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

FEED THE FUTURE CAMBODIA

Zone of Influence Baseline Report

USAID
FROM THE AMERICAN PEOPLE

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List of Acronyms

BMI	Body Mass Index
CDHS	Cambodia Demographic and Health Survey
CDRI	Cambodia Development Resource Institute
CNA	Child No Adult
CSES	Cambodia Socio-Economic Survey
DD	Dietary Diversity
DE	Domains of Empowerment
FNM	Female Adult no Male Adult
FSG	Food Security Group (MSU)
FtF	Feed the Future
GCC	Global Climate Change
GHFSI	Global Hunger and Food Security Initiative
GPI	Gender Parity sub-Index
HHS	Household Hunger Scale
HARVEST	**H**elping **A**ddress **R**ural **V**ulnerabilities and **E**cosystem **ST**ability
IE	Impact Evaluation
IFPRI	International Food Policy Research Institute
IR	Intermediate Result
LSMS	Living Standards Measurement Survey
M&E	Monitoring and Evaluation
MAD	Minimum Acceptable Diet
MDD	Minimum Dietary Diversity
MMF	Minimum Meal Frequency
MNF	Male No Female Adult
MDG	Millennium Development Goal
MFF	Minimum Feeding Frequency
MFA	Male and Female Adult
MOP	Ministry of Planning
MSU	Michigan State University
NGO	Non-Governmental Organization
NIS	National Institute of Statistics
NPW	Non-Pregnant Women
ORS	Oral Rehydration Salts
PBS	Population-Based Survey
PMP	Performance Monitoring Plan
PPP	Purchasing Power Parity
PW	Pregnant Women
RGC	Royal Government of Cambodia
RiA	Required if Available
USAID	United States Agency for International Development
USD	United States Dollar
USG	United States Government
WEAI	Women‘s Empowerment in Agriculture Index
WB	World Bank
WHO	World Health Organization
ZOI	Zone of Influence

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Summary of Feed-the-Future Indicators' Baseline Levels

Cambodia Feed-the-Future Zone of Influence

	Goal, Objectives and Intermediary Results	Indicator Number	Unit	Baseline Level		
				Rural	Urban	All ZOI
Goal: Sustainably Reduce Global Poverty and Hunger						
1	Prevalence of Underweight Children Under Five Years of Age	3.1.6-16	Percent	31.7	19.7	30.4
2	Prevalence of Poverty: % of people living on less than $1.25/day	4-16	Percent	12.7	3.1	11.7
2a	Prevalence of Poverty: % of people below the rural poverty line	4-16 [(a)]	Percent	23.7	17.6	23.1
First Level Objective 1: Inclusive Agricultural Sector Growth						
3	Per capita expenditures (as proxy for income)	4.5-9	USD/capita	559	832	587
3a	Per capita per day expenditures (as proxy for income)	4.5-9 [(a)]	USD pc/day	1.53	2.28	1.61
4	Women Empowerment in Agriculture Index (WEAI)	4.5-?	Index	0.978	-	0.978
First Level Objective 2: Improved Nutritional Status Especially of Women and Children						
5	Prevalence of stunted children under five years of age	3.1.9-11	Percent	45.0	35.7	44.0
6	Prevalence of wasted children under five years of age	3.1.9-12	Percent	12.4	17.6	13.0
7	Prevalence of Underweight Women	3.1.9-13	Percent	15.8	16.7	15.9
Intermediate Result 5: Increased Resilience of Vulnerable Communities and Households						
8	Prevalence of households with moderate or severe hunger	3.1.9.1-3 & 4.7-4	Percent	0.22	-	0.22
Intermediate Result 6: Improved Access to Diverse and Quality Foods						
9	Prevalence of children 6-23 months receiving minimum acceptable diet (MAD)	3.1.9.1-1	Percent	35.5	-	35.5
10	Women's Dietary Diversity: Mean # of food groups cons. by women of reproductive age	3.1.9.1-2	Number	4.6	-	4.6
Intermediate Result 7: Improved Nutrition Related Behaviors						
11	Prevalence of exclusive breastfeeding of children under 6 months of age	3.1.9 -4 & 3.1.9.1-4	Percent	74.1	86.8	75.5
Intermediate Result 8: Improved Use of Material and Child Health and Nutrition Services						
12	Prevalence of anemia among women of reproductive age [(2)]	3.1.9-6	Percent	48.8	40.1	47.6
13	Prevalence of anemia among children 6-59 months [(3)]	3.1.9-14	Percent	59.8	40.0	57.8

Notes: (a) Also computed by the Cambodia Mission.

Feed-the-Future Cambodia

Zone of Influence Baseline Indicators

1. Introduction

This report presents the baseline figures for the high level indicators for the Feed-the-Future (FtF) Zone of Influence (ZOI) to allow for tracing trends in those indicators that are related to the FtF Goal, First Level Objectives and Intermediate Results (IRs). The Feed-the-Future Zone of Influence cover 4 provinces: Pursat, Battambang, Siem Reap and Kampong Thom. Due to the absence of a formal FtF Population Based Survey (PBS) in Cambodia, this report relies on three alternative sources of survey data.

The route for this report is as follows. Section 2 introduces methodological considerations regarding the definition of the ZOI, identification of indicators, and a detailed description of the survey sources, including sample coverage, statistical representation, content, and limitations. Finally, Section 3 defines each high level indicator and presents the baseline level for each for the ZOI, disaggregated by urban vs. rural, and the required breakdowns.

2. Methodology

2.1. Coverage and Representation of the ZOI

The indicators discussed in this report will be tracked throughout the course of Feed-the-Future. Those indicators will have to represent the Zone of Influence (ZOI) of FtF that consists of the four provinces: Pursat, Battangbang, Siem Reap and Kampong Thom.

Since there was no dedicated Population-Based Survey (PBS) implemented at baseline to specifically address FtF reporting needs with respect to high-level indicators, the report relies on sampling surveys that are representative of the ZOI, and report the baseline levels of the indicators disaggregated by rural vs. urban areas. The next section identifies the indicators and defines each of the surveys used to compute them.

2.2. Indicators, Survey Data Sources and Methodology

2.2.1. Summary of Indicators

The Feed-the-Future in Cambodia will be tracking the evolution of a set of indicators to assess performance related to the main goal, first level objectives and a set of intermediate results. Table 1 presents the list of indicators, the source from which the baseline levels are calculated, and the FtF Indicator number.

Sampling and other methodological issues related to each data sources are discussed in the next section. The indicators are fully defined and baseline figures reported in section 3.

2.2.2. Data Sources and Survey Methodologies

Since there was no dedicated Population Based Survey to generate the baseline values, this analysis uses three distinct datasets: (a) Cambodia Socio-Economic Survey (CSES, 2009); (b) Cambodia Demographic and Health Survey (CDHS, 2010); and (c) Cambodia HARVEST Project Impact Evaluation Baseline Survey (IE Baseline, 2012).

2.2.2.1. Cambodia Socio-Economic Survey (CSES)

The Cambodia Socio Economic Survey (CSES, 2009) was conducted by the National Institute of Statistics (NIS) of the Ministry of Planning (MOP) of Cambodia. The CSES 2009 was a nationally representative survey with a sample of 12,000 households within 720 sampling units (villages), which were divided into 12 monthly samples of 1000 households in 60 villages. The sampling design provided for estimates for urban and rural areas and the Municipality of Phnom Penh. The 2008 Population Census of Cambodia was used as sampling frame (NIS, 2010).

Table 1. Feed the Future Indicators and Data Sources for Baseline Reporting

	Goal, Objectives and Intermediary Results	Source	Indicator Number
Goal: Sustainably Reduce Global Poverty and Hunger			
1	Prevalence of Underweight Children Under Five Years of Age (R)	CDHS	3.1.6-16
2	Prevalence of Poverty: Percent of people living on less than $1.25/day (R)	CSES	4-16
First Level Objective 1: Inclusive Agricultural Sector Growth			
3	Per capita expenditures (as proxy for income) of USG targeted beneficiaries (R)	CSES	4.5-9
4	Women Empowerment in Agriculture Index (WEAI) (R)	IE	4.5-?
First Level Objective 2: Improved Nutritional Status Especially of Women and Children			
5	Prevalence of stunted children under five years of age (R)	CDHS	3.1.9-11
6	Prevalence of wasted children under five years of age (R)	CDHS	3.1.9-12
7	Prevalence of Underweight Women (R)	CDHS	3.1.9-13
Intermediate Result 5: Increased Resilience of Vulnerable Communities and Households			
8	Prevalence of households with moderate or severe hunger (RiA)	IE	3.1.9.1-3 & 4.7-4
Intermediate Result 6: Improved Access to Diverse and Quality Foods			
9	Prevalence of children 6-23 months receiving a minimum acceptable diet (RiA)	IE	3.1.9.1-1
10	Women's Dietary Diversity: Mean # of food groups cons. by women of reproductive age (S)	IE	3.1.9.1-2
Intermediate Result 7: Improved Nutrition Related Behaviors			
11	Prevalence of exclusive breastfeeding of children under six months of age (RiA)	CDHS	3.1.9-4 & 3.1.9.1-4
Intermediate Result 8: Improved Use of Material and Child Health and Nutrition Services			
12	Prevalence of anemia among women of reproductive age (RiA) [(2)]	CDHS	3.1.9-6
13	Prevalence of anemia among children 6-59 months (S) [(3)]	CDHS	3.1.9-14

Source: Feed the Future Indicators Handbook (2012). Notes: R-Required Indicator; RiA – Required if Applicable; S – Standard.

The sampling design in the CSES 2009 survey is a three-stage design. In stage one, a sample of villages is selected using systematic sampling. In stage two, an Enumeration Area (EA) is

selected from each village selected in stage one using Simple Random Sampling (SRS). Finally, in stage three, a sample of households is selected from each EA by systematic sampling.

For the generation of the relevant Baseline indicators we used the sample for the four FtF provinces. Table 2 presents ZOI sample, by rural and urban areas, and type of household.

Table 2. ZOI Sample Size for CSES (2009), by Province and Household Type

ZOI break downs	ZOI Sample Size		
	Rural	Urban	All ZOI
All Zone of Influence (ZOI)	2,096	357	2,453
By Household type in ZOI			
Female/No Male in household (FNM)	147	33	180
Male/No Female in household (MNF)	24	6	30
Male and Female in household (MFA)	1,925	318	2,243
Child/No Adult (CNA)	0	0	0

The CSES collects a wide range of data related to household living conditions, income generation and expenditures.[1] For details on content of the instrument, see NIS (2011). However, for the purposes of our reporting, where we just have to generate relevant statistics on per capita expenditure and poverty, we make use of a limited but important portion of the content in the instrument.

2.2.2.2. Demographic and Health Survey (CDHS)

The Cambodia Demographic and Health Survey (CDHS, 2010) is a nationally representative sample survey of 18,754 women and 8,239 men age 15-49. The 2010 CDHS is the third comprehensive survey conducted in Cambodia as part of the worldwide MEASURE DHS project. The primary purpose of the CDHS is to provide policymakers and planners with up-to date, reliable data on fertility; family planning; infant, child, and maternal mortality; maternal and child health; nutrition; malaria; knowledge of HIV/AIDS, and women's status.

The 2010 CDHS sample is a nationally representative of women and men between the ages of 15 and 49. To achieve a balance between the ability to provide estimates at the subnational level and limiting the sample size, 19 sampling domains were defined, 14 of which correspond to individual provinces and 5 of which correspond to grouped provinces. The sample of households was allocated to the sampling domains in such a way that national level estimates of indicators could be produced with precision, separately for urban and rural areas of the country and for each of the 19 sampling domains.

The sampling frame used for the 2010 CDHS was the complete list of all villages enumerated in the 2008 Cambodia General Population Census provided by the NIS. The survey was based on a stratified sample selected in two stages. In the first stage, 611 EAs were selected with probability

[1] Some key content include basic household Information, food consumption during the Last 7 Days, education and literacy, migration, housing, economic activities and income receipts, household Liabilities, spending in durable Goods, maternal health, child health, anthropometric data for children Under 5 years of age, health care seeking and expenditure, disability, and Victimization.

proportional to size. The household listings provided the frame from which households were selected in the second stage. To ensure a sample size large enough to calculate reliable estimates for each study domain, it was necessary to restrict the total number of households selected to 24 in each urban EA and 28 in each rural EA.

All women age 15-49 years who were either usual residents of the selected households or visitors present in the household on the night before the survey were eligible to be interviewed. In addition, in a subsample of every other household selected for the survey, all men age 15-49 were eligible to be interviewed (if they were either usual residents of the selected households or visitors present in the household on the night before the survey). The minimum sample size was larger for women than men because complex indicators (such as total fertility and infant and child mortality rates) require larger sample sizes to achieve a reasonable level of precision, and these data come from interviews with women. In the subsample of households chosen for the male interviews (50 percent of the total sample), all women eligible for interview and all children under the age of five were eligible for anemia testing. These same women and children were also eligible for height and weight measurements to determine their nutritional status (NIS, 2011). For the purposes of generating the Cambodia Feed-the Future Indicators, we use the CDHS 2010 survey sample for the four provinces that make the Zone of Influence. Table 3 summarizes the sample size, by urban versus rural, of the relevant sub-samples used to generate indicators with the CDHS.

Table 3. Relevant Sample Sizes for Indicators Estimated with CDHS (2010)

Relevant Groups	ZOI Sample Size for Relevant Indicators		
	Rural	Urban	All ZOI
All Non-pregnant women in reproductive age (15-49 years)	**1,323**	**491**	**1,814**
Women in reproductive age with anemia measurement (15-49 years)	**1,312**	**484**	**1,796**
Pregnant	73	30	103
Non-pregnant	1,239	454	1,693
Children 0-5 months	**61**	**17**	**78**
Boys	37	10	47
Girls	24	7	31
Children 0-59 months	**575**	**161**	**736**
Boys	301	80	381
Girls	274	81	355
Children 6-59 months with hemoglobin measurement	**503**	**131**	**634**
Boys	257	61	318
Girls	246	70	316

Three questionnaires were used: the Household Questionnaire, the Woman's Questionnaire, and the Man's Questionnaire. The content of these questionnaires was based on a standard model developed by the MEASURE DHS project. For more details see NIS (2011).

2.2.2.3. HARVEST Impact Evaluation Baseline Survey

The HARVEST Project Impact Evaluation Baseline Survey was designed to serve as the benchmark to assess the impact of the HARVEST Project Interventions in Cambodia. Based on HARVEST goals and strategies, the IE is designed to test two development hypotheses: (1) that access to extension, technology, finance and marketing will lead to increased farm productivity, food availability and income; and (2) that home based-production through low input fishponds and home vegetable gardens will increase dietary diversity and lead to improvements in the nutritional status of women and children (Suvedi, 2012). The survey instrument for the IE Baseline was designed by MSU and CDRI. It was adapted from the standard population-based survey (PBS) designed for FtF with some modification to reflect local context and also allow for the calculation of all HARVEST Project indicators. For details on the specific content of the survey instrument, see CDRI (2013).

The Cambodia HARVEST impact evaluation used a cluster sampling approach. The sample size was defined to provide robust, accurate and precise results. In the most conservative approach, sample size is estimated based on a 95 percent confidence level (5 percent error) with a power of 80 percent, which means there is at least 80 percent chance of detecting changes/effects in the study samples with a 95 percent confidence level (CDRI, 2013). The sample was selected to cover the four provinces. So, 60 village clusters were selected for the treatment group and 24 for the control group. There were 25 households selected per cluster, giving a sample of 1500 HARVEST beneficiary households (treatment group) and 600 HARVEST non-beneficiary households (comparison group), which resulted in a total impact evaluation sample of 2,100 households (Table 4).

Table 4. Relevant Sample Sizes for Indicators Estimated with IE Baseline Survey (2012)

Relevant Groups	IE Sample Size (Only Rural)
All Survey Sample households	**2,100**
By Province	
Pursat	525
Battambang	525
Siem Reap	525
Kampong Thom	525
By Type of household	
Female/No Male in household (FNM)	78
Male/No Female in household (MNF)	1
Male and Female in household (MFA)	2,021
Child/No Adult (CNA)	0
All Non-pregnant women in reproductive age (15-49 years)	**2,556**
Children 6-23 months (IE)	**301**
Boys	149
Girls	152
Children 6-59 months	503
Boys	257
Girls	246

It should be highlighted that this Survey is not representative of the FtF Zone of Influence (ZoI). Therefore, the results presented here for the levels of the baseline indicators (WEAI, MAD, HHS, and DD) are an alternative to the absence of FtF ZOI representative survey data to generate them.

2.3. Methodological Limitations

The reporting of indicators relying on these data sources is the best alternative to the absence of a dedicated population based survey specifically designed for FtF. There are several limitations. First, the FtF interventions do not necessarily have a provincially representative coverage area. However, the indicators computed using the CSES and the CDHS are representative of the all ZOI. So, whatever changes observed overtime might be reflecting other interventions as well.

Second, a subset of indicators that could not be generated from the CSES and the CDHS, had to be generated using the Impact Evaluation Baseline Survey, which is not representative of the ZOI. Third, the timing of the CSES (2009/10) and the CDHS (2010) is different. However, both are certainly before the FtF interventions initiated, which is a good reference point. Finally, the two surveys (CSES and CDHS) used to report most of the baseline indicators may not be adequate to serve as *endline* data collection for the Project as those surveys will not necessarily be held in the appropriate timing. Therefore, it will be important to plan for an independent PBS that is sufficiently comparable and takes place at the most appropriate timing to serve as *endline* for the FtF interventions.

3. Cambodia Feed-the-Future Indicators: Definitions and Baseline Values

In this section we define each of the FtF indicators listed in Table 1 (section 2.2.1.) and present the baseline values disaggregated as required by the guidelines in the *USAID Feed the Future Indicator Handbook* (update in April 4, 2012).

3.1. Goal: Sustainably Reduce Global Poverty and Hunger

The main goal of the Feed the Future intervention is to achieve global reduction in poverty and hunger in a sustainable way. This goal is measured through two key indicators: the reduction in the prevalence of underweight children and the reduction in the poverty rate in the ZOI.

3.1.1. Prevalence of Underweight Children Under Five Years of Age

Underweight is a weight-for-age measurement that reflects acute and/or chronic under-nutrition. It 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 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. Through appropriate weighting, the indicator represents the percentage of underweight children in the Zone of Influence. This is a required indicator and needs to be reported by sex of the child. Monitoring the prevalence of underweight children 0-59

months allows USAID and its partners to show the contribution of FtF programs to the Millennium Development Goal (*FtF Indicator Handbook, 2012*).
The CDHS (2010) ZOI sample for the Baseline indicator consists of 736 children (381 boys and 355) aged 0 to 59 months. The indicator uses the 2006 WHO Child Growth Standards and reference population. On average, 30.4 percent of the children are underweight (Table 5). There is no significant difference in the proportion of underweight children under 5 years between boys (30.9%) and girls (29.7%). The prevalence of underweight is significantly more severe in rural areas (31.7%) than in urban areas (19.7%). More in-depth analysis with the CDHS 2010 indicates that there is a negative relationship between underweight children and the wealth status and educational level of mothers (NIS 2011; CDRI, 2013).

Table 5. Prevalence of Underweight Children Under Five Years of Age (%)

Indicator Number	Indicator description and required disaggregation	Baseline Prevalence for ZOI (1)					
		Rural		Urban		All ZOI	
		Value	SE	Value	SE	Value	SE
3.1.6-16	Prevalence of Underweight Children Under Five Years of Age (%)(2)						
	All Children 0-59 months	**31.7**	1.75	**19.7**	4.24	**30.4**	1.63
	Boys	**32.2**	2.40	**20.0**	5.95	**30.9**	2.24
	Girls	**31.1**	2.56	**19.3**	6.10	**29.7**	2.37

Source: Cambodia DHS Survey (2010). Notes: (1) Zone of Influence includes 4 provinces: Battambang, Kampong Thom, Pursat and Siem Reap; (2) Uses WHO 2006 Population of Reference.

Figure 1 presents the distribution of underweight children, contrasted with the curve of the WHO 2006 population of reference. The relatively high underweight rate found in Table 5 is mirrored with a clear dominance towards the left for the population of kids as a whole, and boys and girls.

3.1.2. Prevalence of Poverty: Percent of People Living on Less than $1.25/day

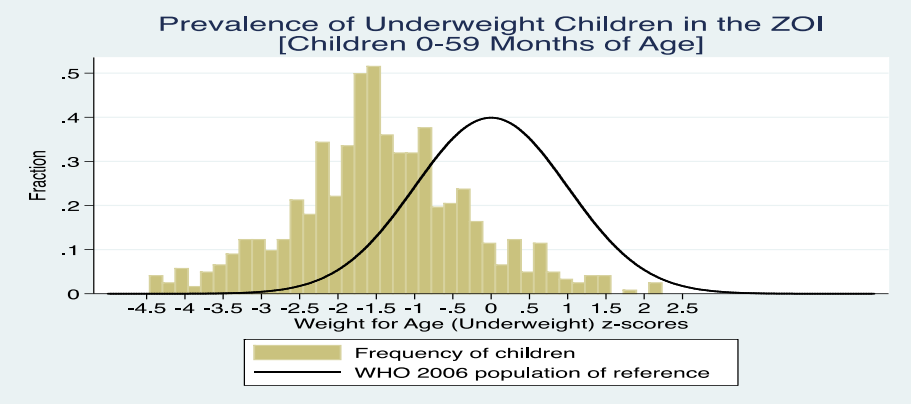
The original indicator of poverty in Feed the Future is "% of people living on less than $1.25/day". According to the FtF Indicators Handbook, this indicator measures the first goal of the Feed the Future Initiative as well as a Millennium Development Goal Target of Halving extreme poverty between 1990 and 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, which allows for international comparisons.

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 (*Feed the Future Indicators Handbook, 2012*). This is a required indicator that needs to be presented for the ZOI and also disaggregated by household type as follows: Adult Female no Adult Male (FNM), Adult Male no Adult Female Adult

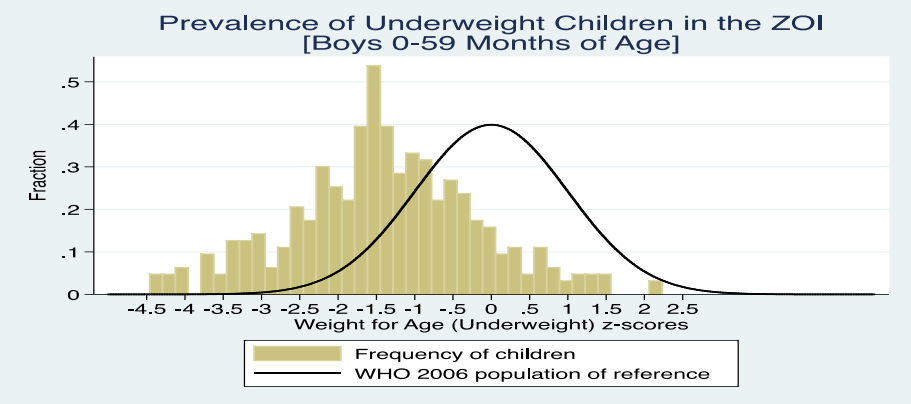
(MNF), Male and Female Adults (MFA), Child no Adults (CNA).

Figure 1. Prevalence of Underweight Children 0-59 Months, 2010

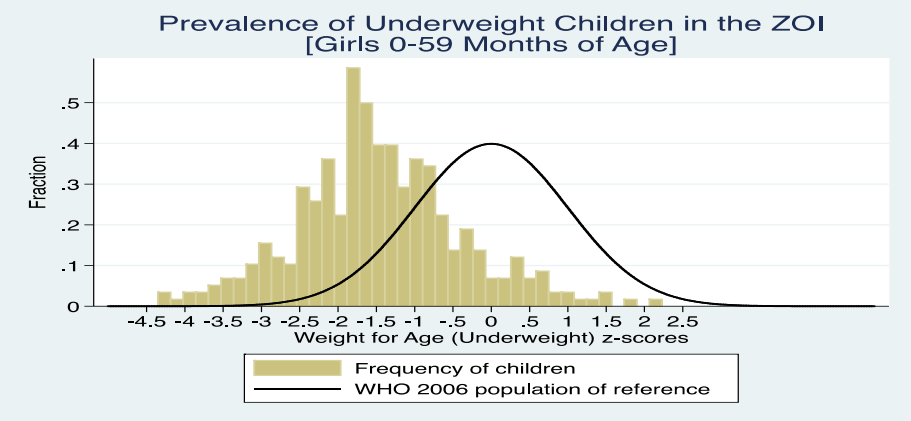
(a) All Sample (Boys + Girls)



(a) Boys



(b) Girls



Source: Cambodia DHS Survey (2010)

In Cambodia, there are two methodological issues to report regarding the poverty indicator. First, the Royal Government of Cambodia (RGC) has developed an alternative way to compute the consumption aggregate used to measure poverty. As a result, this indicator is calculated using two alternative approaches: Cambodia Government (See MOP, 2013) and World Bank. The basic difference is that the "Cambodia MOP Method" does not include imputed rents for people living in their houses who do not pay rent, i.e., only actually paid rents are included. The World

Bank Method (LSMS) inputs rents. Second, in addition to the $1.25/day poverty measure, we computed for this indicator poverty measures based on the country poverty line. It should be stated that there is a difference in the actual poverty line levels derived from the minimum calories requirement in each case. Table 6 summarizes the poverty line levels across the two methods for urban and rural areas of Cambodia. See MOP 2013 for the New Method and how it compares with the World Bank LSMS Method.

Table 6. Poverty Lines: World Bank and Cambodia Methods, by Area of Residence

Area of Residence	Poverty Lines (Riels per capita/day, 2009 Prices)	
	World Bank Method	New Cambodia Method
Urban Areas (1)	3,438	4,352
Rural Areas	3,213	3,503
Cambodia	3,332	3,871

Source: MOP (2013). Notes: (1) Phnom Penh (not included in the ZOI) has a different set of poverty lines.

For reporting purposes, the USAID Cambodia Mission reports the poverty measure that uses the Cambodia method and the relevant poverty lines. In the analysis we present results for both measures ($1.25/day and country poverty line) and methods for the ZOI and separately for urban and rural areas.

The poverty rate calculated using the Cambodia Method and the relevant local poverty lines, results in a headcount ratio of 23.1% for the ZOI (Table 7). In terms of disaggregation across household types, the sample of single adult (male or female) households is relatively small for a statistically meaningful comparison. Generally, results indicate that poverty is significantly higher among Female only households (FNM) than in households with adult males and no females (MNF), 19.7% and 9.9%, respectively for this indicator. The World Bank Method presents poverty rates that are considerably lower, as the approach results in higher consumption levels due to the imputation of housing rental expenditures. Poverty is significantly higher in rural areas (23.7%) than in urban areas (17.6%).

It should be noted that the reporting of this measure of poverty presents a picture consistent with the numbers reported by the MOP of the RGC. However, since they are not referred to the FtF poverty indicator, they cannot be compared to other FtF countries where the $1.25 per day PPP poverty is estimated.

In order to have in hand ZOI estimates that are comparable with other countries, we also present that measure ($1.25 PPP Poverty) in this report. Table 7 presents the results for both the Cambodia and the World Bank Approaches. As indicated in the table, the $1.25 poverty headcount for the ZOI is estimated at 11.7% (Cambodia Method) and 7.7% (World Bank Method), which are relatively low levels for a developing country at this stage. If Cambodia were to be compared to other countries, this last measure ($1.25 per day PPP, using the World Bank Methodology) would be more appropriate as other countries use a similar methodology.

Table 7. Prevalence of Poverty (%), Alternative Approaches

Indicator Number	Indicator description and required disaggregation	Baseline Prevalence for ZOI [1]					
		Rural		Urban		All ZOI	
		Value	SE	Value	SE	Value	SE
4-16	Prevalence of Poverty: People living on less than $1.25/day (%) (2005 PPP) [2]						
Cambodia Approach							
	All Households	**12.7**	0.76	**3.1**	0.94	**11.7**	0.68
	Female/No Male in household (FNM)	**11.5**	2.78	**2.8**	2.75	**10.4**	2.44
	Male/No Female in household (MNF)	**3.4**	3.48	**0.0**	-	**3.0**	3.03
	Male and Female in household (MFA)	**12.9**	0.80	**3.2**	1.01	**11.9**	0.72
	Child/No Adult (CNA)	**-**	-	**-**	-	**-**	-
World Bank Approach							
	All Households	**8.5**	0.61	**1.6**	0.67	**7.7**	0.55
	Female/No Male in household (FNM)	**6.7**	2.19	**2.8**	2.75	**6.2**	1.94
	Male/No Female in household (MNF)	**3.4**	3.48	**0.0**	-	**3.0**	3.04
	Male and Female in household (MFA)	**8.7**	0.64	**1.6**	0.70	**8.0**	0.58
	Child/No Adult (CNA)	**-**	-	**-**	-	**-**	-
Not Required	Percent of people living below the country poverty line (2009) [2] [3]						
Cambodia Approach							
	All Households	**23.7**	1.03	**17.6**	2.03	**23.1**	0.95
	Female/No Male in household (FNM)	**20.6**	3.66	**12.8**	6.04	**19.7**	3.27
	Male/No Female in household (MNF)	**9.3**	5.75	**14.7**	13.73	**9.9**	5.40
	Male and Female in household (MFA)	**24.2**	1.09	**18.2**	2.17	**23.6**	1.00
	Child/No Adult (CNA)	**-**	-	**-**	-	**-**	-
World Bank Approach							
	All Households	**13.9**	0.79	**5.2**	1.20	**13.0**	7.16
	Female/No Male in household (FNM)	**11.6**	2.81	**2.8**	2.75	**10.6**	2.47
	Male/No Female in household (MNF)	**3.4**	3.48	**0.0**	-	**3.0**	3.04
	Male and Female in household (MFA)	**14.3**	0.83	**5.5**	1.31	**13.4**	0.76
	Child/No Adult (CNA)	**-**	-	**-**	-	**-**	-

Source: CSES Survey (2009). Notes: (1) Zone of Influence includes 4 provinces: Battambang, Kampong Thom, Pursat and Siem Reap; (2) The indicators are calculated using two alternative approaches: Cambodia Government (See Ministry of Planning, April 2013) and World Bank.

3.2. First Level Objective 1: Inclusive Agricultural Sector Growth

3.2.1. Per Capita Expenditures (as proxy for income) of USG Targeted Beneficiaries

The importance of this indicator stem from the well-established relationship between increased incomes and improved food security, reduced poverty, and improved nutrition. This indicator will measure the expenditures of households as a proxy for income, based on the assumption that increased expenditures is strongly correlated to increased income. Expenditures are used instead of income because of the difficulty in accurately measuring income and because expenditure data are less prone to error, easier to recall and are more stable over time (*FtF Indicator Handbook, 2012*).

Data for this indicator must be collected using the Consumption Expenditure methodology of the Living Standards Measurement Survey (LSMS). This is a required indicator that needs to be presented for the ZOI and also disaggregated by household type as follows: Adult Female no Adult Male (FNM), Adult Male no Adult Female Adult (MNF), Male and Female Adults (MFA), Child no Adults (CNA).

The same methodological issues discussed in indicator 4-16 (Prevalence of poverty) apply for this indicator. The defined indicator refers to annual per capita expenditure in USD. Like for the poverty indicator, we also report alternative measures, accounting for the alternative methods (Cambodia and World Bank) and in per capita per year as well as per capita per day. Results are presented in Table 8.

Table 8. Consumption Expenditure per capita, Alternative Approaches

Indicator Number	Indicator description and required disaggregation	Baseline Prevalence for ZOI (1)					
		Rural		Urban		All ZOI	
		Value	SE	Value	SE	Value	SE
4.5-9	Per capita expenditures (as proxy for income) of USG targeted beneficiaries **(USD per capita per year)**						
Cambodia Approach							
	All Households	**559**	14.20	**832**	30.81	**587**	13.07
	Female/No Male in household (FNM)	**627**	46.07	**962**	99.66	**668**	41.92
	Male/No Female in household (MNF)	**1,005**	160.55	**1,801**	739.53	**1,103**	186.40
	Male and Female in household (MFA)	**547**	14.95	**801**	28.48	**572**	13.68
	Child/No Adult (CNA)	**-**	-	**-**	-	**-**	-
World Bank Approach							
	All Households	**619**	14.91	**1,049**	43.90	**664**	14.12
	Female/No Male in household (FNM)	**708**	46.17	**1,216**	137.65	**770**	44.26
	Male/No Female in household (MNF)	**1,092**	179.97	**2,142**	721.56	**1,221**	209.10
	Male and Female in household (MFA)	**605**	15.75	**1,012**	44.03	**646**	14.82
	Child/No Adult (CNA)	**-**	-	**-**	-	**-**	-
4.5-9 (per day)	Per capita expenditures (as proxy for income) of USG targeted beneficiaries **(USD per capita per day)**						
Cambodia Approach							
	All Households	**1.53**	0.04	**2.28**	0.08	**1.61**	0.04
	Female/No Male in household (FNM)	**1.72**	0.13	**2.64**	0.27	**1.83**	0.11
	Male/No Female in household (MNF)	**2.75**	0.44	**4.94**	2.03	**3.02**	0.51
	Male and Female in household (MFA)	**1.50**	0.04	**2.19**	0.08	**1.57**	0.04
	Child/No Adult (CNA)	**-**	-	**-**	-	**-**	-
World Bank Approach							
	All Households	**1.70**	0.04	**2.88**	0.12	**1.82**	0.04
	Female/No Male in household (FNM)	**1.94**	0.13	**3.33**	0.38	**2.11**	0.12
	Male/No Female in household (MNF)	**2.99**	0.49	**5.87**	1.98	**3.34**	0.57
	Male and Female in household (MFA)	**1.66**	0.04	**2.77**	0.12	**1.77**	0.04
	Child/No Adult (CNA)	**-**	-	**-**	-	**-**	-

Source: CSES Survey (2009).

The sample size is similar to that used for the poverty estimates. Using the Cambodia Method, it is estimated that the annual household per capita expenditure is about 587 USD. This is reflected in a per capita per day expenditure of 1.61 USD for the ZOI. The results using the World Bank Method indicate a per capita per year level of 664 USD and a per capita per day of 1.82 USD. As expected, for both methods expenditures per capita are relatively higher in urban areas.

2.1.1. Women Empowerment in Agriculture Index (WEAI)

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 engagement in the sector (USAID and IFPRI 2012). The WEAI is composed of two sub-indexes.

The first is the Five Domains of Empowerment sub-index (5DE) which measures the empowerment of women in five areas: (1) decision making over food and agricultural production; (2) ownership, access to, decision making over land, livestock agricultural equipment, credit and household assets; (3) control over income and household expenditure; (4) participation or membership in communities and public speaking; (5) allocation of time to productive and domestic tasks and satisfaction with leisure activities (USAID and IFPRI 2012; CDRI, 2013). The results of 5DE range from zero to one, where higher index scores mean greater empowerment. The 5 DE is defined by 5DE = 1 – MO, where MO=H(A). MO is the disempowerment index, H is disempowered headcount, and A is the average inadequacy score or the percentage of dimension in which disempowered women have inadequate achievements.

The second WEAI sub-index is the Gender Parity Index (GPI), which measures the average level of equality in empowerment of men and women within the household. The GPI shows the proportion of women that have achieved equality relative to their male counterparts – the empowerment gap between male and female of same household. The GPI also varies from zero to one, with the higher values representing greater gender parity. The GPI is defined by $GPI = 1 – H_{GPI} (I_{GPI})$, where H_{GPI} is percentage of women without gender parity, and I_{GPI} is average empowerment gap between women compared with men in their households.

The WEAI is an aggregate index calculated as a weighted sum of country or regional level 5DE and the GPI. It 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. Just like the 5DE and GPI, the WEAI values also range from 0 to 1, where the higher scores indicate greater empowerment. The WEAI is summarized in the following formula: WEAI = 0.9(5DE) + 0.1(GPI)

Given that there was no population-based survey that collected the information relevant for the calculation of the WEAI, the indicator generated in this report had to rely on the IE Baseline survey that is not representative of the ZOI.

The WEAI for our pooled sample from the IE Baseline Survey is 0.978 (Table 9).

[2] http://www.ifpri.org/publication/womens-empowerment-agriculture-index

Table 9. Women Empowerment in Agriculture Index (WEAI) (4.5-?)

Indexes	All sample (Cambodia)	
	Women	Men
Disempowered headcount (H) (%)	7.4	9.1
Average inadequacy score (A) (%)	31.7	31.9
Disempowered index (MO)	0.024	0.029
5DE index (1 – MO)	**0.976**	**0.971**
% of women with no gender parity (H_{GPI}) (%)	5.3	
Average empowerment gap (I_{GPI}) (%)	14.5	
GPI	**0.992**	
WEAI	**0.978**	

Source: HARVEST Baseline Survey (2012).

As per the formula, the WEAI index value of 0.978 is a weighted average of the 5DE sub-index value of 0.976 and the GPI sub-index value of 0.992. In the Table, we can see the levels of the different elements that enter the construction of the index. It illustrates the relatively low levels of disempowerment incidence, lack of gender parity, and empowerment gap.

This is a particularly high, but not surprising, level compared to many countries. In Bangladesh, for example, the WEAI was estimated at 0.749 (USAID and IFPRI 2012). This implies that Cambodian women are more empowered than their Bangladeshi counterparts (CDRI IE Baseline Report, 2013).

3.3. First Level Objective 2: Improved Nutritional Status of Women and Children

3.3.1. Prevalence of Stunted Children Under Five Years of Age

Stunting is a height-for-age measurement that is a reflection of chronic under-nutrition. Stunting is generally due to prolonged exposure to an inadequate diet and poor health. Reducing the prevalence of stunting among children is important because linear growth deficits accrued early in life can lead to cognitive impairments, poor educational performance, and decreased work productivity among adults (*FtF Indicator Handbook, 2012*).

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 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 overtime. 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. Through appropriate weighting, the indicator represents the percentage of stunted children in the Zone of Influence. This is a required indicator and needs to be reported by sex of the child.

The analysis shows a baseline value of 44% incidence of stunting in the ZOI (Table 10). While stunting appears to be slightly high among boys (44.6%) when compared with girls (43.3%), that difference is not significant. Rural areas present a significantly higher incidence of stunted kids.

Table 10. Prevalence of Stunted Children Under Five Years of Age (%)

Indicator Number	Indicator description and required disaggregation	Baseline Prevalence for ZOI (1)					
		Rural		Urban		All ZOI	
		Value	SE	Value	SE	Value	SE
3.1.9-11	Prevalence of stunted children under five years of age (%)(2)						
	All Children 0-59 months	**45.0**	1.87	**35.7**	5.11	**44.0**	1.76
	Boys	**45.5**	2.55	**37.5**	7.20	**44.6**	2.41
	Girls	**44.5**	2.74	**33.7**	7.31	**43.3**	2.57

Source: Cambodia DHS Survey (2010). Notes: (1) Zone of Influence includes 4 provinces: Battambang, Kampong Thom, Pursat and Siem Reap; (2) Uses WHO 2006 Population of Reference.

Figure 2 shows the histograms representing the position of the Cambodian population of pre-school aged children relative to a population of reference (WHO 2006) with respect to stunting. The picture clearly depicts a serious situation with respect to stunting in the Country that needs to be tackled.

3.3.2. Prevalence of Wasted Children Under Five Years of Age

Wasting is a weight-for-height measurement that is a reflection of acute malnutrition. 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 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. Through appropriate weighting, the indicator represents the percentage of wasted children in the ZOI. This is a required indicator and needs to be reported by sex of the child.

Using the same sample of children (CDHS 2010) that formed the basis for the calculation of stunting and underweight, we find a baseline of 13.0 percent incidence of wasting among kids in the ZOI (Table 11), a figure slightly higher than the national average of 11% estimated by the NIS using the same data. Like in the case of the other two indicators, there is not much difference between boys (12.7%) and girls (13.3%). The incidence of stunting is higher in urban areas (17.6%) than in rural areas (12.4%), particularly among girls (23.4%).

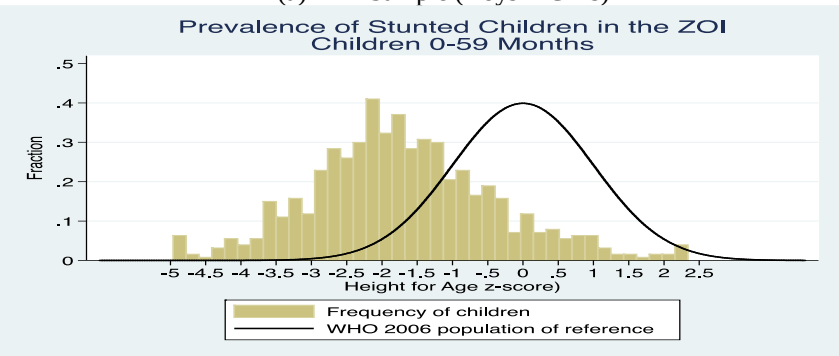
Table 11. Prevalence of Wasted Children Under Five Years of Age (%)

Indicator Number	Indicator description and required disaggregation	Baseline Prevalence for ZOI (1)					
		Rural		Urban		All ZOI	
		Value	SE	Value	SE	Value	SE
3.1.9-12	Prevalence of wasted children under five years of age (%)(2)						
	All Children 0-59 months	**12.4**	1.24	**17.6**	4.06	**13.0**	1.19
	Boys	**12.8**	1.71	**12.3**	4.88	**12.7**	1.62
	Girls	**12.0**	1.79	**23.4**	6.54	**13.3**	1.76

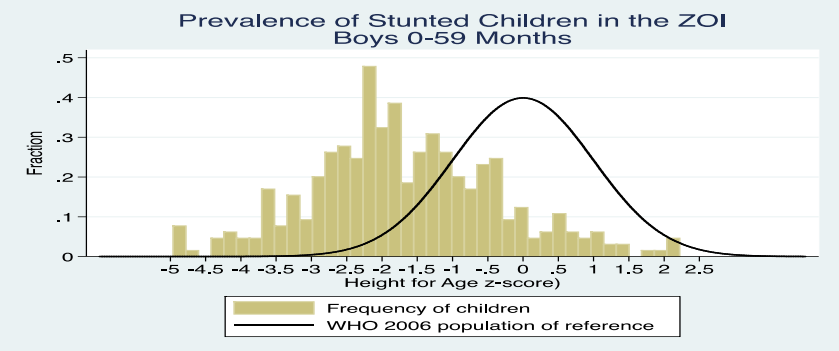
Source: Cambodia DHS Survey (2010). Notes: (1) Zone of Influence includes 4 provinces: Battambang, Kampong Thom, Pursat and Siem Reap; (2) Uses WHO 2006 Population of Reference.

Figure 2. Prevalence of Stunting in Children 0-59 Months, 2010

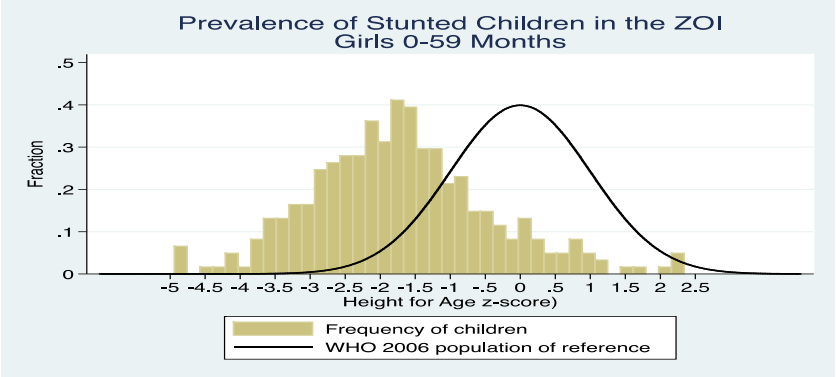
(a) All Sample (Boys + Girls)



(b) Boys



(c) Girls

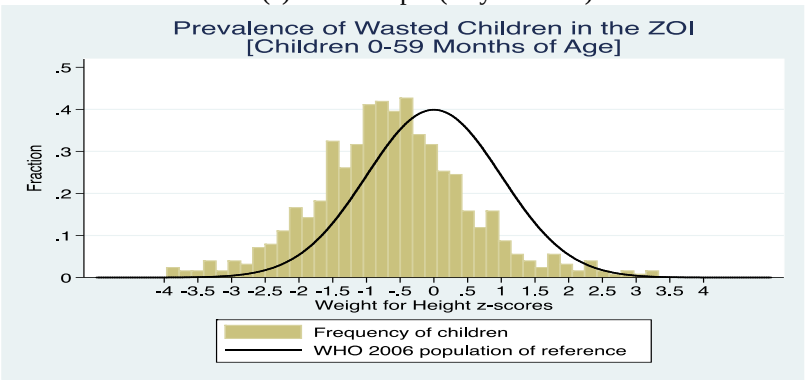


Source: Cambodia DHS Survey (2010)

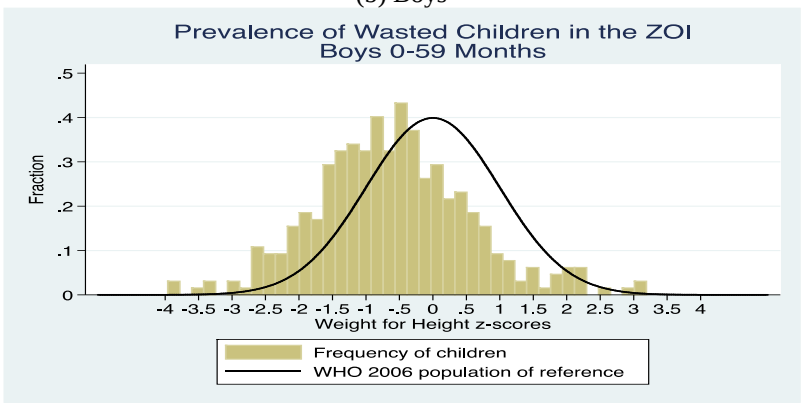
Figure 3 shows the histograms representing the position of the Cambodian population of pre-school aged children relative to a population of reference (WHO 2006) with respect to wasting. The pictures, illustrating a situation more close to the reference population, confirms that while there is some incidence this is the less severe of the three child anthropometric indicators.

Figure 3. Prevalence of Wasting in Children 0-59 Months, 2010

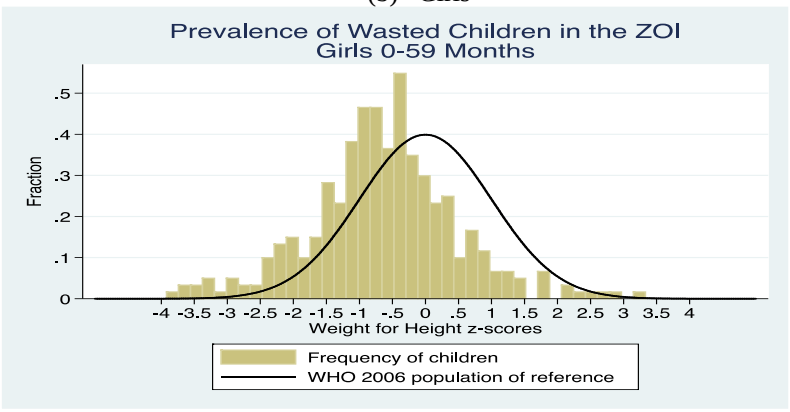
(a) All Sample (Boys + Girls)



(b) Boys



(b) Girls



Source: Cambodia DHS Survey (2010)

Wasting is likely to have negative correlation with weight at birth and with weight of the mother (O'Donnell et al. 2008: 40; NIS 2011), a factor related to the indicator analyzed in the next sub-section.

3.3.3. Prevalence of Underweight Women

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 (*FtF Indicators Handbook, 2012*).

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 = weight (in kg) ÷ height (in meters) squared. The numerator for this indicator is the number of non-pregnant women 15-49 years in the sample 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. Through appropriate weighting, the indicator represents the percentage of underweight non-pregnant women in reproductive age in the Zone of Influence. This is a required indicator.

The ZOI CDHS (2010) sample to compute this indicator consisted of 1,814 non-pregnant women in reproductive age. The baseline level is estimated at 15.9% (Table 12). This level of incidence is consistent with the observed reality of the two measures entering the calculation of this indicator. There is not much difference between the incidences in urban versus rural areas.

Table 12. Prevalence of Underweight Women (%)

Indicator Number	Indicator description and required disaggregation	Baseline Prevalence for ZOI (1)					
		Rural		Urban		All ZOI	
		Value	SE	Value	SE	Value	SE
3.1.9-13	Prevalence of Underweight Women (%)	**15.8**	0.90	**16.7**	2.34	**15.9**	0.84

Source: Cambodia DHS Survey (2010). Notes: (1) Zone of Influence includes 4 provinces: Battambang, Kampong Thom, Pursat and Siem Reap.

It should be noted that under-nutrition among women of reproductive age is associated with increased morbidity, poor food security, and can result in adverse birth outcomes in future pregnancies (*FtF Indicator Handbook, 2012*). Therefore, program actions should lead to improvements in women's nutritional status that can have important pay-offs in the form of improved women's work productivity and better birth outcomes.

3.4. Intermediate Result 5: Increased Resilience of Vulnerable Communities and Households

3.4.1. Prevalence of Households with Moderate or Severe Hunger

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 household members experienced three events in the last four weeks: (1) No food at all in the house; (2) Went to bed hungry; and (3) Went all day and night without eating.

For each question, four responses are possible (never, rarely, sometimes or often), which are collapsed into the following three responses: never (0), rarely or sometimes (1), often (2). Values for the three questions are summed for each household, producing a HHS score ranging from 0 to 6. A household with HHS score lower than 2 is categorized as "little or no huger"; if the HHS score is greater than 1 and less than 4 it belongs to the group of "moderate hunger"; and the household falls into the category of "severe hunger" if its HHS score is greater than 3.

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. This is a *Required if Applicable* (RiA) indicator that needs to be presented for the ZOI and also disaggregated by household type as follows: Adult Female no Adult Male (FNM), Adult Male no Adult Female Adult (MNF), Male and Female Adults (MFA), Child no Adults (CNA).

Given that there was no population-based survey that collected the information relevant for the calculation of the HHS, the indicator generated in this report had to rely on the IE survey that is not representative of the ZOI.

Results from the IE Baseline Survey indicate that only 0.22 percent of the sample households are estimated to have moderate or severe hunger (Table 13). This result implies that, based on this HHS definition, hunger is not a problem for households.

Table 13. Prevalence of Households with Moderate or Severe Hunger (%)

Indicator Number	Indicator description and required disaggregation	Baseline Prevalence for ZOI (1)					
		Rural		Urban		All ZOI	
		Value	SE	Value	SE	Value	SE
3.1.9.1-3 & 4.7-4	Prevalence of households with moderate or severe hunger						
	All households	**0.22**	0.10	-	-	**0.22**	0.10
	Female/No Male in household (FNM)	0.00	-	-	-	0.00	-
	Male/No Female in household (MNF)	0.00	-	-	-	0.00	-
	Male and Female in household (MFA)	0.23	0.11	-	-	0.23	0.11
	Child/No Adult (CNA)	-	-	-	-	-	-

Source: HARVEST Baseline Survey (2012)

On the other hand, it could also be argued that the three leading questions do not capture the situation in the cultural context of Cambodia, where solidarity and social safety nets at community level prevent such extreme circumstances from happening frequently (CDRI, 2013).

3.5. Intermediate Result 6: Improved Access to Diverse and Quality Foods

3.5.1. Prevalence of Children 6-23 Months Receiving a Minimum Acceptable Diet (MAD)

This indicator measures the proportion of children 6-23 months that receive a minimum acceptable diet (MAD), apart from breast milk. The minimum acceptable diet indicator measures both the minimum feeding frequency (MFF) and minimum dietary diversity (MDD), as appropriate for various age groups. If a child meets the MFF and the MDD for their age group and breastfeeding status, then they are considered to receive a MAD.

Tabulation of the indicator requires that data on breastfeeding, dietary diversity, number of semi-solid/solid feeds and number of milk feeds be collected for children 6-23 months the day before the survey. The indicator is calculated from the following two fractions: (1) [breastfed children 6-23 months in the sample who had at least the minimum dietary diversity and the minimum meal frequency (MMF) during the previous day] / [breastfed children 6-23 months in the sample with MAD component data]; and (2) [non-breastfed children 6-23 months that received at least two milk feedings and had at least the MDD not including milk feeds and the MMF during the previous day] / [non-breastfed children 6-23 months in the sample with MAD component data] (*FtF Indicator Handbook, 2012; CDRI, 2013*).

The following are the steps for calculating this indicator: (1) Calculate number of breastfeeding children (6-23 months) that meet both MDD and MMF; (2) Calculate number of non-breastfeeding children (6-23 months) that meet both MDD and MMF; (3) Calculate number of children 6 to 23 months (both breastfeeding and non-breastfeeding). This is the denominator; (4) Sum values of step 1 and step 2 for each child to create the numerator for the indicator; and (5) Compute MAD = (values from step 4 / values from step3)*100

This is a *Required if Applicable* (RiA) indicator that needs to be disaggregated by sex. Given that there was no population-based survey that collected the information relevant for the calculation of the MAD, the indicator generated in this report had to rely on the IE survey that is not representative of the ZOI.

Results reported in Table 14 indicate that on average 35.5 percent of the sampled children 2-23 months receive MAD. The prevalence of children 6-23 months receiving a MAD does not vary by sex of children.

Table 14. Prevalence of Children Receiving a Minimum Acceptable Diet – MAD (%)

Indicator Number	Indicator description and required disaggregation	Baseline Prevalence for ZOI (1)					
		Rural		Urban		All ZOI	
		Value	SE	Value	SE	Value	SE
3.1.9.1-1	Prevalence of children 6-23 months receiving a minimum acceptable diet (%)						
	All Children under 6-23 months	**35.5**	2.76	**-**	**-**	**35.5**	2.76
	Boys	35.6	3.94	-	-	35.6	3.94
	Girls	35.5	3.89	-	-	35.5	3.89

Source: HARVEST Baseline Survey (2012). Notes: (1) Zone of Influence includes 4 provinces: Battambang, Kampong Thom, Pursat and Siem Reap. The number reported here refers to the Impact Evaluation (IE) Sample, not representative of the ZOI.

3.5.2. Women's Dietary Diversity: Mean Number of Food Groups Consumed by Women

This 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; and (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 (*FtF Indicator Handbook, 2012*). This is a *Standard* (S) indicator that needs to be presented for the ZOI. However, given that there was no population-based survey with complete information relevant for the calculation of this indicator, we had to rely on the IE survey that is not representative for the ZOI.

The calculation of this indicator uses the sample of 2,336 women of reproductive age with data on dietary diversity. On average, women of reproductive age consumed 4.6 types of food during the day or night before the interview (Table 15).

Table 15. Women's Dietary Diversity: Number of Food Groups Consumed

Indicator Number	Indicator description and required disaggregation	Baseline Prevalence for ZOI (1)					
		Rural		Urban		All ZOI	
		Value	SE	Value	SE	Value	SE
3.1.9.1-2	Women's Dietary Diversity: Mean # of food groups consumed by women of reproductive age	**4.6**	0.03	-	-	**4.6**	0.03

Source: HARVEST Baseline Survey (2012). Notes: (1) Zone of Influence includes 4 provinces: Battambang, Kampong Thom, Pursat and Siem Reap. The number reported here refers to the Impact Evaluation (IE) Sample, not representative of the ZOI.

3.6. Intermediate Result 7: Improved Nutrition Related Behaviors

3.6.1. Prevalence of Exclusive Breastfeeding of Children Under Six Months of Age

This indicator measures the percent of children 0-5 months of age who were exclusively breastfed during the day preceding the survey. Exclusive breastfeeding means that the infant received breast milk (including milk expressed or from a wet nurse) and may have received ORS, vitamins, minerals and/or medicines, but did not receive any other food or liquid. Exclusive breastfeeding provides children with significant health and nutrition benefits, including protection from gastrointestinal infections and reduced risk of mortality, due to infectious disease (*FtF Indicator Handbook, 2012*).

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 (*FtF Indicator Handbook, 2012*). This is a *Required if Applicable* (RiA) indicator that needs to be presented for the ZOI and disaggregated by sex.

Results reported in Table 16 (based on CDHS 2010) indicate that on average 75.5 percent of the sampled children under six months of age, in the ZOI, had exclusive breastfeeding. There is a significant difference in the prevalence of exclusive breastfeeding by sex, with boys (80.4%) having a higher prevalence than girls (66.1%). Exclusive breastfeeding is higher in urban (86.8%) than in rural (74.1%) areas.

Table 16. Prevalence of Exclusive Breastfeeding of Children Under Six Months of Age (%)

Indicator Number	Indicator description and required disaggregation	Baseline Prevalence for ZOI (1)					
		Rural		Urban		All ZOI	
		Value	SE	Value	SE	Value	SE
3.1.9-4 & 3.1.9.1-4	Prevalence of exclusive breastfeeding of children under six months of age (%)						
	All Children under 6 months of age	**74.1**	5.25	**86.8**	12.32	**75.5**	4.87
	Boys	**79.1**	6.12	**89.3**	13.10	**80.4**	5.57
	Girls	**65.1**	9.67	**78.5**	41.18	**66.1**	9.23

Source: Cambodia DHS Survey (2010). Notes: (1) Zone of Influence includes 4 provinces: Battambang, Kampong Thom, Pursat and Siem Reap.

3.7. Intermediate Result 8: Improved Use of Material and Child Health and Nutrition Services

3.7.1. Prevalence of Anemia Among Women of Reproductive Age

This indicator underscores the importance of women's micronutrient nutrition both pre-pregnancy and during pregnancy for the growth and development of the child in-utero and for a safe delivery and positive birth outcome. Anemia is measured by hemoglobin concentration in the blood and, for this indicator, is collected among women of reproductive age (15-49 years). Non-pregnant women (NPW) with a hemoglobin concentration less than 12g/dl and Pregnant women (PW) with a hemoglobin concentration less than 11g/dl are classified as anemic. Although different levels of severity of anemia can be measured, this indicator measures the prevalence of mild, moderate and severe anemia combined (*FtF Indicator Handbook, 2012*).

The numerator for this indicator is the total number of anemic women 15-49 years in the sample. The denominator is the total number of women 15-49 years in the sample with hemoglobin data. This is a *Required if Applicable* (RiA) indicator that needs to be presented for the ZOI and disaggregated by physiological status: pregnant versus non-pregnant women.

Using data from the CDHS 2010, the analysis finds a baseline prevalence of anemia of 47.6 percent among women of reproductive age (Table 17). When comparing pregnant and non-pregnant women, it is found that in the ZOI, prevalence among pregnant women (53.2%) is relatively higher than among non-pregnant women (47.3%). Anemia is more prevalent in rural areas, affecting about half of the women.

Table 17. Prevalence of Anemia Among Women of Reproductive Age (%)

Indicator Number	Indicator description and required disaggregation	Baseline Prevalence for ZOI (1)					
		Rural		Urban		All ZOI	
		Value	SE	Value	SE	Value	SE
3.1.9-6	Prevalence of anemia among women of reproductive age (2)						
	All women 15-49 years	**48.8**	1.24	**40.1**	3.10	**47.6**	1.15
	Pregnant women	**55.0**	5.23	**43.7**	12.18	**53.2**	4.80
	Non-pregnant women	**48.4**	1.27	**39.9**	3.22	**47.3**	1.18

Source: Cambodia DHS Survey (2010). Notes: (1) Zone of Influence includes 4 provinces: Battambang, Kampong Thom, Pursat and Siem Reap; (2) Sample only includes women with hemoglobin data collected.

These results suggest that over half of the pregnant women have an increased risk of hemorrhage, sepsis, maternal mortality, and of having babies with low weight.

3.7.2. Prevalence of Anemia Among Children 6-59 Months of Age

The prevalence of anemia highlights the importance of micronutrient nutrition for child health and development. Anemia is measured by hemoglobin concentration in the blood and, for this indicator, is collected among children 6-59 months. Children with a hemoglobin concentration less than 11g/dl are classified as anemic. Although different levels of severity of anemia can be measured, this indicator measures the prevalence of all anemia, i.e. mild, moderate and severe anemia combined (*FtF Indicator Handbook, 2012*). The numerator for this indicator is the total number of anemic children 6-59 months. The denominator is the total number of children 6-59 months in the sample with hemoglobin data. This is a *Required if Applicable* (RiA) indicator that needs to be presented for the ZOI and disaggregated by sex.

The baseline value for the incidence of anemia among children 6-59 months is estimated at 57.8% (Table 18). Boys have prevalence rates (59.1%) that are slightly higher than that of girls (56.4%). Anemia affects more children in rural areas (59.8%) than those in urban areas (40.0%).

Table 18. Prevalence of Anemia Among Children 6-59 Months of Age (%)

Indicator Number	Indicator description and required disaggregation	Baseline Prevalence for ZOI (1)					
		Rural		Urban		All ZOI	
		Value	SE	Value	SE	Value	SE
3.1.9-14	Prevalence of anemia among children 6-59 months (%) (2)						
	All Children 6-59 months	**59.8**	1.96	**40.0**	5.91	**57.8**	1.88
	Boys	**61.0**	2.71	**41.8**	8.74	**59.1**	2.60
	Girls	**58.6**	2.85	**38.6**	8.13	**56.4**	2.71

Source: Cambodia DHS Survey (2010). Notes: (1) Zone of Influence includes 4 provinces: Battambang, Kampong Thom, Pursat and Siem Reap; (2) Sample only includes children with hemoglobin data collected. SE (Standard Error)

This means that way over half of the kids 6-59 months in the ZOI are at risk of facing deficient growth and development, including increased morbidity and impaired cognitive development.

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Annex 1: Summary of Indicators by Goal, Objectives and Intermediate Results

Annex Table 1. Indicators for Goal: Sustainably Reduce Global Poverty and Hunger

Indicator Number	Indicator description and required disaggregation	Baseline Values for ZOI (1)		
		Rural	Urban	All ZOI
3.1.6-16	Prevalence of Underweight Children Under 5 Years of Age (%)(2)			
	All children under 5 years of age	31.7	19.7	30.4
	Boys	32.2	20.0	30.9
	Girls	31.1	19.3	29.7
4-16	Prevalence of Poverty: People living on less than $1.25/day (%) (2005 PPP) (3)			
	All Households	12.7	3.1	11.7
	Female/No Male in household (FNM)	11.5	2.8	10.4
	Male/No Female in household (MNF)	3.4	0.0	3.0
	Male and Female in household (MFA)	12.9	3.2	11.9
4-16 (a)	Percent of people living below the country poverty line (2009) (3)			
	All Households	23.7	17.6	23.1
	Female/No Male in household (FNM)	20.6	12.8	19.7
	Male/No Female in household (MNF)	9.3	14.7	9.9
	Male and Female in household (MFA)	24.2	18.2	23.6
	Child/No Adult (CNA)	-	-	-

Note: (1) Zone of Influence includes 4 provinces: Battambang, Kampong Thom, Pursat and Siem Reap; (2) Uses WHO 2006 Population of Reference; (3) Calculation based on the Cambodia Method that does not account for imputed rents; (a) Not required indicators.

Annex Table 2. Indicators for First Level Objectives 1 and 2

Objective Indicator Number	Indicator description and required disaggregation	Baseline Values for ZOI [1]		
		Rural	Urban	All ZOI
1	**Inclusive Agricultural Sector Growth**			
4.5-9	Per capita expenditures (as proxy for income) of USG targeted beneficiaries (USD per capita) **{per capita per year}**			
	All Households	559	832	587
	Female/No Male in household (FNM)	627	962	668
	Male/No Female in household (MNF)	1,005	1,801	1,103
	Male and Female in household (MFA)	547	801	572
	Child/No Adult (CNA)	-	-	-
4.5-9	Per capita expenditures (as proxy for income) of USG targeted beneficiaries (USD per capita) **{per capita per day}**			
	All Households	1.53	2.28	1.61
	Female/No Male in household (FNM)	1.72	2.64	1.83
	Male/No Female in household (MNF)	2.74	4.94	3.02
	Male and Female in household (MFA)	1.50	2.19	1.57
	Child/No Adult (CNA)	-	-	-
4.5-?	Women Empowerment in Agriculture Index (WEAI)	0.978	-	0.978
2	**Improved Nutritional Status Especially of Women and Children**			
3.1.9-11	Prevalence of stunted children under 5 years of age (%)[2]			
	All children under 5 years of age	45.0	35.7	44.0
	Boys	45.7	37.5	44.6
	Girls	44.5	33.7	43.3
3.1.9-12	Prevalence of wasted children under 5 years of age (%)[2]			
	All children under 5 years of age	12.4	17.6	13.0
	Boys	12.8	12.3	12.7
	Girls	12.0	23.4	13.3
3.1.9-13	Prevalence of Underweight Women (%)	15.8	16.7	15.9

Note: (1) Zone of Influence includes 4 provinces: Battambang, Kampong Thom, Pursat and Siem Reap; (2) Uses WHO 2006 Population of Reference; (3) Sample only includes children with hemoglobin data collected; (4) While the DHS instrument includes all the data to compute this indicator, the available Cambodia data set does not have the variable that allows to calculate the sub-component MMF (it does not have the data on frequency of feedings of solids, semi-solid and soft foods). The number reported here refers to the Impact Evaluation (IE) Sample, not representative of the ZOI.

Annex Table 3. Indicators for Intermediate Results

Intermediate Result Indicator Number	Indicator description and required disaggregation	Baseline Values for ZOI (1)		
		Rural	Urban	All ZOI
5	**Increased Resilience of Vulnerable Communities and Households**			
3.1.9.1-3 & 4.7-4	Prevalence of households with moderate or severe hunger			
	All households	0.22	-	0.22
	Female/No Male in household (FNM)	0.00	-	0.00
	Male/No Female in household (MNF)	0.00	-	0.00
	Male and Female in household (MFA)	0.23	-	0.23
	Child/No Adult (CNA)	-	-	-
6	**Improved Access to Diverse and Quality Foods**			
3.1.9.1-1	Prevalence of children 6-23 months receiving a minimum acceptable diet			
	All children 6-23 months	35.5	-	35.5
	Boys	35.6	-	35.6
	Girls	35.5	-	35.5
3.1.9.1-2	Women's Dietary Diversity: Mean # of food groups consumed by women of reproductive age	4.6	-	4.6
7	**Improved Nutrition Related Behaviors**			
3.1.9-4 & 3.1.9.1-4	Prevalence of exclusive breastfeeding of children under six months of age			
	All children under 6 months of age	74.1	86.8	75.5
	Boys	79.1	89.3	80.4
	Girls	65.1	78.5	66.1
8	**Improved Use of Material and Child Health and Nutrition Services**			
3.1.9-6	Prevalence of anemia among women of reproductive age			
	All women of reproductive age (15-49 years)	48.8	40.1	47.6
	Pregnant women	55.0	43.7	53.2
	Non-pregnant women	48.4	39.9	47.3
3.1.9-14	Prevalence of anemia among children 6-59 months (3)			
	All children 6-59 months of age	59.8	40.0	57.8
	Boys	61.0	41.8	59.1
	Girls	58.6	38.6	56.4

Note: (1) Zone of Influence includes 4 provinces: Battambang, Kampong Thom, Pursat and Siem Reap; (2) Uses WHO 2006 Population of Reference; (3) Sample only includes children with hemoglobin data collected; (4) While the DHS instrument includes all the data to compute this indicator, the available Cambodia data set does not have the variable that allows to calculate the sub-component MMF (it does not have the data on frequency of feedings of solids, semi-solid and soft foods). The number reported here refers to the Impact Evaluation (IE) Sample, not representative of the ZOI.