 | *553* |
| Minimum times or more | 39.94 | *553* |
| MAD | 9.18 | *553* |

[a-b] Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across rows.
^ = Results not statistically representative, n<30.
Source: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

## *Child Anemia*

The child anemia indicator stresses the importance of micronutrient nutrition, particularly iron, for children's health and development. Child anemia is associated with adverse consequences for child growth and development, including increased morbidity and impaired cognitive development. The anemia indicator is measured by hemoglobin concentration in the blood and 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; thus, any anemia among children 6-59 months is a hemoglobin concentration less than 11 g/dL. Secondary data from the 2011 DHS were used to tabulate the children's anemia indicator for the ZOI. Indicator values are shown for all children, and also disaggregated by sex of the child (Table 6, p. 19) and gendered household type (Table 19).
In the ZOI, nearly three-quarters (72.3 percent) of children 6-59 months are anemic (Table 19). There are no significant differences in anemia prevalence by sex of the child (Table 6). Anemia prevalence in the ZOI is marginally higher than the national prevalence of 68.7 percent, as reported in the 2011 DHS,[79] as are the values when disaggregated by sex (72.0 percent among males and 72.6 percent among females in the ZOI; 69.0 percent among males and 68.3 percent among females nationally). Table 19 shows that there are no significant differences in the children's anemia indicator by gendered household type.

### Table 19. Prevalence of Anemia Among Children 6-59 Months

| | Baseline Value (%) | *n* (Unweighted) |
|---|---|---|
| **All Households** | **72.29** | ***973*** |
| **Household Type** | | |
| Male and female adults | 71.70 | *765* |
| Female adult only | 73.25 | *192* |
| Male adult only^ | - | *15* |
| Child no adult^ | - | *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.
Source: DHS June-November 2011.

Table 20 presents children's anemia by severity (any, mild, moderate, or severe). Of children with hemoglobin levels less than 11.0 g/dL, most of the cases are classified as moderately or mildly anemic. Approximately five percent (5.2 percent) of children in the ZOI are classified as severely anemic with a hemoglobin level less than 7.0 g/dL, which is slightly higher than the national prevalence of severe anemia, which is 4.0 percent as reported in the 2011 DHS.[80]

### Table 20. Prevalence of Mild, Moderate, and Severe Anemia Among Children 6-59 Months

| | Baseline Value (%) | *n* (Unweighted) |
|---|---|---|
| Any anemia (<11.0 g/dl) | 72.29 | *973* |
| Mild anemia (10.0-10.9 g/dL) | 24.85 | *973* |
| Moderate anemia (7.0-9.9 g/dL) | 42.26 | *973* |

[79] Mozambique DHS. 2011.
[80] Ibid.

| | | |
|---|---|---|
| Severe anemia (<7.0 g/dL) | 5.18 | *973* |

No differences across subgroups for any of the indicators in the table are statistically significant at the 0.05 level.
Source: DHS June-November 2011.

## D2. 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. Undernutrition among WRA is associated with increased morbidity and poor food security, and can result in adverse birth outcomes. This indicator measures the percent of nonpregnant WRA (15-49) who are underweight, as defined by a body mass index (BMI) less than 18.5. [BMI = weight (kg)/height (in meters) squared.] This indicator is calculated for the Mozambique ZOI using secondary data from the 2011 DHS. The women's underweight indicator is presented for all women, as well as by gendered household type.

Table 21 presents women's mean BMI and the prevalence of BMI categories. Across all women surveyed, the mean BMI is 22.0, or normal weight. Nearly 80 percent (79.2) of women are considered normal weight, and there are more overweight/obese women (12.7 percent) than underweight women (8.1 percent) in the sample. These results are similar to the 2011 DHS for both the national average BMI (22.4) and percent of women of normal weight (75.0). The overall percentage of underweight WRA is similar to the national level of 8.6 percent, as is the percent of mildly underweight women (6.7 percent) and moderately to severely underweight (1.9 percent).[81]

**Table 21. Women's BMI**

| | Baseline Value | Std Dev | *n* (Unweighted) |
|---|---|---|---|
| **Mean BMI** | **22.02** | **2.55** | ***2,032*** |
| **BMI Categories** | **%** | | |
| < 17.0 (moderate/severely underweight) | 1.58 | - | *2,032* |
| 17.0-18.49 (mildly underweight) | 6.53 | - | *2,032* |
| 18.5 – 24.9 (normal) | 79.24 | - | *2,032* |
| 25.0-29.9 (overweight) | 10.47 | - | *2,032* |
| ≥ 30.0 (obese) | 2.18 | - | *2,032* |
| <18.5 (underweight) | 8.11 | - | *2,032* |
| 18.5-24.9 (normal) | 79.24 | - | *2,032* |
| ≥ 25.0 (overweight/obese) | 12.66 | - | *2,032* |

No differences across subgroups for any of the indicators in the table are statistically significant at the 0.05 level.
Source: DHS June-November 2011.

In the ZOI, the combined underweight prevalence of WRA is 8.1 percent (Table 22, next page). There are no significant differences in the women's underweight indicator by gendered household type. As shown in Table 21, 6.5 percent are mildly underweight and 1.6 percent are moderately to severely underweight.

[81] Mozambique DHS. 2011.

## Table 22. Prevalence of Underweight Women

| | Baseline Value (%) | *n* (Unweighted) |
|---|---|---|
| **All Households** | **8.11** | ***2,032*** |
| **Household Type** | | |
| Male and female adults | 8.17 | *1,468* |
| Female adult only | 7.88 | *493* |
| Male adult only[1] | 8.53 | *55* |
| Child no adult[1^] | - | *16* |

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 age 18 or older, but the women's underweight indicator includes females age 15-17, so child no adult and male adult only households may have females measured for this indicator.

Source: DHS June-November 2011.

Table 23 shows the prevalence of households with underweight WRA and stunting in children under 5. This is shown for all households and by gendered household type. It is important to note that height and weight measurements were taken from every consenting nonpregnant WRA in the household; this did not necessarily include the mothers or caregivers of all children. In the ZOI baseline, 5.2 percent of surveyed households have WRA who are underweight and children with stunting. There are no significant differences in the measure by gendered household type.

## Table 23. Prevalence of Households with Underweight Women and Stunting in Children Under 5

| | Baseline Value (%) | *n* (Unweighted) |
|---|---|---|
| **All Households** | **5.21** | ***1,090*** |
| **Household Type** | | |
| Male and female adults | 5.43 | *843* |
| Female adult only | 4.29 | *230* |
| Male adult only[1^] | - | *15* |
| Child no adult[1^] | - | *2* |

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 age 18 or older, but the women's underweight indicator includes females age 15-17, so child no adult and male adult only households may have females measured for this indicator.

Source: DHS June-November 2011.

Overweight or obesity is associated with higher risk of hypertension, diabetes, and adverse maternal and neonatal outcomes. The combined prevalence of overweight and obese (BMI >= 25) is 12.7 percent of nonpregnant WRA in the ZOI (Table 24). As shown in Table 21, about one in 10 (10.5 percent) of women surveyed are overweight and 2.2 percent are obese. These values are slightly less than the national 2011 DHS estimates (12.3 percent and 4.2 percent for overweight and obese women, respectively).

As shown in Table 24 on the next page, women in male adult only households are less likely (0.7 percent) to be overweight than women in male and female adult households (13.6 percent) and

women in female adult only households (11.1 percent). Note that male adult only households and child only households are defined by household members age 18 and older; thus, it is possible to have females age 15-17 in these household types.

### Table 24. Prevalence of Overweight and Obese Women

| | Baseline Value (%) | *n* (Unweighted) |
|---|---|---|
| **Any Overweight** | **12.66** | ***2,032*** |
| **Household Type** | | |
| Male and female adults | 13.57[a] | *1,468* |
| Female adult only | 11.12[b] | *493* |
| Male adult only[1] | 0.72[ab] | *55* |
| Child no adult[1^] | - | *16* |

[a-b] Subgroups with the same superscript are significantly different 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 age 18 or older, but the women's overweight indicator includes females age 15-17, so child no adult and male adult only households may have females measured for this indicator.
Source: DHS June-November 2011.

Further analysis examined the prevalence of households with overweight WRA and stunting in children. As mentioned with respect to Table 23, which presented households with underweight women and child stunting, it is important to note that height and weight measurements were taken from every consenting nonpregnant WRA in the household; this did not necessarily include the mothers or caregivers of all children. Table 25 shows that in the ZOI baseline, 6.8 percent of surveyed households have WRA who are overweight/obese and children with stunting. There are no significant differences in this measure by gendered household type.

### Table 25. Prevalence of Households with Overweight/Obese Women and Stunting in Children Under 5

| | Baseline Value (%) | *n* (Unweighted) |
|---|---|---|
| **All Households** | **6.82** | ***1,090*** |
| **Household Type** | | |
| Male and female adults | 6.34 | *843* |
| Female adult only | 9.47 | *230* |
| Male adult only[1^] | - | *15* |
| Child no adult[1^] | - | *2* |

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 age 18 or older, but the women's overweight indicator includes females age 15-17, so child no adult and male adult only households may have females measured for this indicator.
Source: DHS June-November 2011.

## *Women's Dietary Diversity Score*

WRA 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 indicator is a validated proxy measure of the micronutrient adequacy of women's diets and reports the mean number of food groups consumed by WRA during the 24 hours immediately prior to the survey.

Nine food groups are assessed to calculate this indicator: grains, roots, and tubers; legumes and nuts; dairy products; organ meat; eggs; flesh food and small animal protein; vitamin A-rich dark green leafy vegetables; other vitamin A-rich vegetables and fruits; and other fruits and vegetables. The mean number of food groups consumed by WRA is tabulated by averaging the number of these food groups consumed across all WRA in the sample with dietary diversity data available (*n*=2,413). On average, surveyed women report eating 3.3 out of nine food groups. (See Table 6, p. 19, and Table 26, below). As shown in Table 26, women in male and female adult households have a significantly higher dietary diversity score (3.4 food groups) than women in female adult only households (3.1 food groups) and women in male adult only households (3.0 food groups). Note that male adult only households and child only households are defined by household members age 18 and older; thus, it is possible to have females age 15-17 in these household types.

### Table 26. Women's Dietary Diversity Score: Mean Number of Food Groups Consumed by WRA

| | Baseline Value (Mean) | Standard Deviation | *n* (Unweighted) |
|---|---|---|---|
| **All Households** | **3.33** | **1.42** | ***2,413*** |
| **Household Type** | | | |
| Male and female adults | 3.39[ab] | 1.43 | *1,980* |
| Female adult only | 3.09[a] | 1.35 | *338* |
| Male adult only[1] | 3.00[b] | 1.35 | *85* |
| Child no adult[1^] | - | - | *10* |

[a-b] 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 age 18 or older, but the women's dietary diversity indicator includes females age 15-17, so child no adult and male adult only households may have females measured for this indicator.
Source: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

Further analysis was conducted to identify which food groups were most frequently consumed (Table 27). The great majority of women (92.6 percent) eat grains, roots, and tubers. Nearly three-quarters (74.8 percent) report eating vitamin A-rich dark green leafy vegetables, and nearly one-third (30.4 percent) report eating other vitamin A-rich fruits and vegetables. Vitamin A is linked to improved health and immunity, and has generally been shown to reduce anemia.[82]

Half of the sampled women (50.3 percent) consume other fruits and vegetables, and 45.9 percent report consuming flesh foods or other miscellaneous small animal protein foods. Only about one-fourth of women (26.2 percent) report consuming legumes and nuts, and about one in 10 (11.0 percent) report eating eggs. Very few women consume dairy products (0.8 percent) and organ meat (0.8 percent).

[82] Semba and Bloem. 2002.

### Table 27. Percentage of Women Consuming Each Food Group Daily

| | Baseline Value (%) | *n* (Unweighted) |
|---|---|---|
| **Food Group** | | |
| Grains, roots, and tubers | 92.56 | *2,413* |
| Legumes and nuts | 26.24 | *2,413* |
| Dairy products | 0.75 | *2,413* |
| Organ meat | 0.81 | *2,413* |
| Eggs | 10.96 | *2,413* |
| Flesh foods and other misc. small animal protein | 45.89 | *2,413* |
| Vitamin A-rich dark green leafy vegetables | 74.80 | *2,413* |
| Other vitamin A-rich vegetables and fruits | 30.43 | *2,413* |
| Other fruits and vegetables | 50.30 | *2,413* |

Source: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

The Women's Dietary Diversity Score was divided into quartiles and the average of the scores within the quartile were calculated (Table 28). The breakdown by quartiles shows a fairly consistent pattern of increase—from 1.7 in the lowest quartile to 5.3 in the highest quartile, increasing approximately by one food group per quartile.

### 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 (standard deviation) | 1.73 (0.48) | 2.78 (0 .41) | 3.71 (0.46) | 5.30 (0.72) |
| ***n* (Total *n*=2,413)** | **603** | **603** | **603** | **604** |

Source: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

## *Anemia Among WRA*

The prevalence of anemia among WRA stresses the importance of micronutrients in women's diets before and during pregnancy to promote growth and development of the child in utero and 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, and relies on secondary data from the 2011 DHS. The data are disaggregated by physiological status: pregnant and nonpregnant.

Among WRA, more than half (52.4 percent) are anemic. When anemia is examined by severity, 38.4 percent are mildly anemic, 12.8 percent are moderately anemic, and 1.2 percent are severely anemic. (See Table 29, next page.)

Significantly more nonpregnant women (53.6 percent) have anemia, regardless of severity, than pregnant women (44.3 percent). Similarly, when examined by severity, significantly more nonpregnant women (41.1 percent) have mild anemia than pregnant women (20.8 percent). However, with moderate and severe anemia, pregnant women appear to fare worse than nonpregnant women. About one in five (20.8 percent) pregnant women has moderate anemia and 2.8 percent has severe anemia. This is significantly higher than among nonpregnant women, 11.6 percent of whom have moderate anemia and 0.9 percent have severe anemia.

The ZOI anemia prevalence is almost identical to the national prevalence of anemia among women, which is 54.0 percent.[83] The national rates for mild anemia (38.6 percent) and moderate anemia (14.0 percent) are marginally different from those in the ZOI. Levels of anemia among nonpregnant WRA at the national level are slightly higher (54.4 percent) than in the ZOI (53.6 percent). Anemia among pregnant WRA at the national level is markedly higher (50.9 percent) than in the ZOI (44.3 percent).

[83] Mozambique DHS. 2011.

## Table 29. Prevalence of Mild, Moderate, and Severe Anemia Among WRA

| | Baseline Value (%) | *n* (Unweighted) |
|---|---|---|
| **Pregnant Women** | | |
| Any anemia (NP <12.0 g/dL, P <11.0 g/dL) | 44.33[a] | *312* |
| Mild anemia (NP 10.0-11.9 g/dL, P 10.0-10.9 g/dL) | 20.77[b] | *312* |
| Moderate anemia (NP 7.0-9.9 g/dL, P 7.0-9.9 g/dL) | 20.80[c] | *312* |
| Severe anemia (NP and P <7.0 g/dL) | 2.76[d] | *312* |
| **Nonpregnant Women** | | |
| Any anemia (NP <12.0 g/dL, P <11.0 g/dL) | 53.60[a] | *2,099* |
| Mild anemia (NP 10.0-11.9 g/dL, P 10.0-10.9 g/dL) | 41.10[b] | *2,099* |
| Moderate anemia (NP 7.0-9.9 g/dL, P 7.0-9.9 g/dL) | 11.59[c] | *2,099* |
| Severe anemia (NP and P <7.0 g/dL) | 0.91[d] | *2,099* |
| **All Women** | | |
| Any anemia (NP<12.0 g/dL, P<11.0 g/dL) | 52.39 | *2,411* |
| Mild anemia (NP 10.0-11.9 g/dL, P 10.0-10.9 g/dL) | 38.44 | *2,411* |
| Moderate anemia (NP 7.0-9.9 g/dL, P 7.0-9.9 g/dL) | 12.80 | *2,411* |
| Severe anemia (NP and P <7.0 g/dl) | 1.16 | *2,411* |

[a-d] Subgroups with the same superscript are significantly different at the 0.05 level. The comparisons are across rows.
Source: DHS June-November 2011.

Table 30 shows the prevalence of anemia for all women and by gendered household type. There are no significant differences in this indicator by gendered household type.

## Table 30. Prevalence of Anemia Among WRA

| | Baseline Value (%) | *n* (Unweighted) |
|---|---|---|
| **All Households** | **52.39** | ***2,411*** |
| **Household Type** | | |
| Male and female adults | 51.67 | *1,755* |
| Female adult only | 54.46 | *563* |
| Male adult only[1] | 57.35 | *76* |
| Child no adult[1^] | - | *17* |

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] Note, households classified as child no adult and male adult only have no female members age 18 or older, but the women's anemia indicator includes females age 15-17, so child no adult and male adult only households may have females measured for this indicator.

Source: DHS June-November 2011.

## E. Women's Empowerment

Women play a prominent role in agriculture. 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 initiative's 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.[84]

### E1. 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 sector.[85] The WEAI score for Mozambique is 0.83. The WEAI has two subindices: 5DE, which measures women's empowerment based on five domains of empowerment, and the GPI, which 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 (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 adult male/female decision-makers in the same household. Please see Annex B for further description of this indicator and explanation of the calculation. See Table 31 on the next page for the list and definition of WEAI indicators.

### E2. 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. Table 31 shows the five domains, their definitions under the WEAI, the corresponding 10 indicators, and their weights for the 5DE.

The 5DE is a measure of empowerment: The subindex describes women as "empowered" or "not yet empowered" rather than "empowered" or "disempowered." A woman is defined as empowered if she has adequate achievement[86] in 80 percent or more of the weighted indicators, which is considered an empowerment threshold. For women who are not yet empowered, the 5DE captures the percentage of indicators in which those women do 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.

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[84] International Food Policy Research Institute. 2013.
[85] Alkire et al. 2013.
[86] Having "adequate achievement" means an individual score above an adequacy cutoff established for each indicator.

## 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 calculated by first constructing the disempowerment index ($M_0$), and then converting $M_0$ to empowerment (5DE = 1- $M_0$). The disempowerment index is constructed using a multidimensional methodology known as the Alkire Foster Method.[87] $M_0$ 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.[88] In sum, the 5DE is expressed as 5DE = 1 – H x A. Of note, Table 32 (next page) reports H and A as percentages, but in the 5DE formula, the equivalent proportions are used.

Table 32 shows that the 5DE in Mozambique is 0.82. As reflected in the formula above, this score is calculated with the percentage of women in the survey who are not yet empowered (disempowered headcount, or H), which is 48.9, and the average inadequacy score (A), which is 36.4 percent.[89] The results presented in this section do not represent the levels of empowerment of all adult women in the population'; they represent the status of primary female decision-makers in the household.

[87] University of Oxford. (2013).
[88] Alkire et al. 2013.
[89] These are the results based on the calculations of this indicator, recognizing that most women in agriculture are subsistence farmers. For more information on Feed the Future's use of the WEAI, visit http://feedthefuture.gov/article/release-womens-empowerment-agriculture-index. Retrieved May 20, 2013.

## Table 32. Women's 5DE Subindex

| | Baseline Value |
|---|---|
| 5DE subindex | 0.82 |
| Percent of women achieving empowerment (score of 0.80 or greater) (1-$H_n$) | 51.11 |
| Percent of women not achieving empowerment (score below 0.80) ($H_n$) | 48.89 |
| Average adequacy score for women not yet empowered (1-A) | 63.60 |
| Average inadequacy score for women not yet empowered (A) | 36.40 |
| ***n* (Unweighted)** | **1,829** |

Source: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

In addition to examining the 5DE subindex for the sample as a whole, 5DE scores were analyzed and compared by gendered household type. As shown in Table 33, the 5DE subindex differs significantly by household type. Women in male and female adult households have a significantly lower 5DE value (0.81) than women in female adult only households (0.90).

## Table 33. Women's 5DE Subindex and Household Type

| | Baseline Value | SD | *n* (Unweighted) |
|---|---|---|---|
| **Household Type** | | | |
| Male and female adults | 0.81[a] | 0.22 | *1,529* |
| Female adult only | 0.90[a] | 0.15 | *300* |

[a] Significantly different, $p<0.05$. Comparisons are across rows.
Source: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

Table 34 (next page) reports the percentages of primary decision-making females who are not yet empowered and have inadequacy in each of the 10 indicators within each of the five domains of empowerment (i.e., the censored headcount). Please see Annex C for descriptions of each of the 10 indicators including adequacy cutoffs. 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 ratio 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] (Unweighted *n*=1,829) |
|---|---|---|
| **Production** | Input in productive decisions | 18.15 |
| | Autonomy in production | 17.20 |
| **Resources** | Ownership of assets | 7.06 |
| | Purchase, sale, or transfer of assets | 13.05 |
| | Access to and decisions on credit | 46.77 |
| **Income** | Control over use of income | 13.45 |
| **Leadership** | Group member | 26.61 |
| | Speaking in public | 24.83 |
| **Time** | Workload | 15.64 |
| | Leisure | 4.01 |

[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: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

## Production Domain

*Input in productive decisions.* Results shown in Table 34 indicate that 18.2 percent of women in the ZOI are not yet empowered and have inadequate input into productive decisions.

*Autonomy in production.* In the ZOI, 17.2 percent of women are not yet empowered and have inadequacy in the indicator.

## Resources Domain

*Ownership of assets.* Among women in the ZOI, 7.1 percent are not yet empowered and experience inadequacy in ownership of assets.

*Purchase, sale, or transfer of assets.* The percentage of women who are both not yet empowered and have inadequate achievement in terms of controlling the purchase, sale, or transfer of assets is 13.1 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 46.8 percent not yet empowered and not having adequate achievement.

*Control over use of income.* In the ZOI, 13.5 percent of women are not yet empowered and lack adequacy in the control over use of income.

## Leadership Domain

*Participation in formal and informal groups.* In the ZOI, 26.6 percent of women are not yet empowered and experience inadequacy in the group membership indicator.

*Speaking in public.* A similar percentage of women (24.8 percent) are not empowered and lack adequacy in the speaking in public indicator compared with group membership.

### Time Allocation Domain

*Workload.* In the ZOI, 15.6 percent of women are not yet empowered and inadequate on this indicator.

*Leisure time.* This indicator accounts for the lowest percentage of women who are not yet empowered and have inadequacy (4.0 percent).

## E3. GPI

GPI, the second subindex in the WEAI, measures women's empowerment relative to that of men by comparing the 5DE subindex profiles of both sexes 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 those achieved by 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 percentage of women without gender parity ($H_{GPI}$), defined as women with lower achievements in the five domains than their male counterparts. Empowered women—those who score above the empowerment threshold of the 5DE—are automatically counted as having parity with their male counterparts. 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 – ($H_{GPI}$ x $I_{GPI}$). It ranges from zero to one, with higher values indicating greater gender parity. [90]

In Mozambique, the GPI is 0.89, based on the percentage of women without gender parity (48.8) and the average empowerment gap (22.0). Table 35 shows the breakdown of baseline values by the GPI variables.

**Table 35. GPI**

| | Baseline Value |
|---|---|
| GPI | 0.89 |
| Percent of women achieving gender parity (1-$H_{GPI}$) | 51.16 |
| Percent of women without gender parity ($H_{GPI}$) | 48.84 |
| Average empowerment gap ($I_{GPI}$) | 22.03 |
| **n (unweighted)[1]** | **1,047** |

[90] Alkire et al. 2013.

[1] The sample size for the GPI subindex (1,047) is lower than that reported in Table 33 (1,529) because the GPI requires both a male and a female empowerment score. If the male record from Module G (WEAI) is missing or an empowerment score for the male was not calculated, the female record does not contribute to GPI.

Source: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

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

### Table 36. Percentage 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] (Unweighted *n*=1,047) | Female Censored Headcount[2] (Unweighted *n*=1,047) |
| **Production** | Input in productive decisions | 2.80[a] | 21.88[a] |
| | Autonomy in production | 8.00[b] | 18.53[b] |
| **Resources** | Ownership of assets | 0.81[c] | 8.35[c] |
| | Purchase, sale, or transfer of assets | 1.82[d] | 16.08[d] |
| | Access to and decisions on credit | 16.80[e] | 50.85[e] |
| **Income** | Control over use of income | 1.89[f] | 17.34[f] |
| **Leadership** | Group member | 12.31[g] | 27.31[g] |
| | Speaking in public | 6.22[h] | 26.26[h] |
| **Time** | Workload | 5.50[i] | 16.49[i] |
| | Leisure | 3.02 | 3.77 |

[a–i] Subgroups with the same superscript are significantly different at the 0.05 level. The comparisons are across columns. Comparison and estimates are 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: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

Men and women in dual households report significant differences in nine of the 10 5DE indicators. Significantly more women than men are not yet empowered and inadequate in all of the indicators except satisfaction with leisure time.

# Chapter 4. Analysis of Findings

This chapter presents additional country-specific analyses requested by USAID/Mozambique. Data are presented here on the relationship between women's empowerment (WEAI score) and household hunger (i.e., HHS) (Table 37, next page), and between women's empowerment and select indicators, such as the Women's Dietary Diversity Score (Table 38, next page). 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, p. 51). In addition, all 13 FEEDBACK ZOI indicators are broken down by programmatic strata (Table 40, p. 52). The two programmatic strata are:

- The districts in Manica and Tete provinces, as well as the Malema, Mecuburi, and Nampula districts in Nampula province where only agricultural interventions are to be implemented

- The districts in Nampula (except Malema, Mecuburi, and Nampula districts) and Zambezia provinces, in which both agricultural and nutrition interventions will take place

In addition to the disaggregation of indicators by programmatic strata, data for HHS, MAD, Women's Dietary Diversity Score, and WEAI are broken down by expenditure quartile as well as bottom and top expenditure decile (Table 41, p. 56). Finally, the baseline PBS for Mozambique included a country-specific module on mobile phones and mobile money. Data are also presented for the percentage of respondents who have heard of and would use mobile money (Table 42, p. 56) and the percentage of respondents who own and who use a mobile phone (Table 43, p. 57).

## A. Analysis Requested by USAID/Mozambique

### A1. Women's Empowerment and Feed the Future Indicators

Table 37 on the next page presents the relationship between HHS and women's achievement for each of the 10 indicators of the 5DE. There are no statistically significant differences between women living in households with moderate to severe hunger and those living in households with no hunger for any of the 10 indicators in the 5DE subindex.

Table 38, also on the next page, presents the prevalence of households with moderate or severe hunger, Women's Dietary Diversity Score, the prevalence of children receiving a MAD, the prevalence of poverty, and per capita daily expenditure by households with women who are empowered and households with women who are not yet empowered[91] [92]. As with the severity of

[91] Having "adequate achievement" means an individual scores above an adequacy cutoff established for each indicator.
[92] Only those indicators for which data were collected in the PBS could be broken out by empowerment and decision-making categories. Those indicators for which secondary data were used (e.g., the DHS) could not be compared with empowerment and the decision-making index because the WEAI was not collected in the secondary surveys.

household hunger, there are no significant differences between households with empowered women and households with not-yet-empowered women for any of the five indicators from the PBS.

**Table 37. Severity of Household Hunger According to Women's Achievement on the 10 WEAI Indicators**

| | HHS Categories | |
|---|---|---|
| | Moderate to Severe Hunger | No Hunger |
| **5DE Indicator** | % | |
| Input into productive decisions | 82.03 | 80.04 |
| Autonomy in production | 81.12 | 79.01 |
| Ownership of assets | 93.92 | 92.12 |
| Purchase, sale, or transfer of assets | 87.17 | 85.54 |
| Access to and decisions on credit | 10.75 | 7.89 |
| Control over use of income | 88.67 | 85.97 |
| Group member | 63.45 | 62.10 |
| Speaking in public | 68.16 | 68.43 |
| Workload | 77.68 | 77.74 |
| Leisure | 93.28 | 94.83 |
| ***n* (Unweighted)** | **409** | **1,404** |

No differences across subgroups for any of the indicators in the table are statistically significant at the 0.05 level.
Source: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

**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 (%) | 24.89 | *930* | 20.28 | *883* |
| Women's Dietary Diversity Score: Mean number of food groups consumed by WRA (std dev) | 3.38 (1.35) | *858* | 3.22 (1.41) | *840* |
| Prevalence of children 6-23 months receiving a MAD (%) | 9.75 | *189* | 7.96 | *209* |
| Prevalence of poverty: Percentage of people living on less than $1.25/day (2005 PPP) | 62.73 | *933* | 67.57 | *893* |
| Per capita daily expenditures of U.S. Govt.-assisted areas (2010 U.S. $) (std dev) | 1.41 (1.10) | *933* | 1.31 (0.96) | *893* |

No differences across subgroups for any of the indicators in the table are statistically significant at the 0.05 level.
Source: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

Analysis was also conducted to determine the extent to which the achievement of adequacy in five decision-making indicators of WEAI is associated with selected Feed the Future indicators. This analysis examines whether households with women empowered in decision-making have better

outcomes compared with those with not-yet-empowered women.[93] The results are presented in Table 39 on the next page.

The decision-making index was calculated as follows: Each of the five decision-making indicators in the WEAI was scored such that a "1" indicates the respondent achieves adequacy in the indicators (i.e., has adequate freedom to make decisions) and "0" 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); and high (respondent achieved adequacy in all five decision-making activities).

**Table 39. Selected Indicators by Category of Decision-Making Index**

| 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 (%) | 19.80[a] | *751* | 23.53[b] | *968* | 35.61[ab] | *94* |
| Women's Dietary Diversity Score: Mean number of food groups consumed by WRA (std dev) | 3.19 (1.37) | *728* | 3.37 (1.38) | *887* | 3.47 (1.48) | *83* |
| Prevalence of children 6-23 months receiving a MAD (%)^ | 9.82 | *184* | 8.85 | *189* | - | *25* |
| Prevalence of poverty: Percentage of people living on less than $1.25/day (2005 PPP) | 68.24[c] | *758* | 62.27[c] | *974* | 68.54 | *94* |
| Per capita daily expenditures of U.S. Govt.-assisted areas (2010 U.S.$) (std dev) | 1.30 (0.84) | *758* | 1.42 (1.19) | *974* | 1.31 (0.75) | *94* |

[a-c] 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: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

As Table 39 shows, most of the indicators do not differ significantly across the decision-making categories. However, household hunger and prevalence of poverty are the exceptions. The prevalence of household hunger is significantly higher (35.6 percent) among households with high decision-making (compared with low and medium decision-making households, 19.8 percent and 23.5 percent, respectively).[94] Yet, households in the lowest decision-making category have a greater prevalence of poverty (68.2 percent) than those in the middle decision-making category (62.3 percent).

[93] Only those indicators for which data were collected in the PBS could be broken out by empowerment and decision-making categories. Those indicators for which secondary data were used (e.g., the DHS) could not be compared with empowerment and the decision-making index because the WEAI was not collected in the secondary surveys.

[94] The finding that household hunger is associated with greater decision-making (by the primary female) is possibly explained by women with greater decision-making ability residing in female adult only households. However, this is not supported by the poverty findings in Table 39.

Table 40, which begins on the next page, presents the 13 Feed the Future indicators by programmatic strata, calculated with both primary and secondary data. The table disaggregates all indicators by districts that will receive only agriculture programming and districts that will receive both agriculture and nutrition programing. Within each strata, the child nutrition indicators are also disaggregated by sex, and the women's anemia indicator is disaggregated by pregnancy status.

Table 40 reveals significant differences by programmatic strata. Across a number of indicators, people in the agricultural programming only stratum (the first row within each indicator category) generally fare better than their counterparts in the agriculture and nutrition programming stratum.

## Table 40. Values for ZOI Indicators According to Programmatic Strata[95]

| FEEDBACK Indicator | Baseline Values | | | | | |
|---|---|---|---|---|---|---|
| | *n* (Unweighted) | Baseline Value | Std Dev[1] | 95% CI | DEFF | Source |
| **Per Capita Daily Expenditures of U.S. Govt.-Assisted Areas (2010 U.S.$)** | ***2,807*** | **1.42** | **1.13** | **1.32-1.53** | **5.94** | **FEEDBACK PBS** |
| Agriculture programming only | *1,349* | 1.64[a] | 1.34 | 1.50-1.78 | 3.97 | FEEDBACK PBS |
| Agriculture and nutrition programming | *1,458* | 1.21[a] | 0.79 | 1.11-1.31 | 5.78 | FEEDBACK PBS |
| **Prevalence of Poverty: Percentage of People Living on < $1.25/day (2005 PPP)** | ***2,807*** | **62.00** | **-** | **57.59-66.40** | **5.86** | **FEEDBACK PBS** |
| Agriculture programming only | *1,349* | 51.98[b] | - | 46.64- 57.32 | 4.01 | FEEDBACK PBS |
| Agriculture and nutrition programming | *1,458* | 71.74[b] | - | 67.32-76.16 | 3.48 | FEEDBACK PBS |
| **Prevalence of Underweight Children Under 5** | ***1,903*** | **14.22** | **-** | **11.98-16.46** | **2.77** | **DHS** |
| Agriculture programming only | *1,278* | 13.57 | - | 10.79-16.36 | 2.46 | DHS |
| Male | *634* | 12.87[c] | - | 9.29-16.44 | 2.09 | DHS |
| Female | *644* | 14.27 | - | 11.13-17.41 | 1.51 | DHS |
| Agriculture and nutrition programming | *625* | 15.01 | - | 11.36-18.65 | 3.16 | DHS |
| Male | *309* | 19.31[cd] | - | 14.02-24.59 | 2.58 | DHS |
| Female | *316* | 11.10[d] | - | 6.81-15.39 | 2.96 | DHS |
| **Prevalence of Stunting in Children Under 5** | ***1,903*** | **51.55** | **-** | **48.01-55.09** | **3.38** | **DHS** |
| Agriculture programming only | *1,278* | 46.53[e] | - | 42.54-50.53 | 2.38 | DHS |
| Male | *634* | 50.10 | - | 44.78-55.44 | 2.08 | DHS |
| Female | *644* | 43.04[f] | - | 37.58-48.50 | 2.28 | DHS |
| Agriculture and nutrition programming | *625* | 57.70[e] | - | 52.20-63.20 | 3.76 | DHS |
| Male | *309* | 59.09 | - | 50.72-67.45 | 4.17 | DHS |
| Female | *316* | 56.43[f] | - | 49.39-63.48 | 3.20 | DHS |

[95] USAID/Mozambique changed the Programmatic Strata Districts. Therefore, the current programmatic strata differ from what was originally approved in the protocol.

| FEEDBACK Indicator | Baseline Values | | | | | |
|---|---|---|---|---|---|---|
| | *n* (Unweighted) | Baseline Value | Std Dev[1] | 95% CI | DEFF | Source |
| **Prevalence of Wasting in Children Under 5** | ***1,903*** | **6.10** | **-** | **4.84-7.36** | **1.87** | **DHS** |
| Agriculture programming only | *1,278* | 5.66 | - | 4.42-6.91 | 1.07 | DHS |
| Male | *634* | 6.24 | - | 4.09-8.39 | 1.45 | DHS |
| Female | *644* | 5.10 | - | 2.99-7.22 | 1.73 | DHS |
| Agriculture and nutrition programming | *625* | 6.63 | - | 4.28-8.99 | 2.71 | DHS |
| Male | *309* | 9.10 | - | 4.71-13.50 | 3.37 | DHS |
| Female | *316* | 4.39 | - | 2.04- 6.74 | 2.08 | DHS |
| **Prevalence of Underweight WRA** | ***2,032*** | **8.11** | **-** | **6.32 - 9.89** | **3.29** | **DHS** |
| Agriculture programming only | *1,394* | 7.90 | - | 6.10-9.70 | 1.91 | DHS |
| Agriculture and nutrition programming | *638* | 8.37 | - | 5.02-11.72 | 4.97 | DHS |
| **WEAI** | ***1,829*** | **0.83** | **-** | **-** | **-** | **FEEDBACK PBS** |
| Agriculture programming only | *773* | 0.84 | - | - | - | FEEDBACK PBS |
| Agriculture and nutrition programming | *1,056* | 0.82 | - | - | - | FEEDBACK PBS |
| **Prevalence of Households with Moderate or Severe Hunger (HHS)** | ***2,826*** | **22.99** | **-** | **19.21-26.76** | **5.77** | **FEEDBACK PBS** |
| Agriculture programming only | *1,346* | 17.31[g] | - | 13.88-20.73 | 2.72 | FEEDBACK PBS |
| Agriculture and nutrition programming | *1,480* | 27.92[g] | - | 21.99-33.85 | 6.71 | FEEDBACK PBS |
| **Prevalence of Children 6-23 Months Receiving a MAD** | ***553*** | **9.18** | **-** | **5.69-12.68** | **2.05** | **FEEDBACK PBS** |
| Agriculture programming only | *261* | 11.49 | - | 6.35-16.64 | 1.74 | FEEDBACK PBS |
| Male | *119* | 15.33 | - | 7.46-23.21 | 1.42 | FEEDBACK PBS |
| Female | *142* | 8.44 | - | 1.36-15.52 | 2.42 | FEEDBACK PBS |
| Agriculture and nutrition programming | *292* | 7.07 | - | 2.27-11.87 | 2.57 | FEEDBACK PBS |
| Male | *145* | 8.21 | - | 1.10-15.32 | 2.60 | FEEDBACK PBS |
| Female | *147* | 5.78 | - | 1.25-10.31 | 1.30 | FEEDBACK PBS |
| **Women's Dietary Diversity Score: Mean No. of Food Groups Consumed by WRA** | ***2,413*** | **3.33** | **1.42** | **3.17-3.49** | **7.94** | **FEEDBACK PBS** |
| Agriculture programming only | *1,230* | 3.69[h] | 1.43 | 3.48-3.90 | 6.54 | FEEDBACK PBS |
| Agriculture and nutrition programming | *1,183* | 2.97[h] | 1.32 | 2.81-3.13 | 4.72 | FEEDBACK PBS |

| FEEDBACK Indicator | Baseline Values | | | | | |
|---|---|---|---|---|---|---|
| | *n* (Unweighted) | Baseline Value | Std Dev[1] | 95% CI | DEFF | Source |
| **Prevalence of Exclusive Breastfeeding of Children Under 6 Months** | ***219*** | **40.88** | **-** | **33.07-48.69** | **1.76** | **DHS** |
| Agriculture programming only | *145* | 41.83 | - | 31.89-51.78 | 1.49 | DHS |
| Male | *66* | 40.05 | - | 27.16-52.93 | 1.15 | DHS |
| Female | *79* | 43.33 | - | 29.67-56.99 | 1.51 | DHS |
| Agriculture and nutrition programming | *74* | 39.83 | - | 27.52-52.14 | 2.08 | DHS |
| Male | *39* | 39.07 | - | 23.80-54.34 | 1.87 | DHS |
| Female | *35* | 40.87 | - | 18.78-62.97 | 2.80 | DHS |
| **Prevalence of Anemia of Children 6-59 Months** | ***973*** | **72.29** | **-** | **67.51-77.07** | **3.84** | **DHS** |
| Agriculture programming only | *654* | 66.72[i] | - | 60.54-72.89 | 3.21 | DHS |
| Male | *327* | 68.82 | - | 63.18-74.46 | 1.40 | DHS |
| Female | *327* | 64.55[j] | - | 56.48-72.62 | 2.63 | DHS |
| Agriculture and nutrition programming | *319* | 79.23[i] | - | 71.59-86.87 | 5.33 | DHS |
| Male | *156* | 76.30 | - | 67.18-85.41 | 3.14 | DHS |
| Female | *163* | 81.68[j] | - | 73.06-90.29 | 4.06 | DHS |
| **Prevalence of Anemia Among WRA** | ***2,411*** | **52.39** | **-** | **48.22-56.56** | **6.26** | **DHS** |
| Agriculture programming only | *1,632* | 43.03[k] | - | 39.96-46.09 | 1.88 | DHS |
| Pregnant | *188* | 45.50 | - | 37.06-53.94 | 1.54 | DHS |
| Nonpregnant | *1,444* | 42.72[l] | - | 39.38-46.06 | 1.99 | DHS |
| Agriculture and nutrition programming | *779* | 63.63[k] | - | 57.45-69.82 | 6.72 | DHS |
| Pregnant | *124* | 43.34[m] | - | 30.27-56.42 | 4.43 | DHS |
| Nonpregnant | *655* | 67.39[lm] | - | 60.88-73.91 | 6.63 | DHS |

[a-m]Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are between rows within each indicator.

[1] Standard deviations for calculations of means only.

Source: FEEDBACK PBS February-May 2013 and November 2013-January 2014, and DHS June-November 2011.

A higher percentage of households in the agriculture and nutrition programming districts are below the $1.25/day poverty line (71.7 percent) than households in the agriculture programming only districts (52.0 percent). Households in the agriculture and nutrition programming districts also have a lower average daily per capita expenditure ($1.21) than households in agriculture programming only districts ($1.64).

In addition, a higher prevalence of boys in the agriculture and nutrition districts are underweight (19.3 percent) than in the agriculture only districts. There is also a higher prevalence of stunting among all children in the agriculture and nutrition programming districts (57.7 percent) than in the agriculture programming only districts (46.5 percent). The same relationship is true with stunting among girls: Girls in the agriculture and nutrition districts experience more stunting (56.4 percent) than girls in the agriculture only districts (43.0 percent).

With respect to the HHS indicator, more households in the agriculture and nutrition programming districts have moderate or severe hunger (27.9 percent) than households in the agriculture programming only districts (17.3 percent). And women in the agriculture and nutrition programming districts have a lower average dietary diversity score (3.0) than in the agriculture programming only districts (3.7).

Last, with respect to the women's and children's anemia indicators, a higher percentage of children in the agriculture and nutrition programming districts suffer from anemia (79.2 percent) than in the agriculture programming only districts (66.7 percent). The same relationship is true for anemia among female children. Among all WRA (both pregnant and nonpregnant), the prevalence of anemia is higher in the agriculture and nutrition programming districts (63.6 percent) than in the agriculture programming only districts (43.0 percent). This pattern of disadvantage with respect to anemia is also evident among nonpregnant women between the two programmatic strata: Nonpregnant women in the agriculture and nutrition programming districts have a higher prevalence of anemia (67.4 percent) than in the agriculture only districts (42.7 percent).

Table 41 (next page) breaks down the prevalence of moderate and severe hunger, MAD, Women's Dietary Diversity Score, and WEAI by expenditure quartile and decile. For most of the indicators presented, greater household expenditure is associated with better outcomes. A higher percentage of households in the lowest expenditure quartile suffer from moderate or severe hunger (33.5 percent) than any other expenditure quartile. Similarly, households in the lowest (bottom) expenditure decile have a higher prevalence of moderate or severe hunger (37.1 percent) than households in the top expenditure decile (16.5 percent). A higher percentage of children 6-23 months in households in the top expenditure decile receive a MAD (24.1 percent) than in households in the bottom expenditure decile (0.7 percent).

Women in households in the lowest expenditure quartile have a lower average dietary diversity score (2.8) than women in any of the three other expenditure quartiles. Likewise, women in the highest expenditure quartile have a higher average dietary diversity score (3.9) than in any other expenditure quartile. Similarly, women in the bottom expenditure decile have a lower average dietary diversity score (2.6) than in the top expenditure decile (4.1).[96]

[96] Only those indicators for which data were collected in the PBS could be broken out by expenditure quartiles and deciles. Those indicators for which secondary data were used (e.g., the DHS) could not be compared with expenditures because per capita expenditure data was not collected in the DHS.

## Table 41. Selected Indicators, by Category of Daily per Capita Expenditure

| | Quartiles | | | | Deciles | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | Bottom | Top |
| Prevalence households with moderate or severe hunger (HHS) (%) | 33.48[abc] | 20.30[a] | 20.06[b] | 16.93[c] | 37.13[d] | 16.48[d] |
| Prevalence of children 6-23 months receiving a MAD (%) | 4.36 | 11.95 | 10.68 | 12.34 | 0 .73[e] | 24.14[e] |
| Women's Dietary Diversity Score (std dev) | 2.78 (1.20)[fg] | 3.35 (1.35)[f] | 3.49 (1.40)[g] | 3.91 (1.58)[fg] | 2.60 (1.11)[h] | 4.07 (1.80)[h] |
| WEAI | 0.80 | 0.83 | 0.84 | 0.85 | 0.79 | 0.85 |

[a-h] Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are across columns.
Source: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

There are no significant differences in WEAI scores by expenditure quartile or decile.

The remaining analysis presents findings from the Mozambique baseline PBS module on mobile phones and mobile money (the country-specific Module J).[97] Table 42 gives the percentage of respondents that have heard of mobile money and, among those, the percentage that reported they would use mobile money. The table also disaggregates these measures by sex of the respondent and household poverty status. Only 7.3 percent of respondents in the ZOI have heard of mobile money. Among those, the great majority (93.0 percent) indicated they would use mobile money. Respondents from households above the poverty line are more likely to have heard of mobile money (9.4 percent) than those from households below the poverty line (5.6 percent). There are no significant differences by sex of the respondent.

## Table 42. Percentage of Respondents That Have Heard of and Would Use Mobile Money

| | Respondent Sex/Household Poverty Status | | | | |
|---|---|---|---|---|---|
| | All Respondents | Male Primary Respondent | Female Primary Respondent | Below Poverty Line | Above Poverty Line |
| | | | % | | |
| Have heard of mobile money | 7.31 | 7.65 | 6.41 | 5.62[a] | 9.41[a] |
| ***n* (unweighted)** | **2,803** | **2,006** | **797** | **1,452** | **1,296** |
| Would use mobile money[1] | 92.98 | 90.72 | 100.00 | 95.21 | 91.24 |
| ***n* (unweighted)** | **211** | **163** | **48** | **65** | **144** |

[a] Significantly different at the 0.05 level. Comparisons are across columns.
[1] This is a percentage of those who have heard of mobile money.

[97] Within each interviewed household, only one household member, the respondent for the other household-level modules (Modules C, D, and F), responded to the Module J questions. In other words, there are not multiple Module J records per household, unlike, for example, Module H (the women's nutrition module), which captures information from all women age 15-49 in the household.

Source: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

Table 43 (next page) gives the percentage of respondents that use a mobile phone and, among those, the percentage that own a mobile phone only, own a SIM card only, own a mobile phone and a SIM card, or own neither a mobile phone nor a SIM card. These measures are also disaggregated by sex of the respondent and household poverty status. Overall, only one-quarter (25.0 percent) of respondents use a mobile phone. In the ZOI, mobile phone use differs by sex and household poverty status. More male respondents report using a mobile phone (27.7 percent) than female respondents (17.8 percent). Similarly, mobile phone use is greater in wealthier households. More respondents from households above the poverty line (34.9 percent) use a mobile phone than respondents from households below the poverty line (16.9 percent). Table 43 also shows that the great majority of respondents who use a mobile phone report that they own both a mobile phone and a SIM card (96.1 percent), and there are no significant differences by sex and household poverty status.

### Table 43. Percentage of Respondents Using and Owning a Mobile Phone

| | Household Type | | | | |
|---|---|---|---|---|---|
| | All Respondents | Male Primary Respondent | Female Primary Respondent | Below Poverty Line | Above Poverty Line |
| | | | % | | |
| Use a mobile phone | 24.95 | 27.70[a] | 17.80[a] | 16.92[b] | 34.87[b] |
| ***n* (Unweighted)** | **2,803** | **2,006** | **797** | **1,452** | **1,296** |
| Own a mobile phone (no SIM) | 0.77 | 0.64 | 1.27 | 1.68 | 0.25 |
| Own a SIM (no mobile phone) | 0.31 | 0.13 | 1.03 | 0.17 | 0.40 |
| Own a mobile phone and SIM | 96.14 | 96.81 | 93.42 | 94.25 | 97.15 |
| None | 2.79 | 2.42 | 4.28 | 3.91 | 2.19 |
| ***n* (Unweighted)** | **726** | **569** | **157** | **245** | **471** |

[a-b] Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are made across columns.
Source: FEEDBACK PBS February-May 2013 and November 2013-January 2014.

# Chapter 5. Summary and Conclusion

This document has reported the Mozambique Feed the Future ZOI population-based indicator baseline values. FEEDBACK collected primary and secondary data for 13 Feed the Future indicators, six using primary data and seven using secondary data. The PBS interviews included 2,864 households across 96 SEAs in the ZOI; the secondary data were drawn from the ZOI districts from the Mozambique 2011 DHS.

Overall, the population in the Mozambique ZOI faces high levels of poverty and hunger. The prevalence of poverty is 62.0 percent, based on the poverty line of less than $1.25 per day (2005 PPP), and the poverty gap is 22.8 percent (at $1.25 per day). Daily per capita expenditures are low, with an average $1.42 (2010 U.S. dollars). The Government of Mozambique uses a different estimate for the national poverty line, which varies by region and by urban/rural settings.

There is a high prevalence of moderate or severe hunger: The average prevalence in the ZOI is 23.0 percent. It is worth noting that male and female adult households report significantly less moderate and severe hunger (20.0 percent) compared with other household types.

Less than half of households use an improved drinking water source (34.8 percent) and only 21.5 percent have access to an improved sanitation facility.

The conditions of poverty and hunger have affected the nutrition of children, particularly boys. A little more than half of the children under 5 in the ZOI are stunted (51.6 percent), 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 (54.1 percent and 49.2 percent, respectively). The prevalence of wasting (6.1 percent) and underweight (14.2 percent) among children under 5 in the ZOI are similar to the national averages.

In addition, less than half of all children under 6 months are exclusively breastfed (40.9 percent) and the prevalence of children 6-23 months receiving a MAD is only 9.2 percent. Breastfed children fare better than nonbreastfed children with respect to MAD.

Women's Dietary Diversity Scores are quite low. On average, women consume only 3.3 out of nine food groups. Women in male and female adult households have a significantly higher dietary diversity score than women in female adult only households (3.4 and 3.1 percent, respectively). The overwhelming majority of women eat grain, roots, and tubers (92.6 percent), and nearly three-quarters (74.8 percent) have diets rich in vitamin A.

Although most women (79.2 percent) in the ZOI are considered normal weight, Mozambique faces the double burden of overweight and underweight, increasingly common in many developing countries today. More women in the ZOI are overweight/obese (12.6 percent) than underweight (8.1 percent), which are comparable to the national levels. The prevalence of anemia among WRA remains high at 52.4 percent.

The Mozambique data on women's empowerment in agriculture show that 51.1 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 0.82 and their GPI score, a measure of women's empowerment relative to men, is 0.89. Women in male and female adult households have a significantly lower 5DE score than women in female adult only households. Analysis of men and women's censored headcounts, or the percentages not yet empowered and inadequate in the 10 indicators of 5DE (Table 36, p. 48), reveals that significantly more women than men are not yet empowered and inadequate in nine of the 10 indicators. 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/Mozambique, including household hunger and the 10 indicators of 5DE (Table 37, p. 50) and women's empowerment and select Feed the Future indicators (Table 38, p. 50). No significant differences were found. When indicators were disaggregated by the women's decision-making index, those households with the highest level of women's decision-making also had significantly greater household hunger (Table 39, p. 51). Yet, poverty is significantly higher among households with lower decision-making power.

In addition, indicators were compared by program strata. In general, this analysis (Table 40, p. 52) indicated that the agriculture and nutrition districts were worse off than the agriculture only districts. This included higher prevalence of poverty, lower daily per capita expenditure, lower women's dietary diversity, higher rates of anemia for women and children, higher stunting, and higher household hunger (moderate or severe).

The data from the mobile money module indicated that cell phone use is limited (24.9 percent) and that although few people had heard of mobile money services (7.1 percent), nearly all respondents who knew of the services would be willing to use them (92 percent).

Given these findings, further study should explore in more detail the factors affecting women's empowerment in Mozambique 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 Mozambique ZOI. It should be noted that the survey was not designed to allow for conclusions about attribution or causality.

# Annex A. Weight Calculation

## A1. Design Weight

The Mozambique survey sample was drawn with two-stage, stratified cluster sampling following the DHS sample design.[1] Clusters were equally allocated among districts. At the first stage, a sample cluster was selected independently with probability proportional to the cluster's population in each stratum. The strata were the rural areas of the 23 districts in the ZOI. The unequal probabilities of selection across strata caused by the equal number of clusters in each stratum were adjusted relative to the population of each stratum. Design weights were calculated based on the separate sampling probabilities for each sampling stage and for each cluster. We have:

$P_{1hi}$ = first-stage sampling probability of the *i*-th cluster in district *h* (all rural districts).

$P_{2hi}$ = second-stage sampling probability within the *i*-th cluster (household selection).

The probability of selecting cluster *i* in the sample is:

$$P_{1hi} = \frac{m_h \times N_{hi}}{N_h}$$

The second-stage probability of selecting household in cluster *i* is:

$$P_{2hi} = \frac{n_{hi}}{L_{hi}}$$

where:

$m_h$ = number of sample clusters selected in district *h*
$N_{hi}$ = total population in the frame for the *i*-th sample cluster in district *h*
$N_h$ = total population in the frame in district *h*
$n_{hi}$ = number of sample households selected for the *i*-th sample cluster in district *h*
$L_{hi}$ = number of households listed in the household listing for the *i*-th sample cluster in district *h*

The overall selection probability of each household in cluster *i* of district *h* is the product of the selection probabilities of the two stages:

$$P_{hi} = P_{1hi} \times P_{2hi} = \frac{m_h \times N_{hi}}{N_h} \times \frac{n_{hi}}{L_{hi}}$$

[1] ICF International. 2012.

The design weight for each household in cluster *i* of district *h* is the inverse of its overall selection probability:

$$W_{hi} = \frac{1}{p_{hi}} = \frac{N_h \times L_{hi}}{m_h \times N_{hi} \times n_{hi}}$$

During weight calculation, there were eight clusters from two districts whose identification cards could not be linked between sampling frame and survey data files. For these clusters, design weight was further adjusted as the inverse of average selection probability among the unlinked clusters within each of the two districts.

## A2. 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).

## A3. 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 B. 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. 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

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

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

*DISAGGREGATE BY:*

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)

*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-assisted areas (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. 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 to 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:*

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

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:*

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:*

WEAI 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.

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

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 x 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 x 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 x Aa)} + 0.1{1 − (HGPI x 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:* | *DISAGGREGATE BY:* |
|---|---|
| 1. Score for 5DE subindex | None |
| 2. Score for GPI subindex | |
| 3. Total population in ZOI | |
| *TYPE:* | *DIRECTION OF CHANGE:* |
| Impact | 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 (see notes below).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 nonbreastfed 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.

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

*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:* | *DISAGGREGATE BY:* |
|---|---|
| 1. Percentage of children 6-23 months in sample receiving MAD | Sex: Male, Female |
| 2. Total population of children 6-23 months in the ZOI | |

**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

1. Mean number of food groups consumed by women 15-49 years in the sample

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

*DISAGGREGATE BY:*

Location: Urban, Rural

*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 C. The Domains, Indicators, Survey Questions, Aggregation Method, Inadequacy Cut-Offs, and Weights in the WEAI

| Dimension | Indicator | 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<br>Regarding [DOMAIN] I do what I do because I personally think it is the right thing to do<br>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 | 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 | 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 |
| **Leadership** | 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 |
| | 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 | 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).

# Annex D. References


Agrilinks. (2013). *FEEDBACK*. Retrieved from http://agrilinks.org/activity/ftf-feedback-0#term-2.

Alkire, S., Malapit, H., Meinzen-Dick, R., Peterman, A., Quisumbing, A., Seymour, G., and Vaz, A. (2013). *Instructional guide on the Women's Empowerment in Agriculture Index*. Accessed from the International Food Policy Research Institute website: http://www.ifpri.org/sites/default/files/weai_instructionalguide.pdf.

Alkire, S., Meinzen-Dick, R., Peterman, A., Quisumbing, A., Seymour, G., and Vaz, A. (2013). The Women's Empowerment in Agriculture Index. *World Development, 52(C),* 71-91.

Ballard, T., Coates, J., Swindale, A. and Deitchler, M. (2011). *Household Hunger Scale: Indicator Definition and Measurement Guide*. August 2011. Washington, DC: FANTA-2 Bridge, FHI 360.

Croft, T. *DHS data editing and imputation.* Accessed Aug. 10, 2013 at: http://www.measuredhs.com/pubs /pdf/DHSG3/DHS_Data_Editing.pdf.

Deaton, A. (2008). *The Analysis of Household Surveys: A microeconomic approach to development policy*. Baltimore: The Johns Hopkins University Press.

Deaton, A. and Zaidi, S. (2002). *A guide to aggregating consumption expenditures, living standards measurement guide*. Working paper 135. Washington, DC: The World Bank.

Deitchler, M., Ballard, T., Swindale, A., and Coates, J. (2011). *FANTA Technical Note No. 12: Introducing a simple measure of household hunger for cross-cultural use*. February 2011. Washington, DC: USAID.

EM-DAT. (2014). *Mozambique Country Profile- Natural Disasters*. Accessed January 9, 2014 at: www.emdat.be.

Feed the Future M&E Guidance Series: Volume 9. (2013). Retrieved March 2014 from http://feedthefuture.gov/sites/default/files/resource/files/ftf_volume9_targetsettingforpovertyreduction_0.pdf.

FEWSNET. (2014). *Mozambique food security outlook update*. February. Retrieved from http://www.fews.net/southern-africa/mozambique/food-security-outlook-update/wed-2014-02-26.

Filipe, M. and Kring, T. (2011). Agriculture and Poverty Reduction in Mozambique. *Economic and Policy Analysis Unit Brief*, March. United Nations Development Programme (UNDP).

Food and Agriculture Organization (FAO) of the United Nations. (2014). Country Profiles: Mozambique. *Statistical database*. Accessed January 9, 2014 at: http://www.fao.org/statistics/en/.

Grosh, M. and Muñoz, J. (1996). *Manual for planning and implementing the living standards measurement study surveys*. LSMS Working Paper 126. Washington, DC: The World Bank.

Instituto Nacional de Estatística (INE). (2013). *Demographic and Health Survey Mozambique 2011*, March. National Statistics Institute of Mozambique and MEASURE DHS/ICF International.

Instituto Nacional de Estatística (INE). (2010). Projecções Anuais da População Total, Urbana e Rural, dos Distritos da Província de Nampula, Manica, Tete e Zambezica 2007 – 2040

International Food Policy Research Institute (IFPRI). (2013). Accessed May 20, 2013 at: http://www.ifpri.org/publication/womens-empowerment-agriculture-index.

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.

Ministry of Planning and Development. Republic of Mozambique. *Poverty and Wellbeing in Mozambique: Third National Poverty Assessment*. October 2010.

Moçambique. Inquérito Demográfico e de Saúde (DHS). (2011). INE. Ministério de Saúde. Maputo. Moçcambique.

Rosell, P.D., O'Colmain, B., and Howell, H. (2013). *Haiti baseline survey*. Draft Report. ICF Macro Inc. May. Submitted to USAID/Haiti.

Semba, R.D., and Bloem, M.W. (2002). The anemia of vitamin A deficiency: epidemiology and pathogenesis. *European Journal of Clinical Nutrition*; 56(4):271-81.

United Nations Development Programme (UNDP). (2011). *Report on the Millennium Development Goals-Mozambique 2010*, February.

United States Agency for International Development (USAID). (2014). *Feed the Future Mozambique Country Profile*. Accessed January 9, 2014 at: http://feedthefuture.gov/country/mozambique.

United States Agency for International Development (USAID). (2013a). Feed the Future Progress Scorecard, June.

United States Agency for International Development (USAID). (2013b). Feed the Future Indicator Handbook: Definition Sheets (updated October 18, 2013).

United States Agency for International Development (USAID). (2012a). *Feed the future indicator handbook*: *Definition sheets*, April.

United States Agency for International Development (USAID). (2012b). *Feed the Future M&E Guidance Series*. Volume 6: Measuring the Gender Impact of Feed the Future, July. Accessed at http://www.feedthefuture.gov/resource/volume-6-feed-future-measuring-gender-impact-guidance.

United States Agency for International Development (USAID). (2012c). Feed the Future Mozambique Fact Sheet, October.

United States Agency for International Development (USAID).. (2011a). *Feed the Future M&E Guidance Series*. Volume 8: Population-based survey instrument for the feed the future zone of influence indicators with revised WEAI module, October.

United States Agency for International Development (USAID). (2011b). *Feed the Future Mozambique Strategic Review*, March.

United States Agency for International Development (USAID). (2011c). *Feed the Future Mozambique FY 2011-2015 Multi-Year Strategy*, June.

United States Agency for International Development (USAID). (2010). *Feed the Future Mozambique FY 2010 Implementation Plan*.

University of Oxford. (2013). Oxford Poverty and Human Development Initiative (OPHI). *Alkire Foster method*. 2013. Accessed May 20, 2013 at: http://www.ophi.org.uk/research/multidimensional-poverty/alkire-foster-method/.

World Health Organization (WHO). (2013). *Water and sanitation*. Accessed May 3, 2013 at: http://www.who.int/gho/phe/ water_sanitation/en/index.html.

World Health Organization (WHO) and United Nations Children's Fund (UNICEF). (2006). WHO *Child Growth Standards and the Identification of Severe Acute Malnutrition in Infants and Children*.