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## INTEGRATED NUTRITION INVESTMENT FRAMEWORK (INIF)

USAID/Cambodia

April 2012

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The Strengthening Partnerships, Results and Innovations in Nutrition Globally (SPRING) Project is supported by the United States Agency for International Development (USAID) under Cooperative Agreement No. AID-OAA-A-11-00031. SPRING is managed by JSI Research & Training Institute, Inc.

## Contents

EXECUTIVE SUMMARY .....	4
Situational Analysis .....	4
Demographic and Trends .....	4
Progress toward MDG1, MDG4, MDG5.....	5
Nutrition status and progress.....	6
Causal Factors of undernutrition .....	11
Current policy directions for improving nutrition.....	11
Priority Recommendations .....	12
Nutrition Strategic Approach.....	12
PREVENTION OF UNDERNUTRITION.....	13
Recommended Investment 1: Social and Behavior Change Communication (SBCC).....	13
Recommended Investment 2: Strengthen Maternal Nutrition Interventions.....	16
Recommended Investment 3: Reduced Anemia in children and pregnant and lactating women.....	16
Recommended Investment 4: Improved access to and consumption of a diverse and quality diet.	19
Enabling Environment and Country Ownership .....	21
Recommended Investment 5: Enabling Environment for Nutrition Improvements.....	21
Programming Options .....	23
Annexes.....	28
Annex 1:.....	28

## Tables and Figures

<b>Table 1. Cambodia’s Progress toward MDGs 1, 4, 5</b> .....	6
<b>Table 2. Trends in women’s health and nutrition in Cambodia</b> .....	7
<b>Table 3. Trends in child health and nutrition in Cambodia</b> .....	8
<b>Table 4. Relevant RGC policy/strategy</b> .....	12
<b>Table 5. Specific actions for Current OPHE programs</b> .....	24
<b>Table 6. Specific actions for current FSE program</b> .....	24
<b>Table 7. Stakeholder Priority Areas</b> .....	24
<b>Figure 1. Trends nutritional status of children under 5 years</b> .....	5
<b>Figure 2. Indicators of women’s nutritional status by wealth quintile</b> .....	8
<b>Figure 3. Stunting prevalence by child’s age</b> .....	9
<b>Figure 4. Stunting Prevalence among children under 5 years of age by wealth quintile</b> .....	9
<b>Figure 5. Trends in anemia among children under 5, pregnant women and women of reproductive age and progress towards targets</b> .....	10
<b>Figure 6. Anemia prevalence by child's age</b> .....	10
<b>Figure 7. Anemia prevalence among children &lt;5 by household wealth quintile</b> .....	10
<b>Figure 8. USAID Strategic Approach</b> .....	12

## **Executive Summary**

Undernutrition threatens the lives of women and children in Cambodia and represents a major barrier to the country's development. Results from the 2010 Cambodia Demographic and Health Survey (CDHS) indicate that infant and child mortality rates, while remaining unacceptably high, have improved significantly over the past five years. However, undernutrition and anemia rates in both children and women have not improved substantially and continue to adversely impact health indicators and the development of human capital in the nation. In order for the priority development goals of the Royal Government of Cambodia (RGC) to be realized, the nutritional status of Cambodians must be improved.

USAID seeks to accelerate reductions in undernutrition and anemia in young children and mothers by complementing its current investments in improving food security, nutrition, and health by strengthening existing, and/or adding new, evidence-based interventions that address the identified direct causes of undernutrition. In February 2012, a USAID/Washington Nutrition team along with SPRING consultants visited USAID/Cambodia to provide strategic planning assistance by conducting an analysis of current USG nutrition investments, existing nutrition links and gaps between sectors, country needs, and gaps in knowledge, programming, and capacity. Consultations with partners, RGC representatives and other stakeholders, as well as field visits to nutrition and agriculture sites, and a debriefing with USAID/Cambodia informed the development of the following recommendations.

The recommended investments for USAID/Cambodia are briefly summarized in the box below. The document provides a more detailed situational analysis of nutrition in Cambodia, a review of current policy directions, and presents priority recommendations and programming options.

### **Recommended Investments to address stunting and anemia in Cambodia**

- Social and Behavior Change Communication (SBCC) for improving nutrition and hygiene behaviors
- Strengthening Maternal Nutrition Interventions
- Reducing Anemia in children and pregnant and lactating women
- Improving access to and consumption of diverse and quality diet
- Enabling environment for nutrition

## **Situational Analysis**

### ***Demographics and Trends***

Cambodia has a predominantly young and rural population, with 80% percent of the population in rural areas, and 70% under the age of 35 (with 45% under the age of 20). Agriculture is an extremely important sector for Cambodia, where 72.3% of the population is involved in agricultural production. Women represent 55% of the total adult population and 62% of adults work in agriculture. The climate in Cambodia is tropical, with two monsoon seasons: the northeastern monsoon that occurs between November and February brings cooler temperatures and little rain while the southwestern monsoon that occurs between May and October brings strong winds, high humidity and heavy rain.

In the past two decades Cambodia has made substantial improvements in poverty reduction, health, education, and food security. Yet despite improvements in many areas, reductions in undernutrition prevalence among women and children have stagnated. Much of the progress made from 2000 to 2005 was stalled or actually reversed between 2005 and 2010. The prevalence of stunting, or chronic

undernutrition, decreased only slightly and continues to affect nearly 40 % of children under 5 years of age. The prevalence of wasting, or acute malnutrition actually increased from 8.4% in 2005 to 10.9% in 2010. The prevalence of underweight, was about the same in 2010 (28.3%) as it was in 2005 (28.1%). Anemia continues to affect more than half (55.1%) of all children under the age of 5 in Cambodia.

**Figure 1: Trends nutritional status of children under 5 years (CDHS 2000, 2005, 2010)**



#### **Progress toward MDG1, MDG4, and MDG5**

In the past two decades, Cambodia has made substantial improvements in poverty reduction and maternal and child health. In terms of economic growth, Cambodia’s GDP per capita has increased from USD 248 in 1994 to USD 739 in 2008 and USD 830 in 2010. Despite the food price crisis in 2008 and global financial crisis in 2009, Cambodia has returned to its pre-crisis path of economic development and boasts a 5.9% annual growth rate.<sup>1</sup> The national poverty rate in 2010 was estimated at 25.8%, which represents marked and consistent improvement from 47.0% in 1993, 34.7% in 2005, and 30.1% in 2007.<sup>2</sup> The poverty rate is significantly higher (45%) in the Tonle Sap region, where an estimated one third of the country’s poor live.

In general, economic growth has been accompanied by distinct improvements in health indicators. For instance, the maternal mortality ratio decreased significantly from 2005 (472 per 100,000 live births) to 2010 (206 per 100,000). Furthermore, the proportion of births attended by a skilled health provider increased dramatically from 2000 (31.8%) to 2010 (71.0%).

In terms of child health and mortality, the period from 2000 to 2010 was characterized by a marked reduction in the infant mortality rate, which fell from 92.7 per 1,000 live births in 2000 to 57.7 in 2010. Furthermore, children under 5 years of age in Cambodia are far less likely to die today than they were 10 years ago. In fact, the under 5 mortality rate dropped from 121.6 per 1,000 live births in 2000 to 68.0 per 1,000 live births in 2010. An impressive increase in the exclusive breastfeeding rate, which went

<sup>1</sup> Council for Agriculture and Rural Development. (2011). *Review Report: Strategic Framework for Food Security and Nutrition in Cambodia 2008-2012* (SFFSN).

<sup>2</sup> Council for Agriculture and Rural Development. (2011).

from 11.4% in 2000 to 73.5% in 2010, coupled with an increase in other essential child health services contributed significantly to the decrease in infant and child mortality rates.

However, despite improvements in poverty and a number of health indicators, Cambodia's progress toward achievement of the MDGs is threatened by a lack of improvement in the nutritional status of women and children. While the proportion of children who are underweight fell from 38.5% in 2000 to 28.1% in 2005, it remained almost identical (at 28.3%) in 2010.

**Table 1: Cambodia's Progress toward MDGs 1, 4, 5**

MDG, by 2015...	Indicator	2000	2005	2010
<b>1. Halve the proportion of people whose income is less than one dollar a day</b>	Proportion of population below \$1 (PPP) per day (%)	-	34.7*	<b>25.8**</b>
<b>2. Halve the proportion of people who suffer from hunger</b>	Prevalence of underweight among children five (%) ***	38.5	28.1	<b>28.3</b>
<b>4. Reduce by two-thirds the under-five mortality rate</b>	Under-five mortality rate (per 1,000 live births)***	121.6	106.3	<b>68.0</b>
	Infant Mortality Rate (per 1,000 live births)***	92.7	88.1	<b>57.7</b>
<b>5. Reduce by three quarters the maternal mortality ratio</b>	Maternal Mortality Ratio (per 100,000 live births)***	437	472	<b>206</b>
	<b>Proportion of births attended by skilled health personnel (%)***</b>	<b>31.8</b>	<b>43.8</b>	<b>71.0</b>

\*Cambodia Socioeconomic Survey 2004

\*\* Mid Term Review 2011 on National Strategic Development Plan update 2009-2013

\*\*\*CDHS 2000, CDHS 2005, CDHS 2010

### ***Nutrition Status and Progress***

Undernutrition in Cambodia is characterized by significant variations in stunting, underweight, and wasting across wealth quintile and geographic region.

#### ***Maternal Nutrition***

Maternal undernutrition poses serious risks for both mother and child. An undernourished pregnant woman is at greater risk of obstructed labor, more likely to die as a result of postpartum hemorrhage and more susceptible to disease. As shown in Table 2, 19.1% of women in Cambodia have low BMI, and the underweight prevalence has remained almost the same over the past 10 years. Low BMI prior to pregnancy is associated with increased risk of giving birth to a child that is too small for gestational age, which is a major predictor of neonatal morbidity and mortality, failure to grow, slow cognitive development and chronic disease during adulthood.<sup>3</sup> With regard to short stature, an estimated 6.3% of Cambodian women are less than 145 cm tall, actually increasing from 2000 and slightly decreasing since 2005.

<sup>3</sup> National Institute of Statistics, Directorate General for Health, & ICF Macro. (2011). *Cambodia Demographic and Health Survey 2010*.

**Table 2: Trends in women's health and nutrition in Cambodia (CDHS 2000, 2005, 2010)**

Indicator	2000	2005	2010
% of women* with height < 145 cm	5.5	7.7	6.3
% of women with BMI < 18.5	20.7	20.3	19.1
% of women with anemia	57.8	46.6	44.4
% of pregnant women with anemia	66.4	57.1	52.7
% of women who took iron folate for 90+ days during last pregnancy	2.4	17.6	56.9
% of women who received iron folate tablets or syrup postpartum	-	-	44.9
% of women who took deworming medication during last pregnancy	-	10.7	44.5

\*Women of reproductive age (15-49 years)

Anemia increases the risk of maternal and child mortality, stillbirths and low birth weight babies, and globally, is estimated to be a contributing factor in 20% of all maternal deaths.<sup>4</sup> For Cambodia, anemia rates among women are alarmingly high, with 44.4% of women of reproductive age and 52.7% of pregnant women being anemic. Anemia can be caused by a micronutrient deficiency or by helminth infections and other diseases, particularly malaria. The most common form of anemia globally, and about 50% of anemia in Cambodia, is iron deficiency anemia (IDA).

Although women's anemia rates have improved in the last 10 years, its prevalence remains unacceptably high<sup>5</sup>. Current interventions to reduce anemia prevalence include iron and folic acid (IFA) supplementation during pregnancy and after delivery. As shown in Table 2, there has been substantial improvement in IFA supplementation coverage during pregnancy from 2000 to 2010; yet only 56.9% of women report that they took the full recommended 90-day dose of IFA tablets during their last pregnancy. Furthermore, only 44.9% of women took the recommended 42 tablets after their most recent delivery. The fact that IFA supplementation for pregnant and postpartum women has increased significantly, yet anemia prevalence has remained high, suggests possible compliance problems, as well as other possible causes of anemia (i.e. – helminthes and hemoglobinopathies). Although anemia prevalence overall has not improved significantly, it was noted that there have been improvements in the distribution of anemia (i.e. – less cases of moderate to severe anemia and more cases of mild to moderate anemia).

Helminth infections are a significant contributing factor to anemia in both women and children. It is recommended for pregnant women to take a single dose of deworming medication during the second or third trimester. While deworming coverage has increased greatly since 2005, only 44.5% of women reported taking the recommended dose during their most recent pregnancy. This is significant because even a moderate hookworm infection can double iron losses in a woman of reproductive age.<sup>6</sup> In addition to IFA supplementation during pregnancy and after delivery and deworming during pregnancy, the National Nutrition Program (NNP) is interested in adding weekly iron/folate supplements (WIFS) for women of reproductive age to its strategy for reducing anemia prevalence. The goal of WIFS is to decrease the proportion of women who enter pregnancy anemic, recognizing the fact that many women do not have their first antenatal visit in time to maximize the benefits of IFA supplementation during pregnancy and that iron rich foods are in low supply in the Cambodian diet since they are not affordable

<sup>4</sup> National Nutrition Program. (2011). *National Policy and Guidelines for Micronutrient Supplementation to Prevent and Control Deficiencies in Cambodia*.

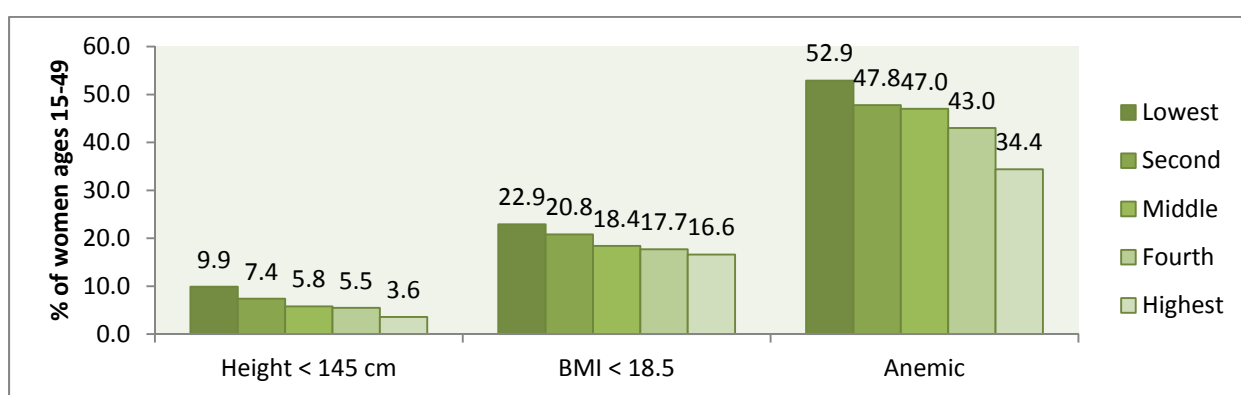
<sup>5</sup> CDHS (2010).

<sup>6</sup>National Nutrition Program. (2011).

for many women. However, this program is currently only being piloted in a small number of areas due to its high cost and funding shortfalls, making universal coverage in the near future is highly unlikely.

In Cambodia, undernutrition affects women in all socioeconomic groups, but poor women are disproportionately at risk of being short stature, underweight and anemic. As can be seen in Figure 2, 9.9% of women in the poorest wealth quintile are short stature, 22.9% are underweight, and more than half (52.9%) are anemic. In comparison, 3.6% of women in the highest wealth quintile are short stature, 16.6% are underweight and 34.4% are anemic. While it is clear that higher income is associated with better nutritional status, economic development alone will not accelerate reductions in undernutrition. In fact, global evidence indicates that the rate of reduction of undernutrition in countries with nutrition-focused programs can be twice as fast as income generation alone.

**Figure 2: Indicators of women’s nutritional status by wealth quintile (CDHS 2010)**



### Child Nutrition

As mentioned previously, much of the nutrition progress made from 2000 to 2005 was stalled or actually reversed between 2005 and 2010, with stunting, wasting, and anemia continuing to represent significant challenges in Cambodia. Table 3 below represents the overall trends in child health and nutrition between 2000 and 2010.

**Table 3: Trends in child health and nutrition in Cambodia (CDHS 2000, 2005, 2010)**

Indicator	2000	2005	2010
Infant mortality rate	92.7	88.1	57.7
Under-5 mortality rate	121.6	106.3	68.0
% of children < 5 underweight	38.5	28.1	28.3
% of children < 5 stunted	49.8	42.7	39.9
% of children < 5 wasted	16.8	8.4	10.9
% of children < 5 with anemia	63.4	61.9	55.1
% of children < 5 that received deworming medication	-	26.7	56.7
% of infants (0-5 months) exclusively breastfed	11.4	60.0	73.5
Prevalence of early initiation of breastfeeding (within 1 hour)	11.0	35.1	65.2
% of children (12-24 months) using bottle with nipple	-	11.8	24.7
% of children (6-23 months) with minimum acceptable diet*	-	45.1	24.0
% of children < 5 with symptoms of ARI in the last 2 weeks	19.8	8.5	6.4



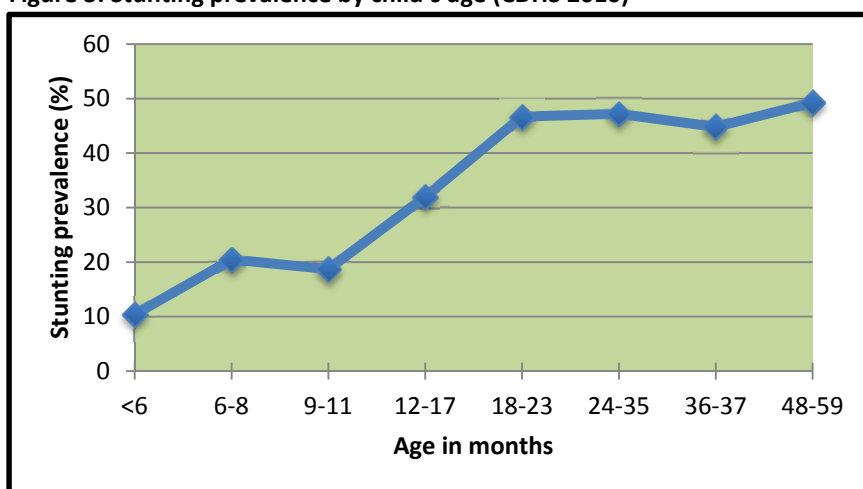
<b>% of children &lt; 5 with diarrhea in the last 2 weeks</b>	18.9	19.5	14.9
<b>% of children (6-59 months) supplemented with vitamin A</b>	28.5	34.5	70.9
<b>% of households consuming adequately iodized salt</b>	12.2	72.5	82.7

### Stunting

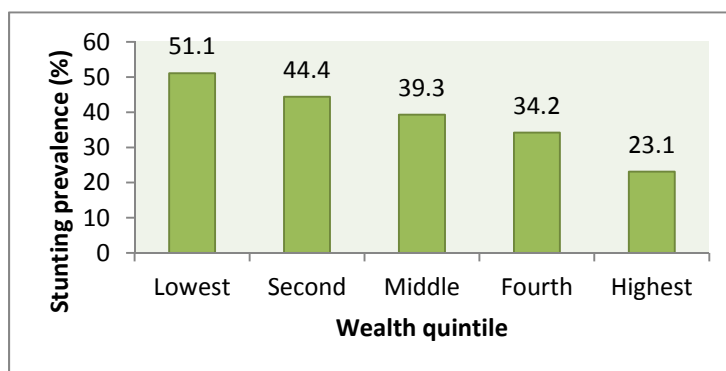
Stunting, or low height-for-age, is an anthropometric measure of linear growth that indicates chronic restriction of a child’s potential growth and is associated with deficits in cognitive development, poor performance in school and reduced productivity in adulthood. Stunting is a major public health problem in Cambodia, and it represents a significant obstacle to the development of the nation’s human capital. While there has been some improvement in stunting since 2000 (see Table 3), progress has been unacceptably slow, with 39.9% of all children under 5 years of age stunted in 2010. In fact, compared to the years between 2000 and 2005, reduction in stunting has slowed significantly since 2005.

As shown in Figure 3, stunting prevalence increases dramatically from 10.4% among infants less than 6 months of age to 20.5% among infants ages 6 to 8 months. The prevalence then continues to increase steadily up to 2 years of age. This reveals that complementary foods are not providing children with the nutrition that they require. In particular, the most common early infant food, rice porridge or *bobor*, is often lacking animal source foods and/or vegetables. Furthermore, the amounts and frequency of feeding are often insufficient.

**Figure 3: Stunting prevalence by child’s age (CDHS 2010)**



**Figure 4: Stunting prevalence among children under 5 years of age by wealth quintile (CDHS, 2010)**



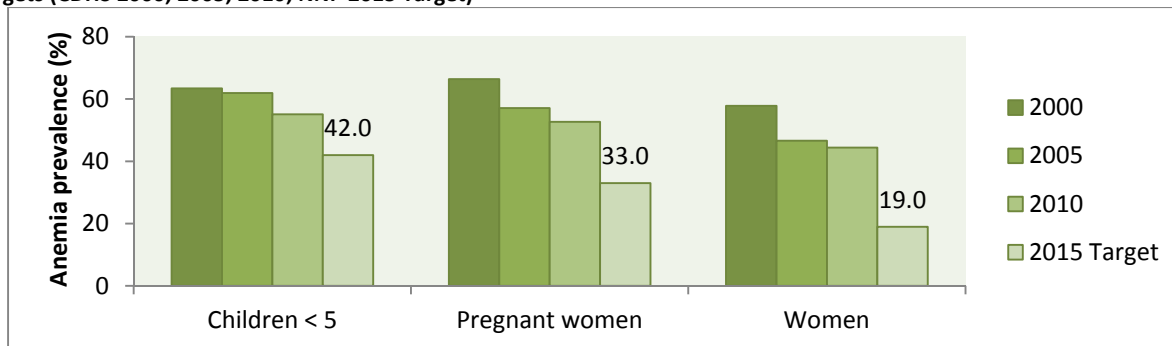
As shown in Figure 4, stunting is a problem across all socio-economic groups. Stunting prevalence among children in the poorest wealth quintile (51.1%) is more than double that of children in the highest wealth quintile (23.1%). Yet a quarter of all young children in the wealthiest households are stunted. This suggests that there is a widespread lack of understanding regarding the negative consequences of stunting and how it can be prevented.

### Anemia in Children

Anemia among young children can lead to increased susceptibility to disease, loss of appetite that can contribute to macronutrient undernutrition and slow cognitive development. More than half (55.1%) of

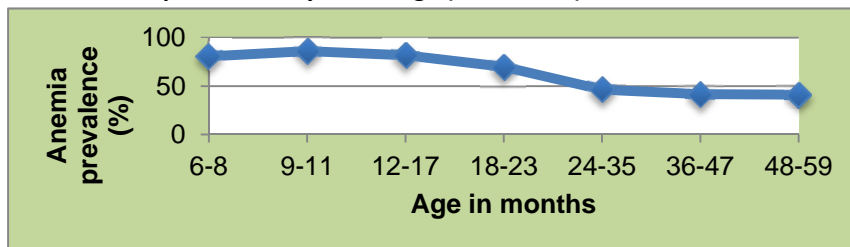
all children under 5 years of age in Cambodia are anemic. While the prevalence has decreased from 63.4% in 2000, there is still an urgent need to further reduce the anemia rate among young children. As displayed in Figure 5, NNP has set the 2015 target for anemia among young children at 42%, requiring a 13.1 percentage point reduction in the next three years. Interventions to address anemia among young children include biannual deworming treatment for children 6-59 months, which 56.7% of children received in 2010. Though this represents a huge increase from 26.7% in 2005, there is still a significant need to increase coverage in order to meet the NNP goal of 90% coverage by 2015.<sup>7</sup>

**Figure 5: Trends in anemia among children under 5, pregnant women, and women of reproductive age and progress toward targets (CDHS 2000, 2005, 2010; NNP 2015 Target)**



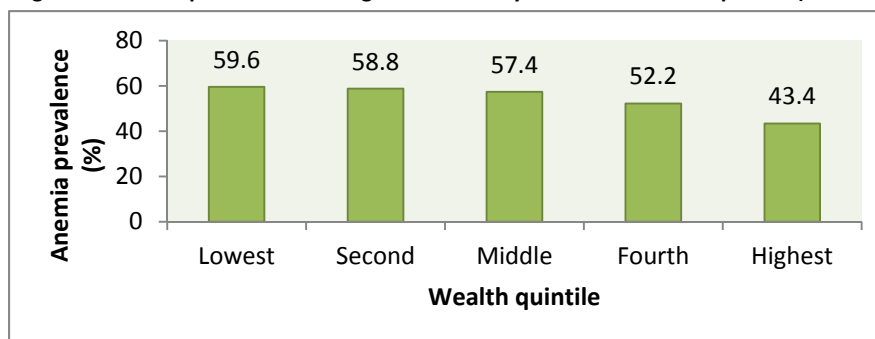
**Figure 6: Anemia prevalence by child's age (CDHS 2010)**

Anemia rates vary greatly by age. As shown in Figure 6, anemia prevalence is highest among children under 2 years of age. In fact, 86.2% of infants 9 to 11 months are anemic. High rates of anemia among children ages 6 to 24 months indicate that typical feeding practices are not meeting the child's iron needs.



**Figure 7: Anemia prevalence among children < 5 by household wealth quintile (CDHS 2010)**

As shown in Figure 6, anemia is a major barrier to child health among all socio-economic groups. Almost 60% of children under 5 years of age in the poorest wealth quintile are anemic as compared with a still alarmingly high rate of



43.4% among children under 5 years of age in the highest wealth quintile. This illustrates the scope of the anemia problem in Cambodia and underscores the importance of establishing adequate coverage of Multiple Micronutrient Powders (MNP) distribution and increasing deworming coverage. MNPs, commonly known as "sprinkles," are now universally accepted by the international nutrition community

<sup>7</sup> National Nutrition Program. (2009). *National Nutrition Strategy 2009-2015*.

as an effective response to vitamin and mineral deficiencies among infants and young children in developing countries. MNP distribution has begun in a few pilot areas of Cambodia with plans to scale up to other provinces in the future.

### ***Causal Factors of Undernutrition***

The following factors were identified as possible key determinants of undernutrition in Cambodia:

- Poor maternal nutrition
  - Women entering pregnancy anemic and with low BMI
  - Inadequate weight gain during pregnancy
- Inadequate infant and young child feeding practices
  - Inadequate complementary feeding: lack of animal source foods, insufficient amount and frequency, poor consistency of food, lack of variety
- Frequent childhood illness
  - Diarrhea, acute respiratory infections (ARI), and helminthes
- Unsafe water, poor hygiene and sanitation

Other underlying factors contributing to undernutrition include:

- A lack of awareness at facility, community and household levels of symptoms and consequences of malnutrition, particularly stunting and micronutrient undernutrition, which are not easily seen
- Mothers' time constraints affect feeding and food preparation
- A lack of nutrition capacity at national level, health center staff, VHSGs, NGO field staff
- Inadequate coverage/implementation of policies and guidelines
- A lack of time and staff
- Inadequate budget for nutrition from RGC and among donors

## **Current Policy Direction for Improving Nutrition**

Cambodia has a strong policy environment for investment in nutrition. Investing in nutrition programming that targets vulnerable households and utilizes an integrated approach is very much in line with government priorities. The Royal Government of Cambodia is committed to improving the nutritional status of women and children in Cambodia in order to improve livelihoods, increase human capital and promote sustainable development. However, a lack of personnel as well as limited technical capacity and funding often prevents comprehensive implementation of strategies and scale up to national coverage. As such, relevant RGC strategies should be used to identify gaps and opportunities for scale up of evidence-based interventions whenever possible. The following table provides a summary of some of the most relevant policies and strategies, which will inform current program activities as well as future nutrition strategies.

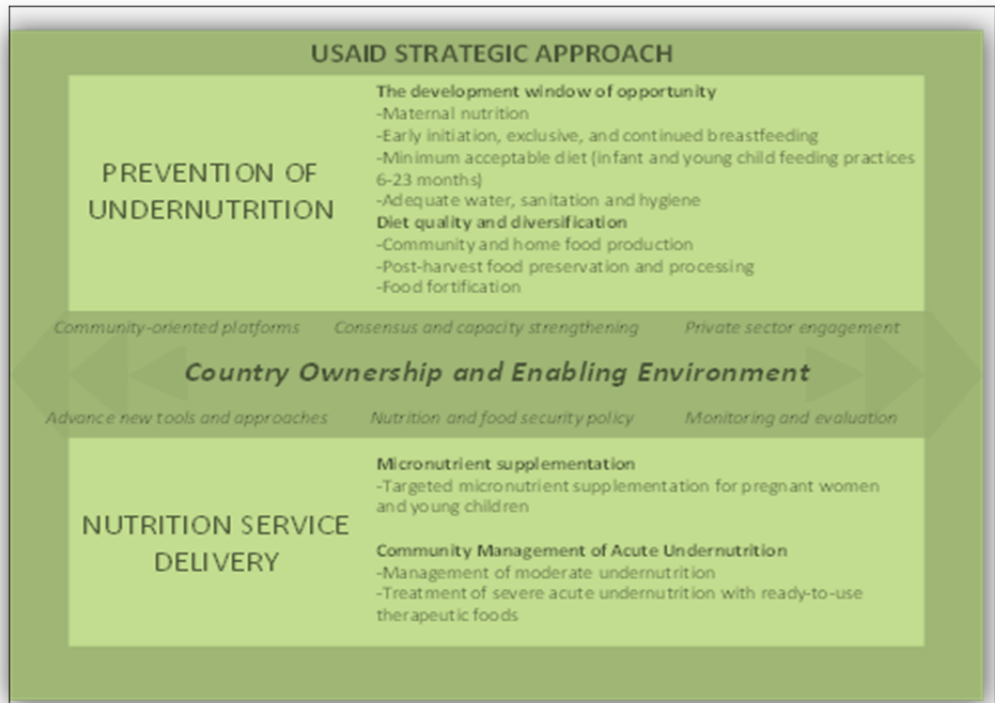
**Table 4: Relevant RGC policy/strategy**

Relevant RGC policy/strategy
<ul style="list-style-type: none"> <li>• <b>Cambodia Child Survival Strategy 2006-2015</b></li> <li>• <b>Health Strategic Plan 2008-2015</b></li> <li>• <b>National Nutrition Strategy 2009-2015</b></li> <li>• <b>National Policy and Guidelines for Micronutrient Supplementation to Prevent and Control Deficiencies in Cambodia</b></li> <li>• <b>National Rural Water Supply, Sanitation and Hygiene Strategy 2010-2025</b></li> <li>• <b>National Social Protection Strategy for the Poor and Vulnerable 2009-2014</b></li> <li>• <b>National Strategic Development Plan 2009-2013</b></li> <li>• <b>Strategic Framework for Food Security &amp; Nutrition in Cambodia 2008-2012</b></li> </ul>

**Priority Recommendations**

The multiple dimensions and causes of undernutrition require smart integration and a comprehensive approach to addressing food security and undernutrition through multiple pathways, including agriculture, health, social and behavioral issues, and social protection. The approach illustrated below represents our foundation for maximizing the synergies of health and agriculture-based interventions to address the challenge of undernutrition. This strategic approach has been adapted to the meet the needs and opportunities in Cambodia.

**Figure 8. USAID Strategic Approach**



## **Results Framework and Recommended Investments**

The key strategic objectives that are recommended are to: 1) reduce child stunting, and 2) reduce maternal and child anemia. To achieve these objectives, 5 core intermediate results, all of which will complement each other, are recommended.

### IR1: Improved Nutrition and Hygiene Behaviors

- Improved infant and young child feeding practices
- Decreased frequency and severity of childhood illness
- Improved household dietary practices

### IR2: Improved women's nutrition during pregnancy and lactation

- Strengthen nutrition component of antenatal care
- Promote optimal weight gain during pregnancy
- Improve quality and quantity of maternal diet

### IR3: Reduced maternal and child anemia

- Scale-up micronutrient supplementation for children and pregnant and lactating women
- Increase deworming coverage for pregnant women and children

### IR4: Improved access to and consumption of diverse and quality diet

- Integrated Nutrition-Agriculture Project (HARVEST)

### IR5: Improved enabling environment for nutrition

- Increased nutrition technical expertise
- Increased advocacy for nutrition

## ***Prevention of Undernutrition***

### **Recommended Investment 1: Social and Behavior Change Communication (SBCC)**

- SBCC for infant and young child feeding practices

Progress in promoting immediate and exclusive breastfeeding in Cambodia has been impressive. This demonstrates that families are ready to change their practices when encouraged with information and health promotion messages. However, it is now necessary to protect gains and promote these practices in the face of growing availability of infant formula and the increase in the number of working women who do not have support to continue breastfeeding. Furthermore, now more attention is needed to improve complementary feeding practices for infants starting at 6 months of age, when breast milk is no longer sufficient to meet nutrient needs for optimal growth. As illustrated previously in Figure 3, stunting levels increase dramatically between 6-23 months when many children's nutritional needs are not being met by traditional feeding practices. The 2010 CDHS found only 24% of children under 2 years of age are fed a minimal acceptable diet. A comprehensive approach to improving complementary feeding should include counseling for caregivers on feeding and care practices and on the optimal use of locally available foods, improving access to quality foods for poor families through household food production, and the provision of micronutrients and fortified food supplements when needed.

Complementary feeding has many important elements that must be conveyed to families through well-designed BCC: active feeding, consistency, frequency, diversity, safety and quantity of complementary foods. The Communication for Behavioral Impact (COMBI) "Campaign to Promote Complementary Feeding in Cambodia: 2011-2013," developed by UNICEF, will be aired in March 2012. This is a well-designed campaign that will provide important information via mass media on child feeding during the critical 6-24 month period. USAID and NGO partners can build on this initiative with community-level

SBCC interventions to expand and improve health education and training guidelines to complement COMBI's mass media messages. Furthermore, a well-coordinated and designed interpersonal communication effort, could contribute significantly to improved feeding practices and increase the prevalence of minimum acceptable diet among children 6-23 months.

In particular, current USAID/Cambodia supported programs could serve as an excellent entry point for nutrition, for example by including additional resources for the control and prevention of maternal anemia, promoting exclusive breastfeeding and good complementary feeding practices, and educating caregivers about nutritious, including fortified foods. At the district level, USAID/Cambodia should coordinate activities closely with other implementing NGOs to ensure that Information, Education, Communication (IEC) materials and nutrition messages are consistent across programs. For instance, the "Mother and Child Health Book" should be revised to match MoH guidance and the Baby Friendly Community Initiative (BFCI) flipchart. On the Infant and Child Feeding Advice section, (p. 61) it advises starting family food when a child is 2-3 years of age and giving thick/enriched bobor up until then, instead of starting family food at 12 months of age per MoH guidance.

- SBCC around key hygiene practices to reduce frequency and severity of infections in children

The World Health Organization estimates that up to 50% of undernutrition<sup>8</sup> and 88% of all diarrhea cases<sup>9</sup> are attributable to unsafe water, inadequate sanitation and inappropriate hygiene practices. From a burden of disease perspective, the main health benefit of improvements in water, sanitation and hygiene (WASH) is a reduction in diarrheal disease. Black et al. (2008) found that the odds of stunting at 2 years of age increased by a factor of 1.05 with each episode of diarrhea in the first 24 months of the child's life.<sup>10</sup>

Hand washing with soap alone has been shown to reduce diarrhea morbidity by 37%, while improved sanitation and point-of-use water treatment have been shown to reduce diarrhea by 34% and 29% respectively.<sup>11</sup> UNICEF is currently conducting a secondary analysis of the 2010 CDHS that will compare the nutritional status of young children with differing access to improved WASH conditions. This analysis will provide further Cambodia-specific information related to the links between WASH and undernutrition.

In addition to a reduction in stunting prevalence, improvements in WASH will greatly reduce the burden of helminth infections. 100% of all cases worldwide of *Ascaris* (roundworm), *Trichuris* (whipworm), and hookworm infestation are attributable to inadequate sanitation and hygiene.<sup>12</sup> WASH interventions address the root cause of helminth infections and reducing the incidence rate will lead to improvements in Cambodia's alarmingly high anemia rates among women and children.

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<sup>8</sup> Fewtrell, L., Prüss-Üstün, A., Bos, R., Gore, F., & Bartram, J. (2007). Water, sanitation and hygiene: quantifying the health impact at national and local levels in countries with incomplete water supply and sanitation coverage. WHO Environmental Burden of Disease Series, No. 15. Geneva: World Health Organization.

<sup>9</sup> UNICEF. (2006). Progress for children: a report card on water and sanitation.

<sup>10</sup> Black, R.E., Allen, L.H., Bhutta, Z.A., Caulfield, L.E. de Onis, M., Ezzati, M., Mathers, C., & Rivera, J. (2008). Maternal and child undernutrition: global and regional exposures and health consequences, *The Lancet* 371, Issue 9608, 243-260.

<sup>11</sup> 3IE. (2009). International initiative for impact evaluation: synthetic review 001. Water, sanitation and hygiene interventions to combat childhood diarrhea in developing countries.

<sup>12</sup> Prüss-Üstün, A., Kay, D., Fewtrell, L., Bartram, J. (2004). Unsafe water, sanitation and hygiene. In: Ezzati, M., Lopez, A.D., Rodgers, A., Murray, C.J.L. eds. *Comparative quantification of health risks*. Geneva, World Health Organization.

Investing in provision of safe water and sanitation, especially for rural populations, will be a critical step toward improving the health of children, reducing stunting and preventing anemia. Promotion of essential hygiene actions must be a serious part of all community nutrition programs. The *National Rural Water Supply, Sanitation and Hygiene Strategy 2010-2025* presents an opportunity for USAID to link with a country-led initiative that can have tangible results.

USAID/Cambodia should seek to address the strongly associated problem of diarrheal infection through the coordination of water and sanitation (WASH) initiatives and connecting Essential Hygiene Actions (EHA) to behavior change communication activities in nutrition. This should be closely consulted with WASH assessment team's visit.

In order to improve overall hygiene practices, effective communication strategies are needed, as embodied in the **Essential Hygiene Actions (EHAs)**:

1. Treatment and safe storage of drinking water;
2. Hand washing with soap at critical times (i.e., after defecation or handling children's feces, before preparing food, before feeding children, before eating);
3. Safe disposal of feces;
4. Proper storage and handling of food to prevent contamination;
5. Community construction and use of affordable latrines.

▪ SBCC for Improved household dietary practices

In order to prevent stunting, a variety of nutritious foods in sufficient quantities must be available to families to feed their children and nourish pregnant and lactating women. Animal source foods are particularly needed to provide protein, zinc, iron, calcium and other essential nutrients. Cultivation of micronutrient rich vegetables and fruits as well as legumes should be continued and expanded to additional target areas.

Improving food availability, access, and utilization are all necessary for attaining positive nutritional outcomes. Within rice and fish value chains, production, marketing and use of these foods must be promoted. Fish is a highly nutritious food that is underused for feeding young children; information should be shared with families concerning its value and how to prepare it for young children right from the family pot. Part of the USAID strategic approach must be to develop messages to encourage families to use some of their additional production and income to identify affordable, accessible nutritious food (including fortified food) and improve the quality of food prepared and consumed by the most vulnerable household members.

Social and behavior change communication (SBCC) programming (using both interpersonal communication and mass media) will be a key area of investment for achieving this intermediate result. It will be used to reach out to target audience groups at the regional, district, community and household levels to educate households about breastfeeding, complementary feeding and handwashing; the importance of micronutrient supplementation for the prevention of vitamin A and iron deficiencies; and also about locally accessible, micronutrient rich foods to prevent deficiencies.

## **Recommended Investment 2: Strengthen Maternal Nutrition Interventions**

In order to break the cycle of stunting and other forms of undernutrition, a strong focus on improving mothers' nutrition during pregnancy and lactation is fundamental. Reducing intrauterine growth restriction by improving maternal nutrition is an important step in intervening in the life cycle to prevent stunting in future generations:

- Strengthen nutrition component of antenatal care
- Promote optimal weight gain during pregnancy

In Cambodia, 59% of pregnant women attend one or more antenatal care (ANC) visits according to the CDHS 2010, and 90% attend at least one. It appears from DHS data that coverage is good for many of the essential ANC services, such as iron and folic acid tablet distribution, blood pressure screening and information on danger signs during pregnancy. Other services have lower coverage, including urine and blood testing. 90.5% of women are weighed during their visit, which is an important element of good prenatal care.

However, the current guidelines for optimal weight gain during pregnancy are in need of review and revision. In Cambodia, weight gain recommendations during pregnancy are outdated and are not standardized in relation to a woman's BMI. The minimum recommended weight gain during pregnancy in Cambodia is just 7-9 kg (15.4-19.8 lbs) for all women regardless of BMI, and many Cambodian women purposely restrict weight gain in the hopes of having an easier delivery. However, this amount is extremely low based on global standards (which typically recommend a weight gain of approximately 11-16 kg for women with a normal BMI and approximately 12-18 kg for underweight women). A recent study in Vietnam found that women with low BMI who gained less than 10 kg during pregnancy were at greater risk of giving birth to a child too small for gestational age.<sup>13</sup>

### *Enhance quality and quantity of maternal diet*

Counseling concerning the quality and quantity of the maternal diet should be an integral part of ANC as well. The lack of appropriate knowledge about nutrition practices contributes to inappropriate caring and feeding practices, especially for young children and pregnant women and lactating women. Poor families may only eat two meals per day, a practice that is insufficient for pregnant or lactating women (and young children) who need to eat more regularly to meet their daily nutritional requirements for healthy development. Cultural norms can also have a negative impact on the nutritional status pregnant and lactating women. A woman's diet during pregnancy and lactation should include extra food and be rich in protein and micronutrients, especially iron, vitamin A, zinc and calcium. Iodized salt is essential to prevent mental impairment in offspring.

## **Recommended Investment 3: Reduced Anemia in children and pregnant and lactating women**

The groups most vulnerable to micronutrient deficiencies are pregnant women, lactating women and young children, mainly because they have a relatively greater need for vitamins and minerals and are more susceptible to the harmful consequences of deficiencies.

Pregnant women are particularly vulnerable to vitamin and mineral deficiencies because of their increased metabolic demands to meet fetal requirements for growth and development. Iron deficiency

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<sup>13</sup> Ota, E. et al. (2011). Maternal body mass index and gestational weight gain and their association with perinatal outcomes in Viet Nam. (2011). *Bulletin of the World Health Organization* 89, 127-136.



is the most common micronutrient deficiency and is the leading cause of anemia, although folate, vitamin B12 and vitamin A deficiencies, chronic inflammation, parasitic infections, and inherited blood disorders also contribute to anemia. As noted in Tables 1 and 3, the most recent measures in the CDHS 2010 showed that 44.4% of women 15-49 years of age were anemic and 11% had moderate or severe anemia. 55.1% of children under 5 years of age are anemic. 80.7% of infants 6-8 months are already anemic, pointing to the need to begin interventions early in life.

Due to unacceptably high anemia rates among women of reproductive age and pregnant women, the National Nutrition Program (NNP) has set targets for anemia reduction by 2015: a 25 percentage point reduction in the anemia prevalence among women of reproductive age and a 19.7 percentage point reduction among pregnant women. Given the slow pace of reductions in anemia prevalence, achieving these ambitious targets will require significant investment in evidence-based nutrition interventions that target anemia. In the long-term, diet diversification with a particular focus on improving access to iron-rich animal source foods is required for sustainable improvement.

One of the biggest barriers to reducing the anemia prevalence in Cambodia is that anemia testing is not available at most health facilities. Thus health workers can only use symptoms such as pallor for diagnosis. Addressing a widespread problem such as anemia without the tools to effectively identify it is a major challenge for health workers. Results from the IRD operational research on anemia control could provide valuable program learning on this gap and possible model to expand.

USAID/Cambodia's strategy should be to scale up micronutrient supplementation targeted to pregnant women and young children, with particular focus on reducing anemia. The focus should be on increasing coverage among target groups who are most in need of micronutrient and deworming interventions: infants starting at 6 months through 2 years of age and pregnant and lactating women, especially in the lowest wealth quintiles where, as Figure 4 illustrates, anemia levels are highest and compliance with supplementation recommendations is lowest.

#### Priority interventions to reduce anemia:

Interventions to prevent and correct iron deficiency anemia include dietary improvement, fortification of foods with iron, iron supplementation and other public health measures such as helminth control. All of these approaches improve iron status in some contexts. The following interventions are recommended to reduce anemia in children and pregnant and lactating women:

- Scale-up micronutrient supplementation for pregnant and lactating women
- Scale-up micronutrient supplementation for children ages 6-24 months of age
- Increase deworming coverage for pregnant women and young children

This section briefly describes these recommended interventions.

#### *Scale-up micronutrient supplementation for pregnant and lactating women*

In Cambodia, iron and folate supplementation is provided to women during pregnancy (for 90 days) and during the postpartum period (for 42 days). However, only 57% of women report taking the recommended 90 tablets or more during their last pregnancy, and only 45% received iron and folate postpartum. This challenge with compliance could be improved with strong counseling services provided by health care workers about the importance of taking iron folic acid, available stock of supplements and educating mothers about maternal nutrition, dietary diversity and informing them about ways to manage common side effects experienced. The coverage and quality of essential services should be

improved to ensure better compliance with iron supplementation during pregnancy and the postpartum period according to MoH standards.

#### Scale-up micronutrient supplementation for children ages 6-24 months

With the doubling of infant size, the expansion of the red cell mass over the first 6 months of life and low iron concentration of maternal milk, the original iron stores become exhausted. Moreover, iron in complementary foods is often lacking. Therefore, it is important to begin iron and other micronutrient supplementation at 6 months of age. The MoH has issued guidelines to address the appropriate use of MNP or Sprinkles for the prevention of iron deficiency anemia among children 6-24 months, stating that Cambodia is “ready to move to scaling up MNPs for 6-24 month old children.”<sup>14</sup> Smaller effectiveness trials in Bangladesh, Benin, Haiti and Vietnam have all demonstrated improved anemia rates when MNPs were provided for two or more months.

#### Increase deworming coverage for pregnant women and young children

Despite the fact that ANC attendance rates are high and the MoH recommends deworming for pregnant women during the second or third trimester, only 44.5% of women report taking deworming medication during their last pregnancy. Even a moderate helminth infection can greatly increase a pregnant woman’s risk of anemia, and it is associated consequences to her own health and the health of her child. Qualitative research is needed to understand the barriers and constraints to full coverage and compliance of both IFA and deworming. The IRD operational research on anemia control can shed light on these issues.

Coverage of bi-annual deworming treatment for children under 5 years of age has improved greatly in recent years: from 26.7% in 2005 to 56.7% in 2010. However, coverage should continue to be scaled up, with a focus on hard-to-reach areas.

#### Incorporate delayed cord clamping into guidelines for delivery and postpartum care

Delayed cord clamping can have a significant impact on iron stores and hemoglobin in neonates born to anemic mothers. In one randomized control trial, delayed cord clamping, compared with early clamping, resulted in improved iron status and reduced prevalence of iron deficiency at 4 months of age, and reduced prevalence of neonatal anemia, without demonstrable adverse effects. As iron deficiency in infants even without anemia has been associated with impaired development, delayed cord clamping seems to benefit full-term infants even in regions with relatively low prevalence of iron deficiency anemia.<sup>15</sup> USAID/Cambodia can ensure that delayed cord clamping is part of standard delivery protocols and help monitor adherence.

Reducing the high rates of maternal anemia in Cambodia could have a profound impact on improving work productivity and economic growth for the country recognizing that women currently represent large part of the agricultural workforce.

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<sup>14</sup>National Policy and Guidelines for Micronutrient Supplementation to Prevent and Control Deficiencies in Cambodia National Nutrition Programme February 2011.

<sup>15</sup> Effect of delayed versus early umbilical cord clamping on neonatal outcomes and iron status at 4 months: a randomized controlled trial *BMJ* 2011;343:d7157

#### **Recommended Investment 4: Improved access to and consumption of a diverse and quality diet**

Lack of dietary diversity is associated with both child stunting and anemia. However, the causal relationship is complex owing to the confounding relationship between dietary diversity and income, and other nutritional outcomes. Agricultural interventions with the most impact on nutritional status are those that introduce diverse crops through horticulture value chains and/or homestead food production and animal source foods through small animal husbandry or dairy initiatives. In Cambodia, a monotonous diet, based overwhelmingly on rice, with minimal consumption of animal-source foods and other nutritious foods are substantial constraints to improving nutrition of young children. To effectively address these constraints, programs are needed to facilitate availability, accessibility and consumption of more diverse quality foods.

Support for local families to raise and consume animal source foods, such as eggs, fish, or milk, can provide much-lacking nutrients to promote growth and development. The current USAID/Cambodia programs focus on fish, ideal for providing protein, zinc and other needed nutrients for growth. In addition to promotion of fish, there is much more that can be done for raising poultry. Better animal husbandry techniques should be introduced for ducks and chickens to both improve their yields of eggs (for consumption by children and pregnant women) and to improve homestead hygiene and reduce disease.

Assisting households to plant family gardens with vegetables and cultivate fruit and nut trees can improve dietary diversity for poor families, as is currently beginning in Cambodia and as similar programs have done in many other countries. The HARVEST strategy to insist on a balance of nutritious vegetables along with income-generating items in home gardens is sensible and should continue. A wider variety of produce can be introduced, including legumes for protein and micronutrients. Household food processing and preservation is a component that could have potential for enriching the year round supply of nutritious foods. Drying fruits, making oils, processing soybeans to make them palatable, or any number of such low technology options could extend the seasons when such vitamin rich foods are available.

#### **Food fortification**

Compelling evidence shows that, under the right conditions, mass fortification programs can be effectively implemented and achieve measurable impact on micronutrient status and outcomes. Three examples in Cambodia include salt iodization, vitamin A fortified cooking oil and iron fortified fish sauce. These programs have produced population level impacts when the fortified foods delivered sufficient amounts of a bioavailable nutrient to a large proportion of the at-risk population. According to the World Bank and The Lancet Series, these programs are deemed highly cost-effective. USAID/Cambodia should coordinate efforts with the GAIN project.

#### **Integrated Nutrition – Agriculture Project (HARVEST)**

- Sensitizing Nutrition within the existing agriculture project (HARVEST)

Strengthening the link between agriculture and nutrition can result in improved nutrition outcomes by maximizing the synergies of health and agriculture-based interventions to address the challenge of undernutrition. Integrated agriculture/nutrition strategies that are recognized to be able to impact child undernutrition include:

- Increasing community and household production of staples and quality foods like fruits, green and yellow vegetables, and animal proteins through community gardens, and, poultry and livestock farming
- Targeting and empowering women so that new farming skills, access to inputs and services, and increases in income translates into improved health and wellbeing of household members, especially their children
- Maximizing the use of food produced through improved food preservation and processing techniques e.g. drying, granaries, etc.
- Increasing household income and subsequent purchase of more nutritious foods for consumption by mothers and women
- Incorporation of nutrition outreach and behavior change activities to ensure both increases in household production and income leads to the purchase and consumption of higher quality foods and feeding of young children
- Working at national and local scale to improve fortification techniques and access to fortified foods in areas with significant micronutrient deficiencies

Increased agricultural production will increase earnings and incomes for the rural poor, which will in turn allow households to access other foods, goods, and services that will improve nutritional status and general welfare. However, evidence indicates that economic growth alone has not been sufficient to eliminate nutritional deficiencies. In Cambodia, complementary programs in nutrition, health, water and sanitation, and BCC are needed to help communities translate increased income into better growth and development outcomes for young children. As noted previously, even within the wealthiest sector of Cambodia, almost a quarter of the children are stunted.

Poverty and chronic malnutrition are widespread in rural Cambodia where smallholder agriculture dominates the economy. There is potential in the agricultural sector to reduce poverty and undernutrition by strengthening the linkages between agriculture and nutrition. Attention to the quality and quantity of food consumption is an important part of the strategy.

In the nutrition messaging and interventions around dietary diversity, it is vital that gender equity and vulnerable populations are considered. One way to address this is by conducting baseline surveys that take into account not only household level nutrition and consumption patterns by sex, age, etc., but also intra-household comparisons of consumption including gender considerations such as for male and female-headed households.

USAID | HARVEST has developed a model that couples assistance to farmers to grow additional vegetables and other crops with nutrition education, including food demonstrations conducted by local Cambodian NGOs. This model can be the nucleus for a range of topics including maternal nutrition, awareness of stunting and solutions, using family foods to feed children 12-24 months, allocation of household income for food diversity, labor saving technologies for women, demonstrations of hygiene practices, etc. A behavior change strategy using multiple approaches should be developed after conducting rapid formative research around barriers and facilitating factors for behavior change among the target population.

#### *Strengthen nutrition education for FtF target communities*

Combining clear nutrition messages with other resources (such as inputs for household gardens and fishponds) targeted to vulnerable households in food insecure areas may offer synergies that maximize

the impact of USAID health and agriculture programs. The USAID OPHE team can contribute nutrition SBCC expertise to FSE programs, particularly HARVEST. At the community level, formalizing channels for coordination between health programs being implemented by RHAC, RACHA, and URC and agriculture programs such as HARVEST will allow for the dissemination of well-tailored, clear nutrition messages to families that increasingly have the means to improve the way they eat and feed their children. By working in an integrated way within communities, families can generate a healthier life cycle by adhering to micronutrient supplementation counseling advice, growing more nutritious food, becoming more productive and feeding children a more diverse diet, and so on.

### **Enabling Environment and Country Ownership**

#### **Recommended Investment 5: Enabling Environment for Nutrition Improvements (capacity building)**

In order to build a better enabling environment for nutrition improvements, two key activities are recommended: 1) Develop nutrition technical expertise; and 2) Increase nutrition advocacy. These activities and their respective interventions are described in further detail below.

#### **Priority interventions for developing nutrition technical expertise**

Although government agencies and many NGOs aim to reduce undernutrition, they are, to some extent, constrained by the lack of trained nutrition staff. The SPRING team encountered multiple examples where absence of nutrition expertise was evident in the design, policy and/or implementation of programs. Part of USAID's strategy to improve nutrition must be to build both nutrition technical expertise for the nation and to strengthen nutrition competence among key health providers and agriculture staff.

- Strengthen and increase coverage of pre-service nutrition training
- Identify and support nutrition training opportunities for professionals

#### **Strengthen and increase coverage of pre-service nutrition training**

The coverage and availability of pre-service nutrition training for nurses, physicians and agriculturalists must be increased in order to ensure that nutrition information is disseminated at the community level. Cambodia and its partners have invested considerable funds for in-service training in nutrition, but this is not sufficient to address this serious public health issue. Medical and nursing schools should have basic nutrition and maternal and child nutrition courses as part of the curricula. Agronomists, extensionists and other food security personnel should have basic food and nutrition courses included in their undergraduate and graduate programs.

#### **Identify and support nutrition training opportunities for professionals**

While the Master of Science in Nutrition program is a significant development for the Cambodian nutrition sector, it is important to remember that technical expertise in nutrition is needed immediately and cannot be delayed until the graduation of the program's inaugural class more than two years from now. Furthermore, it is critical that nutrition training programs be made available to government staff and particularly those working in the National Nutrition Program. During the SPRING assessment, team members were told that no one from NNP was planning to enroll in the upcoming NIPH program due to lack of English language skills and time constraints. Steps to make nutrition training more accessible for professionals working full-time should be taken. For instance, USAID's E-learning Nutrition course would be extremely valuable for NGO and government staff working in the nutrition sector. USAID should consider promoting the use of this course in Nutrition among government and development partners and possibly translating into Khmer for wider audience.

### Priority interventions to Increase nutrition advocacy

It is essential to raise the profile of nutrition in government. The first step in Cambodia is for policy makers, health providers and the public to recognize that stunting is a problem with detrimental life-long consequences and commit to reversing the terrible toll it is having on children, families, communities and the country. Stunting often goes unrecognized by families who live in communities where short stature is so common that it seems normal. Even among health workers, stunting generally does not receive the same attention as underweight or wasting (low weight-for-height), especially if height is not routinely measured as part of community health programs.

- Raise awareness of stunting
- Leverage agriculture investments for nutrition improvements

### *Raise awareness of stunting*

USAID's strategy must be to raise awareness of the problem stunting and of solutions to reducing chronic undernutrition in Cambodia. Several key messages need to be communicated and tailored to different audiences. For example:

- **Stunting reflects poor nutrition of women, infants, and children.**  
Policymakers should be encouraged to use height-for-age as an indicator of overall child health and nutrition well-being. MoH should begin to include measurements of height, not just weight, as part of their routine health services.
- **Stunting that persists beyond two years of age is often permanent.**
- **Reducing stunting is important for achievement of the countries development goals.**  
Efforts to prevent stunting can contribute to achievement of these goals through enhanced cognitive development, school achievement; higher wages earned in adulthood, and better health and survival outcomes.
- **Raise awareness that children throughout the world can achieve their growth potential.**

### *Leverage agriculture investments for nutrition improvements*

This is very much in alignment with the twin goals of FtF. The example of Thailand shows the potential of a holistic, community-based approach linking agriculture and health to improve nutrition status by teaching people about nutrition at the community level at the same time that new agriculture skills, credit and post-harvest technologies are provided.

Generating political commitment and funding support to address vitamin and mineral deficiencies is a challenge because the symptoms of anemia and the effects of other deficiencies in young children are not always obvious, even to parents.

The upcoming National Seminar on Food Security and Nutrition will focus on maternal and child nutrition. This is an excellent opportunity to call attention to stunting as the most prevalent and pressing problem for the country to tackle. The Prime Minister and other key officials will be present and with expert advocacy can be convinced to allocate additional resources for prevention of undernutrition. USAID/Cambodia might consider looking at the "Profiles" program as well. It is our understanding that a plan for addressing food and nutrition insecurity will be one of the follow-up steps of the seminar, and this provides an excellent opportunity to keep the national and donor focus on stunting.

Poor nutrition is the result of many factors and requires action in many sectors, not just agriculture and health. It will be important to formulate cross-sectoral policy and planning linking agriculture, health, water and sanitation, as well as education and other sectors. Government alone cannot solve the complex problems of undernutrition; partnerships with private sector, civil society, educational institutions and others must be created to advance the solutions needed.

## **Programming Options**

### Three options for USAID nutrition investments

With increased interest and focus on nutrition and food security within the USG, USAID missions have developed a variety of programs within their portfolios to best support nutrition goals together with health and agriculture objectives and help communities achieve improved access to diverse foods and increased consumption of quality foods for women and children. Some country plans include programs to improve nutrition using community-based models that integrate nutrition, gender, agriculture, and sanitation.

Below are three programming options that USAID/Cambodia can consider for expanding support for nutrition in the country.

#### **1. Fully integrated food and nutrition program**

- Financing would be from a combination of agriculture, water and sanitation, nutrition and health funds. The integrated program would include strengthening nutrition interventions at health centers and villages, and promoting dietary diversity as well as hygiene education, water and sanitation investments. The focus of activities would be at the community level where agriculture activities and nutrition knowledge and skills for creating better diets for mothers and young children would be combined. Building an enabling environment for advocacy and nutrition competence would be essential part.
- In the short term, nutrition needs to be sensitized within the HARVEST project. If and when there is consensus for a fully integrated food and nutrition project, the design should encompass a team with nutrition and wash expertise.

#### **2. A maternal and child health program with strengthened nutrition interventions included throughout the MCH activities, a continuing agriculture production program with a robust nutrition dimension, and an FSE-nutrition program that builds an enabling environment at national and commune levels plus focus on community nutrition and water and sanitation activities.**

#### **3. Buy in to nutrition Field Support activities (Washington central mechanism) to address nutrition components not already being covered through other MCH and agriculture programs.**

This could be done in-lieu of or in combination with the other options listed above depending on the design of those programs.

Recommendations to reduce stunting and anemia within current OPHE and FSE projects  
 While the strategic approaches recommended in this report are intended to guide long-term investments in nutrition, there are a number of steps that USAID/Cambodia programs can take immediately to improve nutrition outcomes in target communities and create momentum for increased awareness of stunting and anemia in the country. Tables 4 and 5 present recommended areas for improvement and specific actions for current OPHE and FSE programs, respectively.

**Table 5: Specific actions for Current OPHE programs**

Recommended area for improvement	Specific actions
<b><i>Strengthen nutrition portion of ANC within existing programs</i></b>	<ul style="list-style-type: none"> <li>▪ Review and revise weight gain during pregnancy guidelines based on pre-pregnancy BMI and optimal outcomes</li> <li>▪ More attention quality of ANC nutrition services (iron supplementation, deworming, weight gain) among pregnant women at health center and community</li> <li>▪ Review lessons learned from IRD Operations Research for incorporation into anemia guidelines and training</li> </ul>
<b><i>Increase awareness of stunting among NGO staff, health workers, and families</i></b>	<ul style="list-style-type: none"> <li>▪ Introduce twice annual routine height for age measurement               <ul style="list-style-type: none"> <li>- Introduce to health centers</li> <li>- Add to child health booklet and MPA 10</li> </ul> </li> </ul>
<b><i>Expand/begin activities to promote complementary feeding</i></b>	<ul style="list-style-type: none"> <li>▪ Disseminate key messages: enriched <i>bobor</i> for children 6-11 months and family foods for children 12-24 months; Active feeding</li> <li>▪ Assess potential for complementary feeding cooking</li> </ul>
<b><i>Strengthen EHA within existing programs</i></b>	<ul style="list-style-type: none"> <li>▪ Promote hand washing</li> <li>▪ Promote point of use water purification in areas without safe water sources</li> <li>▪ Promote safe water storage</li> <li>▪ Explore opportunities for hygiene promotion and modeling at health facilities</li> </ul>
<b><i>Strengthen nutrition capacity of NGO staff, health center staff and VHSGs</i></b>	<ul style="list-style-type: none"> <li>▪ Increase technical nutrition staff               <ul style="list-style-type: none"> <li>- Within USAID</li> </ul> </li> <li>▪ Provide nutrition technical assistance to NGO partners</li> <li>▪ Support roll out of MPA 10 in all health centers: training, supportive supervision and monitoring</li> </ul>



**Table 6: Specific actions for current FSE program**

Recommended area for improvement	Specific actions
<b><i>Use of home gardens and fishponds to improve nutrition</i></b>	<ul style="list-style-type: none"> <li>▪ Continue to promote household consumption of nutritious foods               <ul style="list-style-type: none"> <li>• Expand Cooking demonstrations (mobile kitchens) for dietary diversity (key messages: enriched <i>bobor</i> for children 6-11 months, family foods for children 12-24 months; active feeding)</li> <li>• Promote consumption of fish among children and pregnant women</li> </ul> </li> <li>▪ Promote the use of increased income to purchase nutritious foods, especially animal source foods</li> <li>▪ Identify opportunities for household production of animal source foods</li> <li>▪ Identify labor saving technologies for women (increasing capacity to provide childcare)</li> </ul>
<b><i>Promote private sector involvement</i></b>	<ul style="list-style-type: none"> <li>▪ Identify community providers of agricultural inputs</li> <li>▪ Assess the capacity of non-clients to access household garden/fishpond inputs</li> </ul>
<b><i>Strengthen EHA at community level</i></b>	<ul style="list-style-type: none"> <li>▪ Emphasize the importance of hygiene with NGO staff</li> <li>▪ Promote hand washing (tippy tap)</li> <li>▪ Promote point of use water purification in areas without safe water sources</li> <li>▪ Promote improved sanitation practices related to house hold animals</li> <li>▪ Explore opportunities for hygiene promotion and modeling at schools</li> </ul>
<b><i>Increase access to and use of safe water</i></b>	<ul style="list-style-type: none"> <li>▪ Continue promotion of private provision of infrastructure and products</li> <li>▪ Mobilization, policy and financing in accordance with National Rural Water Supply and Sanitation Strategy 2010-2025</li> <li>▪ Promote safe water storage</li> </ul>
<b><i>Expand current model of partnering with health NGOs for nutrition behavior change and hygiene education</i></b>	<ul style="list-style-type: none"> <li>▪ In Battambang, support partnership between HARVEST-RHAC (apply lessons learned from HARVEST-RACHA partnership in Pursat)</li> <li>▪ Identify additional platforms for partnership (besides cooking demonstrations, mobile kitchens)</li> </ul>
<b><i>Strengthen nutrition technical capacity within existing projects</i></b>	<ul style="list-style-type: none"> <li>• Supportive supervision, mentorship, and refresher training in nutrition for field workers</li> <li>• Monitor <b>quality and consistency</b> of nutrition messaging</li> </ul>

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## **Annex 1: Assessment Activities**

In order to assist USAID/Cambodia in the development of a nutrition strategy, SPRING conducted an assessment from February 21<sup>st</sup> to March 2<sup>nd</sup>, 2012. Prior to this assessment, the SPRING team carried out a literature review that included a number of relevant RGC policies and strategies as well as peer-reviewed articles addressing various nutrition-related research areas in Cambodia. A detailed discussion of relevant programs, policies, and strategies can be found in Section 3 while a complete list of the documents reviewed can be found in the references section at the end of this report.

During the assessment, SPRING conducted meetings with stakeholders in order to learn about their current projects in nutrition and to determine their future priorities in the sector. If two or more stakeholders mentioned a particular priority, it was included and ranked in Table 1. The most commonly stated priority intervention area was Infant and Young Child Feeding (IYCF) practices, which includes appropriate breastfeeding and complementary feeding practices. However, most stakeholders emphasized that there is a great deal of improvement needed in the area of complementary feeding. With regard to breastfeeding, it is important that Cambodia maintain its impressive achievements in early initiation of breastfeeding and exclusive breastfeeding. These topics will be discussed in greater detail in Section 2. The second most commonly stated priority area was management of acute malnutrition and the third was pre-service training in nutrition for health workers.

A number of recurring themes were revealed through stakeholder meetings. In particular, stakeholders noted that Cambodia is lacking technical nutrition capacity on all levels- from the national level to local health centers. This is due to the fact that at present there are no undergraduate or graduate level nutrition programs and no specific courses in nutrition available in medical and nursing programs. Furthermore, stakeholders stressed the scope of the country's stunting problem, which is discussed further in Section 2. Stunting affects children in all wealth quintiles, and it is a difficult problem to address given the fact that it often goes unnoticed by parents and health workers. Complementary feeding was also emphasized as a critical priority area, despite the relative complexity of promoting appropriate complementary feeding as compared with other health behaviors. In order to address these issues, nutrition components of existing health services must be strengthened in conjunction with community-based interventions. Stakeholders also noted the successes that Cambodia has had in the nutrition sector, specifically in the areas of exclusive breastfeeding and vitamin A supplementation coverage, and conveyed optimism about momentum at the national level to improve nutrition. In order to achieve necessary improvements in nutrition, however, multi-sectoral interventions and stronger coordination amongst stakeholders are needed.

In addition to meetings with stakeholders, SPRING conducted a field visit during the second week in order to gain a better understanding of local motivators and barriers to adequate nutrition as well as to observe selected project activities firsthand. In Kompong Chhnang, the team participated in a debrief session with IRD on the ENRICH program and the on-going Operations Research to Improve Nutrition During Pregnancy in Kompong Chhnang. In Battambang, the team participated in a field day with HARVEST and community IYCF training for mothers with RHAC. Finally, the team conducted two visits to health centers and participated in a cooking demonstration and growth monitoring with RACHA in Pursat. These activities provided valuable information related to nutrition behaviors in the community as well as highlighted successes and areas for improvement within current nutrition programs. The literature review, insights from USAID/Cambodia and stakeholders, and field visit experiences have all informed this report.

**Table 7: Stakeholder priority areas**

Nutrition intervention areas	Stakeholders that prioritize these areas
<b>IYCF practices: particularly complementary feeding</b>	USAID, RACHA, URC, HKI, NMCH, NNP, UNICEF, WFP, WHO
<b>Management of acute malnutrition</b>	NMCH, NNP, UNICEF, WHO, WFP, RHAC, URC
<b>Pre-service nutrition training for health workers</b>	NMCH, UNICEF, HKI, URC, RHAC, RACHA
<b>Building nutrition capacity at the national level</b>	USAID, NMCH, NNP, WHO, WFP
<b>Multiple micronutrient powders (Sprinkles)</b>	NMCH, NNP, WHO, UNICEF, HKI
<b>Homestead food production</b>	USAID, HARVEST, RACHA, HKI
<b>Maternal nutrition</b>	USAID, NMCH, NNP, WHO
<b>Hygiene and sanitation</b>	USAID, HARVEST, PSI
<b>Food fortification</b>	WFP, UNICEF, CARD
<b>Reducing and preventing stunting</b>	CARD, WFP
<b>Whole family nutrition</b>	USAID, HARVEST
<b>Decrease infection incidence, duration, and severity</b>	UNICEF, PSI