



# FEED THE FUTURE

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



# NEPAL

Feed the Future Zone of Influence Baseline Report  
December 2013



**USAID**  
FROM THE AMERICAN PEOPLE

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## List of Acronyms

5DE	Five Domains of Empowerment
ADS	Agricultural Development Strategy
BMI	Body Mass Index
CIP	Country Investment Plan
CPC	Carolina Population Center of the University of North Carolina at Chapel Hill
CPI	Consumer Price Index
DHS	Demographic and Health Survey
DM	Data Management
FSIP	Food Security Interim Plan
FTF	Feed the Future
GPI	Gender Parity Index
HH	Household
HHS	Household Hunger Scale
IFPRI	International Food Policy Research Institute
MAD	Minimum Acceptable Diet
MOHP	Ministry of Health and Population
M&E	Monitoring and Evaluation
MSNP	Multi-Sector Nutrition Plan
NDHS	Nepal Demographic and Health Survey
NHSP	National Health Sector Plan
NLSS	National Living Standards Survey
ODK	Open Data Kit
PBS	Population-Based Survey
PPP	Purchasing Power Parity
PPS	Probability Proportional to Size Sampling Method
QC	Quality Control
USAID	United States Agency for International Development
USG	U.S. Government
VDC	Village Development Committees
WEAI	Women's Empowerment in Agriculture Index
WHO	World Health Organization
ZOI	Zone of Influence



## Executive Summary

This document reports the findings of the baseline population-based survey (PBS) for the Feed the Future initiative in Nepal. Feed the Future is supported by 10 federal agencies and led by the U.S. Agency for International Development (USAID), and seeks to reduce poverty and undernutrition in 19 developing countries by focusing on accelerating growth of the agriculture sector, addressing root causes of undernutrition and reducing gender inequality. The survey captures data in the geographic areas targeted by Feed the Future interventions, known as the Feed the Future Zones of Influence (ZOI).

The PBS was conducted by the Feed the Future FEEDBACK (FTF FEEDBACK) project, which is responsible for performance monitoring and impact evaluation of the Feed the Future initiative. FTF FEEDBACK is implemented by Westat in partnership with TANGO International, the International Food Policy Research Institute (IFPRI), and the Carolina Population Center (CPC) of the University of North Carolina at Chapel Hill. In Nepal, the PBS fieldwork was conducted by a local research organization, New ERA, with direction and oversight from Westat. The fieldwork took place from April 15 to May 28, 2013.

The ZOI in Nepal comprises 20 districts across the western, mid-western and far-western development regions. A total of 2,000 households in the ZOI were interviewed for the PBS data collection activity. These households were spread across 100 clusters in the targeted districts. The Feed the Future baseline for Nepal draws on data from both primary and secondary sources. Of the 13 Feed the Future indicators reported, three were calculated using data gathered in the Nepal Baseline PBS of 2013: (1) *Women's Empowerment in Agriculture Index (WEAI)*; (2) *prevalence of households with moderate or severe hunger*; and (3) *women's dietary diversity*.<sup>1</sup> The following eight indicators were calculated from secondary data from the Nepal Demographic and Health Survey (NDHS) of 2011: (1) *prevalence of stunted children under 5 years of age*; (2) *prevalence of wasted children under 5 years of age*; (3) *prevalence of underweight children under 5 years of age*; (4) *prevalence of underweight women*; (5) *prevalence of children 6-23 months receiving a minimum acceptable diet*; (6) *prevalence of exclusive breastfeeding*; (7) *prevalence of anemia in children 6-59 months* and (8) *prevalence of anemia among women of reproductive age [15-49 years]*. The Nepal Living Standards Survey (NLSS III of 2010-2011) was used to calculate the following two indicators: (1) *prevalence of poverty* and (2) *per capita expenditures*. This report documents the baseline status of indicators against which changes in the Feed the Future ZOI in Nepal will be measured over time. It should be noted that the survey was not designed to allow for conclusions about attribution or causality.

Overall, the prevalence of poverty in the ZOI, based on the \$1.25/person/day threshold, is 32.5 percent. Per capita expenditure in the ZOI is \$2.12/day (USD 2010). Since remittances are important in the Nepal context, USAID/Nepal has requested FTF FEEDBACK to conduct additional analyses to study the impact of remittances in the Nepal ZOI. The results will be presented separately as an addendum to this report.

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<sup>1</sup> Women's dietary diversity score and prevalence of underweight women are measured on women of reproductive age (15-49 years).



The average number of household members in the ZOI is approximately five. Households with both male and female adults (the male and female adult households) in the ZOI have significantly more members, more females, and more children in the 0-5 year age bracket than other gendered household types. There are significantly more children between ages 5 to 17 years in male and female adult households compared to adult male only households. Regarding dwelling characteristics, about 74 percent of households in the ZOI have electricity. The mean number of rooms per household in the ZOI is 2.6. The male and female adult households have more rooms compared to other gendered household types.<sup>2</sup> Approximately 84 percent of all households use an improved drinking water source, and 57.5 percent use improved sanitation facilities. About 85 percent of the households use firewood as their main source of cooking, followed by piped or propane gas (about 12 percent).

The nutrition data show that about 45 percent of children less than 5 years of age in the ZOI are stunted. The data also show that the prevalence of wasting in children under 5 is 12 percent. Although more boys are stunted or wasted, in comparison to girls, the differences are not statistically significant. The prevalence of exclusive breastfeeding for children under 6 months in the ZOI is about 71 percent. Slightly less than a quarter (22.7 percent) of children 6 to 23 months of age obtains a minimum acceptable diet (MAD). About one tenth of all interviewed households (10.6 percent) reported moderate or severe hunger based on the Household Hunger Scale (HHS). Women's dietary diversity is low, with women of reproductive age reporting an average consumption of approximately four out of nine total food groups.

The WEAI measures the empowerment, agency, and inclusion of women in the agriculture sector using two sub-indices. The Five Domains of Empowerment (5DE) subindex measures women's empowerment in five key domains (production, resources, income, leadership and time), and the Gender Parity Index (GPI) measures the average level of equality in the empowerment of men and women in the household. The Nepal PBS data show the 5DE subindex is 0.79. Overall, about 41 percent of women have achieved empowerment (a score of 0.80 or greater). The GPI sub-index in the Nepal ZOI is 0.89. Within households with both a male and a female adult, about 47 percent of women have achieved adequate gender parity (i.e., a 5DE score equal to or higher than the man in their household). The WEAI, which is the weighted sum of the 5DE and GPI sub-indices, is 0.80.

Additional analysis conducted at the request of USAID/Nepal showed that there are no significant differences in women's and children's anemia across categories of household type, nor is there a clear pattern by household wealth quintile. However, for both women and children, anemia prevalence is significantly greater in Terai areas than in hill areas. Additionally, girls are significantly

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

more likely than boys to be anemic, as are younger children (6-23 months) compared to older children (24-59 months), suggesting that the most vulnerable categories with respect to anemia are very young (6-23 months) female children living in Terai areas.

# I. Background

## I.1 Feed the Future and FTF FEEDBACK Overview

Feed the Future is a U.S. Government (USG) initiative that addresses global food insecurity by supporting agriculture sector growth and improving nutritional status in 19 focus countries. The U.S. Agency for International Development (USAID) is responsible for leading the government-wide effort to implement the Feed the Future initiative. Feed the Future FEEDBACK (FTF FEEDBACK) is a USAID-funded project designed to implement monitoring and evaluation activities for Feed the Future. FTF FEEDBACK is implemented by Westat in partnership with TANGO International, the International Food Policy Research Institute (IFPRI), and the Carolina Population Center (CPC) of The University of North Carolina at Chapel Hill.

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

To measure progress in addressing global food insecurity, USAID is collecting data through large-scale household surveys in geographic areas targeted by Feed the Future interventions, known as the Zones of Influence (ZOI). These population-based surveys (PBS) capture information related to agriculture, food security, food consumption, nutrition, women's empowerment, and well-being of households in the ZOI.

## I.2 Feed the Future ZOI Profile

### I.2.1 Rationale for ZOI Designation

With a population of 28 million, Nepal is a severely food-deficient country recovering from a 10-year civil war. With a per capita gross domestic product of current \$707 (estimated 2012), Nepal is the poorest country in South Asia and the twenty-first poorest country in the world<sup>3</sup>. Approximately 25 percent of Nepalese live below the international poverty line of \$1.25/day.<sup>4</sup>

Seventy-five percent of the population works in the agriculture sector,<sup>5</sup> which accounts for 36 percent of the GDP.<sup>6</sup> Recent declining agricultural production has depressed rural economies and

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<sup>3</sup>The World Bank. 2013.

<sup>4</sup>The World Bank. 2013a.

<sup>5</sup>The CIA. 2013.

<sup>6</sup>The World Bank. 2013b.

increased widespread hunger and urban migration in Nepal. This situation is compounded by a population growth rate of 1.8 percent per year<sup>7</sup> and a high ratio of population to arable land.<sup>8</sup>

The main underlying causes of hunger, poverty and undernutrition in Nepal include low agricultural productivity, limited livelihood opportunities, weak market linkages, and inadequate production and consumption of nutritious, locally-available foods. Other major issues include decreasing land resources and biodiversity; climate change risks; low and declining investment in agricultural research and extension; poor access to quality inputs and services; limited basic infrastructure; rising food prices; and market volatility. These result in youth outmigration, declining labor availability, and more fallow land.

The national rate of stunting among children under 5 years old in 2011 was 41 percent (surpassing Sudan),<sup>9</sup> wasting was 11 percent, and underweight was 29 percent (similar to Ethiopia),<sup>10</sup> reflecting widespread chronic malnutrition.

In Nepal's traditionally patriarchal social hierarchy system, women, Dalits<sup>11</sup>, and other disadvantaged groups typically have less access to social services and little access to property ownership or cash. Dalits in the Terai (the plains) have among the highest poverty rates in Nepal (49.2 percent compared to 42.6 percent national average).<sup>12</sup>

The vast majority of Nepali women (90.5 percent)<sup>13</sup> are engaged in agriculture. Since the current total fertility rate is 2.6<sup>14</sup> nationally, but much higher in some areas (particularly in the mid- and far-western regions), most women are involved in multiple roles such as caring for fields and livestock, caring for children, and doing domestic chores. Political uncertainty and declining employment opportunities have resulted in a significant number of male laborers migrating for work abroad, which has added more responsibilities for women.<sup>15</sup> Women and children typically have higher levels of poverty and suffer greater hunger levels.

## **1.2.2 Strategic Objectives for Feed the Future in the ZOI**

Feed the Future's overall objectives in Nepal are to maximize the number of Nepalis lifted out of poverty and increase the number of children and women with improved nutritional status. Also, Nepal is undergoing changes in precipitation patterns, temperature regimes, and hydrology (due to glacier melt) linked to climate change. Feed the Future activities are part of a larger USG commitment to build the resilience of vulnerable populations to the changing climate in Nepal.

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<sup>7</sup> The CIA. 2013a.

<sup>8</sup> The World Bank. 2013c.

<sup>9</sup> UN. 2013.

<sup>10</sup> NDHS. 2011.

<sup>11</sup> Dalits are considered the most disadvantaged caste in Nepal.

<sup>12</sup> UNDP. 2008.

<sup>13</sup> FAO. 2013.

<sup>14</sup> NDHS. 2011.

<sup>15</sup> Adhikari et Al. 2010.

Feed the Future seeks to achieve the following key objectives in Nepal by 2015:

- An estimated 165,000 vulnerable households including Nepali women, children, and family members – mostly smallholder farmers – will receive targeted assistance to escape hunger and poverty. The interventions will focus on establishing profitable businesses that are able to provide inputs, extension services, and market linkages to targeted farmers on a sustainable basis. The interventions will increase production (availability) of vegetables while also enhancing incomes (access).
- In conjunction with the Global Health Initiative, more than 393,000 children will be reached with services to improve their nutrition and prevent stunting and child mortality. Nutrition and hygiene interventions will promote behavior change regarding diet composition, feeding practices, and spending patterns (utilization). Targeted programs also will increase resiliency (stability) in vulnerable communities and groups.
- Significant numbers<sup>16</sup> of people residing in households in rural areas will achieve improved income and nutritional status from strategic policy and institutional reforms.

The agriculture and nutrition components will be strongly connected throughout the program, with the same households targeted by these interventions. A subset of the most vulnerable beneficiaries will be targeted by a literacy and entrepreneurship training component.

### **I.2.3 Government of Nepal Strategies and Investments**

The Feed the Future program in Nepal aligns closely with the Government of Nepal's agriculture and nutrition strategies and investments.

The strategic framework for agriculture and food security in Nepal has been provided in the longer-term Agriculture Perspective Plan (1995-2015). The objectives for the agriculture sector were established in the National Agriculture Policy (2004), National Agriculture Sector Development Priority Framework (2010), and the associated Country Investment Plan (CIP). The overall goal of the CIP is to reduce poverty and household food insecurity on a sustainable basis and to strengthen the national economy.

The Government of Nepal currently is updating its strategy, as embodied in the Agricultural Development Strategy (ADS). This was prepared in 2013 under the leadership of the Asian Development Bank and is being reviewed by the Government of Nepal. The ADS is intended to guide the agricultural sector of Nepal for the next 20 years. The ADS vision is that Nepal will have a “self-reliant, sustainable, competitive, and inclusive agricultural sector that drives economic growth and contributes to improved livelihoods and food and nutrition security.”<sup>17</sup> The ADS aims to accelerate growth in the agriculture sector through four strategic components: governance, productivity, profitable commercialization, and competitiveness. It will achieve these aims while

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<sup>16</sup> According to the Feed the Future Multi-Year Strategy 2011-2015 for Nepal, these preliminary targets were estimated based on analysis at the time of strategy development using estimated budget levels and *ex-ante* cost-benefit ratios from previous agriculture and nutrition investments. Therefore, targets are subject to significant change based on availability of funds and the scope of specific activities designed. More precise targets will be developed through project design for specific Feed the Future activities.

<sup>17</sup> ADB. 2013.

promoting social and geographic inclusiveness, natural resources and economic sustainability, development of the private sector and the cooperative sectors, and improved market (roads, collection centers, packing houses, market centers), information, and power infrastructure (rural electrification). The strategy aims to accelerate agricultural growth, increase food and nutrition security, reduce poverty, increase the agricultural trade surplus, lead to higher and more equitable income of rural households, and strengthen farmers' rights.<sup>18</sup> Since the ADS represents an important opportunity for the Government of Nepal to move agricultural development forward, USAID/Nepal commissioned an overall assessment of the Nepali policy-making process in 2013 to examine the strengths and current barriers for successful food security policy change focusing on the ADS. The results were reported in the Institutional Architecture for Food Security Policy Change: Nepal (July 2013) draft report, outlining the strengths, barriers and recommendations.<sup>19</sup>

The Interim Plan of Nepal (2007-2010), renewed for 2011-2014, contains a food security component. The food security objectives, policies, programs, and monitoring mechanisms in the Food Security Interim Plan (FSIP) were prepared with technical assistance from the Food and Agriculture Organization. The principal objective of the FSIP is to make the lives of the targeted people healthy and productive by improving national food sovereignty and the food and nutrition situation. The basic FSIP objectives are as follows:

1. Increased national self-reliance in basic food products (increased food production, transportation, cold storage, irrigation).
2. Improved nutrition situation (reduced undernutrition).
3. Enhanced quality, standard and hygiene of available food products.
4. Enhanced capacities to manage food insecurity during crisis situations like famines, droughts, floods, landslides, fires, etc.
5. Improved access to food for people/groups most at risk of food insecurity (through rural infrastructure, employment and income generation opportunities).

The Government of Nepal submitted a successful application to the Global Agriculture and Food Security Program (GAFSP) in 2011, and was awarded \$46.5 million for the Nepal Agriculture and Food Security Project (AFSP). The Nepal AFSP seeks to improve household food security through increased agricultural productivity, household incomes, and awareness about health and nutrition, focused in the mid-western and far-western development regions. Agricultural productivity activities will support small infrastructure development, access to locally appropriate technologies, control of diseases and pests, and identification of new and improved technologies. Increased productivity will increase food availability and household incomes, which will be complemented by efforts to change financial management behaviors that threaten to reduce income such as consumption of seed stock and sale of productive assets. Health and nutrition sub-projects will provide dietary support, increase

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<sup>18</sup> Ibid. p 4.

<sup>19</sup> USAID. 2013.



the supply of nutrition foods, and promote improve nutrition, health, and hygiene behaviors through community-based programs.<sup>20</sup>

This aligns with the Ministry of Health and Population's (MOHP) 5-year National Health Sector Plan, Phase II (NHSP II) for 2010-2015. The NHSP II contains components addressing food security and nutrition. The Government of Nepal's nutrition priority areas outlined in this plan are:

1. Wider coverage of micronutrient initiatives (Vitamin A and zinc supplementation, iron fortification and salt iodization);
2. Increased dissemination of information on breastfeeding and complementary feeding practices;
3. Improved focus on maternal and infant nutrition;
4. Improved hygiene and sanitation, food safety and preparation;
5. Strengthened nutrition education in training curriculums for health care workers; and
6. Education on nutrition, dietary diversification and locally available nutritious foods.

Looking forward, the nutrition sector will be guided by the Multi-Sector Nutrition Plan (MSNP) for 2013-2023, which was developed by the National Planning Commission and finalized in September 2012. The MSNP has three major outcomes: (1) policies, plans and multi-sector coordination improved at national and local levels; (2) improved use of nutrition specific and nutrition sensitive services; and (3) strengthened capacity of central and local governments to provide basic nutrition services in an inclusive and equitable manner. The five year goal is to improve maternal and child nutrition, which will result in the reduction of maternal, infant and young child under-nutrition, in terms of maternal BMI and child stunting, by one-third. The 10 year goal is to significantly reduce chronic malnutrition so that it no longer becomes an impediment to improving human capital and for overall socio-economic development.<sup>21</sup>

## **I.2.4 Feed the Future Intervention Areas Within the ZOI**

Nepal is a landlocked country divided into three primary ecological zones mainly running east-west: the Terai in the south, the hill area in the middle, and the mountain area in the north. Crop production and poverty rates vary significantly by region and district. The mid- and far-western regions typically have the highest rates of food insecurity and hunger. And while the Terai is the ecological zone with the greatest agricultural production,<sup>22</sup> eight districts in the Terai faced food deficits in 2010. Furthermore, despite their greater agricultural production rates, some Terai districts have high rates of malnutrition due to behavioral and cultural practices.<sup>23</sup>

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<sup>20</sup> GAFSP. 2013.

<sup>21</sup> Government of Nepal National Planning Commission. 2012.

<sup>22</sup> Joshi, K.D., Conroy, C., and Witcomb, J.R. 2012.

<sup>23</sup> USAID. 2011.

The Terai, together with the hills, contains the most arable land and fertile soils. Irrigation potential is greater and transportation networks are present in the Terai and lower hills. Forty-seven percent of the total population lives in the Terai and 45 percent are located in the hills.<sup>24</sup>

The far-western, mid-western, and western regions have higher sub-regional hunger indexes, incidences of asset sales as a coping strategy, levels of outmigration, and numbers of female-headed households.<sup>25</sup> In addition, the far- and mid-western regions were prioritized by the Government of Nepal in its CIP. USAID/Nepal has aligned its economic growth program with the Government of Nepal's priorities, and Feed the Future will build on USAID/Nepal's economic growth programs in the ZOI.<sup>26</sup>

Thus based on need, prioritization by the Government of Nepal, and potential synergies with other USAID-funded programs in the same geographic areas, 20 districts in three regions (Figure 1) were selected as the ZOI in Nepal as follows:

- Far-western region (six districts): Achham, Baitadi, Dadeldhura, Doti, Kailali, and Kanchanpur.
- Mid-western region (ten districts): Banke, Bardiya, Dailekh, Dang, Jajarkot, Pyuthan, Rolpa, Rukum, Salyan, and Surkhet.
- Western region (four districts): Arghakhanchi, Gulmi, Kapilvastu, and Palpa.

### 1.2.5 Demographics

Table 1 compares the population of the ZOI with the population of Nepal as a whole. The national values in Table 1 are derived from the 2011 Census of Population and Housing.<sup>27</sup> ZOI figures are based on a number of sources, including the 2011 Census and the Nepal Baseline PBS (2013).<sup>28</sup> The total population of Nepal is about 27.5 million, and the population of the ZOI is 6.8 million. Thus, the Feed the Future-supported districts in the ZOI comprise 24.87 percent of the total population.

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<sup>24</sup> Ibid. p. 12.

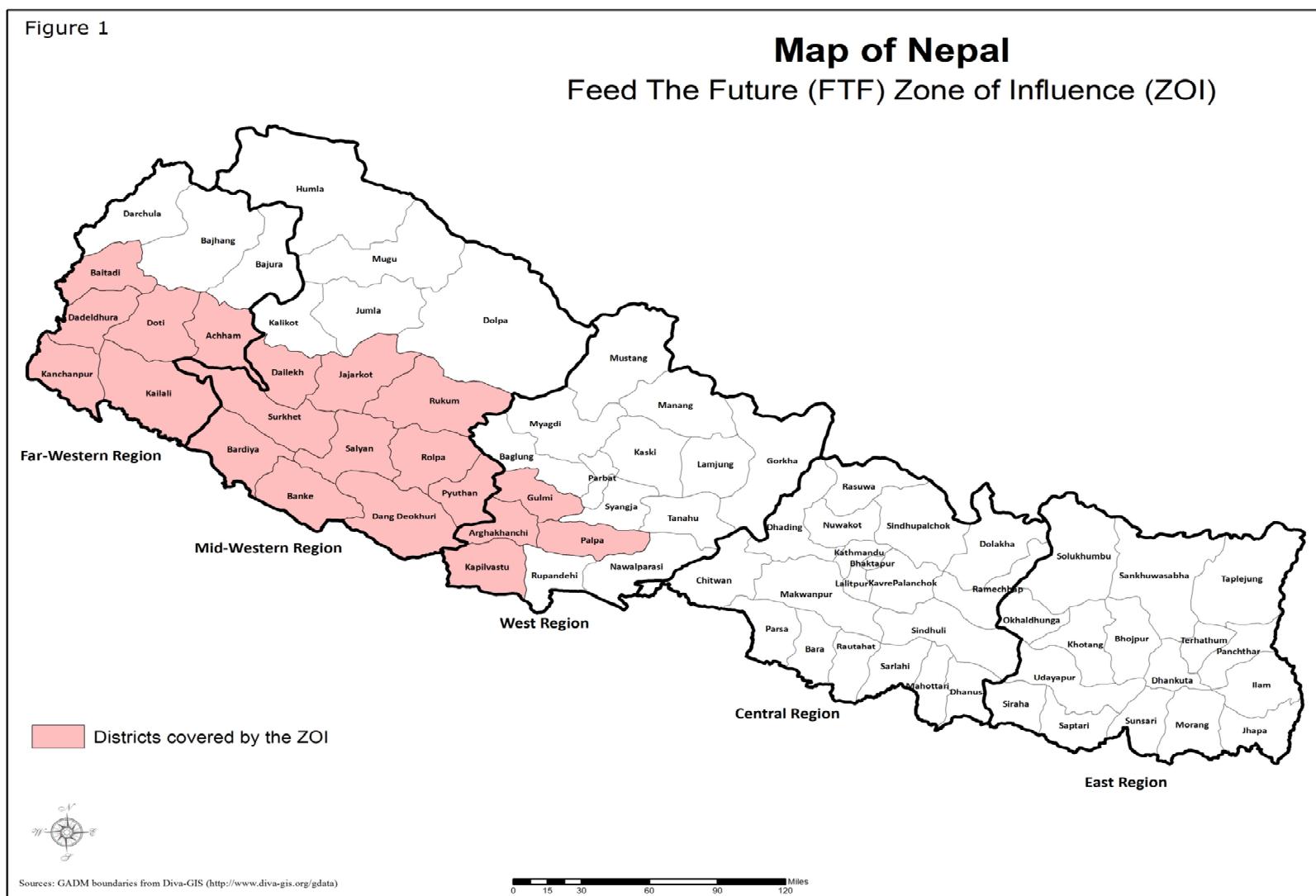
<sup>25</sup> As mentioned in USAID. 2012. "Feed the Future household (HH) level indicators are disaggregated by "gendered household types" – that is: (1) HH with male and female adults (18+ years), (2) HH with at least one male adult and no female adult, (3) HH with at least one female adult and no male adults, and (4) HH with children and no adults. This categorization is somewhat different than the standard "male-headed vs. female-headed" households, and the distinction and change is very meaningful. The concept of "head of household" is highly loaded, presumes certain characteristics that may or may not be present in household gender dynamics, and often reflects the bias of the researcher or respondent. In addition, the head of household concept may perpetuate existing social inequalities and prioritization of household responsibilities that may be detrimental to women." Note: Some of the background data presented in this report were analyzed by household head rather than gendered HH type in the cited reports, and in these cases, the household headship disaggregation is used.

<sup>26</sup> USAID. 2011a.

<sup>27</sup> CBS. 2012.

<sup>28</sup> For further details on how these figures were derived, please refer to Section 2.1.1 under methods.

**Figure 1. Map of Nepal: Feed the Future ZOI and approximate geographic location of intervention areas**



**Table I. Nepal 2013 national and ZOI populations and households**

Population (I)	National <sup>a</sup>	National percent <sup>a</sup>	ZOI <sup>b</sup>	ZOI percent <sup>c</sup>
Total Population	27,516,260	100.0	6,842,936	100.0
Rural	22,817,979	82.9	6,112,087	89.3
Urban	4,698,280	17.1	730,849	10.7
Male and Female Adult(s)	–	–	5,796,631 <sup>d</sup>	84.7
Female Adult(s) only	–	–	987,039 <sup>d</sup>	14.4
Male Adult(s) only	–	–	45,455 <sup>d</sup>	0.7
No Adults	–	–	13,811 <sup>d</sup>	0.2
Women of Reproductive Age (15-49 years)	7,392,012	26.9	1,874,295	27.4
Women of Reproductive Age- Rural	6,022,078	21.9	1,659,805	24.3
Women of Reproductive Age- Urban	1,369,934	5.0	214,491	3.1
Children 0-59 months	2,666,996	9.7	761,381	11.1
Males 0-59 months	1,365,668	5.0	378,990	5.5
Females 0-59 months	1,301,328	4.7	382,392	5.6
Children 6-59 months	–	–	687,557	10.0
Males 6-59 months	–	–	340,350	5.0
Females 6-59 months	–	–	347,207	5.1
Children 0-5 months	–	–	73,825	1.1
Males 0-5 months	–	–	38,640	0.6
Females 0-5 months	–	–	35,184	0.5
Children 6-23 months	–	–	219,430	3.2
Males 6-23 months	–	–	114,824	1.7
Females 6-23 months	–	–	104,606	1.5
<b>Households (II)</b>	<b>National<sup>a</sup></b>		<b>ZOI<sup>b</sup></b>	<b>ZOI Percent<sup>c</sup></b>
Number of Households	5,875,623	100.0	1,343,205	100.0
Male and Female Adult(s)	–	–	1,035,523 <sup>e</sup>	77.1
Female Adult(s) only	–	–	277,457 <sup>e</sup>	20.7
Male Adult(s) only	–	–	24,559 <sup>e</sup>	1.8
No adults	–	–	5,666 <sup>e</sup>	0.4

<sup>a</sup> The national population (Section I) and household (Section II) values are based on the National Population and Housing Census 2011 (National Report).

<sup>b</sup> The ZOI population (Section I) and household (Section II) values are based on the National Population and Housing Census 2011 (National Report).

<sup>c</sup> The denominator for ZOI percent values for section I (population) is 6,842,936 (total ZOI population). The denominator for ZOI percent values for section II (households) is 1,343,205 (total number of households in the ZOI).

<sup>d</sup> Number of people living in each type of household.

<sup>e</sup> Number of households by gendered household type.

Compared to the national population in Nepal, Table 1 shows that the ZOI population is somewhat more rural and has a higher percentage of children under the age of 5. Specifically, the ZOI in Nepal is 89.3 percent rural, compared to all of Nepal at 82.9 percent rural, and 11.1 percent of the ZOI population is under the age of 5 years compared to 9.7 percent nationwide. In the ZOI, 84.7 percent live in households where both an adult female and adult male are present.

## 1.2.6 Agriculture

Feed the Future selected the value chains to be supported in Nepal using the following criteria: high unmet demand; high potential to increase production; prioritization in the CIP; significant nutritional content and share of diet; production by a large number of smallholders; and high potential and applicability in focus districts.

The U.S. Government determined that it can best support the Government of Nepal in addressing Nepal's most pressing food security, poverty, and nutrition challenges through balanced interventions in high-value vegetable value chains and complementary support to cereals (rice and maize), pulses (lentils), and livestock. Prior to Feed the Future investments, change in the area, yield, and production of these crops between 2000-01 to 2010-11 is shown in Table 2.

**Table 2. Percent change in area, yield and production of crops from 2000-01 to 2010-11**

Percent change from 2000-01 to 2010-11			
Value chain	Area	Yield	Production
Rice	-4.1%	10.3%	5.8%
Maize	9.9%	26.7%	39.3%
Lentils	16.2%	24.5%	44.6%
Vegetables	55.3%	24.8%	93.8%

Source: Statistical Information on Nepalese Agriculture, 2010-2011. Government of Nepal Ministry of Agriculture and Cooperatives Agri-Business Promotion and Statistics Division, December 2011.

Feed the Future is not proposing to replace cereals with vegetables, but rather is promoting crop diversification and intercropping. Previous projects have shown that households growing vegetables for sale in markets consume 20 percent of the produce grown, thereby contributing to improved household nutrition. Increased income has proven to contribute to increased food security. Cultivation of vegetables using improved production techniques results in a significantly higher gross margin than cereals. Under the USAID-funded Nepal Flood Recovery Program, when farmers switched from producing cereals to vegetables, their incomes increased by 200 percent. High value vegetable production can have an especially large impact on incomes and food security for producers in marginal areas and/or with small landholdings. Input and labor costs are higher for vegetables, but this is more than compensated for by increased income per unit of land.<sup>29</sup> The increased input and labor startup costs for vegetables reflect the need for improved techniques to address labor shortages and enhance labor productivity (e.g., mechanization, conservation agriculture, and water management), as well as tackle the issues of input costs (for example, improving access to credit and financial services).

Feed the Future is investing in high value vegetables, cereals, pulses, and livestock under an integrated farming systems approach. The integrated farming systems approach includes promotion of intercropping or relay cropping during the fallow season, crop rotation to improve nutrient retention, locally-adapted improved varieties (i.e., high yielding, early harvest, and flood tolerant

<sup>29</sup> USAID. 2011b.

varieties), minimal tillage systems with residue management, timely provision of quality inputs, improved water management, and mechanization adapted to the scale of farms in supported regions.

The focus subsectors of high value vegetables, cereals, pulses, and livestock present many opportunities to integrate women and youth in employment-generating activities. Livestock (e.g., poultry and goats) will also be included as part of the farming system, in order to reach the landless and most marginalized. Enhanced cereal productivity and marketing systems alongside high value vegetable investments increase the likelihood of success by ensuring sufficient local-level production of diverse foods and by increasing resilience in the system.

Conservation agriculture approaches for staple crops can save labor when machinery is used, while also conserving water and fuel and improving soil quality. The labor benefit is of particular value in Nepal, where increasing labor shortages are affecting farming, particularly in female-headed households. Conservation agriculture also is important for climate change adaptation.

Gender is an important cross-cutting issue addressed by the Feed the Future initiative, along with assisting youth and disadvantaged groups. With the high rate of male seasonal migration, in which men leave their households to migrate to India and return for festivals and harvests, women head a large percentage of rural households. By focusing on agricultural value chains, Feed the Future can have a major impact on women and children.

Investments in agriculture will be linked to household nutrition. On the supply side, nutrition will be improved by the production of nutritious foods for the household, sale of agricultural products that generate income for the purchase of nutritious foods, and distribution of these same smallholder farmer-produced nutritious foods to target smallholders as beneficiaries. This will be paired with demand-side activities, including nutrition and hygiene education.

## **1.2.7 13 Population-Based Indicators for the ZOI (Primary and Secondary)**

The Feed the Future baseline for Nepal draws on data from both primary and secondary sources. In this document, the team reports on the 13 Feed the Future indicators. Of the 13 Feed the Future indicators reported, three were calculated using data gathered in the Nepal Baseline PBS (2013): (1) *Women's Empowerment in Agriculture Index (WEAI)*; (2) *prevalence of households with moderate or severe hunger (Household Hunger Scale - HHS)*; and (3) *women's dietary diversity*.<sup>30</sup> The following eight indicators were calculated from secondary data from the NDHS (2011)<sup>31</sup>: (1) *prevalence of stunted children under 5 years of age*; (2) *prevalence of wasted children under 5 years of age* (3) *prevalence of underweight children under 5 years of age*; (4) *prevalence of underweight women of reproductive age (measured by body mass index - BMI)*; (5) *prevalence of children 6-23 months receiving a minimum acceptable diet*; (6) *prevalence of exclusive breastfeeding*; (7) *prevalence of anemia in children 6-59 months* and (8) *prevalence of anemia among women of reproductive age*

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<sup>30</sup> Women's dietary diversity score and prevalence of underweight women are measured on women of reproductive age (15-49 years).

<sup>31</sup> NDHS. 2011.



[15-49 years]. The Nepal Living Standards Survey (NLSS) III (2010-2011)<sup>32</sup> was used to calculate the following two indicators: (1) *prevalence of poverty* and (2) *per capita expenditures*. This report presents general descriptive findings for 11 population-based indicators in Section 3. The two anemia-related indicators (the prevalence of anemia in children 6-59 months and the prevalence of anemia among women of reproductive age [15-49 years]) are discussed in Section 4.0 of this report since they are part of additional analysis requested by USAID/Nepal. Refer to Table 3 on the next page for further details on all the indicators.

### 1.3 Purpose of this Report

This report presents baseline values established from primary and secondary data for 13 Feed the Future indicators in the ZOI in Nepal. The baseline values will be used as a reference point for measuring changes in nutrition, poverty, and gender integration in the agriculture sector in the ZOI. Change over time in the indicators will be determined by comparing baseline data to data collected at the midline and endpoints of the Feed the Future program in Nepal. The data do not allow for conclusions about attribution or causality.

## 2. Methodology for Obtaining Baseline Values for the PBS Indicators

Baseline values for Feed the Future indicators in the ZOI in Nepal are derived from two types of data sources: secondary data and primary data. This methodology section first describes the methods for calculating indicators based on secondary data sources, followed by the methods for calculating indicators from PBS primary data collection.

The NDHS<sup>33</sup> and NLSS III<sup>34</sup> surveys were completed in 2011 and 2010-11, respectively. These surveys are excellent secondary data sources for reporting on nutritional status in women ages 15-49 and children under 5, prevalence of poverty, and per capita expenditures. These data sources had to meet two criteria to provide valid baseline estimates of indicators: (1) data were collected in a recent time window (last two years) prior to the start of Feed the Future activities, and (2) the sample size was large enough to estimate indicator values with sufficient precision and power to measure change over time. Based on sample size calculations found in Section 2.2.3, the samples available in the NDHS (for the nutritional status of women and children, indicators 3 to 10, Table 3) and in the NLSS III (for the prevalence of poverty and per capita expenditures indicators, indicators 1 and 2, Table 3) are considered sufficient to measure change over time. Thus, data for 10 out of the 13 indicators in Table 3 were obtained from the NDHS and NLSS III. Primary data were collected for the remaining three indicators (numbers 11 to 13 shaded in gray in Table 3): the prevalence of households with moderate or severe hunger known as the Household Hunger Scale (HHS), WEAI, and the women's dietary diversity indicators in the ZOI. Although not collected in the Nepal

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<sup>32</sup> NLSSIII. 2011.

<sup>33</sup> NDHS. 2011.

<sup>34</sup> NLSSIII. 2011.

Baseline PBS (2013), the two anemia indicators (numbers 9 and 10 in Table 3) are also included in this report along with additional anemia analysis requested by USAID/Nepal with results presented in Section 4 of this report. Further, data for two additional indicators (see indicators 14 and 15 in Table 3) were collected at the request of the USAID/Nepal: percent of households using an improved sanitation facility and percent of households using an improved drinking water source.<sup>35</sup>

## 2.1 Secondary Data

This section presents the data sources and the procedures used to estimate the indicators of interest for the ZOI from the key secondary data sources: the NDHS (2011) and the NLSS III (2010-2011). The 2011 Nepal Census was also used to estimate population values at the national and ZOI levels.

### 2.1.1 Secondary Data Sources

**Table 3. Sources of data for Nepal Feed the Future ZOI: Population-based indicators (primary and secondary)**

Indicator	ZOI secondary analysis	ZOI baseline survey
Prevalence of poverty <sup>a</sup>	✓	
Per capita expenditures (as a proxy for incomes) <sup>a</sup>	✓	
Prevalence of underweight children <sup>b</sup>	✓	
Prevalence of stunted children <sup>b</sup>	✓	
Prevalence of wasted children <sup>b</sup>	✓	
Prevalence of underweight women <sup>b</sup>	✓	
Prevalence of children 6-23 months receiving a minimum acceptable diet <sup>b</sup>	✓	
Prevalence of exclusive breastfeeding <sup>b</sup>	✓	
Prevalence of anemia among children 6-59 months <sup>c</sup>	✓	
Prevalence of anemia among women of reproductive age <sup>c</sup>	✓	
Prevalence of households with moderate or severe hunger <sup>d</sup>		✓
Women's Empowerment in Agriculture Index <sup>d</sup>		✓
13. Women's dietary diversity <sup>d</sup>		✓
Percent of HH using improved sanitation facility <sup>e</sup>		✓
15. Percent of HH using improved drinking water source <sup>e</sup>		✓

<sup>a</sup> Source: Nepal NLSS III (2010-2011).

<sup>b</sup> Source: NDHS (2011).

<sup>c</sup> Source: NDHS (2011). The anemia indicator data are analyzed and reported by FTF FEEDBACK in Section 4 of this report.

<sup>d</sup> Source: Nepal Baseline PBS (2013).

<sup>e</sup> Source: Nepal Baseline PBS (2013). These indicators were added to the Nepal Baseline PBS (2013) at the request of USAID/Nepal Mission and adapted from the male and female version questionnaires of the Suaahara Baseline Survey (2012).

### *Nepal Demographic and Health Survey (2011)*

Publicly-available NDHS (2011) data were used to calculate anthropometric and nutrition indicators for women and children in the Nepal ZOI. In order to identify the ZOI in the nationally

<sup>35</sup> Refer to Annex A – Attachment 3 for the Nepal Baseline PBS Questionnaire.

representative NDHS data, FTF FEEDBACK utilized geographic information systems data available for the NDHS. The team first identified the boundaries of the 75 districts in Nepal. Then, using global positioning system information for each cluster, the team identified the district names for all clusters within the NDHS dataset. Nepal's ZOI includes 20 districts – Achham, Arghakhanchi, Baitadi, Banke, Bardiya, Dadeldhura, Dailekh, Dang, Doti, Gulmi, Jajarkot, Kailali, Kanchanpur, Kapilvastu, Palpa, Pyuthan, Rolpa, Rukum, Salyan and Surkhet. In the NDHS (2011) data, 87 of the 289 total number of clusters in the survey fall within the ZOI. The team flagged these clusters in the NDHS datasets, and limited the indicator analysis to only those cases within the ZOI. The team also tabulated indicators for the entire country, and verified them with the tables in the NDHS (2011) Final Report to ensure comparability of analytic methods.

### ***Nepal Living Standards Survey III (2010-2011)***

The source of data for the poverty and expenditures indicators for the ZOI analysis is the NLSS III (2010-2011).<sup>36</sup> This survey was conducted by the Central Bureau of Statistics to update data on living standards in Nepal. The NLSS III is a follow up to the earlier NLSS surveys conducted in 1995-96 (NLSS I) and 2003-04 (NLSS II).

Data collection was carried out over a period of 12 months to cover a complete cycle of agricultural activities and to capture seasonal variations, including the dry (February-May), rainy (June-September), and winter (October-January) seasons. The sample was nationally representative for each of the three seasons covered during the fieldwork. The data were collected throughout the year, dividing the clusters proportionately across the three seasons to reduce the seasonal effects of consumption and expenditures.

The NLSS III was designed to provide reliable indicator estimates for three types of geographic areas: urban/rural, ecological zones, and development regions. The ecological zones are based on altitude, and include mountains (4,877 to 8,848 meters), hills (610 to 4,876 meters), and plains (the Terai) across the five development regions spanning Nepal (eastern, central, western, mid-western and far-western). The sample of 1,404 households (derived from the NLSS III data) is representative of the ZOI. Further, there is sufficient sample in the ZOI to measure change in the indicator over time. Of the 14 strata, six<sup>37</sup> are in the ZOI, covering 20 of the 75 districts in Nepal. It is unlikely that the FTF FEEDBACK team will be able to estimate indicators in the three development regions within the ZOI because of the small sample sizes. Of the 1,404 households in the ZOI, 264 are in the western region, 696 households are in the mid-western region and 444 households are in the far-western region. It will not be possible to provide estimates at the district level, due to the small sample sizes in the districts. Refer to Annex B – NLSSIII Study Design for further details on the NLSSIII study design.

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<sup>36</sup> The prevalence of poverty is defined as the percent of people living below USD1.25 per day. The per capita indicator refers to the daily per capita expenditure in 2010 USD.

<sup>37</sup> The six strata include: urban hills, urban Terai, western hills, western Terai, mid-western and far-western rural hills, and mid-western and far-western rural Terai.

## Census

The data sources used to calculate the national – and ZOI – level population values are from the 2011 Nepal Census of Population and Housing and the Nepal Baseline PBS (2013).

The national values presented in Table 1 were taken from the 2011 Census of Population and Housing. The values are based on the long-term growth rate between the 1981 and 2011 censuses (1.91 percent). This rate was applied to inflate the values for the two years between the most recent census and this survey.

The population figures for the ZOI presented in Table 1 are based on various sources. The total population is based on the 2011 census, which was inflated from 2011 for 2013 using the growth rates between 1981 and 2011 among the 20 districts included in the ZOI. In Table 1, the percent or distribution by type of household, women of reproductive age, young children of various ages, gender, and urban/rural location were derived from the Nepal Baseline PBS (2013) and applied to the inflated totals from the census.

The total number of households in the ZOI is based on the number of households found in the PBS. This number of households was used to compute a mean household size in the PBS, which was then applied to the 2013 estimated total population in the ZOI.

Since ages of household members were collected only by years, the distribution by month of children under 5 years of age was based on the birth history in the NDHS (2011). A Kaplan-Meier analysis was applied to the birth history data to derive a percentage distribution of children by age. This distribution was then used to project the populations of children by months of age using inflated census data as the total.

## 2.2 Primary Data Collection

### 2.2.1 Review of Standard Questionnaire Modules

The Nepal Baseline PBS (2013) questionnaire<sup>38</sup> was developed from the baseline survey guidelines from Volume 8 of the Feed the Future Monitoring and Evaluation (M&E) Guidance series titled “Population-Based Survey Instrument for Feed the Future Zone of Influence Indicators with Revised WEAI Module October 2012.” The Nepal Baseline PBS (2013) included modules that capture primary data for indicators that were not available from other population surveys (specifically the NDHS and NLSS). As mentioned in the previous section, these indicators include: prevalence of households with moderate or severe hunger; WEAI; and women’s dietary diversity.

At the request of USAID/Nepal, two additional indicators (percent of households using improved sanitation facilities and percent of households using an improved drinking water source) were

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<sup>38</sup> The complete Nepal Baseline PBS (2013) questionnaire is included in Annex A.

adapted from the female and male versions of the Suaahara Baseline Survey<sup>39</sup> and added to Module D of the Nepal Baseline PBS (2013).

The survey questionnaire was adapted to the local context in two ways. First, questions such as food items for dietary diversity were adapted to the local context. Second, the survey questionnaire was translated into Nepalese by New ERA staff. Back translation from Nepalese to English was performed to confirm the accuracy of the content.

## 2.2.2 Timing of Survey Work

The survey was conducted from April 15 to May 28, 2013, which is outside of the rainy season.<sup>40</sup> The PBS period coincided with the harvest of wheat and potato crops. Food availability is generally modest between March and May, with greater shortages expected from July through September when food grain stores have been exhausted. In contrast, households typically have the best food supply from October through December due to the paddy harvest. According to the Nepal Food Security Bulletin from May 2013, Nepal was in “a minimal food insecurity phase” by the end of March 2013, just before this survey commenced.<sup>41</sup> See Annex C – Nepal PBS 2013 – Survey Administration for further details regarding the logistics of the survey work.

## 2.2.3 Survey Sample Design

### *2011 Sample Size Estimates for Feed the Future Baseline Survey*

Sample size estimates for this survey serve two purposes: (1) to confirm that secondary data sources have sufficient data to measure change over time, and (2) to determine the sample size required to measure change over time for the indicators collected in the baseline PBS. Sample sizes for both purposes are found in Table 4. Indicators 1 to 10 in Table 4 were calculated with secondary data. Indicators 11 to 13 were collected in the baseline PBS.

Values under the columns titled “Sample Size” in Table 4 are for the population related to the indicator. For example, the value of 129 for the “Prevalence of Exclusive Breastfeeding” indicator implies that 129 children age 0-4 months are required to measure change over time for this indicator. Values under the columns titled “Number of Households” are the number of households that must be visited to collect data for each indicator. For “Exclusive Breastfeeding,” 2,745 households need to be visited to have enough children ages 0-4 months in the sample. Note that the cells under “Number of Households” columns are shaded for indicators that did not require data collection in the Nepal Baseline PBS (2013).

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<sup>39</sup> Conducted by Save the Children, IFPRI, and New ERA, in 2012.

<sup>40</sup> Smith, David R. 2011.

<sup>41</sup> WFP. 2013.

**Table 4. Required sample size from baseline to endline\***

Indicator	Baseline value	Endline target value	Sample size (n) <sup>g</sup>	Number of households (n)
1. Prevalence of poverty \$1.25/day <sup>a</sup>	55.0	44.0	546	572
2. Per capita expenditures (as a proxy for incomes) <sup>b,e</sup>	170,735	204,882	756	792
3. Prevalence of underweight children <sup>c</sup>	34.9	27.2	853	1,956
4. Prevalence of stunted children <sup>c</sup>	45.2	36.2	772	1,771
5. Prevalence of wasted children <sup>c</sup>	12.0	8.4	835	1,915
6. Prevalence of underweight women <sup>c</sup>	21.5	16.3	1,725	1,940
7. Prevalence of children 6-23 months receiving a minimum acceptable diet <sup>c</sup>	22.7	31.1	478	3,649
8. Prevalence of exclusive breastfeeding <sup>c</sup>	71.1	85.3	129	2,745
9. Prevalence of anemia among children 6-59 months <sup>c</sup>	49.8	39.8	719	1,649
10. Prevalence of anemia among women of reproductive age (15-49 years) <sup>c</sup>	37.6	30.0	1,957	2,201
11. Prevalence of households with moderate or severe hunger <sup>d</sup>	49.7	39.8	658	690
12. Women's Empowerment in Agriculture Index <sup>d</sup>	0.690	0.759	1,092	1,673
13. Women's dietary diversity <sup>d,f</sup>	3.8	7.6	1,022	1,150

<sup>a</sup> Source for sample size calculation: Feed the Future Nepal Website (<http://www.feedthefuture.gov/country/nepal>, accessed March 2013).

<sup>b</sup> Source for sample size calculation: NLSS III (2010-2011).

<sup>c</sup> Source for sample size calculation: NDHS (2011).

<sup>d</sup> Source for sample size calculation: Estimate from available PBS report at the time of survey.

<sup>e</sup> In local currency Nepalese Rupees (NPR).

<sup>f</sup> Mean number of food groups consumed by women of reproductive age.

<sup>g</sup> For indicators 1 to 11, the sample sizes required are lower than the size available from all sources (primary (PBS (2013)) and secondary (NLSS III (2010-2011)) and NDHS (2011)).

\* The sample size was determined utilizing the Stata software sample size calculation functions for proportions and means, as appropriate. The level of significance was set to 5 percent and the power was set to 80 percent.

The sample size calculations have been adjusted for the design effect and for non-response.<sup>42</sup> The values of design effect for indicators 3 to 10 were calculated for the ZOI based on NDHS (2011) data. Design effect for the other indicators was set to 2.0.

<sup>42</sup> The values under the "Number of Households" columns in Table 4 have been adjusted for non-response. This includes household non-response and individual non-response. Household non-response incorporates those households that were selected for the sample but may not participate in the interviews. Individual non-response are



The baseline values were set with data from Nepal where possible. The baseline value for prevalence of poverty was found on the Feed the Future website for Nepal.<sup>43</sup> The value for per capita expenditures was found in Volume 2 of the survey report for the NLSS III (2010-2011). Values for indicators 3 to 10 were based on secondary data analysis for the ZOI based on the NDHS (2011). The three remaining indicators (prevalence of households with moderate or severe hunger, WEAI, and women's dietary diversity) were based on reasonable estimates from other countries. Estimates of the baselines were needed for these indicators because no secondary data were available for these indicators from surveys for Nepal.

The general rule was to set targets at 20 percent change, which is either an increase or decrease from the baseline, as appropriate. Five of the 11 indicators followed this rule, including prevalence of poverty, per capita expenditure, prevalence of stunted children, prevalence of exclusive breastfeeding, and prevalence of households with moderate or severe hunger.

Exceptions for NDHS (2011) indicators were made where the sample was not large enough to measure 20 percent change. The percentage change for the prevalence of underweight children was set at 22 percent decrease and underweight women at 24 percent decrease. Although these are not within the 20 percent target, they represent a reasonable level of change for projects to achieve in 5 years.

For the following indicators from NDHS (2011) data, the percent change was set to what is possible to detect given the sample from NDHS data for the ZOI: prevalence of wasted children was set at 30 percent decrease, and the prevalence of children 6-23 months receiving a minimum acceptable diet (MAD) was set at 37 percent increase. Referring to the results of the NDHS 2001, 2006, and 2011 data, there has been very little change over time for prevalence of wasting; therefore, we can expect a small level of change. Thus, it would require a much larger sample size to capture any change. Further, compared to stunting and underweight, the prevalence of wasting is at a much lower level, and therefore harder to improve. For minimum acceptable diet, NDHS data show that there has been a large decline from 2006 to 2011, and therefore we can at best expect a small improvement, which would require a large sample size to detect.

A few other exceptions occurred, including the WEAI and women's dietary diversity indicators. The WEAI indicator target was set to 10 percent change with a baseline value of 0.69 (Table 4). Because there was no previous data from Nepal to rely on for this indicator, an estimated baseline value was set based on available PBS data from other countries. The estimated baseline value for the women's dietary diversity indicator was based on NDHS (2011) data. Because the baseline value for this indicator was low at 3.8, the target was set to double this to 7.6.

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those women, men, or children who were eligible for the survey but may not participate. By including household and individual non-response, these values show the number of households that must be visited to achieve the desired sample at the individual level. In other words, if 1,150 households are visited, the survey should be able to collect data on the 1,022 women needed for the dietary diversity indicator.

<sup>43</sup> USAID. 2010.

## Sample Allocation and Stratification

The 20 ZOI districts of the western, mid-western and far-western development regions are subdivided into Village Development Committees (VDC) and municipalities, and each VDC/municipality into wards. Wards, being the smallest administrative units in Nepal, were used as the cluster unit, and were selected using the probability proportional to size (PPS) sampling method.

The sample was stratified to better reflect differences across geographic areas. Strata were designed to better spread the sample among those areas. As shown in Table 5, to ensure each stratum had an adequate number of sample clusters, the sample combined the 20 districts into four regions: far-western region with six districts, the first mid-western region with five districts, the second mid-western region with five districts, and a western region with four districts. In addition to the four regions, the sample was stratified by urban/rural strata. The result was that each region had an urban and a rural stratum to make eight strata total (two strata within each of four regions).

**Table 5. Districts by development region**

Region	Development region	Districts
1	Far-western	Achham, Baitadi, Dadeldhura, Doti, Kailali, Kanchanpur
2	Mid-western	Bardiya, Dailekh, Jajarkot, Salyan, Surkhet
3	Mid-western	Banke, Dang, Pyuthan, Rolpa, Rukum
4	Western	Arghakhanchi, Gulmi, Kapilvastu, Palpa

Source: Nepal Census (2011), Nepal Central Bureau of Statistics.

The 100 sample clusters were first allocated to the four regions proportionally to the number of households. These clusters were further allocated to urban/rural within each region proportionally to the number of urban/rural households. Given that each stratum required a minimum of two sample clusters, this proportional allocation was adjusted by increasing the number of clusters to a minimum of two per urban/rural region.

## Sampling Methodology

The sample size of households for the baseline survey followed a two-stage cluster sampling design. In this design, clusters were randomly selected by PPS sampling within each stratum (region-rural, region-urban) in the first stage. In the second stage, households were randomly selected within each cluster using a household listing. The Central Bureau of Statistics provided the cluster lists on the Feed the Future ZOI of 20 western districts based on the Nepal 2011 Census and New Era developed the household listings of clusters. There were 100 clusters selected based on the PPS sampling in 20 districts. Twenty randomly selected households were interviewed per cluster, with the final sample size of 2000. Refer to Annex D – Nepal PBS 2013 Sample Size Design for further details.

## 2.2.4 Limitations and Challenges

Limitations and challenges related to this primary data collection are described below, along with actions taken to mitigate these limitations.

### *Segmentation of Clusters*

Some of the clusters selected in Nepal had very large numbers of households. Since a complete household listing of these clusters would be costly and would not have been feasible, these clusters were subdivided into several smaller segments, only one of which was further selected and listed. In each segment, the number of households was not recorded, and thus was not used in calculating the actual proportion of households in the selected segment for sampling weights. FTF FEEDBACK staff had to assume equal size of households across all segments in one cluster. Although ideally the segments would be approximately of equal size, the segmentation was done using boundaries that were easily identifiable. This may result in clusters selected with probability slightly disproportional to size.

### *Customization of Questionnaire*

Integration of country-specific customizations to the survey questionnaire was needed, which led to programming, re-configuring, and uploading of multiple versions of the questionnaire in the tablet. It was a challenge to implement the required changes within the timeline and still accomplish the appropriate testing and review processes. The need for translation and mapping of Nepali versions created an additional layer of difficulty for this process, as further review and input from the New ERA staff was required. This extended the development timeline to close to the data collection period. FTF FEEDBACK staff worked closely with New ERA staff to get these tasks accomplished in a timely manner. In addition, the paper version of the questionnaire was modified to allow for manual data collection of Module G-6 (Time Allocation) since it was found during the field-tests that it was cumbersome to complete this particular module in the tablets while in the household. The data was collected manually at the household and immediately after the interview was completed, the enumerator entered the data into the tablet.

### *Use of Android Tablets*

Because New ERA staff had not worked previously with Android Nexus 7 tablets or the Open Data Kit (ODK) data collection software, capacity building was needed to ensure that staff could properly use those systems. Staff were introduced to and gained experience with the tablets and ODK during the training, and also during the two field pilots conducted (in the districts of Kavre and Sindhupalchowk) under the oversight of FTF FEEDBACK staff. FTF FEEDBACK staff maintained open lines of communication with the New ERA staff to provide ongoing technical assistance, especially to address issues related to the tablets or ODK. During the first week of data collection, FTF FEEDBACK staff performed trouble-shooting on the Android tablets and ODK on site, and assisted New ERA staff to improve their skills with these new technologies.

Intermittent availability of electricity is also a challenge in Nepal, as well as a limited number of hours during the day when electricity is available (even in areas that have access). To address this, New ERA staff used generators that require petrol, which was carried by porters with the survey teams. An additional challenge was the reduced effectiveness of the generators due to contaminated petrol which required the survey staff to use solar powered battery chargers. The solar power battery chargers were deemed an appropriate technology to use specially during the non-hazy season in remote areas that do not have access to electricity or are far away from petrol stations. New ERA staff worked well given these constraints and was able to conduct the data collection according to schedule.

### **Data Transmission**

Transmitting data in a timely manner from the field also was a challenge. This was due to unavailability or unreliable coverage of internet services. During the first few days of fieldwork, only a few of the teams were able to send data while in the survey clusters. Data transmission was possible once the teams returned to the central city for review meetings. The internet service, WIMAX, covered only 14 of the 20 districts, and good coverage in those 14 districts often was limited to the district headquarters. Many of the clusters in each district were not close to the headquarters. These difficulties were anticipated in advance, and FTF FEEDBACK worked with New ERA to establish a detailed data transmission plan (which included when and from where data would be transmitted) specific to each cluster, depending on internet coverage and difficulty of the terrain. The data transmission plan was also integrated with the field supervision plan to ensure that data not being transmitted on a daily or weekly basis were backed up. FTF FEEDBACK staff developed a procedure for transmitting data parallel to the regular ODK system to ensure that data would be sent in a timely fashion from the field, particularly for those districts that did not have internet coverage and as a result could not transmit data on a daily basis.

### **Data Quality**

The original plan was for FTF FEEDBACK headquarters to provide raw data to New ERA while the fieldwork was in process. This would allow New ERA to review the quality of data and adjust procedures or provide additional training if necessary while the survey was ongoing. FTF FEEDBACK also planned to provide QC tables produced from the survey data. The combined New ERA and FTF FEEDBACK checks were to improve the overall level of data quality. The FTF FEEDBACK data management (DM) team worked with New ERA to maintain data quality throughout the fieldwork period. This included New ERA reporting on the progress of fieldwork on a weekly basis; the DM team comparing those progress reports with data in the database; the DM team creating QC reports and sending those to New ERA on a weekly basis; and New ERA responding to those reports. The DM team was also involved in cleaning data received from the survey as fieldwork progressed, which allowed for queries to be made to New ERA to help resolve data problems that had been identified.

## Enumerator Team Configuration

The New ERA team initially assigned and scheduled data collection teams assuming that three enumerators would share all the interviews (for the various modules) within each of the households. Since Feed the Future requires that female enumerators interview female respondents (for Modules G and H in particular), more time had to be allotted to complete the household surveys per team. This also led to re-allocation of responsibilities to the male enumerators and the field supervisor.

## 3. Descriptive Findings

This section presents the findings for 11 indicators, including household characteristics, household expenditures, nutrition, household hunger, and women's empowerment. The baseline values for the Feed the Future Nepal indicators are presented in Table 6 followed by a detailed description of each indicator. The two anemia-related indicators are presented in Section 4 of this report since they are part of additional analysis requested by USAID/Nepal.

**Table 6. Nepal Feed the Future ZOI: Population-based indicators (11 indicators)**

Baseline value							
Feed the Future indicator	n (unweighted)	Baseline value (weighted)	Std Dev	95% CI		DEFF	Source* Year collected
<b>Prevalence of Poverty: Percent of people living on less than \$1.25/day</b>	<b>1,404</b>	<b>32.5</b>	<b>2.3</b>	<b>28.0</b>	<b>37.0</b>	<b>3.42</b>	<b>NLSS III 2010-11</b>
Male and female adults	1,044	32.7	2.5	27.8	37.6	3.25	
Female adult(s) only	329	32.8	3.2	26.4	39.2	1.14	
Male adult(s) only^	25	14.4	8.1	-1.7	30.5	0.66	
Child only^^	6	–	–	–	–	–	
<b>Per capita expenditures of USG targeted beneficiaries</b>	<b>1,404</b>	<b>2.12</b>	<b>0.04</b>	<b>2.04</b>	<b>2.21</b>	<b>2.73</b>	<b>NLSS III 2010-11</b>
Male and female adults	1,044	2.10	0.05	2.00	2.20	2.24	
Female adult(s) only	329	2.17	0.08	2.02	2.32	1.84	
Male adult(s) only^	25	3.18	0.49	2.22	4.14	1.26	
Child only^^	6	–	–	–	–	–	
<b>Prevalence of stunted children under 5 years of age</b>	<b>877</b>	<b>45.2</b>	<b>57.9</b>	<b>39.8</b>	<b>50.5</b>	<b>2.0</b>	<b>NDHS 2011</b>
Male	485	46.6	57.9	40.3	52.9	1.5	
Female	392	43.4	57.8	37.4	49.3	1.1	

**Table 6. Nepal Feed the Future ZOI: Population-based indicators (11 indicators) (continued)**

Baseline value								
Feed the Future indicator	n (unweighted)	Baseline value (weighted)	Std Dev	95% CI		DEFF	Source*	Year collected
<b>Prevalence of wasted children under 5 years of age</b>	<b>877</b>	<b>12.0</b>	<b>37.8</b>	<b>9.6</b>	<b>14.4</b>	<b>0.9</b>	<b>NDHS</b>	<b>2011</b>
Male	485	13.2	39.4	10.0	16.5	0.9		
Female	392	10.5	35.7	7.3	13.6	0.8		
<b>Prevalence of underweight children under 5 years of age</b>	<b>877</b>	<b>34.9</b>	<b>55.4</b>	<b>30.0</b>	<b>39.7</b>	<b>1.8</b>	<b>NDHS</b>	<b>2011</b>
Male	485	35.8	55.6	29.5	42.1	1.6		
Female	392	33.7	55.1	28.3	39.2	1.0		
<b>Prevalence of underweight women</b>	<b>1,879</b>	<b>21.5</b>	<b>47.8</b>	<b>18.2</b>	<b>24.8</b>	<b>2.3</b>	<b>NDHS</b>	<b>2011</b>
<b>Women's Empowerment in Agriculture Index<sup>1</sup></b>	<b>1,654</b>	<b>0.80</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>PBS</b>	<b>2013</b>
5DE Sub-index	1,654	0.79	0.20	0.78	0.80	1.1		
GPI Sub-index	1,136	0.89	0.14	0.88	0.89	1.0		
<b>Prevalence of households with moderate or severe hunger</b>	<b>1,946</b>	<b>10.6</b>	<b>30.8</b>	<b>7.6</b>	<b>13.6</b>	<b>4.6</b>	<b>PBS</b>	<b>2013</b>
Male and female adults	1,500	9.9	29.9	7.2	12.5	3.0		
Female adult(s) only	404	13.0	33.7	6.8	19.3	3.5		
Male adult(s) only <sup>^</sup>	35	12.4	32.7	1.1	23.8	1.1		
Child only <sup>^^</sup>	7	–	–	–	–	–		
<b>Prevalence of children 6-23 months receiving a minimum acceptable diet</b>	<b>494</b>	<b>22.7</b>	<b>48.6</b>	<b>17.8</b>	<b>27.6</b>	<b>1.3</b>	<b>NDHS</b>	<b>2011</b>
Male	274	23.6	49.7	16.8	30.5	1.3		
Female	220	21.5	47.3	14.9	28.2	1.1		
<b>Women's dietary diversity: mean number of food groups consumed by women of reproductive age</b>	<b>2,580</b>	<b>3.9</b>	<b>1.3</b>	<b>3.8</b>	<b>4.0</b>	<b>6.4</b>	<b>PBS</b>	<b>2013</b>
Urban	319	4.5a	1.4	4.2	4.7	2.7		
Rural	2,261	3.8a	1.3	3.7	4.0	6.4		



**Table 6. Nepal Feed the Future ZOI: Population-based indicators (II indicators) (continued)**

Feed the Future indicator	n (unweighted)	Baseline value				DEFF	Source*	Year collected
		Baseline value (weighted)	Std Dev	95% CI				
<b>Prevalence of exclusive breastfeeding of children under 6 months of age</b>	<b>162</b>	<b>71.1</b>	<b>53.5</b>	<b>62.3</b>	<b>80.0</b>	<b>1.1</b>	<b>NDHS</b>	<b>2011</b>
Male	86	68.4	54.2	57.2	79.6	0.9		
Female	76	74.4	52.2	62.4	86.4	1.0		

<sup>a</sup> Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are between rows within each indicator.

\* Data Source: Nepal Baseline PBS (2013) or secondary data source NLSS III (2010-2011); NDHS (2011).

<sup>^</sup> Results should be interpreted with caution due to the low number of observations (N).

<sup>^^</sup> Values not reported due to the low number of observations (N<25).

<sup>†</sup> Std dev, CI and DEFF values are not presented as the WEAI is a weighted sum of the SDE and GPI.

## 3.1 Household Characteristics

### 3.1.1 Household Demographic Characteristics<sup>44</sup>

As part of Module C in the Nepal Baseline PBS (2013), primary or secondary respondents provided information about age, highest level of completed education, and other characteristics of household members. Household members include anyone who resided in the home for at least 6 of the last 12 months at the time of the survey (and those who lived in the household for fewer than 6 months, but who intended to stay for an extended period of time) and newborn children.

Data collected on the size of the household, the number of females within the household, and the number of children in the household, are displayed in Table 7. The average number of household members is approximately five (5.1). Households with female adults only or male adults only tend to have fewer members (3.6 and 1.9, respectively) compared with households that have both male and female adults (5.6); these results are statistically significant. More females live in male and female adult households (2.9) than those with female adult only or male adults only (2.5 and 0.4, respectively) households; these results are statistically significant. Similarly, more children ages 17 years and younger live in households that have male and female adults compared with female or male adult only households, but this difference is only statistically significant in comparison to male adult only households.

<sup>44</sup> Unless, indicated otherwise, the statistical significance level is at  $p < 0.05$ .

The overall ZOI estimate of the average number of household members (5.1) is consistent with the average number (4.9) reported in the NLSSIII (2010-2011). Per NLSSIII (2010-2011) findings, the number of household members was higher in rural (5.0) compared with urban (4.4) households, with an average of 4.6 members in western households and an average of 5.2 members in mid-western households (see Annex E, Table E-1: NLSS III (2010-2011): Household Members).

Table 7 also shows that, on average, there are 1.6 school-aged children (5 to 17 years old) in each household overall that are currently attending school, while on average, there are 1.8 school-aged children per household overall. Male and female adult households have more school-aged children attending school (1.7) compared to male adult only households (0.5), and this difference is statistically significant. The male and female adult households also have more children overall (1.8) compared with male adult only households (0.7), and this difference is statistically significant. The statistical significance should be interpreted with caution due to the small number of observations for adult male only households.

**Table 7. Nepal Feed the Future ZOI: Household demographics indicators (i)**

	Household type*				
	All households	Male and Female adult	Female adult only	Male adult only ^	Child only ^^
	Mean (Std dev)				
Number of household members	5.1 (2.4)	5.6 (2.4) <sup>ab</sup>	3.6 (1.6) <sup>ac</sup>	1.9 (1.2) <sup>bc</sup>	–
Number of female household members	2.8 (1.5)	2.9 (1.6) <sup>de</sup>	2.5 (1.3) <sup>df</sup>	0.4 (0.6) <sup>ef</sup>	–
Number of children (0-5 years)	0.6 (0.8)	0.6 (0.8) <sup>g</sup>	0.5 (0.7) <sup>h</sup>	0.0 (0.2) <sup>gh</sup>	–
Number of children (5-17 years)	1.8 (1.5)	1.8 (1.5) <sup>i</sup>	1.7 (1.4) <sup>j</sup>	0.7 (1.1) <sup>j</sup>	–
Number of children (5-17 years) attending school	1.6 (1.4)	1.7 (1.4) <sup>k</sup>	1.6 (1.3) <sup>l</sup>	0.5 (0.9) <sup>kl</sup>	–
<b>n (unweighted)</b>	<b>1,955</b>	<b>1,508</b>	<b>404</b>	<b>35</b>	<b>8</b>

<sup>a-d</sup> Subgroups with the same superscripts are significantly different at the 0.05 level. Comparisons are across columns.

<sup>^</sup> Results (including significant test findings) should be interpreted with caution due to the low number of observations (N).

<sup>^^</sup> Values not reported due to the low number of observations (N<25).

<sup>\*</sup> This table shows data for people who live in the household at least 6 months of the year.

Source: Nepal Baseline PBS (2013).

According to Table 8, the Nepal Baseline PBS (2013) data indicate that 68.5 percent of males and 44.6 percent of females are literate, with households having an overall literacy of 61.6 percent. The higher level of literacy in males compared to females is statistically significant. The overall literacy rate in the ZOI (in 2013) is higher at 61.6 percent compared to the finding for overall literacy rate of 56.5 percent reported in NLSSIII (2010-2011). The literacy rates by gender are consistent. The NLSSIII (2010-2011) revealed that 44.5 percent of females and 71.6 percent of males are literate (see Annex E, Table E-2: NLSS III (2010-2011): Literacy Rate). It should be noted that per the

NLSS, the literacy rate continues to increase over time for males (53.5 percent in 1995-1996, 64.5 percent in 2003-2004 and 71.6 percent in 2010-2011), females (19.4 percent in 1995-1996, 33.8 percent in 2003-2004 and 44.5 percent in 2010-2012), and overall (35.6 percent in 1995-1996, 48 percent in 2003-2004 and 56.5 percent in 2010-2011).

Table 8 also shows that approximately 38 percent of males, 69 percent of females, and 47 percent of household members overall have either no schooling or less than primary education, but males are significantly less likely to have no education compared to females. Males are also significantly more likely to have some primary, completed primary ( $p=0.008$ ), some secondary ( $p=0.02$ ), completed secondary ( $p=0.0003$ ), and/or more than secondary education compared to females.

**Table 8. Nepal Feed the Future ZOI: Age, literacy and education of primary respondent, by sex**

	Male			Female			All		
	Mean or %	Std Dev	n	Mean or %	Std Dev	n	Mean or %	Std Dev	n
<b>All Primary Respondents</b>	<b>71.3</b>	<b>45.3</b>	<b>1,389</b>	<b>28.7</b>	<b>45.3</b>	<b>559</b>	<b>100.0</b>	<b>0.0</b>	<b>1,948</b>
Age (mean)	45.3 <sup>a</sup>	13.5	1,389	39.4 <sup>a</sup>	13.3	559	43.6	13.7	1,948
Literate (read, write or both, %)	68.5 <sup>b</sup>	—	1,389	44.6 <sup>b</sup>	—	559	61.6	—	1,948
<b>Education (highest level completed, %)</b>	<b>—</b>			<b>—</b>			<b>—</b>		
No school/less than primary	38.2 <sup>c</sup>	—	526	68.7 <sup>c</sup>	—	381	47.0	—	907
Some primary	19.6 <sup>d</sup>	—	269	9.1 <sup>d</sup>	—	52	16.6	—	321
Completed primary	7.4 <sup>e</sup>	—	104	3.1 <sup>e</sup>	—	18	6.1	—	122
Some secondary	18.3 <sup>f</sup>	—	257	13.6 <sup>f</sup>	—	77	16.9	—	334
Completed secondary	7.5 <sup>g</sup>	—	108	2.9 <sup>g</sup>	—	17	6.2	—	125
More than secondary	9.0 <sup>h</sup>	—	125	2.6 <sup>h</sup>	—	14	7.2	—	139

<sup>a,j</sup> Subgroups with the same superscripts are significantly different at the 0.05 level. Comparisons are across columns.

Source: Nepal Baseline PBS (2013).

The NDHS (2011) reported that approximately 41 percent of females overall have no schooling compared with about 20 percent of males overall (see Annex E, Table E-3: NDHS (2011): No Education); these percentages are lower than the Nepal Baseline PBS (2013) values (69 percent for females and 38 percent for males). However, the NDHS (2011) percentages are higher in rural areas for females (44 percent) and for males (21 percent) compared with urban areas (27 percent for females and 10 percent for males). Furthermore, the NDHS (2011) showed that more females in the central (46 percent) and far-western regions (46 percent) had no schooling compared with females in the eastern region (35 percent). More males in the central (23 percent) and mid-western regions (22 percent) had no schooling compared with males in the eastern region (17 percent).

Based on the Nepal Baseline PBS (2013), about 9 percent of males, 3 percent of females, and 7 percent of household members overall received more than secondary education. According to the NDHS (2011), percentages of household members with schooling beyond secondary education are

similarly low for both males and females (see Annex E, Table E-4: NDHS (2011): More Than Secondary Schooling) (9 percent and 5 percent, respectively). Per the NDHS (2011), schooling beyond secondary education in rural areas is lower for both males and females (7 percent and 3 percent, respectively) compared with males and females in urban areas (21 percent and 15 percent, respectively). Furthermore, the NDHS (2011) showed that schooling beyond secondary education was highest in the central region for both males (11 percent) and females (7 percent) compared with other regions.

### 3.1.2 Dwelling, Water, and Sanitation Characteristics

Based on direct observation rather than respondent information, enumerators recorded the types of housing construction materials in Module D. In addition, enumerators asked respondents whether or not households had electricity and the types of fuels used for cooking.

Table 9 shows that household dwellings in the ZOI have an average of 2.6 rooms, which is above the average of 2.1 rooms calculated using the NDHS (2011) at the national level. Note that the NDHS definition is less inclusive (which may explain the lower value in comparison to the ZOI estimate) and includes sleeping rooms only. The Nepal Baseline PBS (2013) definition includes any type of room (including living room), but excludes spaces such as bathrooms, hallways, garage, toilet, cellar, kitchen, etc. Table 9 indicates there is a significant difference for the number of rooms in male and female adult households (2.8) compared to both female adult only households (2.2) and male adult only households (1.8).

**Table 9. Nepal Feed the Future ZOI: Household demographic indicators (ii)**

	Dwelling characteristics		Water and sanitation		n (unweighted)
	Number of rooms	Household with electricity	HH using improved water source	HH using improved sanitation facilities	
	Mean (Std Dev)	%	%	%	
<b>All Households</b>	<b>2.6 (1.6)</b>	<b>74.2</b>	<b>83.9</b>	<b>57.5</b>	<b>1,952</b>
<b>Type of Household</b>					
Male and Female Adult	2.8 (1.6) <sup>ab</sup>	75.0	83.8	58.4	1,505
Female Adult Only	2.2 (1.4) <sup>a</sup>	72.5	83.4	54.7	404
Male Adult Only <sup>^</sup>	1.8 (1.4) <sup>b</sup>	63.3	89.1	47.3	35
Child Only <sup>^^</sup>	—	—	—	—	8

<sup>a,b</sup> Subgroups with the same superscripts are significantly different at the 0.05 level. Comparisons are between rows.

<sup>^</sup> Results should be interpreted with caution due to the low number of observations (N).

<sup>^^</sup> Values not reported due to the low number of observations (N<25).

Source: Nepal Baseline PBS (2013).

Approximately 74 percent of households have electricity, which is similar to 76.3 percent reported in the NDHS (2011). The NDHS (2011) also reports that 72.9 percent of rural households have electricity, and a higher percent (97 percent) of urban households have electricity (see Annex E,

Table E-5: NDHS (2011): Electricity). Per Table 9, there are no significant differences between households with male and female adults compared with female adult only or male adult only households with respect to their likelihood of having electricity.

Approximately 84 percent of all households use an improved drinking water source (Table 9). The NDHS (2011) indicated that 89 percent of households overall have access to an improved drinking water source, with urban households having greater access (93 percent) to drinking water compared with rural households (88 percent) (see Annex E, Table E-6: NDHS (2011): Improved Drinking Water Source). Table 9 also shows that there is no significant difference in the use of an improved drinking water source by gendered household type.

More than half (57.5 percent) of households use improved sanitation facilities as seen in Table 9. Although there is some variation by gendered household type, the differences are not statistically significant. This ZOI estimate for improved sanitation is higher than the reported estimate in the NDHS (2011) (39.5 percent overall, 36.7 percent in rural areas and 58.1 percent in urban areas) (see Annex E, Table E-7: NDHS (2011): Improved Sanitation). The difference may be related to how “improved” sanitation was classified. The categories in the Nepal Baseline PBS (2013) that are considered improved are flush toilet (shared/private), ventilated pit latrine, and community toilet. The categories for improved sanitation facilities in the NDHS (2011) do not include shared facilities.

### 3.1.3 Housing Construction Materials and Fuel

Table 10 displays directly observed information on housing construction materials, as recorded by enumerators in Module D of the Nepal Baseline PBS (2013). Table 10 shows households typically use corrugated metal (22.4 percent) and mud or cow dung (22.2 percent), followed by thatch or sticks (19.7 percent) and tile (18.3 percent) for roof materials. There are some variations in roof types among the different gendered household types.

**Table 10. Nepal Feed the Future ZOI: Roof type\***

	Tile %	Wood %	Corrugated metal %	Plastic sheeting %	Thatch/ Sticks %	Mud/ Cow dung %	Other %	n (unweighted)
<b>All Households</b>	<b>18.3</b>	<b>0.5</b>	<b>22.4</b>	<b>0.5</b>	<b>19.7</b>	<b>22.2</b>	<b>16.6</b>	<b>1,952</b>
<b>Type of Household</b>								
Male and Female Adult	18.6	0.5	20.8	0.3	19.4	22.3	18.1	1,505
Female Adult Only	16.4	0.5	28.0	0.8	19.8	23.0	11.6	404
Male Adult Only <sup>^</sup>	26.6	0.0	20.8	0.0	32.8	10.6	9.1	35
Child Only <sup>^^</sup>	—	—	—	—	—	—	—	8

No differences across subgroups are statistically significant at the 0.05 level.

\* Roof types are country-survey-specific.

<sup>^</sup> Results should be interpreted with caution due to the low number of observations (N).

<sup>^^</sup> Values not reported due to the low number of observations (N<25).

Source: Nepal Baseline PBS (2013).

As shown in Table 11, the majority of walls are constructed with earth or mud (49.4 percent) across all gendered household types, and 55.9 percent of female adult only households compared to 47.6 percent of male and female adult households use earth or mud walls. To a lesser extent, households use cement (17.2 percent) and tile or bricks (17.9 percent).

**Table 11. Nepal Feed the Future ZOI: Exterior wall type\***

	Earth/ mud %	Cement %	Tile/ bricks %	Wood %	Stick/ grass %	Corrugated sheets %	Other %	n (unweighted)
<b>All Households</b>	<b>49.4</b>	<b>17.2</b>	<b>17.9</b>	<b>9.6</b>	<b>5.8</b>	<b>0.2</b>	<b>0.0</b>	<b>1,952</b>
<b>Type of Household</b>								
Male and Female Adult	47.6	16.9	19.1	10.1	6.2	0.2	0.0	1,505
Female Adult Only	55.9	17.9	14.6	7.1	4.3	0.3	0.0	404
Male Adult Only <sup>^</sup>	50.7	22.1	8.1	13.1	6.0	0.0	0.0	35
Child Only <sup>^^</sup>	—	—	—	—	—	—	—	8

No differences across subgroups are statistically significant at the 0.05 level.

\* Wall types are country-survey-specific.

<sup>^</sup> Results should be interpreted with caution due to the low number of observations (N).

<sup>^^</sup> Values not reported due to the low number of observations (N<25).

Source: Nepal Baseline PBS (2013).

The NLSS III (2010-2011) similarly reports that approximately 48 percent of household walls are held together by mud-bonded bricks/stones. Further, the NLSS III (2010-2011) reports that the percentage of cement-bonded bricks/stones and concrete exterior walls is higher in urban regions (61 percent) compared with rural regions (17 percent) (see Annex E, Table E-8: NLSS (2010-2011): Household Walls). The rural NLSS III (2010-2011) value (17 percent) is similar to the Nepal Baseline PBS (2013) value recorded for cement walls overall (17.2 percent), which is particularly evident among male and female adult (16.9 percent) and female adult only (17.9 percent) households.

As shown in Table 12, the majority of households use earth or mud (73.9 percent) for floors across all households. Additionally, 77.8 percent of female adult only households compared to 73.1 percent of male and female adult households use earth or mud for floors. To a lesser extent, households also use tile or bricks (17.6 percent) followed by cement (8.1 percent).

**Table 12. Nepal Feed the Future ZOI: Floor type\***

	Earth/ mud %	Cement %	Tile/ bricks %	Wood %	Other %	n (unweighted)
<b>All Households</b>	<b>73.9</b>	<b>8.1</b>	<b>17.6</b>	<b>0.1</b>	<b>0.3</b>	<b>1,952</b>
<b>Type of Household</b>						
Male and Female Adult	73.1	8.2	18.5	0.1	0.1	1,505
Female Adult Only	77.8	7.4	14.2	0.0	0.6	404
Male Adult Only <sup>^</sup>	65.1	12.0	22.9	0.0	0.0	35
Child Only <sup>^^</sup>	—	—	—	—	—	8

No differences across subgroups are statistically significant at the 0.05 level.

\* Floor types are country-survey-specific.

<sup>^</sup> Results should be interpreted with caution due to the low number of observations (N).

<sup>^^</sup> Values not reported due to the low number of observations (N<25).

Source: Nepal Baseline PBS (2013).

The NDHS (2011) reports that 65.7 percent of households use earth/sand for floors, with higher estimates for rural residences (73.3 percent) compared with urban residences (20 percent) (see Annex E, Table E-9: NDHS (2011): Household Floors). The rural value (73.3 percent) from the NDHS (2011) is consistent with the Nepal Baseline PBS (2013) values noted for households using earth/mud as floors and especially similar for male and female adult (73.1 percent) and female adult only (77.8 percent) households.

Table 13 indicates that almost all households use firewood (84.9 percent) as their main source of fuel for cooking, followed by piped or propane gas (12.3 percent). Firewood use is highest among female adult only households (89.5 percent) compared with other gendered household types. Use of piped or propane gas is lower for female adult only households (8.7 percent) compared with other gendered household types.



**Table 13. Nepal Feed the Future ZOI: Fuel type\***

	Electricity %	Piped or propane gas %	Kerosene %	Charcoal %	Fire- wood %	Animal dung %	Agriculture crop residue %	Other %	n (unweighted)
<b>All Households</b>	<b>0.0</b>	<b>12.3</b>	<b>0.1</b>	<b>0.0</b>	<b>84.9</b>	<b>2.6</b>	<b>0.0</b>	<b>0.0</b>	<b>1,952</b>
<b>Type of Household</b>									
Male and Female Adult	0.0	13.3	0.1	0.0	83.6	2.9	0.0	0.0	1,505
Female Adult Only	0.0	8.7	0.3	0.0	89.5	1.5	0.0	0.0	404
Male Adult Only ^	0.0	13.8	0.0	0.0	82.9	3.3	0.0	0.0	35
Child Only ^^	—	—	—	—	—	—	—	—	8

No differences across subgroups are statistically significant at the 0.05 level.

\* Fuel types are country-survey-specific.

^ Results to be interpreted with caution due to the low number of observations (N).

^^ Values not reported due to the low number of observations (N<25).

Source: Nepal Baseline PBS (2013).

## 3.2 Household Expenditures

As described earlier in the Methods section, the NLSS III data were used to calculate the prevalence of poverty and the daily per capita expenditures in the ZOI. Since remittances is an important factor in the Nepal context, additional analysis are currently being conducted at the request of the USAID/Nepal mission to examine its impact in the Nepal ZOI and the results will be presented separately as an addendum to this report.

### 3.2.1 Prevalence of Poverty in the ZOI

The prevalence of poverty is defined as the percent of people living below \$1.25 per day.<sup>45</sup> The percentage of people living below the international poverty line of PPP \$1.25 per capita per day is higher at 32.5 percent in the ZOI, compared to the value of 24.6 percent for Nepal. The prevalence of poverty in the ZOI is found to be similar in the male and female adult and female adult only households. The estimate of prevalence of poverty for the male adult only households is relatively low, but the reliability of the estimate is very low due to the small number of households in the sample (25) and the large confidence interval.

<sup>45</sup> The \$1.25 dollars per person per day is converted into local currency at 2005 “Purchasing Power Parity” (PPP) exchange rates. The use of PPP exchange rates ensures that the poverty line applied for Nepal has the same real value as the poverty line applied to other countries using the PPP exchange rates. The 2005 values are converted to 2010 values with CPI to be comparable with the local currency values at the time of the NLSS III survey. See Annex F of this country report for further details on how the poverty and the expenditures indicators are calculated for the ZOI.

**Table 14. Nepal Feed the Future ZOI: Prevalence of poverty and per capita expenditures**

Feed the Future indicator	n (unweighted)	Baseline value (weighted)	95% CI		DEFF
Prevalence of Poverty: Percent of people living on less than \$1.25/day					
All Nepal	5,988	24.6	22.4	26.8	3.92
ZOI	1,404	32.5	28.0	37.0	3.42
Male and female adults	1,044	32.7	27.8	37.6	3.25
Female adult(s) only	329	32.8	26.4	39.2	1.14
Male adult(s) only <sup>^</sup>	25	14.4	-1.7	30.5	0.66
Child only <sup>^^</sup>	6	—	—	—	—
Per capita expenditures of USG targeted beneficiaries (2010 USD)					
All Nepal	5,988	2.54	2.50	2.59	3.33
ZOI	1,404	2.12	2.04	2.21	2.73
Male and female adults	1,044	2.10 <sup>a</sup>	2.00	2.20	2.24
Female adult(s) only	329	2.17 <sup>b</sup>	2.02	2.32	1.84
Male adult(s) only <sup>^</sup>	25	3.18 <sup>ab</sup>	2.22	4.14	1.26
Child only <sup>^^</sup>	6	—	—	—	—

<sup>a-b</sup> Subgroups with the same superscripts are significantly different at the 0.05 level. Comparisons are between rows.

<sup>^</sup> Results should be interpreted with caution due to the low number of observations (N).

<sup>^^</sup> Values not reported due to the low number of observations (N<25).

Source: Nepal Living Standards Survey (NLSS) III (2010-2011), Central Bureau of Statistics, Nepal.

### 3.2.2 Daily Per Capita Expenditures

The per capita expenditures indicator refers to the daily per capita expenditure in 2010 USD. The conversion from local currency to dollars was done using Consumer Price Index and PPP of private consumption based on the International Comparison of Price Survey 2005.

As expected, similar patterns to what was found for poverty can be observed for the daily per capita expenditure estimates except the pattern is reversed: where there is higher per capita expenditure, the poverty is lower and vice versa as seen in Table 14. The ZOI daily per capita expenditure is lower at \$2.12 than the national estimate of \$2.54. That corresponds to the higher poverty in the ZOI compared to the national level.

The daily per capita expenditure in the ZOI is found to be similar in the households with both male and female adults and households with female adults only. The male only households are better off compared to average households. This finding needs further investigation to justify the result, as the number of households in this category is small. Again, the number of child only households is very small and, therefore, the team was unable to present findings for this category.

Bivariate significance tests were performed for the poverty and expenditure indicators. The equality of proportion test was applied to compare the levels of poverty among the selected demographic groups of households to the overall ZOI. The results show that a significant difference ( $p=.08$ ) is

observed only between the subgroups of male and female adult households and male adult only households. Again, the number of male adult only households is very small.<sup>46</sup>

Table 15 presents the mean quartile and decile values of daily per capita expenditure expressed in USD values converted using the PPP conversion rate of 2010 prices. To accommodate the quartile and decile values for different demographic subgroups for the ZOI, the quartiles and deciles were created for the ZOI level. Due to the small sample sizes of the male adult only and child only households, decile and quartile values for these subgroups are excluded from the table.

**Table 15. Annual per capita expenditures of USG targeted beneficiaries (in 2010 USD)**

	n	Mean	1	Quartiles			Deciles	
				2	3	4	Bottom	Top
All Nepal	5,988	1,030	454	699	1,001	1,965	361	2,722
ZOI	1,404	859	418	609	844	1,566	331	2,131
Male and Female Adult	1,044	849	419	607	842	1,560	332	2,126
Female Adult Only	329	877	415	624	853	1,535	325	2,049
Male Adult Only <sup>^</sup>	25	1,287	503	617	868	2,242	NA	2,873
Child Only <sup>^^</sup>	6	–	–	–	–	–	–	–

No differences across subgroups are statistically significant at the 0.05 level.

<sup>^</sup> Results should be interpreted with caution due to the low number of observations (N).

<sup>^^</sup> Values not reported due to the low number of observations (N<25).

Source: Nepal Living Standards Survey (NLSS) III (2010-2011), Central Bureau of Statistics, Nepal.

Based on the decile values of daily per capita expenditures, distribution of expenditures are more equal across expenditure groups in the ZOI than at the national level, as evidenced by the ratios of the highest to lowest decile values.

### 3.3 Nutrition and Household Hunger

Women's and children's anthropometric and nutrition indicators were tabulated with secondary data, specifically the NDHS (2011) data. As mentioned previously, we tabulated these indicators for the ZOI only, although we also verified our tabulations with data for the entire country (comparing our results to relevant tables in the NDHS [2011] Final Report). The specific indicators tabulated with NDHS (2011) data include: prevalence of underweight children; prevalence of stunted children; prevalence of wasted children; prevalence of underweight women; prevalence of children 6-23 months receiving a minimum acceptable diet; and prevalence of exclusive breastfeeding.

<sup>46</sup> The equality of means tests for the per capita expenditure shows that the difference between the means for the male and female adult households and female adult only households is not statistically significant. Comparisons between the male and female adult households with male adult only households, and between the female adult only and male adult only households show highly statistically significant differences (at  $p=0.0002$  and  $p<.0001$  levels, respectively). Given the small number of the male adult only households, these findings should be interpreted with caution.

### 3.3.1 Child Nutrition: Anthropometry (Stunting, Wasting and Underweight)

Stunting, wasting, and underweight are the three nutritional indicators for children under 5 years of age (0-59 months). These three indicators all rely on children's age, weight, and height information from the NDHS' household member file. "Prevalence of children's stunting" is a measure of height-for-age that reflects chronic, longer-term, undernutrition. This indicator is the percent of children aged 0-59 months who are too short for their age, or stunted, defined as a height-for-age z-score less than two standard deviations (below -2SD) from the median of the 2006 World Health Organization (WHO) Child Growth Standard Population.<sup>47</sup> This indicator measures the combined prevalence of moderate (below -2SD and above -3SD) and severe (below -3SD) stunting.

Table 16 shows that among children under 5 years of age in the Nepal ZOI, nearly half are stunted (45.2 percent), with no statistical difference in stunting (moderate and severe) between boys and girls. Similarly, sex differences in percent stunted within categories of gendered household type are not statistically significant. In addition to examining sex differences in child stunting within categories of household type, we also tested for differences in child stunting (for all children) by household type. In this bivariate analysis, we did not find significant differences in child stunting by household type. As shown in Table 16, the difference between stunting in children in female adult only households (51.5 percent) compared to male and female adult households (43.6 percent) is close to reaching statistical significance at .05 level ( $p=0.07$ ).

**Table 16. Nepal Feed the Future ZOI: Prevalence of stunted children under 5 years of age**

	Male		Female		All	
	%	n	%	n	%	n
<b>All Households</b>	<b>46.6</b>	<b>485</b>	<b>43.4</b>	<b>392</b>	<b>45.2</b>	<b>877</b>
<b>Type of Household</b>						
Male and Female Adult	44.8	393	42.1	302	43.6	695
Female Adult Only	54.2	92	48.6	88	51.5	180
Male Adult Only <sup>^</sup>	–	0	–	2	–	2
Child Only <sup>^</sup>	–	0	–	0	–	0

No differences across subgroups are statistically significant at the 0.05 level.

<sup>^</sup>Values not reported due to the low number of observations ( $N<25$ ).

Source: NDHS (2011).

National trends show that stunting among children under 5 years of age has declined in recent years in Nepal. Child stunting declined from 57 percent in the NDHS (2001) to 49 percent in the NDHS (2006) to 41 percent in the NDHS (2011) (NDHS 2011 Final Report, p. 169). Compared to the national prevalence of 40.5 percent (in the NDHS [2011]), child stunting prevalence in the ZOI is higher, at 45.2 percent. When one examines Nepal's national prevalence of stunting by rural/urban,

<sup>47</sup> WHO, 2006.

we see great differences. For example, stunting in rural areas in Nepal is 41.8 percent versus only 26.7 percent in urban areas (NDHS 2011 Final Report, p. 166-7) (see Annex E, Table E-10: NDHS (2011): Child Stunting). Among the five development regions in Nepal, including the three regions in which the ZOI is located, the prevalence of stunting is highest in the mid-western region, at 50.3 percent (NDHS 2011 Final Report, p. 166).

“Prevalence of children’s wasting” is a measure of weight-for-height indicating acute, current malnourishment, or nutritional status in the period immediately preceding the survey. This indicator is the percent of children aged 0-59 months who are wasted, defined as a weight-for-height z-score less than two standard deviations (below -2SD) from the median of the 2006 WHO Child Growth Standard.<sup>48</sup> As with stunting, this indicator measures the combined prevalence of moderate (below -2SD and above -3SD) and severe (below -3SD) wasting.

As shown in Table 17, among all children under 5 years of age in the Nepal ZOI, 12.0 percent are wasted. As with stunting, a greater percentage of boys than girls is wasted, but this difference by sex is not statistically significant. In addition, and similar to the findings for stunting, while more boys than girls exhibit wasting in both male and female adult households and female adult only households, these sex differences within categories of gendered household type are not statistically significant. (There are too few cases of male adult only and child only households to report findings.)

As with stunting, we also examined differences in child wasting by gendered household type. In this bivariate analysis, we did not find significant differences in child stunting by household type.

**Table 17. Nepal Feed the Future ZOI: Prevalence of wasted children under 5 years of age**

	Male		Female		All	
	%	n	%	n	%	n
<b>All Households</b>	<b>13.2</b>	<b>485</b>	<b>10.5</b>	<b>392</b>	<b>12.0</b>	<b>877</b>
<b>Type of Household</b>						
Male and Female Adult	13.7	393	11.0	302	12.5	695
Female Adult Only	11.4	92	9.0	88	10.2	180
Male Adult Only <sup>a</sup>	–	0	–	2	–	2
Child Only <sup>a</sup>	–	0	–	0	–	0

No differences across subgroups are statistically significant at the 0.05 level.

<sup>a</sup>Values not reported due to the low number of observations (N<25).

Source: NDHS (2011).

Unlike stunting, in Nepal, child wasting has not exhibited a clear pattern of decline in recent years. Child wasting increased from 11 percent in 2001 to 13 percent in 2006 and then declined to 11 percent (NDHS 2011 DHS Final Report, p. 169). Compared to the national prevalence of 10.9 percent (from the NDHS [2011]), the prevalence of child wasting in the ZOI is slightly higher at 12.0 percent (from our secondary analysis of the NDHS [2011]). Moreover, as with stunting,

<sup>48</sup> Ibid.

rural/urban disparities in child wasting persist. In Nepal nationally, 11.2 percent of rural children are wasted compared to only 8.2 percent of urban children (NDHS 2011 Final Report, p. 166) (see Annex E, Table E-11: NDHS (2011): Child Wasting). Among the development regions in which the ZOI is located, wasting is highest in the mid-western region, at 11.3 percent.

“Prevalence of underweight children” is the third children’s anthropometric indicator tabulated for the ZOI with the NDHS (2011). Children’s underweight is a measure of weight-for-age indicating acute and/or chronic undernutrition. This indicator is the percent of children aged 0-59 months who are underweight, defined as a weight-for-age z-score less than two standard deviations (below -2SD) from the median of the 2006 WHO Child Growth Standard.<sup>49</sup> As with stunting and wasting, this indicator measures combined prevalence of moderate (below -2SD and above -3SD) and severe (below -3SD) underweight.

As shown in Table 18, among children under 5 years in the ZOI, more than one-third, 34.9 percent, are underweight. As with both stunting and wasting, a greater percentage of boys than girls is underweight, but this difference by sex is not statistically significant. In addition, and similar to the findings for both stunting and wasting, while more boys than girls are underweight in male and female adult households and female adult only households, these differences by sex within categories of gendered household type are not significant. (There are too few cases of male adult only and child only households to report findings.)

**Table 18. Nepal Feed the Future ZOI: Prevalence of underweight children under 5 years of age**

	Male		Female		All	
	%	n	%	n	%	n
<b>All Households</b>	<b>35.8</b>	<b>485</b>	<b>33.7</b>	<b>392</b>	<b>34.9</b>	<b>877</b>
<b>Type of Household</b>						
Male and Female Adult	33.8	393	32.1	302	33.0 <sup>a</sup>	695
Female Adult Only	44.4	92	39.9	88	42.3 <sup>a</sup>	180
Male Adult Only <sup>^</sup>	–	0	–	2	–	2
Child Only <sup>^</sup>	–	0	–	0	–	0

<sup>a</sup> Subgroups with the same superscripts are significantly different at the 0.05 level. Comparisons are between rows.

<sup>^</sup>Values not reported due to the low number of observations (N<25).

Source: NDHS (2011).

As with both stunting and wasting, we also examined differences in child underweight by gendered household type. In this bivariate analysis, we found that children in female adult only households (shown in the “All” column in Table 18) are significantly more likely to be underweight than children in male and female households (42.3 percent versus 33.0 percent,  $p=0.02$ ). There are no significant differences between other categories of household type.

As with stunting, the prevalence of child underweight has declined in Nepal in recent years. Child underweight declined from 43 percent in the 2001 NDHS, to 39 percent in the 2006 NDHS, to

<sup>49</sup> Ibid.

29 percent in the 2011 NDHS (NDHS [2011] Final Report, p. 169). Compared to the national prevalence of 28.8 percent (from the NDHS [2011]), the prevalence of child underweight in the ZOI is higher at 34.9 percent. Following the pattern of child stunting and wasting, child underweight also exhibits large differences by rural/urban; nationally, the NDHS (2011) shows that 30.0 percent of rural children are wasted, compared to only 16.5 percent of urban children (NDHS [2011] Final Report, p. 166) (see Annex E, Table E-12: NDHS (2011): Child Underweight). Moreover, among the development regions in the ZOI, child wasting is most pronounced in the mid-western region, at 36.9 percent, the highest level of child wasting among Nepal's five regions (NDHS [2011] Final Report, p. 166).

In addition to the three tables above showing stunting (Table 16), wasting (Table 17), and underweight (Table 18) in the ZOI, Table 19 shows all the child anthropometric indicators together, separating moderate (less than -2 SD) and severe (less than -3 SD) levels of stunting, wasting, and underweight. Table 19 shows the mean z-scores for stunting, wasting, and underweight for male, female, and all children. These scores are disaggregated by gendered household type.

Table 19 shows that 17.7 percent of children in the ZOI are severely stunted (-3 SD), 2.8 percent are severely wasted (-3 SD), and 9.3 percent are severely underweight (-3 SD). For Nepal nationally, these values are 16.2 percent severely stunted, 2.6 percent severely wasted, and 7.7 percent severely underweight (NDHS [2011] Final Report, p. 166-7). As shown in the NDHS (2011), there are substantial differences in severe stunting and underweight by type of place of residence in Nepal, with urban children generally faring better than rural children. Throughout Nepal, 17.2 percent of rural children are severely stunted (similar to the ZOI value of 17.7), compared to only 6.2 percent of urban children. However, the prevalence of severe wasting is similar between rural and urban areas; 2.6 percent of rural children are severely wasted versus 2.7 percent of urban children nationally. Like stunting, the prevalence of severe underweight differs substantially by rural/urban; 8.1 percent of rural children are severely wasted, compared to only 4.0 percent of urban children (NDHS [2011] Final Report, p. 166-7).

Among the western, mid-western and far-western regions in Nepal, severe stunting is highest in the mid-western region, at 21.1 percent. This region also has relatively high rates of severe wasting (2.8 percent) and severe underweight (10.7 percent) (NDHS [2011] Final Report, p. 166-7). The mid-western region's values for severe stunting and severe underweight are greater than the ZOI values, while severe wasting (2.8 percent) is identical in the ZOI and the mid-western region.

For the nine anthropometric indicators shown in Table 19, we conducted significance tests by sex, for all households and within each category of gendered household type. Nearly all these tests were non-significant. We found that males and females differ significantly only for the mean weight-for-height (wasting) indicator within female adult only households. In female adult only households, male children's wasting z-score value (1.0) is significantly lower than female children's value (0.7) ( $p=0.024$ ). This significant difference by sex was not found for other household types. In general, there are no differences in the anthropometric indicators in Table 19 by sex of the child.



Also shown in Table 19 are differences in the indicators by gendered household type. In other words, analysts investigated whether children residing in different categories of household type experienced statistically significant differences in stunting, wasting, and underweight. As with sex, very few significant differences were found. We also found very few differences in moderate and severe stunting, wasting, and underweight by household type. As discussed above with respect to Table 18, the only significant difference found was for underweight; children in female adult only households in the ZOI are significantly more likely to be underweight than children in male and female adult households ( $p=0.024$ ). An estimated 42.3 percent of children in female adult only households are underweight, relative to only 33.0 percent in male and female adult households. However, no other differences by household type were found to be statistically significant in this bivariate analysis.

### **3.3.2 Child Nutrition: Infant and Young Child Feeding**

#### ***Exclusive Breastfeeding***

The “exclusive breastfeeding” indicator is defined as the percent of infants under 6 months (0-5 months) of age who were exclusively breastfed during the day preceding the survey. Exclusive breastfeeding means that the infant received only breast milk (including expressed breast milk fed by spoon, cup, etc., or breast milk from a wet nurse) and no other liquids or foods (with the exception of oral rehydration salts, vitamins, minerals, and/or medicines). The limited age range (only infants 0-5 months) results in small sample sizes for this indicator. See Annex F for descriptions of the Feed the Future indicators.

As with child stunting, wasting and underweight, the prevalence of exclusive breastfeeding was calculated with secondary data for the Nepal ZOI baseline indicator, specifically the NDHS (2011), which contains information on child feeding practices. (Note that there is no children’s module in the Nepal Baseline PBS [2013]). As shown in Table 20, nearly three-quarters (71.1 percent) of infants 0 to 5 months are exclusively breastfed in Nepal. In Table 6, this indicator is presented for male and female infants separately. While fewer male infants than female infants are reported to be exclusively breastfed, this difference by infants’ sex is not statistically significant. (Note the very small sample size for this indicator, only 162 infants aged 0-5 months in the NDHS [2011] sample.)

**Table 19. Nepal Feed the Future ZOI: Nutritional status of children under 5**

	Stunting (height-for-age)			Wasting (weight-for-height)			Underweight (weight-for-age)			Number of children
	%	%	Mean	%	%	Mean	%	%	Mean	
	Below	Below		Below	Below		Below	Below		
	-3 SD	-2 SD	Z-score (SD)	-3 SD	-2 SD	Z-score (SD)	-3 SD	-2 SD	Z-score (SD)	
All children under 5	17.7	45.2	-1.8	2.8	12.0	-0.8	9.3	34.9	-1.6	877
Male children	18.6	46.6	-1.8	3.2	13.2	-0.8	9.6	35.8	-1.6	485
Female children	16.5	43.4	-1.7	2.3	10.5	-0.8	8.9	33.7	-1.6	392
Type of household										
Male and Female Adult	17.0	43.6	-1.8	3.0	12.5	-0.8	8.9	33.0 <sup>a</sup>	-1.5	695
Male children	18.4	44.8	-1.8	3.3	13.7	-0.7	9.7	33.8	-1.5	393
Female children	15.2	42.1	-1.7	2.7	11.0	-0.8	7.8	32.1	-1.5	302
Female Adult Only	20.4	51.5	-1.9	1.9	10.2	-0.8	11.0	42.3 <sup>a</sup>	-1.7	180
Male children	19.4	54.2	-1.9	2.5	11.4	-1.0 <sup>b</sup>	9.2	44.4	-1.8	92
Female children	21.4	48.6	-2.0	1.2	9.0	-0.7 <sup>b</sup>	12.9	39.9	-1.7	88
Male Adult Only <sup>^</sup>	—	—	—	—	—	—	—	—	—	2
Male children <sup>^</sup>	—	—	—	—	—	—	—	—	—	0
Female children <sup>^</sup>	—	—	—	—	—	—	—	—	—	2
Child Only <sup>^</sup>	—	—	—	—	—	—	—	—	—	0
Male children <sup>^</sup>	—	—	—	—	—	—	—	—	—	0
Female children <sup>^</sup>	—	—	—	—	—	—	—	—	—	0

<sup>a,b</sup> Subgroups with the same superscripts are significantly different at the 0.05 level. Comparisons are between rows.

<sup>^</sup>Values not reported due to the low number of observations (N<25).

Source: NDHS (2011).

**Table 20. Nepal Feed the Future ZOI: Prevalence of exclusive breastfeeding of children under 6 months of age**

	%	n
<b>All Households</b>	<b>71.1</b>	<b>162</b>
<b>Type of Household</b>		
Male and Female Adult	69.2	129
Female Adult Only	79.4	33
Male Adult Only <sup>^</sup>	–	0
Child Only <sup>^</sup>	–	0

No differences across subgroups are statistically significant at the 0.05 level.

<sup>^</sup>Values not reported due to the low number of observations (N<25).

Source: NDHS (2011).

Table 20 shows the exclusive breastfeeding indicator for all households and also disaggregated by gendered household type. While more infants in female adult only household (79.4 percent) are exclusively breastfed than those in male and female adult households (69.2 percent), this difference by household type is not statistically significant. This relatively large difference does not translate to statistical significance due to the relatively small sample size for children who were exclusively breastfed.

Nationally, the percentage of infants under 6 months who are exclusively breastfed is 69.6 percent (see Annex E, Table E-13: NDHS (2011): Exclusive Breastfeeding), compared to 71.1 percent in the ZOI (NDHS [2011] DHS Final Report, p. 172).

### **Minimum Acceptable Diet**

The “minimum acceptable diet” (MAD) indicator measures the percent of children 6-23 months who receive a Feed the Future-defined MAD apart from breast milk. This measure includes both minimum feeding frequency and minimum dietary diversity as appropriate for various age groups and by breastfeeding status. For Nepal, the baseline MAD indicator was calculated with the NDHS (2011) data.

Minimum feeding (or meal) frequency, one component of this indicator, varies by both breastfeeding status and age. For breastfeeding children (those whose caregivers report the children received breast milk the prior day), minimum meal frequency 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. Minimum meal frequency for non-breastfeeding children does not differ by age, and is defined as four or more feedings of solid, semi-solid, soft foods, or milk feeds for all non-breastfeeding children 6-23 months. Moreover, for non-breastfeeding children, at least two of these feedings must be milk feeds.

“Minimum dietary diversity,” the second component of this multi-dimensional indicator, also varies by breastfeeding status (but not by age). For breastfeeding children, minimum dietary diversity is defined as receiving four or more food groups from a total of seven food groups. These seven foods

groups for breastfeeding children include: (1) grains, roots, and tubers; (2) legumes and nuts; (3) dairy products; (4) flesh foods (meat, fish, poultry and liver/organ meats); (5) eggs; (6) Vitamin A-rich fruits and vegetables; and (7) other fruits and vegetables. For non-breastfeeding children, minimum dietary diversity is defined as four or more of the six food groups (all aforementioned food groups except the dairy products group).

As shown in Table 21, less than one-quarter, or 22.7 percent, of children 6-23 months receive a MAD. While slightly more boys than girls receive a MAD, this difference by child's sex is not statistically significant.

Table 21 shows the MAD indicator for all households and disaggregated by gendered household type. Again, although a greater percent of children 6-23 months of age in male and female adult households than those in female adult only households obtain a MAD, this difference is not significant.

**Table 21. Nepal Feed the Future ZOI: Prevalence of children 6-23 months receiving a minimum acceptable diet**

	%	n
<b>All Households</b>	<b>22.7</b>	<b>494</b>
<b>Type of Household</b>		
Male and Female Adult	23.0	406
Female Adult Only	21.5	88
Male Adult Only <sup>^</sup>	–	0
Child Only <sup>^</sup>	–	0

No differences across subgroups are statistically significant at the 0.05 level.

<sup>^</sup>Values not reported due to the low number of observations (N<25).

Source: NDHS (2011).

In Table 22, the MAD indicator is disaggregated by component and breastfeeding status. This reveals that non-breastfed children may be particularly disadvantaged on these infant and young child feeding components (although there are only 11 non-breastfed children 6-23 months of age in the sample, so results should be interpreted with caution). Secondly, Table 22 shows that children in the Nepal ZOI are disadvantaged on the dietary diversity component (four or more food groups) more so than the meal frequency component (minimum times or more).

Among all children 6-23 months in the Nepal ZOI, only 27.0 percent obtain the minimum dietary diversity (four or more food groups), although 71.9 percent obtain minimum meal frequency. Among breastfed children, 26.9 percent obtain minimum dietary diversity but 72.7 percent obtain minimum meal frequency. Among the few non-breastfed children in the sample, 31.3 percent obtain minimum dietary diversity and only 37.8 percent obtain minimum meal frequency. Only 14.5 percent of non-breastfed children obtain a MAD, although the sample is very small (only 11 cases), and thus should be interpreted with caution.

Statistically significant differences were found between breastfed and non-breastfed children 6-23 months of age for the minimum meal frequency component only. Breastfed children are significantly more likely to achieve minimum meal frequency ( $p=0.034$ ). However, the sample of non-breastfed children is very small, and there are no statistically significant differences in the overall MAD indicator, at 22.7 percent for all, by breastfeeding status.

**Table 22. Nepal Feed the Future ZOI components of minimum acceptable diet among children 6-23 months of age**

	Baseline value %	n (unweighted)
<b>Breastfed Children 6-23 months</b>		
Four or more food groups	26.9	483
Minimum times or more	72.7 <sup>a</sup>	483
Minimum acceptable diet	22.9	483
<b>Non-Breastfed Children 6-23 months</b>		
Milk or milk products	65.2	11
Four or more food groups	31.3	11
Minimum times or more	37.8 <sup>a</sup>	11
Minimum acceptable diet	14.5	11
<b>All Children 6-23 months</b>		
Breast milk, milk or milk products	99.2	494
Four or more food groups	27.0	494
Minimum times or more	71.9	494
Minimum acceptable diet	22.7	494

<sup>a</sup> Subgroups with the same superscripts are significantly different at the 0.05 level. Comparisons are between rows.

Source: NDHS (2011).

### Women's Nutrition: Underweight

The “prevalence of underweight women” indicator measures the percent of non-pregnant women of reproductive age (15-49 years) who are underweight, as defined by a BMI value of less than 18.5 (with  $BMI = \text{weight [in kg]} / \text{height [in m]}^2$ ). In Nepal, the baseline women's underweight indicator was calculated for the ZOI with the secondary NDHS (2011) data, which includes sampled women's age, height, weight, and pregnancy status information. There is no Feed the Future disaggregation variable required for this indicator.

As shown previously in Table 6, 21.5 percent of women in the Nepal ZOI are underweight, with a BMI below 18.5. In Table 23, this indicator is shown for all households and also disaggregated by gendered household type. There are no significant differences in women's underweight by household type. The prevalence of underweight women is slightly lower among female adult only households than among male and female adult households, although this difference is not statistically significant.

(Note that there are very few women of reproductive age residing in male adult only households, so the indicator for this category of household type should be interpreted with great caution.)

**Table 23. Nepal Feed the Future ZOI: Prevalence of underweight women (BMI < 18.5)**

	%	n
<b>All Households</b>	<b>21.5</b>	<b>1,879</b>
<b>Type of Household</b>		
Male and Female Adult	21.7	1,501
Female Adult Only	20.4	372
Male Adult Only <sup>^</sup>	–	6
Child Only <sup>^</sup>	–	0

No differences across subgroups are statistically significant at the 0.05 level.

<sup>^</sup>Values not reported due to the low number of observations (N<25).

Source: NDHS (2011).

For Nepal nationally, 18.2 percent of women of reproductive age are classified as underweight (see Annex E, Table E-14: NDHS (2011): Women's Nutrition: Underweight), slightly lower than the 21.5 percent in the ZOI (NDHS [2011] Final Report, p. 183). As with the children's anthropometric indicators discussed above, there are also disparities by place of residence for the women's underweight indicator. While 18.2 percent of women of reproductive age overall are underweight, in rural areas, 18.8 percent are underweight, compared to only 14.1 percent in urban areas (see Annex E, Table E-14: NDHS (2011): Women's Nutrition: Underweight) (NDHS [2011] Final Report, p. 183). Similarly, the percentages of women who are underweight in the three development regions of the ZOI – western, mid-western, and far-western – are 14.0, 19.3 and 23.9 percent respectively. This is comparable to the value of 21.5 percent in the ZOI (NDHS [2011] Final Report, p. 183).

Table 24 shows more detailed information about the distribution of BMI scores for women of reproductive age in Nepal's ZOI. Across all women in the ZOI, the mean BMI is 20.6, or within normal weight. In Nepal nationally, mean BMI is higher, at 21.4. Nationally, BMI is lower in rural areas (21.2) than urban areas (22.7). Among the five development regions, BMI is lowest in the far-western (20.3) and the mid-western (20.8) regions (see Annex E, Table E-15: NDHS (2011): Mean BMI) (NDHS [2011] Final Report, p. 183).

Table 24 also shows that nearly three quarters (70.9 percent) of women of reproductive age in the ZOI are considered normal weight. While 14.9 percent are mildly underweight (BMI between 17.0 and 18.49), 6.6 percent are moderately or severely underweight (BMI less than 17.0). In Nepal nationally, 11.5 percent are mildly underweight and 6.7 percent are moderately or severely underweight, which is comparable to the value of 6.6 percent in the ZOI.

In addition, Table 24 shows that 6.8 percent of women of reproductive age in the ZOI are overweight (BMI between 25.0 and 29.9), and less than one percent (0.8 percent) are classified as obese (BMI 30.0 or greater). The percentages of overweight and obese women are greater in Nepal

nationally, at 11.2 and 2.2 percent, respectively. However, in rural areas in Nepal (and the ZOI is largely rural), only 9.6 and 1.8 percent are overweight and obese (see Annex E, Table E-16: NDHS (2011): Women's Nutrition: Overweight and Obese) (NDHS [2011] Final Report, p. 183).

**Table 24. Nepal Feed the Future ZOI: Nutritional status of women of reproductive age**

	Baseline value	Std dev	n (unweighted)
<b>Mean Body Mass Index (BMI)</b>	<b>20.6</b>	<b>3.4</b>	<b>1,879</b>
<b>BMI</b>			
% < 17.0 (Moderate/Severely Underweight)	6.6	-	1,879
% 17.0-18.49 (Mildly Underweight)	14.9	-	1,879
% 18.5 – 24.9 (Normal)	70.9	-	1,879
% 25.0-29.9 (Overweight)	6.8	-	1,879
% ≥ 30.0 (Obese)	0.8	-	1,879
% < 18.5 (Underweight)	21.5	-	1,879
% 18.5-24.9 (Normal)	70.9	-	1,879
% ≥ 25.0 (Overweight/Obese)	7.6	-	1,879

Source: NDHS (2011).

### **Women's Nutrition: Dietary Diversity**

“Women's dietary diversity,” or the mean number of food groups consumed by women of reproductive age (15-49 years), is a validated proxy measure of the micronutrient adequacy of women's diets. Women's dietary information is not available in the NDHS (2011), but this information was collected in the Nepal Baseline PBS (2013). Module H of the Nepal Baseline PBS (2013) included questions on food consumption the prior day (“yesterday during the day or night”) for all women of reproductive age in the sampled households. Per Feed the Future guidelines,<sup>50</sup> women's food consumption was coded into the following nine food groups: (1) grains, roots, and tubers; (2) legumes and nuts; (3) dairy products; (4) organ meat; (5) eggs; (6) flesh foods and other small animal protein; (7) vitamin a dark green leafy vegetables; (8) other vitamin A-rich vegetables and fruits; and (9) other fruits and vegetables.

Table 25 shows the women's dietary diversity indicator for all women of reproductive age as well as disaggregated by gendered household type. The mean number of food groups consumed by women of reproductive age in all households is 3.9, with no statistical differences seen by household type. Note: There are too few cases of women in male adult only households (N=4) and child only households (N=4) for meaningful interpretation.

<sup>50</sup> The Feed The Future guidelines draw upon the WHO Operational Guide, Indicators for Assessing Infant and Young Child Feeding Practices, Part 2, Measurement [2010]).”



**Table 25. Nepal Feed the Future ZOI: Women's dietary diversity: Mean number of food groups consumed by women of reproductive age**

	Mean	Std dev	n
<b>All Households</b>	<b>3.9</b>	<b>1.3</b>	<b>2,580</b>
<b>Type of Household</b>			
Male and Female Adult	3.9	1.3	2,112
Female Adult Only	3.8	1.3	460
Male Adult Only <sup>^</sup>	–	–	4
Child Only <sup>^</sup>	–	–	4

No differences across subgroups are statistically significant at the 0.05 level.

<sup>^</sup>Values not reported due to the low number of observations (N<25).

Source: Nepal Baseline PBS (2013).

As shown in Table 26, further analysis was conducted to identify which specific food groups were most frequently consumed. Nearly all women of reproductive age in the Nepal ZOI report eating grains, roots, and tubers (99.7 percent), and a large majority eat legumes and nuts (80.7 percent) and other (non-Vitamin A-rich) fruits and vegetables (77.9 percent). About a third of respondents have diets rich in Vitamin A (dark green leafy vegetables [33.1 percent]) and fewer consume other Vitamin A-rich vegetables and fruits (23.0 percent). Less than one quarter consumed animal protein (flesh foods and other miscellaneous small animal protein [21.0 percent], and organ meat [5.9 percent]). In the Nepal ZOI, 5.2 percent reported consuming eggs, and a fairly large percentage, 42.4 percent, of surveyed women report consuming dairy products.

**Table 26. Nepal Feed the Future ZOI: Percent of women eating each of the nine food groups**

	Baseline value (%)	n (unweighted)
<b>Women's Dietary Diversity Food Groups</b>		
Grains, roots and tubers	99.7	2,580
Legumes and nuts	80.7	2,580
Dairy products	42.4	2,580
Organ meat	5.9	2,580
Eggs	5.2	2,580
Flesh foods and other misc. small animal protein	21.0	2,580
Vitamin A dark green leafy vegetables	33.1	2,580
Other Vitamin A rich vegetables and fruits	23.0	2,580
Other fruits and vegetables	77.9	2,580

Source: Nepal Baseline PBS (2013).

## Household Hunger

The “household hunger” indicator is a household-level indicator that measures the percent of households in the ZOI experiencing “moderate or severe hunger,” as defined by the Feed the Future Indicator Handbook. This indicator should always be measured at the same time each year, ideally at the most vulnerable time of year.

As shown previously in Table 6, 10.6 percent of households in the Nepal ZOI report experiencing moderate or severe household hunger. Table 6 also disaggregates Nepal’s household hunger indicator by gendered household type. While household hunger is highest among female adult only households relative to male adult only households and male and female adult households, differences in household hunger by type of household are not statistically significant. Moreover, there are too few cases of child only households in the Nepal PBS to utilize the indicator value for that category of household type.

In addition to Table 6, Table 27 shows the three categories of household hunger: little to no household hunger (HHS score 0-1); moderate household hunger (HHS score 2-3); and severe household hunger (HHS score 4-6). We show values for all households, as well as values disaggregated by gendered household type.

**Table 27. Nepal Feed the Future ZOI: Household hunger, for all and by household type**

	Little to no hunger	Moderate hunger	Severe hunger	n (unweighted)
	%			
<b>All Households</b>	<b>89.4</b>	<b>10.3</b>	<b>0.3</b>	<b>1,946</b>
<b>Type of Household</b>				
Male and Female Adult	90.1	9.7	0.2	1,500
Female Adult Only	87.0	12.8	0.2 <sup>a</sup>	404
Male Adult Only <sup>^</sup>	87.6	8.8	3.7 <sup>a</sup>	35
Child Only <sup>^^</sup>	–	–	–	7

<sup>a</sup> Subgroups with the same superscripts are significantly different at the 0.05 level. Comparisons are between rows.

<sup>^</sup> Results to be interpreted with caution due to the low number of observations (N).

<sup>^^</sup> Values not reported due to the low number of observations (N<25).

Source: Nepal Baseline PBS (2013).

As shown in Table 27, the majority of households (89.4 percent) report little to no hunger. Very few households overall (0.3 percent) in Nepal’s ZOI reported experiencing severe hunger. It is noteworthy that among male adult only households, however, 3.7 percent report experiencing severe hunger. This is a significant difference compared to both male and female adult households and female adult only households. (However, there are only 35 male adult only households in the Nepal sample.)

## 3.4 Women's Empowerment

Women play a prominent role in agriculture and because of the persistent economic constraints they face, women's empowerment is a main focus of Feed the Future. Empowering women is particularly important to achieving the Feed the Future objective of inclusive agriculture sector growth. The WEAI was developed to track the change in women's empowerment levels that occurs as a direct or indirect result of interventions under Feed the Future. For more information, the WEAI questionnaires and manual can be found online.<sup>51</sup>

### 3.4.1 WEAI Overview

The WEAI measures the empowerment, agency, and inclusion of women in the agriculture sector in an effort to identify and address the constraints that limit women's full engagement in the agriculture sector.<sup>52</sup>

For Nepal, the WEAI score is 0.80. The WEAI is composed of two subindices: the five domains of empowerment subindex (5DE) measures the empowerment of women in five areas, and the Gender Parity Index (GPI) measures the relative empowerment of men and women within the household. The WEAI score is computed as a weighted sum of the ZOI-level 5DE and the GPI (both discussed in the following section). Thus, improvements in either the 5DE or GPI will increase the WEAI score. The total formula for the Index is:  $WEAI = 0.9 \times 5DE + 0.1 \times GPI$ .

The WEAI is an aggregate index reported at the ZOI level and is based on *individual*-level data on men and women in the same household, as well as data from women living in households with no adult male. The respondents are primary male/female decision-makers in the household. Refer to Annex F for further description of this indicator and explanation of the calculation. See Table 28 for the list and definition of WEAI indicators.

### 3.4.2 5DE

The 5DE subindex assesses whether women are empowered across the five domains examined in the WEAI. Each domain is weighted equally, as are each of the indicators within a domain. The five domains, their definitions under the WEAI, the corresponding 10 indicators, and their weights for the 5DE are shown below in Table 28.

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<sup>51</sup> IFPRI. 2013.

<sup>52</sup> Alkire, S. et al. 2013.

**Table 28. WEAI indicators**

Domain (each weighted 1/5 of the 5DE subindex)	Definition of domain	Indicators	Weight of indicator in 5DE subindex
<b>Production</b>	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
<b>Resources</b>	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
<b>Income</b>	Sole or joint control over income and expenditures	Control over use of income	1/5
<b>Leadership</b>	Membership in economic or social groups and comfort in speaking in public	Group member	1/10
		Speaking in public	1/10
<b>Time</b>	Allocation of time to productive and domestic tasks and satisfaction with the available time for leisure activities	Workload	1/10
		Leisure	1/10

The 5DE is a measure of empowerment rather than disempowerment. As such, the index describes women as “empowered” or “not yet empowered,” rather than disempowered. A woman is defined as empowered in the five domains if she has adequate achievements<sup>53</sup> in 80 percent or more of the weighted indicators. Within the 5DE, the 80 percent threshold is also called the empowerment threshold. The 5DE contributes 90 percent of the weight to the WEAI. The 5DE score ranges from zero to one, where higher values indicate greater empowerment.

The 5DE is calculated by first constructing the disempowerment index ( $M_0$ ), and then converting  $M_0$  to empowerment. The formula is:  $5DE = 1 - M_0$ . The disempowerment index is constructed using a multidimensional methodology known as the Alkire Foster Method.<sup>54</sup>  $M_0$  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

<sup>53</sup> Having “adequate achievement” means an individual scores above an adequacy cutoff established for each indicator.

<sup>54</sup> University of Oxford. 2013.

not yet achieve adequacy.<sup>55</sup> In sum, the 5DE is expressed as:  $5DE = 1 - H \times A$ . Of note, Table 29 reports H and A as percentages, but in the 5DE formula, the equivalent proportions are used.

Table 29 shows that the 5DE in Nepal is 0.79. As reflected in the formula above, this score is calculated with the percent of women in the survey who are not yet empowered (disempowered headcount), which is 58.9, and the average inadequacy score, which is 36.4 percent.<sup>56</sup>

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

**Table 29. Women's 5DE index**

	Baseline value
5DE Index	0.79
Percent of women achieving empowerment (score of 0.80 or greater) ( $1-H_n$ )	41.15
Percent of women not achieving empowerment (score below 0.80) ( $H_n$ )	58.85
Average adequacy score for women not yet empowered ( $1-A$ )	63.57
Average inadequacy score for women not yet empowered ( $A$ )	36.43
<b>n</b>	<b>1,654</b>

Source: Nepal Baseline PBS (2013)

In addition to examining the 5DE for the sample as a whole, 5DE scores were analyzed and compared by household type. As shown in Table 30, women's 5DE scores are significantly higher in female adult only households compared to women in male and female adult households.

**Table 30. Women's 5DE score and household type**

	Baseline value	SD	n (unweighted)
<b>Household type</b>			
Male and female adults	0.76 <sup>a</sup>	0.20	1,291
Female adult only	0.88 <sup>a</sup>	0.18	363

<sup>a</sup> Subgroups with the same superscript are significantly different at the 0.05 level. The comparisons are between rows.

Source: Nepal Baseline PBS (2013)

<sup>55</sup> Alkire, S., Meinzein-Dick, R. et al. 2013.

<sup>56</sup> These are the results based on the calculations of this indicator, recognizing that most women in agriculture are subsistence farmers. For more information on the WEAI utilization by Feed the Future visit the following site: <http://feedthefuture.gov/article/release-womens-empowerment-agriculture-index>. Retrieved May 20, 2013.

Table 31 reports the percentages of females who are not yet empowered and have inadequacy for the 10 indicators within each of the five domains of empowerment. Refer to Annex F for descriptions of each of the 10 indicators including adequacy cutoffs. In Table 31, 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 people who are deprived on that indicator is divided by the total number of respondents. 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 index. Discussion of each indicator and domain follows Table 31.

**Table 31. Percent of women who are not yet empowered and who have inadequate achievement (censored headcount) in the 5DE indicators**

Domain	Indicator	Censored headcount <sup>1</sup> (n=1,654)
<b>Production</b>	Input in productive decisions	2.69
	Autonomy in production	30.73
<b>Resources</b>	Ownership of assets	9.62
	Purchase, sale, or transfer of assets	9.23
	Access to and decisions on credit	39.53
<b>Income</b>	Control over use of income	4.58
<b>Leadership</b>	Group member	54.96
	Speaking in public	24.30
<b>Time</b>	Workload	39.07
	Leisure	14.56

<sup>1</sup> The censored headcount ratio for a particular indicator is the number of not-yet-empowered people who are deprived on that indicator divided by the total population.

Source: Nepal Baseline PBS (2013)

### **Production Domain**

**Input in Productive Decisions.** Results shown in Table 31 indicate that among the 5DE indicators, the lowest percentage of women in the ZOI (2.7 percent) are not yet empowered and have inadequate input into productive decisions.

**Autonomy in Production.** With respect to autonomy in production, 30.7 percent of women are not yet empowered and inadequate in the indicator.

### **Resources Domain**

**Ownership of Assets.** Among women in the Nepal ZOI, 9.6 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 inadequate in terms of controlling the purchase, sale, or transfer of assets is 9.2 percent.

**Access to and Decisions on Credit.** The indicator tracking access to and decisions on credit shows the second highest percentage of inadequacy among women, with 39.5 percent not yet empowered and not having adequate achievement.

**Control Over Use of Income.** The percentage of women who both are not yet empowered and lack adequacy in the control over use of income is low, at 4.6 percent.

### **Leadership Domain**

**Participation in Formal and Informal Groups.** Among the 5DE indicators, the group membership indicator has the highest percentage of women who are both not yet empowered and experience inadequacy, at 55.0 percent.

**Speaking in Public.** A much lower percentage of women are both not empowered and lack adequacy in the speaking in public indicator (24.3 percent) compared to group membership.

### **Time Allocation Domain**

**Workload.** With respect to the workload indicator, 39.1 percent of women are both not yet empowered and experience inadequacy.

**Leisure Time.** The percentage of women in the ZOI who are both not yet empowered and have inadequacy in leisure time is 14.6 percent.

## **3.4.3 GPI**

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



women in the sample, the GPI score is calculated using only women living in a household with at least one adult man (often her partner).

The GPI is calculated by multiplying two factors. The first is the percent of women without gender parity ( $H_{GPI}$ ), defined as women with lower achievements in the five domains than that of their male counterparts. Empowered women, meaning those who score above the empowerment threshold of the 5DE, are automatically counted as having parity with their male counterpart. The second factor is the average empowerment gap ( $I_{GPI}$ ), which measures the average percentage shortfall in empowerment between women and men living in households without gender parity across all indicators. The GPI is calculated with the formula:  $GPI = 1 - (H_{GPI} \times I_{GPI})$ . The GPI ranges from zero to one, with higher values indicating greater gender parity.<sup>57</sup>

In Nepal, the GPI is 0.89, which is calculated with the formula above that is based on the percent of women without gender parity (53.2) and the average empowerment gap (21.5). Table 32 shows the breakdown of baseline values by the GPI variables.

**Table 32. GPI**

	Baseline value
GPI	0.89
Percent of women achieving gender parity ( $1 - H_{GPI}$ )	46.79
Percent of women without gender parity ( $H_{GPI}$ )	53.21
Average Empowerment Gap ( $I_{GPI}$ )	21.50
<b>n</b>	<b>1,136</b>

Source: Nepal Baseline PBS (2013).

Table 33, presents men's and women's censored headcounts, or the percent not yet empowered and inadequate in the 10 indicators of 5DE. Note that, unlike Table 31, which showed percentages for all women in the survey, in Table 33, the percentages reported are based only on males and females in dual households, those households with both a male and a female adult.

Table 33 shows that men and women in dual households report significant differences in nine of the ten 5DE indicators. Significantly more women than men are not empowered and have inadequacy in all of the indicators except input into productive decisions.

<sup>57</sup> Alkire, S., Meinzein-Dick, R. et al. 2013.

**Table 33. Percent of men and women who are not yet empowered and have inadequate achievement (censored headcount) in the 10 5DE indicators**

Baseline values			
Domain	Indicator	Male Censored Headcount <sup>1</sup> (n=1,136)	Female Censored Headcount <sup>2</sup> (n=1,136)
<b>Production</b>	Input in productive decisions	3.15	2.93
	Autonomy in production	19.13 <sup>a</sup>	38.47 <sup>a</sup>
<b>Resources</b>	Ownership of assets	0.18 <sup>b</sup>	12.02 <sup>b</sup>
	Purchase, sale, or transfer of assets	1.72 <sup>c</sup>	11.13 <sup>c</sup>
	Access to and decisions on credit	22.54 <sup>d</sup>	43.29 <sup>d</sup>
<b>Income</b>	Control over use of income	0.60 <sup>e</sup>	4.71 <sup>e</sup>
<b>Leadership</b>	Group member	31.80 <sup>f</sup>	60.48 <sup>f</sup>
	Speaking in public	5.04 <sup>g</sup>	26.98 <sup>g</sup>
<b>Time</b>	Workload	21.32 <sup>h</sup>	43.48 <sup>h</sup>
	Leisure	10.04 <sup>i</sup>	15.28 <sup>i</sup>

<sup>a-i</sup> Subgroups with the same superscript are significantly different at the 0.05 level. The comparisons are across columns. Comparison and estimates for men and women living in male and female adult households.

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

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

Source: Nepal Baseline PBS (2013).

## 4. Analysis of Findings

### 4.1 Analysis Requested by USAID/Nepal

In response to a request by the USAID/Nepal Mission, FTF FEEDBACK also calculated women's and children's anemia indicators for the Nepal ZOI. Data from the NDHS (2011) was used to calculate anemia for both pregnant and non-pregnant women of reproductive age (15-49), and for children aged 6-59 months. The results of the analysis are reported below.

#### 4.1.1 Women's Anemia

As shown in Table 34, which presents women's anemia in the Nepal ZOI by selected background characteristics, over one-third (37.6 percent) of women aged 15-49 in the Nepal ZOI experience any anemia. (Any anemia is defined as a hemoglobin level less than 12.0 g/dl for non-pregnant women, or less than 11.0 g/dl for pregnant women. Mild anemia is 10.0-11.9 for non-pregnant women and 10.0-10.9 for pregnant women. Moderate anemia is 7.0-9.9 for both non-pregnant and pregnant women, and severe anemia is < 7.0 for both non-pregnant and pregnant women. The anemia categories presented in Table 34 are adjusted for pregnancy status.)

**Table 34. Nepal Feed the Future ZOI: Prevalence of anemia in women of reproductive age (15-49), by select background characteristics**

	Anemia				n
	Any	Mild	Moderate	Severe	
<b>All Women</b>	37.6	30.0	7.2	0.4	1,966
<b>Gendered Household Type</b>					
Male and Female Adult HHs	38.0	30.3	7.3	0.4	1,571
Female Adult Only HHs	36.0	28.6	6.8	0.5	389
Male Adult Only HHs <sup>^</sup>	–	–	–	–	6
Child No Adult HHs <sup>^</sup>	–	–	–	–	0
<b>Pregnancy Status</b>					
Not Pregnant	37.5	30.3	6.9 <sup>a</sup>	0.4	1,879
Pregnant	40.1	24.4	14.8 <sup>a</sup>	0.9	87
<b>Ecological Zone</b>					
Hill	28.6 <sup>b</sup>	24.4 <sup>c</sup>	3.8 <sup>d</sup>	0.3	916
Terai	45.9 <sup>b</sup>	35.1 <sup>c</sup>	10.3 <sup>d</sup>	0.5	1,050
<b>Household Wealth Quintile</b>					
Poorest	34.4 <sup>e</sup>	28.3	5.5 <sup>f</sup>	0.5	540
Poorer	40.3	32.9	7.3	0.0	369
Middle	43.0 <sup>eg</sup>	31.0	11.1 <sup>ghi</sup>	0.8	378
Richer	34.3 <sup>g</sup>	27.6	6.2 <sup>h</sup>	0.5	349
Richest	35.4	30.1	5.3 <sup>i</sup>	0.0	330

<sup>a-i</sup> Subgroups with the same superscript are significantly different at the 0.05 level. The comparisons are between rows.

<sup>^</sup> Values not reported due to the low number of observations (N<25).

Source: NDHS (2011).

When examining women's anemia by severity, 30.0 percent of all women in the ZOI have mild anemia, 7.2 percent have moderate anemia, and less than one percent (0.4) have severe anemia. Among pregnant women, 40.1 percent have any anemia; 24.4, 14.8 and 0.9 percent have mild, moderate, and severe anemia, respectively. There are no significant differences between pregnant and non-pregnant women with respect to any anemia. However, pregnant women are significantly more likely to experience moderate anemia than non-pregnant women (14.8 percent versus 6.9 percent). Note that the sample size for pregnant women who were tested for anemia in the Nepal ZOI is very small (87 cases), and thus results should be interpreted with caution.

Table 34 also shows anemia levels by gendered household type. There are no significant differences in women's anemia by household type. Anemia results are also presented by ecological zone. For any, mild, and moderate anemia, women residing in the hill zone are significantly less likely to be anemic than women in the Terai zone. (Note that the DHS hemoglobin data are also adjusted by altitude and smoking status, if known [DHS 2011, p. 184].)

Finally, anemia levels by household wealth quintiles are also shown in Table 34. Some bivariate relationships are significant. For example, more women in the middle household wealth quintile experience any anemia compared to both women in the poorest quintile as well as women in the richer quintile. Similarly, women in the middle wealth quintile experience more moderate anemia than women in the poorest, richer, and richest quintiles.

Table 35, presents women's anemia by both smoking/tobacco usage and gendered household type. More than one-third (38.1 percent) of non-smokers across all household types are anemic, as are 34.2 percent of smokers across all households types.

**Table 35. Nepal Feed the Future ZOI: Prevalence of anemia in women of reproductive age (15-49), by smoking/tobacco usage and gendered household type**

Anemia					
	Any	Mild	Moderate	Severe	n
Smoker Status <sup>a</sup>					
Non-Smoker					
All Households	38.1	30.7	7.0	0.4	1,718
Male and Female Adult HHs	38.2	30.8	7.1	0.3	1,376
Female Adult Only HHs	37.7	30.4	6.7	0.6	336
Male Adult Only HHs <sup>^</sup>	—	—	—	—	6
Child No Adult HHs <sup>^</sup>	—	—	—	—	0

**Table 35. Nepal Feed the Future ZOI: Prevalence of anemia in women of reproductive age (15-49), by smoking/tobacco usage and gendered household type (continued)**

Anemia					
	Any	Mild	Moderate	Severe	n
<b>Smoker</b>					
All Households	34.2	25.3	8.5	0.4	248
Male and Female Adult HHs	36.7	27.4	8.8	0.5	195
Female Adult Only HHs	25.4	17.8	7.6	0.0	53
Male Adult Only HHs <sup>^</sup>	–	–	–	–	0
Child No Adult HHs <sup>^</sup>	–	–	–	–	0
<b>Tobacco Usage<sup>b</sup></b>					
<b>Non-User</b>					
All Households	37.7	30.5	6.8	0.4	1,673
Male and Female Adult HHs	37.8	30.6	6.8	0.4	1,340
Female Adult Only HHs	37.5	30.0	6.9	0.7	327
Male Adult Only HHs <sup>^</sup>	–	–	–	–	6
Child No Adult HHs <sup>^</sup>	–	–	–	–	0
<b>User</b>					
All Households	36.9	27.3	9.3	0.3	293
Male and Female Adult HHs	39.2	28.9	10.0	0.4	231
Female Adult Only HHs	27.8	21.1	6.7	0.0	62
Male Adult Only HHs <sup>^</sup>	–	–	–	–	0
Child No Adult HHs <sup>^</sup>	–	–	–	–	0
<b>Heavy Smoker Status<sup>c</sup></b>					
<b>Not Heavy Smoker</b>					
All Households	37.6	29.9	7.3	0.4	1,925
Male and Female Adult HHs	38.0	30.3	7.4	0.4	1,541
Female Adult Only HHs	36.0	28.4	7.0	0.6	378
Male Adult Only HHs <sup>^</sup>	–	–	–	–	6
Child No Adult HHs <sup>^</sup>	–	–	–	–	0
<b>Heavy Smoker</b>					
All Households	37.6	34.7	2.9	0.0	41
Male and Female Adult HHs	38.2	34.3	3.8	0.0	30
Female Adult Only HHs <sup>^</sup>	–	–	–	–	11
Male Adult Only HHs <sup>^</sup>	–	–	–	–	0
Child No Adult HHs <sup>^</sup>	–	–	–	–	0

## 4.1.2 Children's Anemia

Table 36 presents the prevalence of any, mild, moderate, and severe anemia in the Nepal ZOI among children aged 6-59 months. As with women's anemia, any anemia captures all anemia cases, including those classified as mild, moderate, or severe. Anemia values for males, females, and all children are shown, and also disaggregated by gendered household type.

Nearly half (49.8 percent) of the children 6-59 months in the Nepal ZOI have anemia. As with women's anemia, for all children combined, there are no significant differences in anemia by household type. When the children's anemia indicators are disaggregated by sex, we see that across all household types, girls are significantly more likely than boys to experience any anemia (54.3 percent for girls versus 46.1 percent for boys). This difference by child's sex also exists in male and female adult households; in male and female adult households, girls are more likely than boys to have any anemia as well as moderate anemia. Yet in female adult only households, boys appear to be more likely to be moderately anemic than girls (24.4 percent versus 12.3 percent).

**Table 36. Nepal Feed the Future ZOI: Prevalence of anemia in children 6-59 months, by sex and gendered household type**

Anemia					
	Any ( $<11.0$ g/dl)	Mild ( $10.0-10.9$ g/dL)	Moderate ( $7.0-9.9$ g/dL)	Severe ( $<7.0$ g/dL)	n
All Children					
All Households	49.8	26.8	22.4	0.6	789
Male and Female Adult HHs	49.2	25.1	23.3	0.8	625
Female Adult Only HHs	52.3	33.7	18.6	0.0	162
Male Adult Only HHs <sup>^</sup>	—	—	—	—	2
Child No Adult HHs <sup>^</sup>	—	—	—	—	0
Males					
All Households	46.1 <sup>a</sup>	26.1	19.7	0.3	429
Male and Female Adult HHs	43.4 <sup>b</sup>	24.5	18.6 <sup>c</sup>	0.3	346
Female Adult Only HHs	57.1	32.7	24.4 <sup>d</sup>	0.0	83
Male Adult Only HHs <sup>^</sup>	—	—	—	—	0
Child No Adult HHs <sup>^</sup>	—	—	—	—	0
Females					
All Households	54.3 <sup>a</sup>	27.7	25.5	1.1	360
Male and Female Adult HHs	56.3 <sup>b</sup>	25.9	29.1 <sup>ce</sup>	1.4	279
Female Adult Only HHs	47.1	34.8	12.3 <sup>de</sup>	0.0	79
Male Adult Only HHs <sup>^</sup>	—	—	—	—	2
Child No Adult HHs <sup>^</sup>	—	—	—	—	0

<sup>a-e</sup> Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are made between rows.

<sup>^</sup>Values not reported due to the low number of observations (N<25).

Source: NDHS (2011).

Table 37 presents anemia in children 6-59 months by sex and age group. Children 6-23 months (children under two years of age) are significantly more likely to be anemic (including mild, moderate and severe anemia) than children 24-59 months (children 2-5 years of age). About three-quarters (74.9 percent) of children 6-23 months in the ZOI are anemic, compared to only 39.6 percent among children 24-69 months.

**Table 37. Nepal Feed the Future ZOI: Prevalence of anemia in children 6-59 months, by sex and age group**

Anemia					
	Any ( $<11.0$ g/dl)	Mild (10.0-10.9 g/dL)	Moderate (7.0-9.9 g/dL)	Severe ( $<7.0$ g/dL)	n
All Children					
6-59 Months	49.8	26.8	22.4	0.6	789
6-23 Months	74.9 <sup>a</sup>	34.2 <sup>b</sup>	38.5 <sup>c</sup>	2.2 <sup>d</sup>	224
24-59 Months	39.6 <sup>a</sup>	23.8 <sup>b</sup>	15.8 <sup>c</sup>	0.0 <sup>d</sup>	565
Male					
6-59 Months	46.1 <sup>e</sup>	26.1	19.7	0.3	429
6-23 Months	76.1 <sup>f</sup>	34.5	40.6 <sup>i</sup>	1.0	112
24-59 Months	35.5 <sup>fg</sup>	23.1	12.3 <sup>ij</sup>	0.0	317
Female					
6-59 Months	54.3 <sup>e</sup>	27.7	25.5	1.1	360
6-23 Months	73.7 <sup>h</sup>	33.9	36.4 <sup>k</sup>	3.3 <sup>l</sup>	112
24-59 Months	45.0 <sup>gh</sup>	24.7	20.3 <sup>jk</sup>	0.0 <sup>l</sup>	248

<sup>a-l</sup> Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are made between rows.

Source: NDHS (2011).

These age group differences exist for both boys and girls. Among boys 6-23 months, 76.1 percent are anemic, compared to only 35.5 percent of boys 24-59 months. Among girls 6-23 months, 73.7 percent are anemic, compared to 45.0 percent of girls 24-59 months. Moreover, significantly more girls (45.0 percent) than boys (35.5 percent) in the 24-59 months age group experience anemia.

Table 38 presents the prevalence of anemia in the ZOI among children 6-59 months, by sex and ecological zone. As with women, children in the Terai zone are significantly more likely than children in the hill zone to be anemic. Nearly 59 (58.8) percent of children in the Terai zone are anemic, compared to 42.1 percent of children in the hill zone.

Table 39 presents the prevalence of anemia in children 6-59 months, by sex and household wealth quintile. Among all children in the ZOI, males and females combined, there are no significant differences in anemia by household wealth. Among boys, the highest anemia prevalence appears to be in the middle wealth quintile; more boys in the middle wealth quintile are anemic than boys in the poorest quintile. Among girls, the wealth quintile with the highest prevalence of anemia is the richer quintile, but for girls, there are no significant differences in any anemia by wealth category. However, girls in the poorest quintile are significantly more likely than boys in the poorest quintile to be anemic, 55.4 percent for girls versus 39.8 percent for boys.



**Table 38. Nepal Feed the Future ZOI: Prevalence of anemia in children 6-59 months, by sex and ecological zone**

Anemia					
	Any (<11.0 g/dl)	Mild (10.0-10.9 g/dL)	Moderate (7.0-9.9 g/dL)	Severe (<7.0 g/dL)	n
<b>All Regions</b>					
All Children	49.8	26.8	22.4	0.6	789
Male	46.1 <sup>a</sup>	26.1	19.7	0.3	429
Female	54.3 <sup>a</sup>	27.7	25.5	1.1	360
<b>Hill Zone</b>					
All Children	42.1 <sup>b</sup>	24.4	17.7 <sup>c</sup>	0.0	427
Male	41.9	24.5	17.3	0.0	242
Female	42.3 <sup>d</sup>	24.1	18.2 <sup>e</sup>	0.0	185
<b>Terai Zone</b>					
All Children	58.8 <sup>b</sup>	29.6	27.7 <sup>c</sup>	1.4	362
Male	51.9 <sup>f</sup>	28.3	23.0	0.6	187
Female	65.2 <sup>df</sup>	30.9	32.2 <sup>e</sup>	2.1	175

<sup>a-f</sup> Subgroups with the same superscript are significantly different at the 0.05 level. Comparisons are made between rows.

Source: NDHS (2011).

**Table 39. Nepal Feed the Future ZOI: Prevalence of anemia in children 6-59 months, by sex and household wealth quintiles**

Anemia					
	Any (<11.0 g/dl)	Mild (10.0-10.9 g/dL)	Moderate (7.0-9.9 g/dL)	Severe (<7.0 g/dL)	n
<b>All Children</b>					
Poorest	46.6	25.6	20.4	0.7	319
Poorer	53.5	26.5	26.3	0.6	153
Middle	52.2	31.0	21.2	0.0	138
Richer	53.6	26.8	26.8	0.0	97
Richest	44.4	23.8	17.7	2.9	82
<b>Male</b>					
Poorest	39.8 <sup>ab</sup>	21.5 <sup>c</sup>	17.6	0.6	172
Poorer	51.3	25.0	26.3	0.0	84
Middle	58.7 <sup>a</sup>	37.1 <sup>c</sup>	21.6	0.0	76
Richer	41.7 <sup>d</sup>	25.0	16.6	0.0	47
Richest	39.4	27.9	11.6	0.0	50
<b>Female</b>					
Poorest	55.4 <sup>b</sup>	30.7	23.9	0.8 <sup>e</sup>	147
Poorer	56.1	28.4	26.3	1.4	69
Middle	44.5	23.7	20.7	0.0 <sup>f</sup>	62
Richer	62.9 <sup>d</sup>	28.2	34.7	0.0	50
Richest	52.0	17.6	27.1	7.2 <sup>ef</sup>	32

In summary, secondary analysis of DHS data for the Nepal ZOI reveals that more than one-third (37.6 percent) of women aged 15-49 and nearly half (49.8) of children 6-59 months are classified as anemic. In general, there are no significant differences in women's and children's anemia across categories of household type, nor is there a clear pattern by household wealth quintile. However, for both women and children, anemia prevalence is significantly greater in Terai areas than in Hill areas. (Note that the NDHS hemoglobin data are adjusted for altitude prior to classifying for anemia [NDHS 2011, p. 177].) Additionally, girls are significantly more likely than boys to be anemic, as are younger children (6-23 months) compared to older children (24-59 months), suggesting that the most vulnerable categories with respect to anemia are very young (6-23 months) female children living in Terai areas.

## 5. Summary and Conclusions

This report presents the findings of the 2013 Nepal Baseline PBS for the Feed the Future initiative. The PBS was conducted by the FTF FEEDBACK project, which is responsible for performance monitoring and impact evaluation of the Feed the Future initiative. FTF FEEDBACK is implemented by Westat in partnership with TANGO International, IFPRI, and the Carolina Population Center of the University of North Carolina at Chapel Hill. In Nepal, the PBS fieldwork was conducted by a local research organization, New ERA, with direction and oversight from Westat. The fieldwork took place from April 15 to May 28, 2013.

The FTF FEEDBACK ZOI in Nepal comprises 20 districts across the western, mid-western and far-western development regions. A total of 2,000 households in the ZOI were interviewed for the PBS data collection activity. These households were spread across 100 clusters in the targeted districts. The Feed the Future baseline for Nepal draws on data from both primary and secondary sources. Of the 13 Feed the Future indicators reported, three were calculated using data gathered in the 2013 Nepal Baseline PBS: (1) *WEAI*; (2) *prevalence of households with moderate or severe hunger*; and (3) *women's dietary diversity*. Eight indicators were calculated for the ZOI from secondary data from the 2011 NDHS: (1) *prevalence of stunted children under age 5*; (2) *prevalence of wasted children under age 5*; (3) *prevalence of underweight children under age 5*; (4) *prevalence of underweight women of reproductive age [15-49 years]*; (5) *prevalence of children 6-23 months receiving a minimum acceptable diet*; (6) *prevalence of exclusive breastfeeding among children 0-5 months*; (7) *prevalence of anemia in children 6-59 months* and (8) *prevalence of anemia among women of reproductive age [15-49 years]*. The 2010-2011 NLSS III was used to calculate the following two indicators in the ZOI: (1) *prevalence of poverty* and (2) *per capita expenditures*.

Overall, approximately one-third of residents of the Nepal ZOI live in poverty and over 10 percent of households face hunger. The prevalence of poverty in the Nepal ZOI, based on the \$1.25/person/day threshold, is 32.5 percent, and per capita expenditures in the ZOI is \$2.12/day (2010 USD). While the majority of households experience little to no hunger (89.4 percent), more than 10 percent of households face moderate hunger (10.3 percent). Very few households – less than 1 percent (0.3 percent) – report severe hunger in the Nepal ZOI. Additional analyses are

currently being conducted at the request of USAID/Nepal to examine the impact of remittances in the Nepal ZOI and the results will be presented separately as an addendum to this report.

The average number of household members in the ZOI is approximately five. Households with both male and female adults (defined as age 18 or over) in the ZOI have significantly more members, more females, and more children in the 0-5 year age bracket than other gendered household types (i.e., female adult only and male adult only households). With respect to dwelling characteristics, the average number of rooms for households in the ZOI is 2.6. Nearly three-quarters (74.2 percent) of households have electricity, and more (83.9 percent) have access to an improved drinking water source. However, nearly half of all households (42.5 percent) do not have access to improved sanitation facilities. The great majority of households, about 85 percent, use firewood as their main source of cooking fuel; about 12 percent piped or propane gas.

With respect to women's and children's nutrition indicators, which were calculated for the ZOI using secondary analysis of the Nepal 2011 DHS data, nearly half (45.2 percent) of children less than 5 years of age in the ZOI are stunted (a measure of height-for-age and an indicator of chronic, long-term, undernutrition). Twelve percent of children under 5 are wasted (weight-for-height, an indicator of current malnourishment). Over one-third (34.9 percent) of children are underweight (weight-for-age, an indicator of acute and/or chronic undernutrition). There are no significant differences by sex with respect to child stunting, wasting or underweight.

Among women of reproductive age, most women are of normal weight. However, 21.5 percent are underweight, defined as a Body Mass Index (BMI) of less than 18.5, and 6.6 percent are moderately or severely underweight (BMI < 17.0). Conversely, roughly the same proportion of women in the ZOI, 7.6 percent, are overweight or obese (BMI ≥ 25.0).

The prevalence of exclusive breastfeeding for children under 6 months in the ZOI is about 71 percent. However among children 6-23 months, less than one-quarter (22.7 percent) receive a minimum acceptable diet (MAD), a measure of both dietary diversity and feeding frequency among both breastfed and non-breastfed children. In addition, women's dietary diversity is quite low in the ZOI, with women of reproductive age reporting an average consumption of approximately four out of nine total food groups. Women in urban areas consume significantly more food groups (4.5) compared to women in rural areas (3.8).

The WEAI, a summary measure of women's empowerment, agency, and inclusion in the agriculture sector, is composed of two sub-indices, the 5DE (including the domains of production, resources, income, leadership and time), and the GPI. The 5DE contributes the majority (90 percent) of the total WEAI score. In Nepal, the 5DE index is 0.79. About 41 percent of women overall have achieved adequate empowerment (a score of 0.80 or greater). Moreover, the percentage of women who are not yet empowered and inadequate on the 10 indicators of 5DE is significantly higher than that of men for nine of the 10 indicators (Table 33). Only with respect to input in productive decisions are there no significant differences between women and men.

Additional analysis conducted at the request of USAID/Nepal showed that there are no significant differences in women's and children's anemia across categories of household type, nor is there a clear pattern by household wealth quintile. However, for both women and children, anemia prevalence is significantly greater in Terai areas than in Hill areas. Additionally, girls are significantly more likely than boys to be anemic, as are younger children (6-23 months) compared to older children (24-59 months), suggesting that the most vulnerable categories with respect to anemia are very young (6-23 months) female children living in Terai areas.

In conclusion, data from the 2013 baseline Nepal PBS, as well as secondary analysis of the 2011 DHS and 2010-2011 NLSS, provide a comprehensive picture of household hunger and poverty, women and children's nutritional status, and women's empowerment within the Nepal Feed the Future ZOI. This report documents the baseline status of indicators against which changes in the Feed the Future ZOI in Nepal will be measured over time. It should be noted that the survey was not designed to allow for conclusions about attribution or causality.

## Appendix A. References

- ADB. 2013. ADB 7762-NEP (2013) Draft Final Report. Technical Assistance for the Preparation of the Agricultural Development Strategy, Asian Development Bank, May 2013. Page 3.
- Adhikari, Ramesh, and Podhisita, Chai, “Household Headship and Early Child Death in Nepal,” June 2010.
- Alkire, S., H. Malapit, R. Meizen-Dick, A. Peterman, A. Quisumbing, G. Seymour, and A. Vaz. 2013. Instructional Guide on the Women’s Empowerment in Agriculture Index.
- Alkire, S., Meinzen-Dick, R., Peterman, A., Quisumbing, A., Seymour, G., & Vaz, A. (2013). The women’s empowerment in agriculture index. *World Development*, 52(C), 71-91.
- CBS. 2012. Nepal Central Bureau of Statistics. National Report. Accessed on July 2010, 2013 at: <http://cbs.gov.np/wp-content/uploads/2012/11/National%20Report.pdf>.
- The CIA. 2013. Labor force by occupation. Accessed on July 10, 2013 at: <https://www.cia.gov/library/publications/the-world-factbook/geos/np.html>.
- The CIA. 2013a. Population growth rate. Accessed on July 10, 2013 at: <https://www.cia.gov/library/publications/the-world-factbook/geos/np.html>.
- GAFSP. 2013. Global Agriculture and Food Security Program. Nepal. Retrieved from: <http://www.gafspfund.org/content/nepal>.
- Government of Nepal National Planning Commission. Multi-sector Nutrition Plan for Accelerating the Reduction of Maternal and Child Undernutrition in Nepal, 2013-2017 (2023). September 2012. pp. 7-8.
- FAO. 2013. The Food and Agriculture Organization of the United Nations website. Engagement of women in agriculture. Accessed on July 10, 2013 at: <http://www.fao.org/sd/wpdirect/WPre0110.htm>.
- International Food Policy Research Institute (IFPRI). (2013). Accessed May 20, 2013 at: <http://www.ifpri.org/publication/womens-empowerment-agriculture-index>.
- Joshi, K.D., Conroy, C., and Witcomb, J.R. (2012). Agriculture, seed, and innovation in Nepal: Industry and policy issues for the future. IFPRI Project Paper. Retrieved from: [http://www.ifpri.org/sites/default/files/publications/Agriculture\\_seed\\_and\\_innovation\\_in\\_Nepal.pdf](http://www.ifpri.org/sites/default/files/publications/Agriculture_seed_and_innovation_in_Nepal.pdf)
- NDHS. 2011. Ministry of Health and Population (MOHP) [Nepal], New ERA, and ICF International Inc. 2012. Nepal Demographic and Health Survey 2011. Kathmandu, Nepal: Ministry of Health and Population, New ERA, and ICF International, Calverton, Maryland.
- NLSSIII. 2011. Nepal Living Standards Survey (2010-11). Central Bureau of Statistics National Planning Commission Secretariat Government of Nepal, October 2011.

- Smith, David R. "Chapter 4: Select Destinations – Nepal." CDC Health Information for International Travel. CDC, 2011. Available at: <http://wwwnc.cdc.gov/travel/yellowbook/2012/chapter-4-select-destinations/nepal>. Accessed 24 June 2013.
- UN. 2013. UN Data on Stunting, wasting and underweight figures. Accessed on July 10, 2013 at: <http://data.un.org/Data.aspx?d=SOWC&f=inID%3A106>.
- UNDP. 2008. The Dalits of Nepal and the New Constitution. September 2008. Retrieved at <http://www.ccd.org.np/publications/dalit%20of%20nepal%20and%20a%20new%20constitution.pdf> on July 10, 2013.
- 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/>.
- USAID. 2010. Feed the Future Nepal FY 2010 Implementation Plan. Located at <http://www.feedthefuture.gov/country/nepal>, accessed on January 2013.
- USAID. 2011. Feed the Future Nepal FY 2011-2015 Multi-Year Strategy, May 26, 2011, p. 9.
- USAID. 2011a. Feed the Future Nepal. FY 2011-2015 Multi-Year Strategy, May 26, 2011, p. 12.
- USAID. 2011b. Feed the Future Nepal. FY 2011-2015 Multi-Year Strategy, May 26, 2011, p. 12.
- USAID. 2011c. Feed the Future Nepal. FY 2011-2015 Multi-Year Strategy, May 26, 2011, p. 25.
- USAID 2012. "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>.
- USAID 2013. Institutional Architecture for Food Security Policy Change: Nepal (2013) Draft Final Report produced by the Enabling Agricultural Trade (EAT) project, implemented by Fintrac, for the United States Agency for International Development, July 2013. Pages 5, 6 and 29.
- WFP. 2013. Food Security Unit of the Ministry of Agricultural Development and Food Security Monitoring and Analysis Unit. Nepal Food Security Bulletin. 2013. World Food Programme. Available at: <http://www.wfp.org/content/nepal-food-security-bulletins-2013>. Accessed 27 Jun 2013.
- WHO. 2006. Child Growth Standards and the Identification of Severe Acute Malnutrition in Infants and Children. World Health Organization and United Nations Children's Fund.
- The World Bank. 2013. GDP per capita. Data. Accessed July 10, 2013 at: <http://data.worldbank.org/indicator/NY/GDP.PCAP.CD>.
- The World Bank. 2013a. Poverty level at \$1.25 a day. Accessed July 10, 2013 at <http://data.worldbank.org/country/nepal>.

The World Bank. 2013b. GDP figures. Accessed July 10, 2013 at:  
<http://data.worldbank.org/indicator/NV.AGR.TOTL.ZS>.

The World Bank. 2013c. Ratio of population to arable land. Accessed July 10, 2013 at:  
<http://data.worldbank.org/indicator/AG.LND.ARBL.HA.PC>

World Development. 2013. The women's empowerment in agriculture Index (S. Alkire, R. Meinzen-Dick, A. Peterman, A. Quisumbing, G. Seymour, A. Vaz). 52:71-91.



## **Annex A. Protocol for the Nepal Population Baseline Survey (PBS) in the Feed the Future Zone of Influence (ZOI)**

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## List of Acronyms

BFS	Bureau for Food Security
CAPI	Computer Assisted Personal Interviewing
EA	Enumeration Areas
HH	Households
IRB	Institutional Review Board
M&E	Monitoring and Evaluation
MOHP	Ministry of Health and Population
NDHS	Nepal Demographic and Health Survey
NHRC	Nepal Health Research Council
NLSS	Nepal Living Standard Survey
ODK	Open Data Kit
PPS	Probability Proportional to Size Sampling Method
USAID	United States Agency for International Development
WEAI	Women's Empowerment Agricultural Index
ZOI	Zone of Influence

## A.I Overview

The monitoring and evaluation (M&E) system for the U.S. Government-supported food security activities under the Feed the Future initiative includes reporting on a set of population-based indicators within a pre-defined geographic zone of influence (ZOI). These indicators are based on analysis of survey data. As a Feed the Future focus country, the U.S. Agency for International Development (USAID) Mission in Nepal will report on 13 indicators in the Nepal Feed the Future ZOI.

The Nepal Feed the Future ZOI is comprised of 20 districts in three regions as follows:

- Far-western region (six districts): Achham, Baitadi, Dadeldhura, Doti, Kailali, and Kanchanpur;
- Mid-western region (ten districts): Banke, Bardiya, Dailekh, Dang, Jajarkot, Pyuthan, Rolpa, Rukum, Salyan, and Surkhet; and
- Western region (four districts): Arghakhanchi, Gulmi, Kapilvastu, and Palpa.

The Nepal Demographic and Health Survey (NDHS)<sup>58</sup> and the Nepal Living Standard Survey III (NLSS III)<sup>59</sup> were completed in 2010-11 and 2011, respectively. These surveys are excellent secondary data sources for reporting on nutritional status in women (ages 15-49 and children under 5), prevalence of poverty and per capita expenditures. Based on sample size calculations found in Section 2 of this protocol, the sample sizes in the NDHS (for the nutritional status in women and children, indicators 3 to 10, Table A-1) and in the NLSS (for the prevalence of poverty and per capita expenditures indicators, indicators 1 and 2, Table A-1), are considered sufficient to measure change over time (Section 2 shows further details on the level of change). Thus, data for 10 out of the 13 required indicators in Table A-1 can be obtained from the NDHS (2011) and NLSS III (2010-11). Primary data will be collected for the remaining three indicators (numbers 11 to 13 shaded in gray in Table A-1), greatly reducing time and resources entailed: the Prevalence of households with moderate or severe hunger (Household Hunger Scale), Women's Empowerment Agricultural Index (WEAI) and the women's dietary diversity indicators in the ZOI. Further, two additional indicators will be collected: percent of HH using improved sanitation facility and percent of HH using improved drinking water source. [Please refer to Annex A – Attachment 3 for the PBS Baseline Questionnaire.]

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<sup>58</sup> Ministry of Health and Population (MOHP) [Nepal], New ERA, and ICF International Inc. 2012. *Nepal Demographic and Health Survey 2011*. Kathmandu, Nepal: Ministry of Health and Population, New ERA, and ICF International, Calverton, Maryland.

<sup>59</sup> Nepal Living Standard Survey III (2010-11) Central Bureau of Statistics National Planning Commission Secretariat Government of Nepal, October 2011.

**Table A-1. List of indicators**

Indicator	Feed the Future ZOI secondary analysis	Feed the Future ZOI baseline survey
Prevalence of poverty	Yes	No
Per capita expenditures (as a proxy for incomes)	Yes	No
Prevalence of underweight children	Yes	No
Prevalence of stunted children	Yes	No
Prevalence of wasted children	Yes	No
Prevalence of underweight women	Yes	No
Prevalence of children 6-23 months receiving a minimum acceptable diet	Yes	No
Prevalence of exclusive breastfeeding	Yes	No
Prevalence of anemia among children 6-59 months	Yes	No
Prevalence of anemia among women of reproductive age	Yes	No
Prevalence of households with moderate or severe hunger	No	Yes
Women's Empowerment in Agriculture Index	No	Yes
13. Women's dietary diversity	No	Yes
Percent of HH using improved sanitation facility		Yes
Percent of HH using improved drinking water source		Yes

## A.2 Sample Size Estimates for Feed the Future Baseline Survey

Sample size estimates for this survey serve two purposes: (1) to confirm that secondary data sources have sufficient data to measure change over time, and, (2) determine the sample size required to measure change over time for the indicators in the Feed the Future baseline survey. Sample sizes for both purposes are found in Table A-2. Indicators 1 to 10 in the will be calculated with secondary data. Indicators 11 to 13 will be collected by the Feed the Future baseline survey.

Values under the columns titled “Sample Size” (in Table A-2) are for the population related to the indicator. For example, the value of 129 for Exclusive Breastfeeding implies that 129 children age 0-4 months are required to measure change over time for this indicator. Values under the columns titled “Number of Households” (in Table A-2) are the number of households that must be visited to collect data for each indicator. For Exclusive Breastfeeding, 2,745 households would need to be visited to have enough children ages 0-4 months in the sample. Note that the cells under “Number of Households” columns (in Table A-2) are grayed out because these indicators do not require data collection.

Sample size estimates in this were determined utilizing Stata software sample size calculation functions for proportions and means as appropriate. The level of significance was set to 5 percent and the power was set to 80 percent.

**Table A-2. Required sample size from baseline to endline**

Indicator	Baseline value	Endline target value	Sample size		Number of households	
			Baseline	Endline	Baseline	Endline
1. Prevalence of poverty \$1.25/day	55.0	44.0	546	546	572	572
2. Per capita expenditures (as a proxy for incomes)	170,735	204,882	756	756	792	792
3. Prevalence of underweight children	34.9	27.2	853	853	1,956	1,956
4. Prevalence of stunted children	45.2	36.2	772	772	1,771	1,771
5. Prevalence of wasted children	12.0	8.4	835	835	1,915	1,915
6. Prevalence of underweight women	21.5	16.3	1,725	1,725	1,940	1,940
7. Prevalence of children 6-23 months receiving a minimum acceptable diet	22.7	31.1	478	478	3,649	3,649
8. Prevalence of exclusive breastfeeding	71.1	85.3	129	129	2,745	2,745
9. Prevalence of anemia among children 6-59 months	49.8	39.8	719	719	1,649	1,649
10. Prevalence of anemia among women of reproductive age	37.6	30.0	1,957	1,957	2,201	2,201
11. Prevalence of households with moderate or severe hunger	49.7	39.8	658	658	690	690
12. Women's Empowerment in Agriculture Index	0.690	0.759	1,092	1,092	1,673	1,673
13. Women's dietary diversity	3.8	7.6	1,022	1,022	1,150	1,150

The sample size calculations have been adjusted for the design effect. The values of design effect for indicators 3 to 10 were calculated for the ZOI based on NDSH (2011) data. Design effect for the other indicators was set to 2.0.

The values under the “Number of Households” columns (in Table A-2) have been adjusted for non-response. This includes household non-response and individual non-response. Household non-response incorporates those households that were selected for the sample, but may not participate in the interviews. Individual non-response are those women, men, or children who were eligible for the survey, but may not participate. By including household and individual non-response, these values show the number of households that must be visited to achieve the desired sample at the individual level. In other words, if 1,150 households are visited, the survey would be able to collect data on the 1,022 women needed for the dietary diversity indicator.

Values under the column “Sample Size” (in Table A-2) do not include non-response. This is the actual number of cases expected for the survey. Excluding the non-response adjustment in this column makes the values directly comparable to the number of cases based on survey data. For example, in the NDHS there were 877 children in the ZOI with data for stunting (see Appendix 1). This is greater than the 772 sample size value for stunting in Table A-2, which implies that the NDHS (2011) has more than enough samples to measure change over time in stunting.

The baseline values were set with data from Nepal where possible. The baseline value for prevalence of poverty was found on the Feed the Future website for Nepal.<sup>60</sup> The value for per capita

<sup>60</sup> <http://www.feedthefuture.gov/country/nepal>, accessed March 2013.

expenditures was found in Volume 2 of the survey report for the NLSS III (2010-11). Values for indicators 3 to 10 were based on secondary data analysis for the ZOI based on the NDHS (2011). The three remaining indicators (prevalence of households with moderate or severe hunger, WEAI, and women's dietary diversity) were based on reasonable estimates from other countries. Estimates of the baselines were needed for these indicators, because no secondary data were available for these indicators in surveys for Nepal.

The general rule was to set targets at 20 percent change, which is either an increase or decrease from the baseline, as appropriate. Seven of the 13 indicators followed this rule, including prevalence of poverty, per capita expenditure, prevalence of stunted children, prevalence of exclusive breastfeeding, prevalence of anemia among children, prevalence of anemia among women, and prevalence of households with moderate or severe hunger. Exceptions for NDHS indicators were made where the sample was not large enough to measure 20 percent change. The percentage change for the prevalence of underweight children was set at 22 percent decrease and underweight women at 24 percent decrease. Although these are not within the 20 percent target, they represent a reasonable level of change for projects to achieve in 5 years, and therefore recommended that the Nepal Feed the Future baseline survey rely on NDHS (2011) data. [Please note that for underweight children, the endline target would need to be changed to 27.9 (from 27.2) to make it a 20 percent change and for underweight women, the endline would need to be changed to 17.3 (from 16.3) to make it a 20 percent change.]

For the following indicators from NDHS (2011) data, the percent change was set to what is possible given the sample from DHS data (for the specified ZOI): prevalence of wasted children was set at 30 percent decrease, and the prevalence of children 6-23 months receiving a minimum acceptable diet was set at 37 percent increase. Referring to the results of the DHS 2001, 2006 and 2011 data, there has been very little change over time for prevalence of wasting, therefore, we can expect a small level of change. Thus, it would require a much larger sample size to capture any change. Further, compared to stunting and underweight, the prevalence of wasting is at a much lower level, and therefore harder to improve. For minimum acceptable diet, NDHS data shows that there has been a large decline from 2006 to 2011, and therefore we can at best expect a small improvement which would require a large sample size to detect.

A few other exceptions occurred for indicators with very high or low baseline values. The high baseline value (.69, Table A-2) was for the WEAI and the target was set to 10 percent change (based on the Tajikistan PBS, as there are no data from Nepal to gauge this). The low baseline value (3.8, Table A-2) was for women's dietary diversity (based on NDHS data). Because the baseline value for this indicator was 3.8 percent, the target was set for a 100 percent increase, which in terms of percentage point change is only 3.8. Thus, while it is large in percentage terms, it is actually not a large absolute change.



In all cases for indicators 1 to 10, the sample size in Table 2 is lower than the size available from secondary data. Indicators 1 and 2 are lower than 1,872 households estimated<sup>61</sup> to be in the ZOI for the NLSS III (2010-11). The sample sizes for indicators 3 to 10 are lower than those found in secondary analysis of the NDHS (2011). See Appendix 1 for ZOI calculations for these indicators. As noted above, this is by design, because the targets have been adjusted to make this the case. The indicators in this group that have the targets at 20 percent change are prevalence of stunted children, prevalence of exclusive breastfeeding and the two anemia indicators.

## A.3 Survey Design

The design of the Feed the Future ZOI consists of two basic components: questionnaire design and sample design. Westat will provide technical assistance for both of these survey components as described below.

### A.3.1 Questionnaire Design

The survey questionnaire has been developed from the Feed the Future baseline survey guidelines for Volume 8 of the Feed the Future M&E Guidance series, Population-Based Survey Instrument for Feed the Future Zone of Influence Indicators with Revised WFAI Module October 2012 and two additional indicators (percent of HH using improved sanitation facility and percent of HH using improved drinking water source) have been adapted from the female and male versions of the Suaahara Baseline Survey [conducted by Save the Children, IFPRI and a local partner New ERA in 2012] and added to Module D. As referred to earlier, the questionnaire includes modules for indicators that are not available from other population surveys (specifically the NDHS and NLSS). (See Appendix III for the full questionnaire.) The baseline survey will involve primary data collection on the following Feed the Future indicators (Table A-3): Prevalence of households with moderate or severe hunger (Module F); Women's Empowerment in Agriculture Index (Module G); and Women's dietary diversity (Module H):

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<sup>61</sup> The NLSS III (2010-11) has a sample of 7,020 households. There are 20 districts in the ZOI of the 75 districts in Nepal. If the sample in the ZOI roughly matches the proportion of districts there would be  $7,020 \times (20/75) = 1,872$  households in the sample. Note that the ZOI includes districts in the more populous Terai and Hill regions of Nepal. The ZOI including more populous regions suggests that more of the NLSS sample will fall in the ZOI than on average. That being the case, using the proportion of districts to find the sample size in the ZOI is a reasonable assumption.

**Table A-3. Feed the Future modules to be included for PBS**

Feed the Future survey module	Description of indicator
F	Prevalence of households with moderate or severe hunger
G	Women's Empowerment in Agriculture Index
H	Women's dietary diversity

The questionnaire will include the statement of informed consent (Module B), the household roster (Module C), dwelling physical characteristics (Module D) modules. As mentioned earlier, data for two additional indicators (percent of HH using improved sanitation facility and percent of HH using improved drinking water source, adapted from the Suaahara survey) will be collected and have been added to Module D of the questionnaire.

The survey questionnaires have been translated by New Era, a local contractor, into Nepalese. A back translation will be done from Nepalese to English to confirm the accuracy of the content. During the pretest and training, any issues found in the translations will be corrected.

### A.3.2 Sample Design

#### *Sample Size*

The sample size calculations are described in Section 2. The final sample size is 2000 households.

#### *Sampling*

The sample size of households for the baseline survey will follow a two-stage cluster sampling design. In this design, enumeration areas (EAs) or cluster areas, are selected by probability proportional to size (PPS) sampling in the first stage. Households within each selected EA are selected randomly from a list of households in the second stage. The Central Bureau of Statistics has provided the cluster lists on the Feed the Future ZOI of 20 districts based on the Nepal 2011 Census. The Westat statistician grouped the 20 districts into four regions (Table A-4) and selected clusters within groups based on the PPS sampling. There will be 100 clusters selected based on the PPS sampling in 20 districts, and in each cluster, 20 randomly selected households will be interviewed. Since there is no household listing available for the clusters, New Era will conduct a household listing of clusters before the start of the survey and randomly select 20 households from that list.

**Table A-4. Distribution of clusters by districts and Urban/Rural**

Group	Region	Districts	Total cluster	Urban	Rural
1	Far-western	Achham, Baitadi, Dadeldhura, Doti, Kailali, Kanchanpur	30	5	25
2	Mid-western I	Bardiya, Dailekh, Jajarkot, Salyan, Surkhet	22	2	20
3	Mid-western II	Banke, Dang, Pyuthan, Rolpa, Rukum	27	3	24
4	Western	Arghakhanchi, Gulmi, Kapilvastu, Palpa	21	2	19
<b>Total</b>			<b>100</b>	<b>12</b>	<b>88</b>

## A.4 Fieldwork

FTF FEEDBACK has contracted New Era, a local research organization, to carry out the fieldwork. [Please refer to Annex A – Attachment 2 for the Workplan.] FTF FEEDBACK will provide initial training to trainers and field supervisors (who are fluent in English), and the trainers will train the enumerators. The training will involve instruction for approximately three weeks on the use of tablets and data collection. More specifically, the New Era team will be introduced to the Nexus 7 tablet, the use of Open Data Kit (ODK) software in general, and the functionality of the FTF FEEDBACK survey within ODK. The training will include: an introduction to the functional process of collecting; processing the data using the tablet; key process issues like data backup; data review; and data transfer will be covered. The second area of the training will involve preparation for conducting the household interviews. The data collection portion of the training includes instruction on how to: initiate contact with a household, obtain the necessary informed consent, conduct the interview, and return to households that require follow-up. Instructions will be given on the content of the questionnaire, including a review of the questions and the response codes. Survey team leaders will be given additional training on: how to supervise the enumerator teams, including conducting the household listing, selection of households from the listed ones, making and tracking interview assignments, checking the quality of the interview process, and checking the quality of the data entered for each interview.

An important component of the training will be on human subjects protection during the survey, including topics on survey ethics, privacy, confidentiality, etc. After the training, as a condition of employment, each enumerator will sign a confidentiality statement. The FTF FEEDBACK staff will collect the statements and submit them to Westat (in the U.S.) for record keeping. Anyone violating the confidentiality agreement during data collection will be asked to resign from the survey.

During the fieldwork, the survey team leaders will handle the day-to-day management of the field teams. Supervisors will oversee the fieldwork in different districts. A team of enumerators will be comprised of one male and one female member, to accommodate gender sensitive cultural expectations. The WEAI requires interviews of both the primary male and female members of the household. These teams will interview respondents in the same household. The female enumerator

will interview the primary female member of the household while the male enumerator interviews the primary male member of the household.

There will be 20 field teams each consisting of one field supervisor, two enumerators and one porter. Four additional enumerators will remain as back-up. Supervisors will visit field teams on an ongoing basis to ensure the quality of interviews, the completeness of responses on questionnaires, and to troubleshoot any problems encountered during the fieldwork. These field supervisors will report to the survey coordinator, who will manage the overall survey process.

## **A.5 Data Management**

Data entry will be performed on tablet computers in the field with a computer-assisted personal interviewing (CAPI) system. CAPI will speed the data entry and reduce errors during the interview and data entry process. Because we expect data collected with CAPI to result in fewer errors from the start, less time will be required for data cleaning post fieldwork. The CAPI data entry system will be programmed with the ODK software.

During the fieldwork, data quality will be maintained in several ways. In the field, the editor will manually check each questionnaire closely for completeness, consistency, range checks and skip patterns. If there are errors/omissions that can be corrected in the field, the enumerators will go back to the household to fill in missing data or correct potentially erroneous data. The team leader will also check a subset of questionnaires in the same manner. When the corrections have been completed, the team leader will upload the data to the Westat server assuring confidentiality of the respondents. Once data are uploaded, Westat staff will perform additional review of data quality, both manually and with computer programs. Field teams will be notified of any problems found during this review.

## **A.6 Analysis and Reporting**

The analysis and reporting process for the survey will be completed in about 2 weeks after the completion of data entry and cleaning for that survey. Preliminary results will be available from about 2 weeks of data collection (by the second week of June, 2013), barring any unforeseen events that may delay data collection, such as national strikes etc. A survey report will be prepared for dissemination. Major findings will be reported through the summary report for a wider audience. The first round of dissemination will present indicators at ZOI level and disaggregated by groups of interest (i.e., by gender, region etc.). Based on comments and questions from USAID and other stakeholders, a more detailed analysis may follow.

In addition to entering data for indicators collected into the Feed the Future Monitoring System (FTFMS), FTF FEEDBACK may also present findings in-country to mission staff, implementing partners, and other stakeholders if desired. Table A-5 provides a template for the reporting of some of the indicators.

**Table A-5. Indicators**

Indicator	Value	Sample size (n)	Standard error	Design effect (DEFF)
Prevalence of households with moderate or severe hunger				
Women's Empowerment in Agriculture Index				
Women's dietary diversity				
Percent of HH using improved sanitation facility				
Percent of HH using improved drinking water source				

## A.7 Institutional Review Board (IRB) Approval

New Era has confirmed that there is no IRB in Nepal for conducting surveys and research. However, if the survey involves collection of biological specimen or biomarkers, i.e., blood, urine, mouth swab, etc., then the survey needs to be approved by the Nepal Health Research Council (NHRC). Since the present survey will involve interviews-only, it was agreed (after discussions with the country mission) that there is no need for obtaining approval from the NHRC. However, as New Era confirmed, an approval letter from the Ministry of Agricultural Development is required. This approval letter is intended to obtain support from the district and villages officials. The Nepal USAID Mission will obtain this letter from the Ministry of Agricultural Development. The Westat IRB has provided approval for Nepal FTF FEEDBACK baseline survey, and requires the letter from the Ministry of Agricultural Development. The questionnaire will include an informed consent statement, which will be collected from each participant. It is to be noted that the training of trainers conducted by FTF FEEDBACK, and the training of enumerators by New Era staff, both contain a human subject's protection component.

## Annex A – Attachment I: Nepal Baseline FTF FEEDBACK Indicators, by ZOI and All Districts

Indicator	Unweighted	Mean	Lin. std.	95% CI		Design effect
	n		Error	(DEFF)		
Zone of Influence (ZOI) <sup>1</sup>						
Child Stunting (0-59 mos., % < -±2 sd <sup>2</sup> height-for-age)	877	45.2	2.73	39.8	50.5	2.0
Child Wasting (0-59 mos., % < -±2 sd weight-for-height)	877	12.0	1.21	9.6	14.4	0.9
Child Underweight (0-59 mos., % < -±2 sd weight-for-age)	877	34.9	2.48	30.0	39.7	1.8
Women Underweight (age 15-49, % < 18.5 BMI)	1,879	21.5	1.67	18.2	24.8	2.3
Child Anemia (6-59 mos., % <11.0 g/dl)	789	49.8	3.04	43.9	55.8	2.2
Women's Anemia (age 15-49) <sup>2</sup>	1,966	37.6	2.47	32.8	42.5	3.8
Exclusive Breastfeeding (children 0-5 months) <sup>3</sup>	162	71.1	4.49	62.3	80.0	1.1
Minimum acceptable diet (children 6-23 months) <sup>3</sup>	494	22.7	2.50	17.8	27.6	1.3
All Districts in Nepal						
Child Stunting (0-59 mos., % < -±2 sd height-for-age)	2,430	40.5	1.46	37.6	43.4	2.1
Child Wasting (0-59 mos., % < -±2 weight-for-height)	2,430	10.9	0.81	9.3	12.5	1.6
Child Underweight (0-59 mos., % < -±2 weight-for-age)	2,430	28.8	1.36	26.1	31.5	2.2
Women Underweight (age 15-49, % < 18.5 BMI)	5,794	18.2	1.10	16.0	20.3	4.7
Child Anemia (6-59 mos., % <11.0 g/dl)	2,180	46.2	1.71	42.9	49.6	2.6
Women's Anemia (age 15-49) <sup>3</sup>	6,086	35.0	1.35	32.3	37.6	4.8
Exclusive Breastfeeding (children 0-5 months) <sup>4</sup>	497	69.6	2.96	63.8	75.5	2.1
Minimum acceptable diet (children 6-23 months) <sup>4</sup>	1,421	24.1	1.97	20.2	27.9	3.0

Source: Secondary analysis of Nepal 2011 DHS.

### NOTES:

<sup>1</sup> The Feed the Future ZOI includes 20 Districts (of a total of 75 Districts in Nepal): Achham, Arghakhanchi, Baitadi, Banke, Bardiya, Dadeldhura, Dailekh, Dang, Doti, Gulmi, Jajarkot, Kailali, Kanchanpur, Kapilvastu, Palpa, Pyuthan, Rolpa, Rukum, Salyan and Surkhet.

<sup>2</sup> SD- Standard Deviation.

<sup>3</sup> Among non-pregnant women, anemia is defined as <12.0 g/dl; among currently pregnant women, the threshold is <11.0 g/dl.

<sup>4</sup> Sample limited to youngest children living with the mother.

## Annex A – Attachment 2: Workplan

	January				February				March				April				May				June				July			
Task order	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4
Document review (e.g. PFI project documentation, stakeholders, existing projects, ongoing research, geographic coverage, etc.)																												
Meetings scheduled for inception mission																												
Secondary analysis of DHS data for ZOI																												
Inception mission (meet with USAID, MoA, MoI, Next Generation, large stakeholders, IFs, research orgs, potential subcontractors)																												
PFI ZOI Workplan																												
Identification of indicators to be measured in PFS																												
Determination of sample size and design																												
Draft SOW/budget for local contractor																												
Review contract with local contractor (in contract with IFMAG)																												
Develop protocol, if necessary (in contract with IFMAG, contract with local contractor)																												
Final design protocol, draft survey/instruments																												
Analysis plan development																												
Procure sampling frame and start first stage of sample																												
Tentative field work schedule developed																												
Procurement of enumerators, supervisors, vehicles, materials, venue, etc.																												
Translation and localization of survey protocols (enumerator field guide, supervisor field guide, quality controls, etc.)																												
Programming local language data entry forms (PDA, tablet or computer based)																												
Pilot test of survey instruments for language and interview times																												
IRB approval (letter from the Ministry of Agriculture)																												
Household listing																												
PFS survey training (including field test)																												
PFS field work (household selection and interviewing)																												
PFS data cleaning																												
PFS data analysis																												
PFS data analysis (report only PFS required indicators) - in PFI-MIS																												
Draft baseline report																												
Baseline report reviewed																												
Baseline report finalized																												



# Annex A – Attachment 3: Nepal PBS Questionnaire



## FEED THE FUTURE

M&E Guidance Series

### Nepal Population-Based Baseline Survey Instrument for Feed the Future Zone of Influence Indicators April 2013

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## 3.1 Requirements for Feed the Future Indicator Baselines

Operating units (OUs) must collect baseline data for the performance monitoring indicators to be tracked. The source of baseline data depends on the indicator. Feed the Future M&E Guidance Volume 2<sup>62</sup> includes information regarding baseline collection for all indicators. Volume 8 is guidance that focuses on the design and implementation of the required population-based survey (PBS) in the Feed the Future zone of influence (ZOI) to collect baseline, mid-term, and final data for the following Feed the Future indicators:

Indicator	PBS Module
4-16 Prevalence of Poverty: Percent of people living on less than \$1.25/day	Module C: Household Roster and Demographics, Module E: Household Consumption Expenditure
4.5-9 Per capita expenditures of USG targeted beneficiaries	Module C: Household Roster and Demographics, Module E: Household Consumption Expenditure
3.1.9-16 Prevalence of underweight children under 5 years of age	Module I: Child Anthropometry and Anemia and Infant and Young Child Feeding
3.1.9-11 Prevalence of stunted children under 5 years of age	Module I: Child Anthropometry and Anemia and Infant and Young Child Feeding
3.1.9-12 Prevalence of wasted children under 5 years of age	Module I: Child Anthropometry and Anemia and Infant and Young Child Feeding
3.1.9-13 Prevalence of underweight women	Module H: Women's Anthropometry and Anemia and Dietary Diversity
4.5-TBD Women's Empowerment in Agriculture Index (Indicator number to be assigned shortly)	Module G: WEAI Individual Application
3.1.9.1-3 and 4.7-4 Prevalence of households with moderate or severe hunger	Module F: Household Hunger Scale
3.1.9.1-1 Prevalence of children 6-23 months receiving a minimum acceptable diet	Module I: Child Anthropometry and Anemia and Infant and Young Child Feeding
3.1.9.1-2 Women's Dietary Diversity: Mean number of food groups consumed by women of reproductive age	Module H: Women's Anthropometry and Anemia and Dietary Diversity
3.1.9-4 and 3.1.9.1-4 Prevalence of exclusive breastfeeding of children under 6 months of age	Module I: Child Anthropometry and Anemia and Infant and Young Child Feeding
3.1.9-14 Prevalence of anemia among children 6-59 months	Module I: Child Anthropometry and Anemia and Infant and Young Child Feeding
3.1.9-6 Prevalence of anemia among women of reproductive age	Module H: Women's Anthropometry and Anemia and Dietary Diversity

**NOTE:** The Nepal Baseline PBS will not collect Information on Modules E or I. For Module H, the Nepal Baseline PBS will only collect information for the Women's Dietary Diversity.

<sup>62</sup> [http://feedthefuture.gov/sites/default/files/resource/files/ftf\\_volume2\\_baselines\\_march2012.pdf](http://feedthefuture.gov/sites/default/files/resource/files/ftf_volume2_baselines_march2012.pdf)

Additionally, the Nepal baseline survey will include data collection on two additional indicators adapted from the Suaahara baseline survey (2012) in Module D. These include: percent of HH using improved sanitation facility and percent of HH using improved drinking water source.

## 3.2 Standardized PBS Questionnaire

Consistency across Feed the Future countries in how PBS information is collected is important to demonstrate overall impact on poverty, malnutrition and gender equity from Feed the Future investments. To help ensure consistency, this guidance contains a standardized instrument that you are urged to use, to the extent possible, when implementing PBS baseline, midterm and final data collection.

This standardized questionnaire instrument for the baseline Nepal PBS is made up of the following modules. Each module is listed separately and the respondent is specified at the beginning. You can combine modules that are asked of the same type of respondent in your questionnaire. Use skips to direct respondents to the applicable sections of the questionnaire. Informed consent (see Module B) should be obtained for each potential respondent within the household.

- A. QUESTIONNAIRE COVER SHEET.
- B. INFORMED CONSENT.
- C. HOUSEHOLD ROSTER AND DEMOGRAPHICS.
- D. DWELLING CHARACTERISTICS [INCLUDING TWO ADDITIONAL INDICATORS: PERCENT OF HH USING IMPROVED SANITATION FACILITY AND PERCENT OF HH USING IMPROVED DRINKING WATER SOURCE].
- E. HOUSEHOLD HUNGER SCALE.
- F. WEAI FOR INDIVIDUAL APPLICATION TO MALE AND FEMALE, OR FEMALE ONLY IN HOUSEHOLD, DEPENDING ON HOUSEHOLD TYPE
  - F1. INDIVIDUAL IDENTIFICATION;
  - F2. ROLE IN HOUSEHOLD DECISION-MAKING AROUND PRODUCTION AND INCOME GENERATION;
  - F3. ACCESS TO PRODUCTIVE CAPITAL/ACCESS TO CREDIT; AND
  - F4. INDIVIDUAL LEADERSHIP AND INFLUENCE IN THE COMMUNITY/GROUP MEMBERSHIP AND INFLUENCE IN THE GROUP.

- G. DECISION MAKING.
- H. TIME ALLOCATION.
- I. H. WOMEN'S DIETARY DIVERSITY.

### 3.3 Logistical Considerations

It is highly recommended that survey planners have enumerators work in teams of two. Two enumerators can also apply the WEAI module to the primary male and female decision-maker separately and in private, and they can divide up and apply other modules that require different respondents to reduce the total amount of time spent in the household.

Enumerators should carry duplicates of Module G, for interviews with (1) an adult female in households with adult females, and (2) an adult male in households having both adult females and males (or questionnaires should be printed with two copies of Module G already included). Enumerators should also carry duplicate copies of Modules C and H in case there are more than 14 household members or more than five women of reproductive age in the household. Survey planners should plan accordingly and ensure enumerators have sufficient copies of these modules with them, and a way for integrating them into questionnaires to avoid loss after completion.

### 3.4 Analyzing ZOI PBS Data and Tabulating Feed the Future Indicators

Instructions for analyzing the data collected using the standardized modules and creating the HHS and women's dietary diversity, are listed below. Tabulation instructions for WEAI will be made available at a future date.

HHS: See T. Ballard, J. Coates, A. Swindale, M. Deitchler. 2011. [Household Hunger Scale: Indicator Definition and Measurement Guide](#).<sup>63</sup>

Women's Dietary Diversity: The applicable disaggregated food groups in Module H should be aggregated into the following 9 foods groups – 1. Grains, roots and tubers; 2. Legumes and nuts; 3. Dairy products; 4. Organ meat; 5. Eggs; 6. Flesh foods and other misc. small animal protein; 7. Vitamin A rich dark green leafy vegetables; 8. Other vitamin A rich vegetables and fruits; 9. Other fruits and vegetables – and the number of food groups consumed summed.

See [FFP Standard Indicators Handbook](#).<sup>64</sup>

<sup>63</sup> [http://www.fantaproject.org/publications/hhs\\_2011.shtml](http://www.fantaproject.org/publications/hhs_2011.shtml)

<sup>64</sup> [http://www.usaid.gov/our\\_work/humanitarian\\_assistance/ffp/ffpstdindicatorshandbook.pdf](http://www.usaid.gov/our_work/humanitarian_assistance/ffp/ffpstdindicatorshandbook.pdf)

## 3.5 Population-Based Survey Sampling Guidance

This guidance does not provide step-by-step instructions on how to develop the ZOI PBS sample design, nor does it address all elements of the sample design. Rather, it focuses on specific elements where consistency across OUs is desirable, and shares current knowledge and best practice on elements where common practice may be less than optimal.

## 3.6 Defining the ZOI for the PBS Sample Frame

The ZOI is the geographic area where Feed the Future interventions will be implemented. For sample frame purposes, you should define the ZOI at the lowest geopolitical level (e.g., counties, municipalities, districts) that makes sense in your context, and where you plan reasonable coverage of Feed the Future interventions. The sample frame for the ZOI PBS should cover all areas where Feed the Future interventions will be implemented, not only those where integrated agriculture-nutrition activities are planned. The sample frame should not exclude areas where only agriculture or only nutrition interventions will be implemented. You should avoid including areas in the ZOI PBS sample frame where no Feed the Future interventions will be implemented, because including these areas will dilute Feed the Future effects and make it more difficult to demonstrate that change has occurred.

## 3.7 Determining the Baseline PBS Sample Size

Decisions on sample size are driven by a number of factors, the biggest driver being the amount of change you would like to capture between baseline and final. In a scenario with unlimited resources, PBS could be implemented with a sample size large enough to capture even the smallest change in every Feed the Future indicator with statistical significance. However, resources are not unlimited, and decisions must be made on which indicators to use to determine PBS sample size.

The sample size for the ZOI PBS should be determined by the requirements to capture changes in the three key impact indicators of prevalence of poverty, and underweight and stunting in children under 5 years of age. You should calculate sample requirements using estimated baseline prevalence (from external sources such as LSMS and DHS) and targeted change over 5 years for each of these three indicators, then use the largest of these sample sizes as the overall minimum required PBS sample size.<sup>65</sup>

Since these high-level indicators are likely to be the indicators with the smallest amount of targeted change, the sample size that results will almost always be large enough to capture statistically

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<sup>65</sup> The basic equation to calculate the sample size required to capture the change in these prevalence indicators is  $n = D * [(Z\alpha + Z\beta)^2 * (P1(1 - P1) + P2(1 - P2)) / (P2 - P1)^2]$ , where  $n$  = required minimum sample size per survey round;  $D$  = design effect (usually assumed to be 2 in the absence of a direct measure from similar surveys);  $P1$  = the estimated baseline value of the indicator (expressed as a proportion, not a percentage);  $P2$  = the expected value of the indicator after 5 years (expressed as a proportion) –  $(P2 - P1)$  is the targeted change;  $Z\alpha$  = the Z-score corresponding to the desired level of statistical significance  $\alpha$ , and  $Z\beta$  = the z-score corresponding to the desired level of statistical power  $1 - \beta$  (see more on significance and power in the next section).

significant changes in lower-level indicators, such as exclusive breastfeeding and MAD. This is because the amount of change needed in these indicators to achieve the targeted higher-level nutritional status results is larger, thus the sample size and number of households that must be visited to capture changes will be smaller.

### 3.8 Determining the Level of Statistical Significance and Power When Calculating the Sample Size

You must also factor two sources of potential error in the indicator value estimates into the sample size calculation. *Statistical significance*, the alpha ( $\alpha$ ) error, reflects the degree of confidence desired that, if measured, the targeted change would not have occurred by chance. *Statistical power*, calculated as one (1) minus the beta ( $\beta$ ) error, is the degree of confidence desired to be certain of detecting a change of the targeted size if one actually occurred. You should use the standard alpha level of .05 for baseline-final sample size calculation, and most OUs should also use the standard beta level of .20. However, Feed the Future countries that receive the highest levels of funding should consider using a beta level of .10 to increase the probability that targeted changes in poverty, stunting, and other key indicators will be detected.

### 3.9 Determining the Number of Households to be Visited

After determining the PBS sample size, you need to calculate how many households need to be visited to collect the required sample. This is called “inflating” the sample. There are two factors that need to be considered: (1) households that decline to be interviewed (i.e., non-responding households), and (2) households having no children under the age of 5 (for the application of the child anthropometric module). To compensate for these two factors, the base sample size is inflated to ensure data will be collected from enough households or individuals to reach sample requirements for poverty, stunting and underweight, even after screening out households that decline to be interviewed and households without children under 5.<sup>66</sup>

To compensate for households that refuse to participate in the survey, the rule of thumb is to increase the sample size by 10 percent (unless prior information on household non-response rates is available from similar surveys in the country).

Experience has shown that the standard approach to inflating sample size, which divides the required sample by the average number of children under 5 per household in the target population, often underestimates the number of household that need to be visited and, in such instances, has resulted in too few children being encountered to complete the required sample. FANTA-3/FHI-360 recommends a new approach for inflating the sample that takes into account the probability of encountering a household with at least one child under 5, given the average number of children per household. The approach also includes a deflation factor to account for households with more than

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<sup>66</sup> Enumerators will apply the non-child-related modules in households with no children under 5; these households will only be screened out for application of the child-related modules.

one child under 5. You should ask your M&E contractors to contact your BFS M&E point of contact and FANTA-3 at [fantamail@fhi360.org](mailto:fantamail@fhi360.org) to get more information on the approach and to access the formulas and a calculator to estimate the required number of households to be visited to meet the stunting and underweight sample requirements.

### 3.10 Determining the Number of Sample Strata

A sufficient sample size to detect the expected amount of change from baseline to final evaluation with statistical significance is required at the overall ZOI level and may be desired for sub-zones or groups within the ZOI. These sub-zones or groups for which separate, statistically significant estimates are desired are called strata. Because a sample of adequate size needs to be collected in each strata identified, the cost of the ZOI PBS increases with each strata, so you are encouraged to be judicious in deciding how many strata are required. Ideally, strata should not overlap<sup>67</sup> and, if the strata do not cover 100 percent of the ZOI geographic area, a separate representative sample of adequate size will need to be collected for the parts of the ZOI not included in any of the strata.

The seven Feed the Future required indicators<sup>68</sup> must be collected for the entire ZOI, regardless of the type of intervention(s) being implemented. If your ZOI includes areas where integrated agriculture-nutrition activities will be implemented, and other areas where only agriculture or only nutrition activities will be implemented, you may wish to define separate strata for the integrated versus stand-alone intervention areas, so you can look at the difference in, e.g., changes in nutritional status in areas with integrated programming and those with only agriculture interventions. You would then aggregate the samples from each strata, applying appropriate sample weights if the total sample were not distributed among domains using probability proportional to size allocation, to obtain an estimate at the overall ZOI level.

Another aspect to consider is whether separate strata are required for indicator disaggregates such as sex (e.g., for child anthropometric indicators) and gendered household type (e.g., for poverty and per capita expenditure indicators.) These disaggregates warrant separate attention because, unlike geographic-based strata which are easier to plan for and to sample, planning and sampling for disaggregate strata would be much more difficult. This is because we do not know the internal composition of households prior to drawing the sample, and we cannot predict and control how much of the sample will fall into such strata in the field, given that households with unknown internal compositions are selected at random.

Decisions about whether to create strata for gendered household type are more complicated. First, because this way of categorizing households is new, data don't exist to help determine how large the difference in poverty and expenditure indicators by gendered household type is likely to be. Second,

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<sup>67</sup> Although strata may overlap, this introduces undue complexity into the sample design and data analysis and should be avoided.

<sup>68</sup> Prevalence of Poverty: Percent of people living on less than \$1.25/day, Per capita expenditures of USG targeted beneficiaries, Prevalence of underweight children under 5 years of age, Prevalence of stunted children under 5 years of age, Prevalence of wasted children under 5 years of age, Prevalence of underweight women, and WEAI.



existing sample frames will not contain information on gendered household type to be used for stratification. This information would have to be collected as part of efforts to update dwelling lists in selected clusters (more on this below) and would add time and expense to these efforts. Third, because Female Adult no Male Adult, Male Adult no Female Adult, and Child no Adult household types would have to be over-sampled proportional to their prevalence in the population, a separate phase of sampling with differential sample weights corresponding to the different gendered household types would need to be included in the design, adding considerable complication to the sampling strategy. For these reasons, you are also not required to treat each gendered household type as a separate stratum for ZOI PBS sampling purposes.

### 3.11 Determining the Sampling Method

The most statistically efficient method to select households to visit would be to take a list of all the households in the ZOI, and randomly select the required number of households from this list. This is called Simple Random Sampling (SRS). However, even if a comprehensive list of all households in the ZOI were available, which is extremely unlikely, SRS is not a very cost efficient sampling method, because it results in a much more *dispersed* sample. This would create significant challenges for planning and effective supervision, and would result in greater transportation costs and possibly lower data quality. For these reasons, the ZOI PBS should use multi-stage sampling, where the first stage involves dividing the ZOI population into clusters (e.g., census enumeration districts, communities, villages) and randomly selecting clusters from this list, with a cluster's chance of being selected proportional to the number of households in the cluster (Probability Proportional to Size sampling with replacement, or PPS).

After the clusters are selected, the second sampling stage involves listing all the dwellings within the selected clusters and randomly selecting dwellings<sup>69</sup> within clusters. Possible third and fourth stages involve selecting households<sup>70</sup> within sampled dwellings, if required, and individuals within sampled households, if required (see sections below.)

### 3.12 Determining the Number of Clusters to Sample

While sampling just a few clusters and taking a large sample of dwellings within each cluster would be most cost efficient, this strategy would greatly decrease the statistical efficiency of the sample, and should be avoided. On the other hand, sampling a large number of clusters and taking a small sample of dwellings within each cluster, while statistically efficient, is not cost efficient. Therefore, a balance between the two approaches is recommended. A good rule of thumb is that each cluster should have no more than 25-30 *dwellings* selected; the total number of clusters required is determined by dividing the total inflated sample by the number of dwellings to be visited per cluster.

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<sup>69</sup> Unless updated lists of households in selected clusters are already available, the second sample stage will involve sampling from a list of dwellings, i.e., physical structures, rather than from a list of households, i.e., groups of people who sleep under one roof and eat from the same pot, because dwellings rather than households are usually enumerated when mapping the cluster – see section on “Randomly Selecting Dwellings at the Cluster Level.”

<sup>70</sup> This stage of sampling is meant to take into consideration multi-household dwellings.



### 3.13 Randomly Selecting Dwellings at the Cluster Level

Most sample frames will not contain updated lists of dwellings in the clusters selected for sampling. In these cases, survey implementers often select dwellings to survey using non-systematic methods such as the “random walk.” The problem with these methods is that they are not probability-based and therefore introduce unknown bias. For a method to be probability-based, every dwelling in the population has to have a known and non-zero chance of being selected. With methods such as the random walk, some dwellings have no chance of being selected and therefore the sample that results cannot be appropriately weighted to represent the population. To avoid this, you should invest the additional time and resources required to map and comprehensively list all dwellings in selected clusters, and to systematically select the dwellings to be surveyed from these updated, comprehensive lists.

### 3.14 Collecting Data on All Households Within a Dwelling and All Target Individuals Within a Household

When enumerators encounter more than one household within a dwelling, or more than one target individual (e.g., women of reproductive age, children 0-5 months, children 0-23 months, children 0-59 months) within a household, should they randomly sample among them or collect data from all of them? While taking a random sample of households or target individuals can reduce the sample’s design effect to some extent (by reducing the intra-dwelling or intra-household correlation, which is a measure of the extent to which responses within dwellings or within households are similar), this advantage is out-weighed by the complexity introduced by increasing the number of sample stages and the number and variety of associated sample weights to be managed. Therefore, we recommend that all households within a dwelling and all target individuals within a household be selected for interviewing.

## MODULE A. HOUSEHOLD IDENTIFICATION COVER SHEET

Household Identification	Code	Interview details	Code
A01. Household Identification	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	A17. Team and interviewer's code number: _____	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
A02. Cluster number	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	A19. Date of second visit (dd/mm/yyyy):	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
A03. Village	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	A20. Reason for second visit: _____	
A03a. Ward #		A21. Final outcome of interview (enter code)	<input type="text"/>
A04. Name of VDC/Municipality _____		A22. Name/code of supervisor: _____	<input type="text"/>
A05. District	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	xx. Signature of supervisor (date): _____	
A06. Region	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	A24. Date of data entry(dd/mm/yyyy)::	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
A09. Type of household:		A03-A06 Create codes if needed	A21 <b>OUTCOME OF INTERVIEW</b> Complete..... 1 Incomplete..... 2 Absent..... 3 Refused..... 4 Could not locate..... 5
<b>A09 HOUSEHOLD TYPE</b> <b>Male and female adult</b> – household contains at least one male and one female adult ≥ 18 years old..... 1 <b>Female adult only</b> – household contains at least one female adult and no male adults ≥ 18 years old..... 2 <b>Male adult only</b> – household contains at least one male adult and no female adults ≥ 18 years old..... 3 <b>Child only</b> – household contains no adults ≥ 18 years old..... 4			
<p>The <b>primary and secondary respondents</b> are those who <u>self-identify</u> as the primary male and female (or female only) members responsible for the decision making, both social and economic, within the household. In Male and Female Adult Households, they are usually the husband and wife; however they can also be other household members as long as they are aged 18 and over. In Female Adult Only households, there will only be a primary respondent – the principal female decision-maker aged 18 or older. Primary and secondary respondents do not need to be noted for Male Adult Only and Child Only Households, and Module G WEA I should not be applied in Male Adult Only and Child Only Households.</p>			

## MODULE B. INFORMED CONSENT

**Informed Consent:** *It is necessary to introduce the household to the survey and obtain the consent of all prospective respondents to participate. If a prospective respondent (e.g., a woman of reproductive age) is not present at the beginning of the interview, be sure to return to this page and obtain consent before interviewing him or her. Ask to speak with a responsible adult in the household.*

### ENUMERATOR WILL READ THIS:

Thank you for the opportunity to speak with you. We are a research team from New ERA. We are conducting a survey to learn about agriculture, food security, food consumption, nutrition and well-being of households in this area. Your household has been selected to participate in an interview that includes questions on topics such as your family background, dwelling characteristics, household assets, food consumption and nutrition of women. The survey includes questions about the household generally, and questions about individuals within your household, if applicable. These questions in total will take approximately 2-3 hours to complete and your participation is entirely voluntary. If you agree to participate, you can choose to stop at any time or to skip any questions you do not want to answer. Your answers will be completely confidential; we will not share information that identifies you with anyone. After entering the questionnaire into a data base, we will destroy all information such as your name which will link these responses to you.

Do you have any questions about the survey or what I have said? If in the future you have any questions regarding survey and the interview, or concerns or complaints we welcome you to contact New Era by calling \_\_\_\_\_. We will leave one copy of this form for you so that you will have record of this contact information and about the study.

*Ask the following consent questions of all prospective respondents. As applicable, have the person check and sign the consent box below.*

*Enumerator ask the following:*

1. Who is the main male adult (18 years or older) decision-maker in the household? <NAME>, do you agree to participate in the survey?
2. Who is the main female adult decision-maker in the household? <NAME>, do you agree to participate in the survey?
3. Are there other females 15 to 49 years old in the household? <NAME>, do you agree to participate in of the survey?
4. Who is the main person (preferably an adult, but can also be a minor) in the household primarily responsible for food preparation? <NAME>, do you agree to participate in the survey?

**NOTE: DIFFERENT COUNTRIES WILL HAVE DIFFERENT AGES BY WHICH INDIVIDUALS CAN GIVE INFORMED CONSENT. IN SOME COUNTRIES, AN ADOLESCENT UNDER 18 YEARS OLD IS NOT ABLE TO GIVE INFORMED CONSENT ALONE; CONSENT OF HER CAREGIVER MAY ALSO BE REQUIRED. THE AGE AT WHICH CAREGIVER CONSENT IS NO LONGER NECESSARY SHOULD BE IDENTIFIED AS PART OF THE ETHICAL REVIEW/INSTITUTIONAL REVIEW BOARD (IRB) PROCESS.**

MODULE B. INFORMED CONSENT SIGNATURE PAGE

Instructions:

- Complete the name and Section A to obtain consent from adult respondents (18 years or older)
- Complete the name and Section B to obtain consent from minors (Less than 18 years old). In section B, obtain consent from parent/caregiver to allow for the child to participate and obtain assent from the child also)

	<u>Section A</u>			<u>Section B</u>					
	(Adults 18 and +) Consent to participate in survey (Check one box)			Consent to be taken from both parent/caregiver and Child					
				Parental/caregiver consent for child to participate in survey			Child Assent to participate in survey		
Name	YES	NO	Signature of witness	YES	NO	Signature of Witness	YES	NO	Signature of witness

MODULE B. INFORMED CONSENT DUPLICATE SIGNATURE PAGE  
DUPLICATE TO LEAVE WITH THE HOUSEHOLD

Thank you for the opportunity to speak with you. We are a research team from New ERA. We are conducting a survey to learn about agriculture, food security, food consumption, nutrition and well-being of households in this area. Your household has been selected to participate in an interview that includes questions on topics such as your family background, dwelling characteristics, household assets, food consumption and nutrition of women. The survey includes questions about the household generally, and questions about individuals within your household, if applicable. These questions in total will take approximately 2-3 hours to complete and your participation is entirely voluntary. If you agree to participate, you can choose to stop at any time or to skip any questions you do not want to answer. Your answers will be completely confidential; we will not share information that identifies you with anyone. After entering the questionnaire into a data base, we will destroy all information such as your name which will link these responses to you.

Do you have any questions about the survey or what I have said? If in the future you have any questions regarding survey and the interview, or concerns or complaints we welcome you to contact New Era by calling \_\_\_\_\_. We will leave one copy of this form for you so that you will have record of this contact information and about the study.

	Section A			Section B					
	(Adults 18 and +) Consent to participate in survey (Check one box)			Consent to be taken from both parent/caregiver and Child					
				Parental/caregiver consent for child to participate in survey			Child Assent to participate in survey		
	YES	NO	Signature of witness	YES	NO	Signature of witness	YES	NO	Signature of witness
Name									

## MODULE C. HOUSEHOLD ROSTER AND DEMOGRAPHICS

**Enumerator:** Ask these questions about all household members. Ask the primary or secondary respondent, whoever is most knowledgeable about the age, completed education, and other characteristics of household members.

First, we would like to ask you about each member of your household. Let me tell you a little bit about what we mean by household. For our purposes today, members of a household are adults or children that live together and eat from the 'same pot', including servants, lodgers, and agricultural laborers. Household members include anyone who has lived in your house for at least 6 of the last 12 months, but does not include anyone who lives here but eats separately. Newborn children less than 6 months old and anyone who has joined the household less than 6 months ago but has the intention of staying for a longer period of time are also considered members of the household. Please do *not* include anyone who died recently, even if he or she lived here more than 6 months in last 12 months, nor anyone who left the household less than 6 months ago with the intention of being away from the household for a longer period of time or permanently (this includes either leaving through marriage, or servants, lodgers, and agricultural laborers have left.)

How many members in the family.....

Please list the names of everyone considered to be a member of this household, starting with the main male (or female, if no adult male) decision maker: **LIST THE NAMES OF ALL HOUSEHOLD MEMBERS. THEN ASK:** Does anyone else live here even if they are not at home now? These may include children in school or household members at work. **IF 'YES,' COMPLETE THE LISTING. THEN, COLLECT THE REMAINING COLUMNS OF INFORMATION FOR EACH MEMBER, ONE PERSON AT A TIME.**

Household identification (in data file, each module must be matched with the HH ID)

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I D C O D E	Name of household member? [start with primary respondent, continue with the secondary respondent, if applicable, and other members]		What is [NAME's] sex?  1 = M 2 = F 99= Refused	What is [NAME's] relationship to the primary respondent?	What is [NAME's] age? (in years)*  If <3, skip C05-08	Can [NAME] read and write?	Is [NAME] currently attending school?  1 = Yes 2 = No	Has [NAME] ever attended school?  1= Yes 2= No	What is the highest grade of education completed by [NAME]?
	C01		C02	C03	C04	C05	C06	C07	C08
01									
02									
03									
04									
05									
06									
07									
08									
09									
10									
11									
12									
13									
14									
	<b>C03: Relationship to Primary Respondent</b>			<b>C05: Literacy</b>			<b>C08: Education level</b>		
	Primary respondent.....	1	Nephew/niece of spouse.....	9	Cannot read and write.....	1	Less than 1 class/year completed (no school) .....	00	
	Spouse/partner.....	2	Cousin of primary respondent.....	10	Can sign (write) only .....	2	Grade 1 to grade 10 .....	1-10	
	Son/daughter.....	3	Brother/sister-in-la.....	11	Can read only .....	3	Grade 11 and above .....	11	
	Son/daughter-in-law .....	4	Mother/father-in-law .....	12	Can read and write .....	4	School-based pre-primary centers .....	94	
	Grandson/		Cousin of primary respondent's spouse .....	13	Refused .....	99	Informal pre-school .....	95	
	granddaughter.....	5	Other relative .....	14			Don't know (DK)/Non response (NR)/Not applicable (NA).....	98	
	Mother/Father .....	6	Servant/Maid .....	15					
	Brother/sister .....	7	Laborer .....	16					
	Nephew/niece .....	8	Other relationship .....	17					
			Refused .....	99					

## MODULE D. DWELLING CHARACTERISTICS

Household identification (*in data file, each module must be matched with the HH ID*)

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**Enumerator:** Ask the person primarily responsible for food preparation

	Response	Response codes
<b>D01.ENUMERATOR: OBSERVE (DO NOT ASK)</b> Roof top material (outer covering):		<b>D01:Type of roof</b> Tile..... 1      Thatched/vegetable matter/ Wood ..... 2      Sticks ..... 5 Corrugated metal ..... 3      Mud/cow dung ..... 6 Plastic sheeting..... 4      Cement Concrete..... 7 Other/Don't know..... 8
<b>D02.ENUMERATOR: OBSERVE (DO NOT ASK)</b> Floor material:		<b>D02:Type of floor</b> Earth/mud..... 1      Wood..... 5 Earth/mud and stones ..... 2      Other..... 6 Concrete/flag stone/cement ..... 3 Tile/bricks ..... 4
<b>D03.ENUMERATOR: OBSERVE (DO NOT ASK)</b> Exterior Walls:		<b>D03: Type of walls</b> Earth/mud and stones ..... 1      Wood/sticks/bamboo/corrugatedsheets ..... 5 Earth/mud ..... 2      Other ..... 6 Concrete/flag stone/cement ..... 3 Tile/bricks ..... 4
<b>D04.</b> How many rooms are there in this dwelling? (Do not count bathrooms, hallways, garage, toilet, cellar, kitchen)		
<b>D05.a</b> What is the main type of toilets your household uses?		<b>D05: Type of toilet</b> Flush, shared ..... 1      Community toilet..... 5 Flush, private..... 2      Pan / bucket..... 6 Ventilated improved pit latrine (VIP) ..... 3      No toilet..... 7 Pit latrine ..... 4      Other..... 8 Refused..... 99
<b>D05.b ENUMERATOR: OBSERVE (DO NOT ASK)</b> (Is there a toilet?)		Yes..... 1 No..... 2 (>> D05.d) Could not observe..... 3 (>> D05.d)



## MODULE D. DWELLING CHARACTERISTICS (CONTINUED)

<b>D05.c ENUMERATOR: OBSERVE (DO NOT ASK)</b> (What kind of toilet facility does the household have?)	Flush to piped sewer system.....1 Flush to septic tank .....2 Flush to pit latrine .....3 Flush to somewhere else.....4 Flush, don't know where .....5 Ventilated improved pit latrine .....6 Pit latrine with slab.....7 Pit latrine without slab/Open pit.....8 Composting toilet .....9 Bucket toilet .....10 No facility/bush/field.....11										
<b>D05.d ENUMERATOR: OBSERVE (DO NOT ASK)</b> (Is there human feces in the house, compound or right outside the compound?)	Yes, in the house.....1 Yes, near the compound .....2 No.....3										
<b>D06.a</b> What is the main source of drinking water for members of your household?	Piped in to dwelling.....11 Piped to yard/plot .....12 Public tap/standpipe.....13 Tube Well or Borehole.....21 Protected well.....31 Unprotected well.....32 Protected spring.....41 Unprotected spring.....42 Rain Water.....51 Tanker truck .....61 Surface Water (river/dam/lake/pond/stream/canal/irrigation channels).....71 Stone tap/dhara .....81 Bottled water.....91 Other (Specify).....96 Refused .....99										
<b>D06.b</b> Do you use the main drinking water source all year or only part of the year?	Only in the dry season .....1 Only in the rainy season .....2 All year round .....3 Refused .....99										
<b>D07.</b> Does this household have electricity?	Yes = 1; No = 2; No response = 99										
<b>D08.</b> What is the main source of cooking fuel for your household?	<table> <tr> <td><b>D07: Cooking fuel</b></td><td>Firewood.....5</td></tr> <tr> <td>Electricity.....1</td><td>Animal dung.....6</td></tr> <tr> <td>Piped or liquid propane gas (biogas).....2</td><td>Agricultural crop residue.....7</td></tr> <tr> <td>Kerosene.....3</td><td>Other .....8</td></tr> <tr> <td>Charcoal.....4</td><td>Refused.....99</td></tr> </table>	<b>D07: Cooking fuel</b>	Firewood.....5	Electricity.....1	Animal dung.....6	Piped or liquid propane gas (biogas).....2	Agricultural crop residue.....7	Kerosene.....3	Other .....8	Charcoal.....4	Refused.....99
<b>D07: Cooking fuel</b>	Firewood.....5										
Electricity.....1	Animal dung.....6										
Piped or liquid propane gas (biogas).....2	Agricultural crop residue.....7										
Kerosene.....3	Other .....8										
Charcoal.....4	Refused.....99										

## MODULE F. HOUSEHOLD HUNGER SCALE

Household identification (*in data file, each module must be matched with the HH ID*)

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Enumerator: Ask of the person responsible for Household Food Preparation.

No.	Question	Response	Response code
F01	In the past [4 weeks/30 days] was there ever no food to eat of any kind in your house because of lack of resources to get food?		Yes = 1 2 = No >>F03 99= Refused
F02	How often did this happen in the past [4 weeks/30 days]?		1 = Rarely (1-2 times) 2 = Sometimes (3-10 times) 3 =Often (more than 10 times) 99 = Refused
F03	In the past [4 weeks/30 days] did you or any household member go to sleep at night hungry because there was not enough food?		Yes = 1 2 = No>>F05 99 =Refused
F04	How often did this happen in the past [4 weeks/30 days]?		1 = Rarely (1-2 times) 2 = Sometimes (3-10 times) 3 = Often (more than10 times) 99=Refused
F05	In the past [4 weeks/30 days] did you or any household member go a whole day and night without eating anything at all because there was not enough food?		Yes = 1 2 = No >>end of module 99 =Refused
F06	How often did this happen in the past [4 weeks/30 days]?		1 = Rarely (1-2 times) 2 = Sometimes (3-10 times) 3 = Often (more than 10 times) 99= Refused

## MODULE G. WOMEN'S EMPOWERMENT IN AGRICULTURE INDEX

**NOTE:** The information in Module G1 can be captured in different ways; however there must be a way to (a) identify the proper individual within the household to be asked the survey, (b) link this individual from the module to the household roster, (c) code the outcome of the interview, especially if the individual is not available, to distinguish this from missing data, (d) record who else in the household was present during the interview. This instrument must be adapted for country context including translations into local languages when appropriate.

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

*Please double check to ensure:*

*You have completed the roster section of the household questionnaire to identify the correct primary and/or secondary respondent(s);*

*You have noted the household ID and individual ID correctly for the person you are about to interview;*

*You have verified that the respondent(s) is(are)  $\geq 18$  years old ;*

*You have gained informed consent for the individual in the household questionnaire;*

*You have sought to interview the individual in private or where other members of the household cannot overhear or contribute answers.*

*Do not attempt to make responses between the primary and secondary respondent the same—it is ok for them to be different.*

## MODULE G1. INDIVIDUAL IDENTIFICATION

	Code			Code
<b>G1.01.</b> Household Identification: .....	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		<b>G1.05.</b> Outcome of interview	<input type="text"/>
<b>G1.02.</b> Name of respondent currently being interviewed (ID Code from roster in Section C Household Roster): <b>Surname, First name:</b> .....	<input type="text"/> <input type="text"/>		<b>G1.06.</b> Ability to be interviewed alone:	<input type="text"/>
<b>G1.03.</b> Sex of respondent: Male ..... 1 Female ..... 2	<input type="text"/>		<b>G05</b> Completed..... 1 Incomplete ..... 2 Absent..... 3 Refused ..... 4 Could not locate..... 5	<b>G06</b> Alone ..... 1 With adult females present ..... 2 With adult males present ..... 3 With adults mixed sex present ..... 4 With children present..... 5 With adults mixed sex and children present..... 6 Refused..... 99
<b>G1.04.</b> Type of household Male and female adult (age 18+)..... 1 Female adult only (age 18+) ..... 2	<input type="text"/>			

## MODULE G2. ROLE IN HOUSEHOLD DECISION-MAKING AROUND PRODUCTION AND INCOME GENERATION

Household identification (in data file, each sub-module (G2-G6) must be linked with HH and respondent ID)

Respondent ID Code


Activity		Did you (singular) participate in [ACTIVITY] in the past 12 months (that is during the last [one/two] cropping seasons)?  Yes..... 1 No..... 2 >> next activity Refused.....99	How much input did you have in making decisions about [ACTIVITY]?	How much input did you have in decisions on the use of income generated from [ACTIVITY]
Activity Code	Activity Description	G2.01	G2.02	G2.03
<b>A</b>	Food crop farming: crops that are grown primarily for household food consumption			
<b>B</b>	Cash crop farming: crops that are grown primary for sale in the market			
<b>C</b>	Livestock raising			
<b>D</b>	Non-farm economic activities: Small business, self-employment, buy-and-sell			
<b>E</b>	Wage and salary employment: in-kind or monetary work both agriculture and other wage work			
<b>F</b>	Fishing or fishpond culture			
			<b>G2.02/G2.03: Input into decision making</b> No input.....1 Input into very few decisions .....2 Input into some decisions.....3 Input into most decisions .....4 Input into all decisions .....5 No decision made .....6 Refused.....99	

## MODULE G3. ACCESS TO PRODUCTIVE CAPITAL

Productive Capital		Does anyone in your household currently have any [ITEM]? Yes .....1 No.....2 >> next item Refused.....99	How many of [ITEM] does your household currently have?	Who would you say owns most of the [ITEM]?	Who would you say can decide whether to sell [ITEM] most of the time?	Who would you say can decide whether to give away [ITEM] most of the time?	Who would you say can decide to mortgage or rent out [ITEM] most of the time?	Who contributes most to decisions regarding a new purchase of [ITEM]?
Productive Capital		G3.01a	G3.01b	G3.02	G3.03	G3.04	G3.05	G3.06
<b>A</b>	Agricultural land (pieces/plots)							
<b>B</b>	Large livestock (oxen, cattle)							
<b>C</b>	Small livestock (goats, pigs, sheep)							
<b>D</b>	Chickens, Ducks, Turkeys, Pigeons							
<b>E</b>	Fish pond or fishing equipment							
<b>F</b>	Farm equipment (non-mechanized)							
<b>G</b>	Farm equipment (mechanized)							
<b>H</b>	Nonfarm business equipment (blacksmith, cobbler, tailor, auto repair shop)							
<b>I</b>	House (and other structures)							
<b>J</b>	Large consumer durables (fridge, TV, sofa)							
<b>K</b>	Small consumer durables (radio, cookware)							
<b>L</b>	Cell phone							

MODULE G3. ACCESS TO PRODUCTIVE CAPITAL (CONTINUED)

M	Other land not used for agricultural purposes (pieces, residential or commercial land)							
N	Means of transportation (bicycle, motorcycle, car)							
				G3.02-G3.06: Decision-making and control over productive capital				
				Self.....1	Self and other household member(s)..... 5	Self and other outside people..... 8		
				Partner/Spouse .....2	Partner/Spouse and other household member(s)..... 6	Partner/Spouse and other outside people ..... 9		
				Self and partner/spouse jointly.....3	Someone (or group of people) outside the household ..... 7	Self, partner/spouse and other outside people ..... 10		
				Other household member.....4		Refused ..... 99		

## MODULE G3. ACCESS TO CREDIT

Lending sources		Has anyone in your household taken any loans or borrowed cash/in-kind from [SOURCE] in the past 12 months?	Who made the decision to borrow from [SOURCE]?	Who makes the decision about what to do with the money/ item borrow from [SOURCE]?
Lending source names		<b>G3.07</b>	<b>G3.08</b>	<b>G3.09</b>
<b>A</b>	Non-governmental organization (NGO)			
<b>B</b>	Informal lender			
<b>C</b>	Formal lender (bank/financial institution)			
<b>D</b>	Friends or relatives			
<b>E</b>	Group based micro-finance or lending including VSLAs / SACCOs/ merry-go-rounds			
		<b>G3.07 Taken loans</b> Yes, cash..... 1 Yes, in-kind..... 2 Yes, cash and in-kind..... 3 No ..... 4 >> G4.01 Don't know ..... 5 >> G4.01 Refused..... 99	<b>G3.08/G3.09: Decision-making and control over credit</b> Self..... 1 Partner/Spouse..... 2 Self and partner/spouse jointly ..... 3 Other household member ..... 4 Self and other household member(s) ..... 5 Partner/Spouse and other household member(s) ..... 6 Someone (or group of people) outside the household ..... 7 Self and other outside people ..... 8 Partner/Spouse and other outside people..... 9 Self, partner/spouse and other outside people ..... 10 Refused..... 99	



## MODULE G4. INDIVIDUAL LEADERSHIP AND INFLUENCE IN THE COMMUNITY

QNo.	Question	Response	Response codes
G4.01	Do you feel comfortable speaking up in public to help decide on infrastructure (like small wells, roads, water supplies) to be built in your community?		No, not at all comfortable .....1 Yes, but with a great deal of difficulty .....2
G4.02	Do you feel comfortable speaking up in public to ensure proper payment of wages for public works or other similar programs?		Yes, but with a little difficulty .....3 Yes, fairly comfortable .....4
G4.03	Do you feel comfortable speaking up in public to protest the misbehavior of authorities or elected officials?		Yes, very comfortable .....5 Refused .....99

## MODULE G4. GROUP MEMBERSHIP AND INFLUENCE IN THE GROUP

Group membership		Is there a [GROUP] in your community?	Are you an active member of this [GROUP]?
		Yes .....1 No .....2 >> next group Don't know.....9 Refused.....99	Yes.....1 No .....2 Don't know.....9 Refused.....99
	Group Categories	<b>G4.04</b>	<b>G4.05</b>
<b>A</b>	Agricultural / livestock / fisheries producer's group (including marketing groups)		
<b>B</b>	Water users' group		
<b>C</b>	Forest users' group		
<b>D</b>	Credit or microfinance group (including SACCOs/merry-go-rounds/ VSLAs)		
<b>E</b>	Mutual help or insurance group (including burial societies)		
<b>F</b>	Trade and business association		
<b>G</b>	Civic groups (improving community) or charity group (helping others)		
<b>H</b>	Local government		
<b>I</b>	Religious group		
<b>J</b>	Other women's group (only if it does not fit into one of the other categories)		
<b>K</b>	Other (specify)		

## MODULE G5. DECISION MAKING

<p>ENUMERATOR: Ask G5.01 for all categories of activities before asking G5.02. Do <u>not</u> ask G5.02 if G5.01 response is 1 and respondent is male OR G5.01 response is 2 and respondent is female.</p> <p>If household does not engage in that particular activity, enter 98 and proceed to next activity.</p>		When decisions are made regarding the following aspects of household life, who is it that normally takes the decision?	<p>To what extent do you feel you can make your own personal decisions regarding these aspects of household life if you want(ed) to?</p> <p>Ask only if G5.01 is 1 and respondent is female, G5.01 is 2 and respondent is male, or G5.01 is 3-7.</p>
		<b>G5.01</b>	<b>G5.02</b>
A	Getting inputs for agricultural production		
B	The types of crops to grow for agricultural production		
C	Taking crops to the market (or not)		
D	Livestock raising		
E	Your own (singular) wage or salary employment		
F	Major household expenditures (such as a large appliance for the house like refrigerator)		
G	Minor household expenditures (such as food for daily consumption or other household needs)		
		<p><b>G5.01: Who makes decision</b></p> <p>Main male or husband ..... 1</p> <p>Main female or wife..... 2</p> <p>Husband and wife jointly..... 3</p> <p>Someone else in the household..... 4</p> <p>Jointly with someone else inside the household ..... 5</p> <p>Jointly with someone else outside the household..... 6</p> <p>Someone outside the household/other ..... 7</p> <p>Household does not engage in activity/Decision not made ..... 98</p> <p>Refused ..... 99</p>	<p><b>G5.02: Extent of participation in decision making</b></p> <p>Not at all..... 1</p> <p>Small extent..... 2</p> <p>Medium extent..... 3</p> <p>To a high extent..... 4</p> <p>Refused..... 99</p>

## MODULE G5. MOTIVATION FOR DECISION MAKING

<p><i>ENUMERATOR:</i> This set of questions is very important. I am going to give you some reasons why you act as you do in the aspects of household life I just mentioned. You might have several reasons for doing what you do and there is no right or wrong answer. Please tell me how true it would be to say:  <i>[If household does not engage in that particular activity, enter 98 and proceed to next activity.]</i></p>		<p>My actions in [ASPECT] are partly because I will get in trouble with someone if I act differently.</p> <p>[READ OPTIONS: <b>Always True, Somewhat True, Not Very True, or Never True</b>]</p>	<p>Regarding [ASPECT] I do what I do so others don't think poorly of me.</p> <p>[READ OPTIONS: <b>Always True, Somewhat True, Not Very True, or Never True</b>]</p>	<p>Regarding [ASPECT] I do what I do because I personally think it is the right thing to do.</p> <p>[READ OPTIONS: <b>Always True, Somewhat True, Not Very True, or Never True</b>]</p>
		<b>G5.03</b>	<b>G5.04</b>	<b>G5.05</b>
<b>A</b>	Getting inputs for agricultural production			
<b>B</b>	The types of crops to grow for agricultural production			
<b>C</b>	Taking crops to the market (or not)			
<b>D</b>	Livestock raising			
		<p><b>G5.03/G5.04/G5.05: Motivation for activity</b></p> <p>Never true.....1            Not very true.....2            Somewhat true .....3            Always true .....4            Household does not engage in activity/Decision not made.....98            Refused.....99</p>		

## MODULE G6. TIME ALLOCATION

**Enumerator: G6.01:** Please record a log of the activities for the individual in the last complete 24 hours (starting yesterday morning at 4 am, finishing 3:59 am of the current day). The time intervals are marked in 15 min intervals and one to two activities can be marked for each time period by drawing a line through that activity. If two activities are marked, they should be distinguished with a P for the primary activity and S for the secondary activity written next to the lines. Please administer using the protocol in the enumeration manual.

Activity	4	5	6	7	8	9	10	11	12	13	14	15
A Sleeping and resting(Primary)												
Sleeping and resting(Secondary)												
B Eating and drinking(Primary)												
Eating and drinking(Secondary)												
C Personal care(Primary)												
Personal care(Secondary)												
D School (also homework) (Primary)												
School (also homework) (Secondary)												
E Work as employed(Primary)												
Work as employed(Secondary)												
F Own business work(Primary)												
Own business work (Secondary)												
G Farming/livestock/fishing(Primary)												
Farming/livestock/fishing(Secondary)												
J Shopping/getting service(Primary)												
Shopping/getting service(Secondary)												
K Weaving, sewing, textile care(Primary)												
Weaving, sewing, textile care(Secondary)												
L Cooking(Primary)												
Cooking(Secondary)												
M Domestic work(Primary)												
Domestic work(Secondary)												
N Care for children/adults/elderly(Primary)												
Care for children/adults/elderly(Secondary)												
P Travelling and commuting(Primary)												
Travelling and commuting(Secondary)												
Watching TV/listening to radio/reading(Primary)												
Watching TV/listening to radio/reading(Secondary)												
T Exercising(Primary)												
Exercising(Secondary)												
U Social activities and hobbies(Primary)												
Social activities and hobbies(Secondary)												
W Religious activities(Primary)												
Religious activities(Secondary)												
X Other, specify (Primary)												
Other, specify (Secondary)												

## MODULE G6. TIME ALLOCATION (CONTINUED)

		Evening						Night																													
	Activity	16			17			18			19			20			21			22			23			24			1			2			3		
A	Sleeping and resting(Primary)																																				
	Sleeping and resting(Secondary)																																				
B	Eating and drinking(Primary)																																				
	Eating and drinking(Secondary)																																				
C	Personal care(Primary)																																				
	Personal care(Secondary)																																				
D	School (also homework) (Primary)																																				
	School (also homework) (Secondary)																																				
E	Work as employed(Primary)																																				
	Work as employed(Secondary)																																				
F	Own business work(Primary)																																				
	Own business work (Secondary)																																				
G	Farming/livestock/fishing(Primary)																																				
	Farming/livestock/fishing(Secondary)																																				
J	Shopping/getting service(Primary)																																				
	Shopping/getting service(Secondary)																																				
K	Weaving, sewing, textile care(Primary)																																				
	Weaving, sewing, textile care(Secondary)																																				
L	Cooking(Primary)																																				
	Cooking(Secondary)																																				
M	Domestic work(Primary)																																				
	Domestic work(Secondary)																																				
N	Care for children/adults/elderly(Primary)																																				
	Care for children/adults/elderly(Secondary)																																				
P	Travelling and commuting(Primary)																																				
	Travelling and commuting(Secondary)																																				
Q	Watching TV/listening to radio/reading(Primary)																																				
	Watching TV/listening to radio/reading(Secondary)																																				
T	Exercising(Primary)																																				
	Exercising(Secondary)																																				
U	Social activities and hobbies(Primary)																																				
	Social activities and hobbies(Secondary)																																				
W	Religious activities(Primary)																																				
	Religious activities(Secondary)																																				
X	Other, specify (Primary)																																				
	Other, specify (Secondary)																																				

## MODULE G6. SATISFACTION WITH TIME ALLOCATION

QNo.	Question	Response	Response options/Instructions
G6.02	How satisfied are you with your available time for leisure activities like visiting neighbors, watching TV, listening to the radio, seeing movies or doing sports?		<p>READ: Please give your opinion on a scale of 1 to 10. 1 means you are not satisfied and 10 means you are very satisfied. If you are neither satisfied or dissatisfied this would be in the middle or 5 on the scale.</p> <p>Refused.....99</p>

## MODULE H. WOMEN'S DIETARY DIVERSITY

Household identification (*in data file, each respondent must be matched with the HH ID*)

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*Enumerator Instructions: Ask these questions of each woman of reproductive age (15-49 years) in the household. Check to see if EACH women has given consent to be interviewed in Module B. If a woman has not yet given consent, return to Module B and gain her consent before proceeding. You should carry duplicate copies of this module in case there are more than 5 women of reproductive age in the household.*

No.	Question	Response codes	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5																																																												
H01	WOMAN'S ID CODE FROM THE HOUSEHOLD ROSTER		<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td><td></td></tr></table>			<table border="1"><tr><td></td><td></td></tr></table>																																																				
H02	In what month and year were you born?	IF MONTH IS NOT KNOWN, ENTER '98'  IF YEAR IS NOT KNOWN, ENTER '9998'	<table border="1"><tr><td></td><td></td></tr><tr><td colspan="2">Month</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td colspan="4">Year</td></tr></table>			Month						Year				<table border="1"><tr><td></td><td></td></tr><tr><td colspan="2">Month</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td colspan="4">Year</td></tr></table>			Month						Year				<table border="1"><tr><td></td><td></td></tr><tr><td colspan="2">Month</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td colspan="4">Year</td></tr></table>			Month						Year				<table border="1"><tr><td></td><td></td></tr><tr><td colspan="2">Month</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td colspan="4">Year</td></tr></table>			Month						Year				<table border="1"><tr><td></td><td></td></tr><tr><td colspan="2">Month</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td colspan="4">Year</td></tr></table>			Month						Year			
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H03	Please tell me how old you are. What was your age at your last birthday? RECORD AGE IN COMPLETED YEARS	IF RESPON-DENT CANNOT REMEMBER HOW OLD SHE IS, ENTER '98' AND ASK QUESTION H04.  IF RESPONDENT KNOWS HER AGE >> H05	<table border="1"><tr><td></td><td></td></tr><tr><td colspan="2">Years</td></tr></table>			Years		<table border="1"><tr><td></td><td></td></tr><tr><td colspan="2">Years</td></tr></table>			Years		<table border="1"><tr><td></td><td></td></tr><tr><td colspan="2">Years</td></tr></table>			Years		<table border="1"><tr><td></td><td></td></tr><tr><td colspan="2">Years</td></tr></table>			Years		<table border="1"><tr><td></td><td></td></tr><tr><td colspan="2">Years</td></tr></table>			Years																																									
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H04	Are you between the ages of 15 and 49 years old?	1 = Yes 2 = No >> end module 9 = Don't know >> end module 99 = Refused																																																																	



## MODULE H. WOMEN'S DIETARY DIVERSITY (CONTINUED)

H05	CHECK H02, H03 AND H04 (IF APPLICABLE): IS THE RESPONDENT BETWEEN THE AGES OF 15 AND 49 YEARS? IF THE INFORMATION IN H02, H03, AND H04 CONFLICTS, DETERMINE WHICH IS MOST ACCURATE.	1 = Yes 2 = No >> end module					
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WOMEN'S DIETARY DIVERSITY	
	<p>Please describe everything that you ate yesterday during the day or night, whether at home or outside the home.</p> <p><b>A)</b> Think about when you first woke up yesterday. Did you eat anything at that time?            IF YES: Please tell me everything you ate at that time. PROBE: Anything else? UNTIL RESPONDENT SAYS NOTHING ELSE, THEN CONTINUE TO PART B.            IF NO, CONTINUE TO PART B.</p> <p><b>B)</b> What did you do after that? Did you eat anything at that time?            IF YES: Please tell me everything you ate at that time. PROBE: Anything else? UNTIL RESPONDENT SAYS NOTHING ELSE.</p> <p>REPEAT QUESTION B ABOVE UNTIL RESPONDENT SAYS SHE WENT TO SLEEP UNTIL THE NEXT DAY.</p> <p>IF RESPONDENT MENTIONS MIXED DISHES LIKE A PORRIDGE, SAUCE, OR STEW, PROBE:  <b>C)</b> What ingredients were in that [mixed dish]? PROBE: Anything else? UNTIL RESPONDENT SAYS NOTHING ELSE.</p> <p>AS THE RESPONDENT RECALLS FOODS, UNDERLINE THE CORRESPONDING FOOD AND ENTER '1' IN THE COLUMN NEXT TO THE FOOD GROUP. IF THE FOOD IS NOT LISTED IN ANY OF THE FOOD GROUPS BELOW, WRITE THE FOOD IN THE BOX LABELED 'OTHER FOODS.' IF FOODS ARE USED IN SMALL AMOUNTS FOR SEASONING OR AS A CONDIMENT, INCLUDE THEM UNDER THE CONDIMENTS FOOD GROUP.</p> <p>ONCE THE RESPONDENT FINISHES RECALLING FOODS EATEN, READ EACH FOOD GROUP WHERE '1' WAS NOT ENTERED, ASK THE FOLLOWING QUESTION AND ENTER '1' IF RESPONDENT SAYS YES, '0' IF NO, AND '9' IF DON'T KNOW.</p> <p>Yesterday during the day or night, did you drink/eat any [food group items]?</p>

## MODULE H. WOMEN'S DIETARY DIVERSITY (CONTINUED)

No.	Question	Response codes	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5
	OTHER FOODS: PLEASE WRITE DOWN OTHER FOODS TO THE RIGHT OF THIS BOX THAT RESPONDENT MENTIONED BUT ARE NOT IN THE LIST BELOW. THIS WILL ALLOW THE SURVEY SUPERVISOR OR OTHER KNOWLEDGEABLE INDIVIDUAL TO CLASSIFY THE FOOD LATER.		WRITE FOODS EATEN HERE:	WRITE FOODS EATEN HERE:	WRITE FOODS EATEN HERE:	WRITE FOODS EATEN HERE:	WRITE FOODS EATEN HERE:
H14	CEREALS: Food made from grains, (e.g., Rice, roti, bread, puffed rice, pressed rice, noodles, or any other foods rice, wheat, maize/corn, or other locally available grains)	1 = Yes 2 = No 9 = Don't Know 99= Refused					
H15	VITAMIN A RICH VEGETABLES AND TUBERS: Pumpkin, carrots, squash, or sweet potatoes that are yellow or orange inside or [other local yellow/orange foods]	1 = Yes 2 = No 9 = Don't Know 99= Refused					
H16	WHITE TUBERS AND ROOTS OR OTHER STARCHY FOODS: White potatoes, white yams, manioc, cassava, [other local root crops] or any other foods (not orange inside) made from roots	1 = Yes 2 = No 9 = Don't Know 99= Refused					
H17	ANY DARK GREEN LEAFY VEGETABLES: (e.g., Spinach, amaranth leaves, mustard leaves, pumpkin leaves, yam leaves)	1 = Yes 2 = No 9 = Don't Know 99= Refused					

## MODULE H. WOMEN'S DIETARY DIVERSITY (CONTINUED)

No.	Question	Response codes	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5
H18	VITAMIN A RICH FRUITS: Ripe mangoes, ripe papayas, apricot, jack fruit or [other local vitamin A-rich fruits]	1 = Yes 2 = No 9 = Don't Know 99= Refused					
H19	ANY OTHER FRUITS (e.g., Tomatoes, Bananas, apples, guavas, oranges, other citrus fruits, pineapple, watermelon, grapes, strawberries, plum, peaches) OR VEGETABLES (e.g., Cauliflower, cabbage, eggplant, green papaya, radish, onion)	1 = Yes 2 = No 9 = Don't Know 99= Refused					
H20	ORGAN MEATS: Liver, kidney, heart, or other organ meats	1 = Yes 2 = No 9 = Don't Know 99= Refused					
H21	MEAT: Any meat, such as beef, pork, lamb, goat, chicken, or duck	1 = Yes 2 = No 9 = Don't Know 99= Refused					
H22	EGGS: (e.g., Eggs of different birds – chicken, duck)	1 = Yes 2 = No 9 = Don't Know 99= Refused					
H23	Big/small FRESH OR DRIED FISH, SHELLFISH (e.g., prawn, crab), OR SEAFOOD:	1 = Yes 2 = No 9 = Don't Know 99= Refused					
H24	ANY FOODS MADE FROM BEANS, PEAS, LENTILS, NUTS, OR SEEDS (e.g., Soybeans, beans, peas, lentils, other pulses)	1 = Yes 2 = No 9 = Don't Know 99= Refused					

## MODULE H. WOMEN'S DIETARY DIVERSITY (CONTINUED)

No.	Question	Response codes	Woman 1	Woman 2	Woman 3	Woman 4	Woman 5
H25	MILK AND MILK PRODUCTS: Cheese, yogurt, or other milk products	1 = Yes 2 = No 9 = Don't Know 99= Refused					
H26	OILS AND FATS: Any oil, fats, or butter, or foods made with any of these (e.g., Oil, fats, or butter added to food or used for cooking including ghee)	1 = Yes 2 = No 9 = Don't Know 99= Refused					
H27	SWEETS/SNACK FOODS: Any sugary foods such as chocolates, sweets, candies, pastries, cakes, or biscuits (e.g., Sugar, honey, rock candy, cold drinks, chips, Tea and coffee)	1 = Yes 2 = No 9 = Don't Know 99= Refused					
H28	Condiments for flavor, such as chilies, spices, herbs, or fish powder	1 = Yes 2 = No 9 = Don't Know 99= Refused					
H29	Grubs, snails, or insects	1 = Yes 2 = No 9 = Don't Know 99= Refused					
H30	Foods made with red palm oil, red palm nut, or red palm nut pulp sauce	1 = Yes 2 = No 9 = Don't Know 99= Refused					
H31	Was yesterday a special day, like a celebration, feast day, fast day, sickness, etc. where you ate special foods or more or less than usual or did not eat because of fasting?	1 = Yes 2 = No 9 = Don't Know 99= Refused					

## List of Recent Surveys Conducted in Feed The Future Countries That Can Be Used as a Basis to Locally Adapt These Modules (LSMS, Agriculture LSMS, DHS)

Feed the Future Countries	LSMS	New Integrated Agriculture LSMS	DHS
<b><u>East Africa</u></b>			
DRC			Done 2007
East Africa Regional	n/a	n/a	n/a
Ethiopia	Done 2000, 2004 (HICES)	Part 1 will be done in September 2011 (ERSS)	Done 2000, 2005 Ongoing 2011
Kenya			Done 2003, 2008
Rwanda			Done 2000, 2005, 2007, 2010
Southern Sudan			
Tanzania	Done 1991, 1992, 1993, 1994, 2004	Part 1 was done in 2008-9 (TZNPS) Part 2 will be done 2011	Done 2003, 2004-5, 2010
Uganda		Done in 2009-10. Expected to be done annually for next 5 years (UNPS)	Done 2000, 2006, Ongoing 2011
<b><u>West Africa</u></b>			
Ghana	Done 1991, 1998		Done 2003, 2008
Liberia			Done 2007
Mali		In planning stage – expected 2011	Done 2001
Senegal			Done 2005, 2010
West Africa Regional	n/a	n/a	n/a
<b><u>South Africa</u></b>			
Malawi	Done 2004	Part 1 was done March 2011 (IHS3) Part 2 will be done 2013 and every 5 years from 2011.	Done 2000, 2004, 2010
Mozambique			Done 2003, Ongoing 2011
South Africa Regional	n/a	n/a	n/a
Zambia			Done 2001, 2007
Zimbabwe			Done 2005-6, Ongoing 2011
<b><u>Asia</u></b>			
Bangladesh	Done 2000, 2005 (HIES)		Done 2000, 2004, 2007, Ongoing 2011
Cambodia			Done 2000, 2005, 2010
Nepal	Done 1996, 2003		Done 2001, 2006, 2011
RDMA	n/a	n/a	n/a
Tajikistan	Done 1993, 2003, 2009		Planned 2012

Feed the Future Countries	LSMS	New Integrated Agriculture LSMS	DHS
<b><u>LAC</u></b>			
Haiti			Done 2000, 2005-6, Ongoing 2011
Guatemala	Done 2000		
Honduras			Done 2005-6, Ongoing 2011

## Annex B. National Living Standards Survey (NLSS) III Study Design

The original objective of the design of the NLSS III was to be able to produce reliable indicator estimates for all 14 strata. It was found that the samples in the hills and Terai for the mid- and far-western regions were too small to provide reliable estimates. As a result, the mid- and far-western region strata for hills were combined, as were the mid- and far-western region strata for the Terai. Combining these strata reduced the number of “analytic domains” for which indicators could be reliably estimated to 12. Among these 12, six are in the ZOI (urban hills, urban Terai, western hills, western Terai, mid-western and far-western rural hills, and mid-western and far-western rural Terai).

The NLSS III sample was designed to be representative at the national and strata levels. The sample was selected in two stages. Within each stratum, clusters were selected proportional to size and, within each cluster, households were sampled randomly. The characteristics of this design translate to sub-areas such as the ZOI, which covers 20 of 75 districts in Nepal. The sample in the ZOI is therefore representative.

Indicators can be estimated from the NLSS III for the ZOI because the sample is representative and because there is sufficient sample in the ZOI (1,404 households) to measure change in the indicator over time. It is unlikely that the FTF FEEDBACK team will be able to estimate indicators in the three development regions within the ZOI because of the small sample sizes. Of the 1,404 households in the ZOI, 264 are in the western region, 696 households are in the mid-western region and 444 households are in the far-western region. It will not be possible to provide estimates at the district level, due to the small sample sizes in the districts.

## Annex C. Nepal PBS 2013 – Survey Administration

FTF FEEDBACK contracted New ERA to carry out the field work. Prior to implementation of the survey, staff from Westat (prime contractor for FTF FEEDBACK) conducted a training of trainers session in English with 12 New ERA staff from March 17 until March 26, 2013. After the training of trainers session was completed, the New ERA staff, with the support of FTF FEEDBACK staff, conducted the training of enumerators and field supervisors in Nepalese. The training, conducted between March 27 and April 11, 2013, included 45 enumerators and 22 field supervisors. Both training sessions included instruction on the use of the Android Nexus 7 tablets and data collection for all questionnaire modules. More specifically, trainees were introduced to the tablet, including the process of collecting and processing the data using the tablet, data backup, data review, and data transfer. An important component of the training was on human subjects protection, including topics on survey ethics, privacy, and confidentiality. During the training, each trainee signed a confidentiality statement. A copy of the interviewer training manual can be obtained from the Development Experience Clearinghouse or by contacting the FTF FEEDBACK project.

The data collection portion of the training included instructions on how to initiate contact with a household, obtain the necessary informed consent, conduct the interview, and return to households that would require followup. Instructions were given on the content of the questionnaire, including a review of each question in each module and the response categories. Field supervisors were given additional training on how to: supervise the interviewer teams; conduct the household listing; select households from the listed ones; make and track interview assignments; check the quality of the interview process; and check the quality of the data entered for each interview. Both trainings were followed by pilot tests that were conducted in the field using the Nepalese version of the survey questionnaire uploaded into the tablets. This allowed the trainers and the enumerators to practice in the field the entire process of data collection and transmission using the tablets. The first field test was conducted by the FTF FEEDBACK trainers and 12 New ERA staff and the second by FTF FEEDBACK staff, New ERA staff, and all enumerators and field supervisors. These field tests allowed for discussion of outstanding issues to further improve the data collection processes, including refinement of translations, prior to the start of the data collection.

The data collection staff was organized into 20 field teams; each team consisted of one field supervisor, two surveyors and one porter. Four additional enumerators remained as back-up staff. Field supervisors visited field teams on an ongoing basis, as pre-scheduled, to ensure the quality of interviews and the completeness of responses on questionnaires, and to troubleshoot any problems encountered during the fieldwork. These field supervisors reported to the survey coordinator, who managed the overall survey process. During the fieldwork, the field supervisors handled the day-to-day management of the field teams and oversaw the fieldwork in different districts.

The WEAI requires interviews of both the primary male and female members of the household. Thus a team of enumerators consisted of one male and one female member to accommodate



gender-sensitive cultural expectations. The female enumerator interviewed the primary female member of the household while the male interviewer interviewed the primary male member of the household.

During the fieldwork, numerous measures were taken to ensure data quality. In the field, the field supervisor manually checked each questionnaire closely for completeness, consistency, range checks and skip patterns. If there were errors or omissions that could be corrected in the field, the enumerators returned to the household to complete the missing information or to correct potentially erroneous data. The field supervisor also checked a subset of questionnaires in the same manner. When the corrections were completed, the field supervisor uploaded the data to the Westat servers. Uploaded data were de-identified to assure confidentiality of the respondents. Once data was uploaded to the Westat servers from the field, FTF FEEDBACK staff performed additional reviews of data quality, both manually and with computer programs, and provided instant feedback to the survey coordinator at New ERA. Field teams were then notified of any problems found during the FTF FEEDBACK review. New ERA was required to respond in writing to the list of queries sent by the FTF FEEDBACK staff on a weekly basis throughout the data collection period. The New ERA team also deployed a team of eight quality control (QC) staff who visited the districts on a pre-determined schedule to allow for quick communication and direct contact with the field teams. These QC staff would check survey procedures, observe interviews, review completed questionnaires, troubleshoot logistical and technical problems, and provide guidance about issues found during the review of data received from Nepal. FTF FEEDBACK staff guided development and performed oversight of the implementation of the operations, data quality, and data transmission plans.

## Annex D. Nepal PBS 2013 – Sample Size Design

The sample size of households for the baseline survey followed a two-stage cluster sampling design. In this design, clusters were selected by probability proportional to size (PPS) sampling within each stratum (region-rural, region-urban) in the first stage. In the second stage, households were randomly selected within each cluster using a household listing. The Central Bureau of Statistics provided the cluster lists on the Feed the Future ZOI of 20 western districts based on the Nepal 2011 Census and New Era developed the household listings of clusters. There were 100 clusters selected based on the PPS sampling in 20 districts. Twenty randomly selected households were interviewed per cluster, with the final sample size of 2000.

### D.1 First Stage Selection of Clusters

At the first sampling stage, the sample clusters were selected within each stratum (region-rural, region-urban) systematically with PPS sampling from the ordered list of clusters in the sampling frame. The following procedures were used:<sup>71</sup>

1. Within each region, the clusters were sorted by the following codes: rural/urban, district, VCD/municipality, ward.
2. The number of households was cumulated following the ordered list of clusters within region and by rural/urban. The final cumulated measure of size was taken as the total number of households in the frame ( $M_b$ ).
3. The sampling interval was obtained by dividing the total number of households ( $M_b$ ) by the number of clusters to be selected in each stratum ( $n_b$ ).  $I_h = M_h / n_h$ .
4. A random number ( $R_b$ ) between 0 and  $I_b$  was selected. The sample clusters in stratum  $b$  were identified by the following selection numbers:  
 $S_{hi} = R_h + [I_h \times (i - 1)]$ , where  $i=1, 2, \dots, n_b$ .
5. The  $i$ -th selected cluster is the one with a cumulated number of households closet to  $S_{hi}$  but not less than  $S_{hi}$ .

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<sup>71</sup> Demographic and Health Survey Sampling and Household Listing Manual. ICF International. Calverton MD. September 2012.

## D.2 Household Listing

After the clusters were selected for the survey, a complete listing of households in the selected clusters was conducted prior to the selection of households. The listing included information that is helpful in locating the household: geographic information to identify the clusters, the village within the cluster, and the name of the household head. The total number of households from the listing was important for the selection of households and survey weights.

Some of the selected clusters in the survey have a very large number of households. Clusters with more than 300 households in the sampling frame were subdivided into several smaller segments, each with 200-300 households. Only one of the segments was included in the survey and listed. The segmentation was carried out based on different landmarks such as lanes, roads, canals, river/streams, hills, gullies, farm terraces, temples, ponds, etc. If there were more than 10 segments in a cluster, the random number was used to select one segment as a cluster for the household listing. If there were less than 10 segments in any ward, the hat method was used to select one segment as a cluster for the household listing.

## D.3 Selection of Households Within Clusters

Within each cluster, households were selected randomly. Twenty households were selected per enumeration area. The selection process was systematic. First, the sampling interval was calculated by dividing the number of households by 20. Then a random number from one to the sampling interval was selected to determine the first household. After that, households were selected by adding the sampling interval to determine the number of the next household in the list to be included in the sample.

## D.4 Sampling Weights

The sampling weight was calculated with the design weight corrected for non-response for each of the selected clusters. Response rates were calculated at the cluster level as ratios of the number of interviewed units divided by the number of eligible units, where units could be household or individual (woman or child).

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.

## D.5 Design Weights

The Nepal survey sample was drawn with two-stage, stratified cluster sampling, following the NDHS sample design.<sup>72</sup> 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 stratum  $h$  (by region and urban/rural).

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

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

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

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 stratum  $h$ .

$N_{hi}$  = total population in the frame for the  $i$ -th sample cluster in stratum  $h$ .

$N_h$  = total population in the frame in stratum  $h$ .

$b_{hi}$  = the proportion of households in the selected cluster compared to the total number of households in the  $i$ -th sample cluster in stratum  $h$  if the cluster is segmented; otherwise  $b_{hi} = 1$ .

$n_{hi}$  = number of sample households selected for the  $i$ -th sample cluster in stratum  $h$ .

$L_{hi}$  = number of households listed in the household listing for the  $i$ -th sample cluster in stratum  $h$ .

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<sup>72</sup> Demographic and Health Survey Sampling and Household Listing Manual. ICF International. Calverton MD. September 2012.

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

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

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

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

## Annex E. NLSS III and NDHS Data References

### Household Demographic Characteristics

**Table E-1. NLSS III (2010-2011): Household members**

	Household type				
	Overall	Rural	Urban	Western	Mid-Western
Number of household members	4.9	5.0	4.4	4.6	5.2

Source: NLSS III (2010-2011).

**Table E-2. NLSS III (2010-2011): Literacy rate**

	Overall	Female	Male
Literate (%)	56.5	44.4	71.6

Source: NLSS III (2010-2011).

**Table E-3. NDHS (2011): No education**

	Female overall	Male overall	Rural female	Rural male	Urban female	Urban male	Central female	Central male	Western female	Western male
No education (%)	41.4	19.6	43.7	21.2	26.5	10.1	46.3	22.8	37.9	17.1

Source: NDHS (2011).

**Table E-4. NDHS (2011): More than secondary schooling**

	Female overall	Male overall	Rural female	Rural male	Urban female	Urban male	Central female	Central male
More than secondary (%)	4.7	8.6	3.3	6.6	13.9	20.5	6.6	11.2

Source: NDHS (2011).

### Dwelling, Water, and Sanitation Characteristics

**Table E-5. NHDS (2011): Electricity**

	Household type		
	Overall	Rural	Urban
Electricity (%)	76.3	72.9	97

Source: NDHS (2011).

**Table E-6. NHDS (2011): Improved drinking water source**

	Household type		
	Overall	Rural	Urban
Improved Drinking Source (%)	89	88	93

Source: NDHS (2011).

**Table E-7. NHDS (2011): Improved sanitation**

	Household type		
	Overall	Rural	Urban
Improved Sanitation (%)	39.5	36.7	58.1

Source: NDHS (2010-2011).

### *Household Construction Materials*

**Table E-8. NLSS (2010- 2011): Household walls**

	Household Type	
	Rural	Urban
Cement-bonded bricks/stones (%)	17	61

Source: NLSS III (2010- 2011).

**Table E-9. NDHS (2011): Household floors**

	Household Type		
	Overall	Rural	Urban
Earth/sand (%)	65.7	73.3	20

Source: NDHS (2011).

### *Child Nutrition: Anthropometry*

**Table E-10. NDHS (2011): Child stunting**

	Household type			
	Overall	Rural	Urban	Mid-Western
Child Stunting (%)	40.5	41.8	26.7	50.3

Source: NDHS (2011).

**Table E-11. NDHS (2011): Child wasting**

	Household type			
	Overall	Rural	Urban	Mid-Western
Child Wasting (%)	10.9	11.2	8.2	11.3

Source: NDHS (2011).

**Table E-12. NDHS (2011): Child underweight**

	Household type			
	Overall	Rural	Urban	Mid-Western
Child Stunting (%)	28.8	30	16.5	36.9

Source: NDHS (2011).

## Exclusive Breastfeeding

**Table E-13. NDHS (2011): Exclusive breastfeeding**

Infants 0-5 months	
Exclusively Breastfed (%)	69.6

Source: NDHS (2011).

## Women's Nutrition

**Table E-14. NDHS (2011): Women's nutrition: Underweight**

	Household type					
	Female overall	Rural female	Urban female	Western female	Mid-Western female	Far-Western female
Underweight, BMI < 18.5 (%)	18.2	18.8	14.1	14.0	19.3	23.9

Source: NDHS (2011).

**Table E-15. NDHS (2011): Women's Nutrition: Mean BMI**

	Household type				
	Female overall	Rural female	Urban female	Mid-Western female	Far-Western female
Mean BMI	21.4	21.2	22.7	20.8	20.3

Source: NDHS (2011).

**Table E-16. NDHS (2011): Women's nutrition: Overweight and obese**

	Household type	
	Rural	
Overweight, BMI 25.0 – 29.9 (%)	9.6	
Obese, BMI ≥ 30 (%)	1.8	

Source: NLSS III (2010- 2011).



## **Annex F. Nepal PBS 2013 Feed the Future Indicator Descriptions and Calculations**

The source for the indicator information listed in this appendix comes from the online version of The Feed the Future FY 2011 Indicator Handbook – Updated April 4, 2012.

Accessed on August 15, 2013 at the following website:

[https://www.ftfms.net/de//DE\\_Documents/UsersGuide/indicators.html#203](https://www.ftfms.net/de//DE_Documents/UsersGuide/indicators.html#203)

**INDICATOR TITLE: 3.1.9-11 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 percent 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), this 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 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 improved agricultural productivity.

**UNIT:****DISAGGREGATE BY:**

Please enter these two data points:

Sex: Male, Female

1. Percent of children 0-59 month of age in the sample that is stunted

2. Total population of children 0-59 month of age in zone of influence

**TYPE:****DIRECTION OF CHANGE:**

Impact

Lower is better

**DATA SOURCE:**

population-based survey and official DHS data (see notes below)

**MEASUREMENT NOTES:**

- **LEVEL of COLLECTION:** *For FTF:* We will monitor this indicator in our targeted sub-national regions/districts (i.e., “zones of influence,” or the geographic region(s)/districts targeted by the USG intervention) to measure results attributable to USG assistance. Where possible, we will also monitor this indicator at the national level to keep a contextual “pulse” on the country situation. National level data should be obtained from the DHS, usually conducted every 5 years.
- **WHO COLLECTS DATA FOR THIS INDICATOR:** An M&E contractor will collect this data in FTF Zone of Influence and will also enter country-level DHS data into the FTF Monitoring System, when available.
- **HOW SHOULD IT BE COLLECTED:** The M&E contractor will conduct population-based surveys in the targeted Zone of Influence to collect this data, using the official DHS method of collection and the FTF M&E Guidance Series Volume 8: Population-Based Survey Instrument for Feed the Future Zone of Influence Indicators. This contractor will use DHS data, collected every 5 years, to look at national-level data. Information on the frequency of DHS by country can be obtained at: [http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv\\_id=228&ctry\\_id=33&SrvyTp=country](http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv_id=228&ctry_id=33&SrvyTp=country)
- **FREQUENCY OF COLLECTION:** Data should be collected in the Zone of Influence for baseline, mid-term (ideally), and final reporting.

**INDICATOR TITLE: 3.1.9-12 Prevalence of wasted children under 5 years of age(R)****DEFINITION:**

This indicator measures the percent 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:**

Please enter these two data points:

**DISAGGREGATE BY:**

Sex: Male, Female

1. Percent of children 0-59 months of age in the sample that is wasted
2. Total population of children 0-59 months of age in zone of influence

**TYPE:**

Impact

**DIRECTION OF CHANGE:**

Lower is better

**DATA SOURCE:**

Population-based survey and official DHS data (see notes below).

**MEASUREMENT NOTES:**

- **LEVEL of COLLECTION:** For FTF: We will monitor this indicator in our targeted sub-national regions/districts (i.e., “zones of influence,” or the geographic region(s)/districts targeted by the USG intervention) to measure results attributable to USG assistance. Where possible, we will also monitor this indicator at the national level to keep a contextual “pulse” on the country situation. National level data should be obtained from the DHS, usually conducted every 5 years.
- **WHO COLLECTS DATA FOR THIS INDICATOR:** An M&E contractor will collect this data in FTF Zone of Influence and will also enter country-level DHS data into the FTF Monitoring System, when available.
- **HOW SHOULD IT BE COLLECTED:** The M&E contractor will conduct population-based surveys in the targeted Zone of Influence to collect this data, using the official DHS method of collection and the FTF M&E Guidance Series Volume 8: Population-Based Survey Instrument for Feed the Future Zone of Influence Indicators. This contractor will use DHS data, collected every 5 years, to look at national-level data. Information on the frequency of DHS by country can be obtained at: [http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv\\_id=228&ctry\\_id=33&SrvyTp=country](http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv_id=228&ctry_id=33&SrvyTp=country)
- **FREQUENCY OF COLLECTION?:** Data should be collected in the Zone of Influence for baseline, mid-term (ideally), and final reporting.

**INDICATOR TITLE: 3.1.9-13 Prevalence of underweight women(R)****DEFINITION:**

This indicator measures the percent of non-pregnant 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:  $BMI = \text{weight (in kg)} \div \text{height (in meters)}^2$ .

The numerator for this indicator is the number of non pregnant women 15-49 years with a BMI < 18.5. The denominator for this indicator is the number of non pregnant 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, 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 FTF

**UNIT:****DISAGGREGATE BY:**

Please enter these two data points:

None

1. Percent of women of reproductive age in the sample that is underweight

2. Total population of women of reproductive age in zone of influence

**TYPE:****DIRECTION OF CHANGE:**

Impact

Lower is better

**DATA SOURCE:**

Population-based survey and official DHS data (see notes below).

**MEASUREMENT NOTES:**

- **LEVEL of COLLECTION:** For FTF: We will monitor this indicator in our targeted sub-national regions/districts (i.e., "zones of influence," or the geographic region(s)/districts targeted by the USG intervention) to measure results attributable to USG assistance. Where possible, we will also monitor this indicator at the national level to keep a contextual "pulse" on the country situation. National level data should be obtained from the DHS, usually conducted every 5 years.
- **WHO COLLECTS DATA FOR THIS INDICATOR:** An M&E contractor will collect this data in FTF Zone of Influence and will also enter country-level DHS data into the FTF Monitoring System, when available.
- **HOW SHOULD IT BE COLLECTED:** The M&E contractor will conduct population-based surveys in the targeted Zone of Influence to collect this data, using the official DHS method of collection and the FTF M&E Guidance Series Volume 8: Population-Based Survey Instrument for Feed the Future Zone of Influence Indicators. This contractor will use DHS data, collected every 5 years, to look at national-level data. Information on the frequency of DHS by country can be obtained at: [http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv\\_id=228&ctry\\_id=33&SrvyTp=country](http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv_id=228&ctry_id=33&SrvyTp=country)
- **FREQUENCY OF COLLECTION:** Data should be collected in the Zone of Influence for baseline, mid-term (ideally), and final reporting.

**INDICATOR TITLE: 3.1.9-16 Prevalence of underweight children under 5 years of age (R)****DEFINITION:**

Underweight children is a weight-for-age measurement. Underweight is a reflection of acute and/or chronic undernutrition. This indicator measures the percent 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 the goal of the Feed the Future Initiative. The prevalence of underweight children is also an indicator to monitor the Millennium Development Goal 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 FTF programs to the Millennium Development Goal.

**UNIT:**

Please enter these two data points:

**DISAGGREGATE BY:**

Sex: Male, Female

1. Percent of children 0-59 months of age in the sample that is underweight

2. Total population of children 0-59 months of age in zone of influence

**TYPE:**

Impact

**DIRECTION OF CHANGE:**

Lower is better

**DATA SOURCE:**

population-based survey and official DHS data (see notes below)

**MEASUREMENT NOTES:**

- **LEVEL of COLLECTION?:** For FTF: We will monitor this indicator in our targeted sub-national regions/districts (i.e., “zones of influence,” or the geographic region(s)/districts targeted by the USG intervention) to measure results attributable to USG assistance. Where possible, we will also monitor this indicator at the national level to keep a contextual “pulse” on the country situation. National level data should be obtained from the DHS, usually conducted every 5 years.
- **WHO COLLECTS DATA FOR THIS INDICATOR?:** An M&E contractor will collect this data in FTF Zone of Influence and will also enter country-level DHS data into the FTF Monitoring System, when available.
- **HOW SHOULD IT BE COLLECTED?:** The M&E contractor will conduct population-based surveys in the targeted Zone of Influence to collect this data, using the official DHS method of collection and the FTF M&E Guidance Series Volume 8: Population-Based Survey Instrument for Feed the Future Zone of Influence Indicators. This contractor will use DHS data, collected every 5 years, to look at national-level data. Information on the frequency of DHS by country can be obtained at: [http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv\\_id=228&ctry\\_id=33&SrvyTp=country](http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv_id=228&ctry_id=33&SrvyTp=country)
- **FREQUENCY OF COLLECTION?:** Data should be collected in the Zone of Influence for baseline, mid-term (ideally), and final reporting.

**INDICATOR TITLE: 3.1.9.1-1 Prevalence of children 6-23 months receiving a minimum acceptable diet(RiA)**

*RATIONALE:* Appropriate feeding of children 6-23 months is multidimensional. The minimum acceptable diet 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:*

Please enter these two data points:

Sex: Male, Female

1. Percent of children 6-23 months in sample receiving a minimum acceptable diet

2. Total population of children 6-23 months in zone of influence

*TYPE:*

*DIRECTION OF CHANGE:*

Outcome

Higher is better

*DATA SOURCE:*

Population-based survey and official DHS data (see notes below)

*MEASUREMENT NOTES:*

- **LEVEL of COLLECTION:** For FTF: We will monitor this indicator in our targeted sub-national regions/districts (i.e., "zones of influence," or the geographic region(s)/districts targeted by the USG intervention) to measure results attributable to USG assistance. Where possible, we will also monitor this indicator at the national level to keep a contextual "pulse" on the country situation. National level data should be obtained from the DHS, usually conducted every 5 years.
- **WHO COLLECTS DATA FOR THIS INDICATOR?:** An M&E contractor will collect this data in FTF Zone of Influence and will also enter country-level DHS data into the FTF Monitoring System, when available.
- **HOW SHOULD IT BE COLLECTED?:** The M&E contractor will conduct population-based surveys in the targeted Zone of Influence to collect this data, using the official DHS method of collection and the FTF M&E Guidance Series Volume 8: Population-Based Survey Instrument for Feed the Future Zone of Influence Indicators. This contractor will use DHS data, collected every 5 years, to look at national-level data. Information on the frequency of DHS by country can be obtained at:  
[http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv\\_id=228&ctry\\_id=33&SrvyTp=country](http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv_id=228&ctry_id=33&SrvyTp=country)
- **FREQUENCY OF COLLECTION?:** Data should be collected in the Zone of Influence for baseline, mid-term (ideally), and final reporting.
- For detailed guidance on how to collect and tabulate this indicator, refer to the WHO document: Indicators for assessing infant and young child feeding practices, Part 2, Measurement, available at  
[http://whqlibdoc.who.int/publications/2010/9789241599290\\_eng.pdf](http://whqlibdoc.who.int/publications/2010/9789241599290_eng.pdf)

**INDICATOR TITLE: 3.1.9.1-2 Women's Dietary Diversity: 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 development consequences for the child in-utero. Dietary diversity (assessed here as the number of food groups consumed) is a key dimension of a high quality diet with adequate micronutrient content; and thus, important to ensuring the health and nutrition of both women and their children.

**UNIT:**

Number

**DISAGGREGATE BY:**

Location: Urban, Rural

Please enter these two data points:

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 zone of influence

**TYPE:**

Outcome

**DIRECTION OF CHANGE:**

Higher is better

**DATA SOURCE:**

Population-based survey and official DHS data (see notes below)

**MEASUREMENT NOTES:**

To collect data for this indicator, a more disaggregated set of food groups than the nine food groups above should be used in the questionnaire. The same set of food groups that are used to collect the dietary diversity component of the MAD indicator for children can be used (refer to the WHO Operational Guide for more details, [http://www.fanta-2.org/downloads/pdfs/IYCF\\_Measurement\\_2010.pdf](http://www.fanta-2.org/downloads/pdfs/IYCF_Measurement_2010.pdf))

For collection and tabulation of this indicator, foods used in condiment amounts should not be counted as having been consumed.

- **LEVEL of COLLECTION:** For FTF: We will monitor this indicator in our targeted sub-national regions/districts (i.e., “zones of influence,” or the geographic region(s)/districts targeted by the USG intervention) to measure results attributable to USG assistance. Where possible, we will also monitor this indicator at the national level to keep a contextual “pulse” on the country situation. National level data should be obtained from the DHS, usually conducted every 5 years.
- **WHO COLLECTS DATA FOR THIS INDICATOR:** An M&E contractor will collect this data in FTF Zone of Influence and will also enter country-level DHS data into the FTF Monitoring System, when available.

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

- **HOW SHOULD IT BE COLLECTED:** The M&E contractor will conduct population-based surveys in the targeted Zone of Influence to collect this data, using the official DHS method of collection and the FTF M&E Guidance Series Volume 8: Population-Based Survey Instrument for Feed the Future Zone of Influence Indicators. This contractor will use DHS data, collected every 5 years, to look at national-level data. Information on the frequency of DHS by country can be obtained at:  
[http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv\\_id=228&ctry\\_id=33&SrvyTp=country](http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv_id=228&ctry_id=33&SrvyTp=country)
- **FREQUENCY OF COLLECTION:** Data should be collected in the Zone of Influence for baseline, mid-term (ideally), and final reporting.



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

**DEFINITION:**

This indicator measures the percent of children 0-5 months of age who were exclusively breastfed during the day preceding the survey. breastfeeding means that the infant received breast milk (including milk expressed or from a wet nurse) and may have received ORS, 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:

**DISAGGREGATE BY:**

Sex: Male, Female

1. Percent of children 0-5 months of age in sample who are exclusively breast fed

2. Total population of children 0-5 months of age in zone of influence

**TYPE: OUTPUT/OUTCOME**

Outcome

**DIRECTION OF CHANGE:**

Higher is better

**DATA SOURCE:**

Population-based survey and official DHS data (see notes below).

**MEASUREMENT NOTES:**

- **LEVEL of COLLECTION:** For FTF: We will monitor this indicator in our targeted sub-national regions/districts (i.e., “zones of influence,” or the geographic region(s)/districts targeted by the USG intervention) to measure results attributable to USG assistance. Where possible, we will also monitor this indicator at the national level to keep a contextual “pulse” on the country situation. National level data should be obtained from the DHS, usually conducted every 5 years.
- **WHO COLLECTS DATA FOR THIS INDICATOR:** An M&E contractor will collect this data in FTF Zone of Influence and will also enter official DHS data into the FTF Monitoring System, when available.
- **HOW SHOULD IT BE COLLECTED:** The M&E contractor will conduct population-based surveys in the targeted Zone of Influence to collect this data, using the official DHS method of collection and the FTF M&E Guidance Series Volume 8: Population-Based Survey Instrument for Feed the Future Zone of Influence Indicators. This contractor will use DHS data, collected every 5 years, to look at national-level data. Information on the frequency of DHS by country can be obtained at: [http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv\\_id=228&ctry\\_id=33&SrvyTp=country](http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv_id=228&ctry_id=33&SrvyTp=country)
- **FREQUENCY OF COLLECTION:** Data should be collected in the Zone of Influence for baseline, mid-term (ideally), and final reporting.
- For detailed guidance on how to collect and tabulate this indicator, refer to the WHO document: Indicators for assessing infant and young child feeding practices, Part 2, Measurement, available at [http://whqlibdoc.who.int/publications/2010/9789241599290\\_eng.pdf](http://whqlibdoc.who.int/publications/2010/9789241599290_eng.pdf)

**INDICATOR TITLE: 4-16 Prevalence of Poverty: Percent of people living on less than \$1.25/day\*(R)**

*\* The 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 UN for the MDGs.*

**DEFINITION:**

This indicator measures Millennium Development Goal Target 1a. Halving extreme poverty refers to the period 1990 to 2015. The applicable poverty line has been updated to \$1.25 dollars 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 FTF M&E Guidance Series Volume 8: Population-Based Survey Instrument for Feed the Future Zone of Influence Indicators. FTF 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, 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 a Millennium Development Goal. It is the purpose of the FTF Initiative. All objectives, program elements, and projects are designed to reduce poverty.

**UNIT:**

Percent

Please enter these two data points:

1. Percentage of people from sample living on <\$1.25/day
2. Total population of people in zone of influence

**TYPE:**

Impact

**DATA SOURCE:**

MDG database for national level; Population-based surveys conducted by the M&E contractor in the FTF zone of influence. population/sub-national level)

**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)

**DIRECTION OF CHANGE:**

Lower is better

**INDICATOR TITLE: 4-16 Prevalence of Poverty: Percent of people living on less than \$1.25/day\*(R)**

*\* The 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 UN for the MDGs.*

**MEASUREMENT NOTES:**

At the national level, this is a contextual indicator that is not USG-attributable, but should still be measured to assess overall food security situation in a country. Because this is a contextual indicator, no targets will need to be set at the national level.

- **LEVEL of COLLECTION:** This indicator should be collected in the FTF Zones of Influence (i.e., the targeted population/sub-national level) through household/population-based surveys, as well as monitored at the national level. This data is already collected by the UN for measuring progress towards the MDG, and is available at the country and regional levels in the MDG database at <http://mdgs.un.org/unsd/mdg/Data.aspx>
- **WHO COLLECTS DATA FOR THIS INDICATOR:** The UN already collects this data for the MDGs at the country and regional level; however, an M&E contractor will do the collection in the FTF Zone of Influence
- **HOW SHOULD IT BE COLLECTED::** For the national level data, the M&E contractor should be consistent in pulling the country information from the MDG database, knowing the methods used by UN described in this data collection handbook: <http://mdgs.un.org/unsd/mdg/Data.aspx> For the Zone of Influence survey, the M&E contractor should conduct a population-based survey using the LSMS methodology and the FTF M&E Guidance Series Volume 8: Population-Based Survey Instrument for Feed the Future Zone of Influence Indicators, in conjunction with collection of the nutrition indicators (i.e., there should be one survey to collect all the impact-level data for the FTF initiative).
- **FREQUENCY OF COLLECTION?:** Data should be collected in the Zone of Influence for baseline, mid-term, and final reporting. Ideally, data would be collected approximately every two years.

**INDICATOR TITLE: 4.5-9 Per capita expenditures (as a proxy for income) of USG targeted beneficiaries(R)**

**DEFINITION:**

An income proxy model is an approach to monitor rural household income and income components using easy-to-collect proxy variables. The model uses a set of algebraic equations that relate proxy variables to components of income. Algebraic relationships are developed using standard “ordinary least squares” econometric techniques applied to a household data set which contains detailed data on household incomes and the proxy variables. Once this detailed data set is collected and the model is estimated, one needs only to collect the proxy variables to obtain estimates of income components and total household income.

FTF will collect expenditure data in order to calculate per capita income for this indicator, and for prevalence of poverty (indicator #4-1). FTF will be using an adapted Poverty Assessment Tool (PAT), being developed through EGAT/PR, based on the consumption expenditure methodology of the Living Standards Measurement Survey (LSMS). Data for this indicator should be collected either through this adapted PAT or through the LSMS Consumption Expenditure module.

**RATIONALE:**

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

**UNIT:**

U.S. Dollar

Please enter these two data points:

1. Average per capita income (in USD) of sample
2. Total population in zone of influence/targeted region

**NOTE:** *To get USD, convert from local currency at the average exchange rate for the reporting period)*

**TYPE:**

Outcome

**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)

**DIRECTION OF CHANGE:**

Higher is better

**DATA SOURCE:**

Population-based surveys conducted by the M&E contractor in the FTF zone of influence (targeted population/sub-national level) FTF

**INDICATOR TITLE: 4.5-9 Per capita expenditures (as a proxy for income) of USG targeted beneficiaries(R)**

*MEASUREMENT NOTES:*

At the national level, this is a contextual indicator that is not USG-attributable, but should still be measured to assess overall food security situation in a country. Because this is a contextual indicator, no targets will need to be set at the national level.

- **LEVEL of COLLECTION:** This indicator should be collected in the FTF Zones of Influence (i.e., the targeted population/sub-national level) through household/population-based surveys, as well as monitored at the national level. This data is already collected by the UN for measuring progress towards the MDG, and is available at the country and regional levels in the MDG database at <http://mdgs.un.org/unsd/mdg/Data.aspx>
- **WHO COLLECTS DATA FOR THIS INDICATOR?:** The UN already collects this data for the MDGs at the country and regional level; however, an M&E contractor will do the collection in the FTF Zone of Influence
- **HOW SHOULD IT BE COLLECTED?:** For the national level data, the M&E contractor should be consistent in pulling the country information from the MDG database, knowing the methods used by UN described in this data collection handbook: <http://mdgs.un.org/unsd/mdg/Data.aspx> For the Zone of Influence, the M&E contractor should conduct a population-based survey using the LSMS methodology and the FTF M&E Guidance Series Volume 8: Population-Based Survey Instrument for Feed the Future Zone of Influence Indicators, in conjunction with collection of the nutrition indicators (i.e., there should be one survey to collect all the impact-level data for the FTF initiative)
- **FREQUENCY OF COLLECTION?:** Data should be collected in the Zone of Influence for baseline, mid-term (ideally), and final reporting.

**INDICATOR TITLE: 4.5-19 Women's Empowerment in Agriculture Index (R)****DEFINITION:**

The Women's Empowerment in Agriculture Index (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 sub-indexes; the Five Domains of Empowerment sub-index (5DE) measures the empowerment of women in five areas; and the Gender Parity sub-Index (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 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 sub-index 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 5DE sub-index)	Definition of domain	Indicators	Weight of indicator in 5DE sub-index
<b>Production</b>	Sole or joint decision-making over food and cash-crop farming, livestock, fisheries as well as autonomy in agricultural production	Input in productive decisions	1/10
		Autonomy in production	1/10
<b>Resources</b>	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
<b>Income</b>	Sole or joint control over income and expenditures	Control over use of income	1/5
<b>Leadership</b>	Membership in economic or social groups and comfort in speaking in public	Group member	1/10
		Speaking in public	1/10
<b>Time</b>	Allocation of time to productive and domestic tasks and satisfaction with the available time for leisure activities	Workload	1/10
		Leisure	1/10

## INDICATOR TITLE: 4.5-19 Women's Empowerment in Agriculture Index (R)

The 5DE is a measure of empowerment rather than disempowerment. 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 disempowered women, the 5DE also shows the percent-age of indicators in which those women meet the thresh old 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-maker regardless of their relationship to each other. For households that have not achieved gender parity, the GPI shows the gap that needs to be closed for women to reach the same level of empowerment as men. By definition, households without a primary adult male are excluded from this measure, and thus the aggregate WEAI uses the mean GPI value of dual-adult households. The GPI contributes 10 percent of the weight to the WEAI.

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

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:  $GPI = \{1 - (H_{wgp} \times I_{GPI})\}$ .

### RATIONALE:

Feed the Future supports the inclusion of poorer and more economically vulnerable populations in economic growth strategies in the agriculture sector in order 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:

Number; Please enter these three data points:

1. Score for 5DE sub-index
2. Score for GPI sub-index
3. Total population in Zone of Influence

### DISAGGREGATE BY:

None

### TYPE:

Impact

### DIRECTION OF CHANGE:

Higher is better

### DATA SOURCE:

Population-based surveys conducted by an M&E contractor in the FTF Zone of Influence.

**INDICATOR TITLE: 4.5-19 Women's Empowerment in Agriculture Index (R)***MEASUREMENT NOTES:*

- **LEVEL of COLLECTION:** This indicator should be collected in the FTF Zones of Influence ( i.e., the targeted population/sub-national level) through household/population-based surveys.
- **WHO COLLECTS DATA FOR THIS INDICATOR:** An M&E contractor will do the collection in the FTF Zone of Influence.
- **HOW SHOULD IT BE COLLECTED:** For the Zone of Influence survey, the M&E contractor should conduct a population-based survey using the WEAI methodology and the FTF M&E Guidance Series Volume 8: Population-Based Survey Instrument for Feed the Future Zone of Influence Indicators (i.e., there should be one survey to collect all the impact-level data for the FTF initiative).
- **FREQUENCY OF COLLECTION:** Data should be collected in the Zones of Influence for baseline, mid-term, and final reporting.



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

This indicator measures the percent 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 three events were experienced by household members in the last four weeks: 1. no food at all in the house; 2. went to bed hungry, 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 follow 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:**

Please enter these two data points:

1. Percent of households in sample with moderate to severe hunger
2. Total population of households in zone of influence

**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:**

Population-based survey 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 this data at the national level.

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

This indicator should always be measured at the same time each year, at the most vulnerable part of the year (e.g., right before harvest, during the dry season, etc.) Although this indicator will be collected in the Zone of Influence by an M&E contractor, USAID/W is also working with HQ and Missions to have the HHS added as a module to the DHS, which is usually conducted every 5 years. Missions direct which modules the DHS should add to the default set of survey questions, and all Focus Countries should request that the HHS module be added to any upcoming DHS for collection of the national-level data.

- **LEVEL of COLLECTION?:** For FTF: We will monitor this indicator in our targeted sub-national regions/districts (i.e., “zones of influence,” or the geographic region(s)/districts targeted by the USG intervention) to measure results attributable to USG assistance. Where possible, we will also monitor this indicator at the national level to keep a contextual “pulse” on the country situation. National level data should be obtained from the DHS, usually conducted every 5 years.
- **WHO COLLECTS DATA FOR THIS INDICATOR?:** An M&E contractor will collect this data in FTF Zone of Influence and will also enter country-level DHS data into the FTF Monitoring System, when available.
- **HOW SHOULD IT BE COLLECTED?:** The M&E contractor will conduct population-based surveys in the targeted Zone of Influence to collect this data, using the official DHS method of collection and the FTF M&E Guidance Series Volume 8: Population-Based Survey Instrument for Feed the Future Zone of Influence Indicators. This contractor will use DHS data, collected every 5 years, to look at national-level data. Information on the frequency of DHS by country can be obtained at:  
[http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv\\_id=228&ctry\\_id=33&SrvyTp=country](http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv_id=228&ctry_id=33&SrvyTp=country)
- **FREQUENCY OF COLLECTION?:** Data should be collected in the Zone of Influence for baseline, mid-term (ideally), and final reporting.
- For more information on the HHS, including guidance for collection and tabulation of the prevalence of households with moderate or severe hunger, refer to the FANTA-2 website: [www.fanta-2.org](http://www.fanta-2.org)