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## **BONA WOREDA SIDAMA ZONE, SNNPR PROJECT END LINE NUTRITIONAL SURVEY PRELIMINARY REPORT**

Save the Children USA and Regional ENCU in SNNPR  
January 2008

## **1. Introduction**

Bona Woreda is one of the 19 woredas and two City Administration in Sidama Zone, SNNPR, located at about 135 kilometers South East of Awassa, the capital of SNNPR and 398km from Addis Ababa. Bona Woreda is located in the Sidama coffee livelihood Zone of SNNPR of Ethiopia. Bona woreda borders Arbegona woreda at the north, Bensa woreda at the East, Oromya region Bore Woreda at the South and Hulla & Buressa woredas in the west. The woreda is divided in to 27 rural kebeles and one urban kebele. It is a newly re-structured woreda composed of 15 kebeles form Hulla and 13 kebeles form Arbegona woreda. The population of the woreda, based on CSA 1994 census is estimated at 134386 as of 2000 EC., with 49.5% females and 50.5 % males. The population density is 557/km<sup>2</sup> and average land holding size is less than 0.5 ha/HH. Regarding ethnicity the majority are Sidama. The religion is predominately protestant. The average household (HH) size is 6 with 1-2 children per HH. The population is dependent on mixed subsistence farming with traditional techniques. Maize, 'Enset', Haricot bean, "teff" and Wheat are the main crops with coffee being the main cash crop. The staple foods in the area are 'Enset' and Maize. Bona Woreda is characterized with two agro-ecological zones; Dega (High land) which accounts for (10.7%) and mid land which accounts 89.3% (25 Kebeles) respectively.

## **2. Livelihood and food security**

Most part of Bona Woreda is located in Sidama Coffee Livelihood Zone and it covers midland part that accounts 89.3% of the area. It is a relatively productive midland area that attracts migrant laborers from nearby highland areas during the busy coffee picking season. The woreda has its problem, the best known of which was the extreme slump in coffee prices in 2002-03, which caused hardship for households in the woreda and beyond. Fortunately, prices have now returned to more favorable levels, but other problems remain: high population density and population growth; landholding fragmentation into smaller and smaller fields (which results in low levels of crop production per household); declining pasture land and livestock holdings; increasingly erratic and insufficient rainfall; and endemic coffee and "Enset" plant diseases. An additional problem is the lack of saving schemes for farmers, many of whom obtain large sums of money during the coffee harvest period.

Altitudes range from 1700 –2300 meters above sea level. The landscape is characterized by undulating hills and, due to the high population density; most of the woredas land is cultivated. This is a visibly green part of SNNPR, with eucalyptus, and coffee trees prominent throughout the woreda and "Enset" stems growing around every house. However, there is no natural forest and very limited communal grazing land.

Rainfall in coffee growing part of the woreda is more reliable than in the maize part, and falls during two rainy seasons, the "Belg" and "Kiremt" rains. Coffee is the main cash crop and Enset is the main food crop, and these are supplemented by small quantities of other rain fed food crops (including maize, sorghum, haricot beans, and sweet potatoes). Annual food crops are generally intercropped amongst the coffee and Enset plants. As a

result, plow oxen are rarely used for cultivation in woreda; most cultivation is done by hand.

Due to small landholding sizes and the large proportion of land that is dedicated to coffee production, most households do not produce enough food crops to last throughout the year, even in a year of good crop production. Market reliance is therefore quite high in woreda, suggesting that both cash crop and staple food prices should be closely monitored. One of the reasons why 2002-03 was such a bad year in this livelihood zone was because low coffee prices, and resulting low household income levels, coincided with high maize prices (which were partly caused by drought in the neighboring Sidama Maize Belt Livelihood Zone).

Market access is generally good in this livelihood zone, with a major tarmac road passing through the zone and all-weather roads feeding into it. In addition, major urban markets for crops and livestock are nearby. Cattle are the most important type of livestock in Bona. Grazing land is in short supply, however, so cattle are generally raised using a 'zero-grazing' system, whereby animals are kept close to the homestead and are fed crop residues and collected (or purchased) grass.

According to the information presented refers to the consumption year from July 2003 to June 2004 ( Hamle 1995 – Sene 1996 in the Ethiopian calendar), which was a mixed type of year: coffee production was poor, coffee prices were average and food crop production was average. Since then the woreda especially Melgano area suffered food shortage.

A number of food aid programs have been implemented in the area to address chronic and acute food insecurity amongst the local population. Currently, a three year productive safety-net program (PSNP) is being implemented to address the problem of chronic food insecurity in 12 kebeles of the woreda targeting 9361 beneficiaries (woreda DPP, 2006). . EOS program has been carried out since 2006 focusing on addressing moderate malnutrition, de-worming, measles immunization and vitamin A supplementation. The 8<sup>th</sup> round EOS screening was conducted on November 2007. In this screening, 19,154 (83.5%) children received Vitamin A supplementation and 17,009 (85.3%) children were de-wormed. In this 8<sup>th</sup> round EOS screening 5.7% (n=1091) of children were found to be moderately malnourished (MUAC 11 to 12 cm) and 0.9% (n=141) of the screened children had severe acute malnutrition (MUAC < 11 cm). Moreover, 39 (0.2%) children had nutritional edema (data from Woreda Health Office 2007).

SCUS has been implementing a rapid response health & nutrition program in Bona woreda in collaboration with ministry of health as of June 2007. The program has implemented a community based therapeutic care (CTC) intervention in one inpatient/TFU and 5 outpatient treatment program (OTP) for severe acute malnutrition. The program is supported by UN-OCHA and will end in March 2008. The CTC program in its last two quarters (June 13 – December 30, 2007) has treated 1209 children with severe acute malnutrition and all its performance indicators have met international standards. It has also delivered key health, nutrition and sanitation messages to CTC beneficiaries through its outreach component using community volunteers.

This nutrition survey was conducted in Bona woreda in collaboration with Regional Emergency Nutrition Coordination units using the new SMART methodology to assess the current status of acute malnutrition and see the added impact of the CTC program being implemented in Bona woreda. The survey result will be used for further decision in the status of the rapid response program going on in Bona by SCUS.

### **3. Bona Nutrition survey summary**

**Implementing agency:** SC/USA in collaboration with regional ENCU

**Survey dates:** December 27 – January 3, 2008

**Survey Area:** Bona Woreda of Sidama zone, SNNPR

**Target groups:** 720 children 6-59 months of age (**65-110 cm in height**)

**Methodology:** Random two-stage 20 x 36 cluster survey (**SMART Methodology**)

**Sample size:** In 36 clusters, 720 children 6-59 months of age were measured, average of 20 per cluster. Sample size for Crude Mortality was n= (4045) (648HH), sample size for Under Five Mortality was n=(775).

**Woreda and under five populations:** The total population of the Woreda is estimated to be **111,495** with an under-five population of **22,299**.

**The specific objectives include the following:**

- Understand the major causes of malnutrition and estimate current prevalence of acute malnutrition in Bona woreda and to know the prevalence of malnutrition following the CTC intervention for 6 months.
- Estimate retrospective mortality rates over 3 months period prior to the current survey
- Estimate the BCG and measles vaccination coverage and vitamin A supplementation.
- Estimate the prevalence of morbidity.
- Provide food and nutrition security information for relevant governmental and non-governmental agencies.
- In the context of current and ongoing activities, to determine the likely additional needs of the population in terms of nutrition and health interventions immediately and in the future months.
- Help in the planning and design of nutritional program going on in the woreda
- Look in to some of the basic indicators status of the CTC project

### **4. Results**

- Flagged WHZ records: 0% (n=0)

#### 4.1 Anthropometric results: children (based on NCHS reference 1977)

Global acute malnutrition is defined as <-2 z scores weight-for-height and/or oedema and severe acute malnutrition is defined as <-3z scores weight-for-height and/or oedema)

Table 4.1: Distribution of age and sex of sample

	<b>Boys</b>		<b>Girls</b>		<b>Total</b>		<b>Ratio</b>
	<b>no.</b>	<b>%</b>	<b>no.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>Boy: girl</b>
<b>6-17 months</b>	71	51.1	68	48.9	139	19.1	1.0
<b>18-29 months</b>	94	47.5	104	52.5	198	27.2	0.9
<b>30-41 months</b>	86	49.7	87	50.3	173	23.7	1.0
<b>42-53 months</b>	66	41.8	92	58.2	158	21.7	0.7
<b>54-59 months</b>	27	44.3	34	55.7	61	8.4	0.8
<b>Total</b>	344	47.2	385	52.8	729	100.0	0.9

Table 4.2: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

	<b>All</b> n = 729	<b>Boys</b> n = 344	<b>Girls</b> n = 385
<b>Prevalence of global malnutrition (&lt;-2 z-score and/or oedema)</b>	(46) 6.3 % (4.1 - 8.5 95% C.I.)	(23) 6.7 % (3.2 - 10.1 95% C.I.)	(23) 6.0 % (3.2 - 8.7 95% C.I.)
<b>Prevalence of moderate malnutrition (&lt;-2 z-score and &gt;=-3 z-score, no oedema)</b>	(44) 6.0 % (3.9 - 8.2 95% C.I.)	(23) 6.7 % (3.2 - 10.1 95% C.I.)	(21) 5.5 % (2.9 - 8.0 95% C.I.)
<b>Prevalence of severe malnutrition (&lt;-3 z-score and/or oedema)</b>	(2) 0.3 % (-0.1 - 0.7 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(2) 0.5 % (-0.2 - 1.2 95% C.I.)

The prevalence of oedema is 0.1 %

Table 4.3: Prevalence of acute malnutrition by age based on weight-for-height z-scores and/or oedema

		<b>Severe wasting</b> (<-3 z-score)		<b>Moderate wasting</b> (>= -3 and <-2 z-score )		<b>Normal</b> (> = -2 z score)		<b>Oedema</b>	
<b>Age (mths)</b>	<b>Total no.</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>
<b>6-17</b>	139	0	0.0	6	4.3	133	95.7	0	0.0
<b>18-29</b>	198	1	0.5	16	8.1	181	91.4	0	0.0
<b>30-41</b>	173	0	0.0	14	8.1	159	91.9	0	0.0
<b>42-53</b>	158	0	0.0	3	1.9	154	97.5	1	0.6
<b>54-59</b>	61	0	0.0	5	8.2	56	91.8	0	0.0
<b>Total</b>	729	1	0.1	44	6.0	683	93.7	1	0.1

Table 4.4: Distribution of acute malnutrition and oedema based on weight-for-height z-scores

	<b>&lt;-3 z-score</b>	<b>&gt;=-3 z-score</b>
<b>Oedema present</b>	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 1 (0.1 %)
<b>Oedema absent</b>	Marasmic No. 1 (0.1 %)	Normal No. 727 (99.7 %)

Table 4.5: Prevalence of acute malnutrition based on the percentage of the median and/or oedema

	n = 729
<b>Prevalence of global acute malnutrition (&lt;80% and/or oedema)</b>	(24) 3.3 % (1.9 - 4.7 95% C.I.)
<b>Prevalence of moderate acute malnutrition (&lt;80% and &gt;= 70%, no oedema)</b>	(23) 3.2 % (1.8 - 4.5 95% C.I.)
<b>Prevalence of severe acute malnutrition (&lt;70% and/or oedema)</b>	(1) 0.1 % (-0.1 - 0.4 95% C.I.)

Table 4.6: Prevalence of malnutrition by age, based on weight-for-height percentage of the median and oedema

		<b>Severe wasting (&lt;70% median)</b>		<b>Moderate wasting (&gt;=70% and &lt;80% median)</b>		<b>Normal (&gt;=80% median)</b>		<b>Oedema</b>	
<b>Age (mths)</b>	<b>Total no.</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>
<b>6-17</b>	139	0	0.0	4	2.9	135	97.1	0	0.0
<b>18-29</b>	198	0	0.0	5	2.5	193	97.5	0	0.0
<b>30-41</b>	173	0	0.0	10	5.8	163	94.2	0	0.0
<b>42-53</b>	158	0	0.0	2	1.3	155	98.1	1	0.6
<b>54-59</b>	61	0	0.0	2	3.3	59	96.7	0	0.0
<b>Total</b>	729	0	0.0	23	3.2	705	96.7	1	0.1

Table 4.7: Absolute number of children in need of OTP and or SC/TFU and SFP

<b>Weight For Height(n=544)</b>	<b>(n=729)</b>	<b>6-59 months/ woreda under five N=22,299</b>
Estimated number of sever acute malnutrition (WHM< 70% and/ or edema)	1 (0.1%) (-0.1%-0.4%) 95% CI	22
Estimated number of moderate acute malnutrition (70 %=< WHM<80%)	23 (3.2%) (1.8%-4.5%) 95% CI	714

## 4.2 Mortality results (retrospective over 3 months prior to the date of the survey)

Table 4.8: Mortality rates

	Deaths/10,000/day	95% CI
Crude Mortality Rate (n=4045)	0.08	(0.01-0.18)
Under Five Mortality Rate (n=775)	0.14	(0.00 – 1.5)

The main causes of death reported for the under-five children include, 1 unknown; where as cause of death for adults were malaria (2) and 1 unknown.

## 4.3 Child morbidity

### Morbidity Cumulative Prevalence (2 weeks prior to survey)

Overall morbidity rate among children under-five years of age was reported to be 8.9%. As can be seen in the table below, diarrhea and ARI were the predominant causes of illness among under-fives in the two weeks prior to the date of the survey.

#### Morbidity

Illness	Number of Cases	Percentage Cases in Population %	Percentage Cases of Illness %
ARI	32	4.4	49.2
Diarrhea	33	4.5	50.8
Total	65	8.9	100

Mothers of sick children were asked whether they had taken their child to a health facility for treatment. Only 38 (58.5%) mothers said yes, while the remainder chose alternative therapy or did not seek treatment. Reasons cited informally included lack of money and awareness.

## 4.4 Vaccination & Vit.A supplementation coverage

### Child Vaccination and Vitamin A Supplementation

Child Vaccination and Supplementation	N	%	95% CI
Measles by card (9-59 months) n=692	156	22.5	18.2-27.4
*Measles by card or recall (9-59 months) n=692	521	75.3	70.3-79.8
BCG by scar (6-59 months) n=729	533	73.1	68.2-77.5
Vitamin A in last 6 months (6-59 months)	671	92	88.6-94.5

\*Children aged 9-59 months vaccinated for measles on EOS campaign of December 2007 and regular vaccination dates.

#### 4.5 Proportion of children in nutrition program among the survey sample

Program type	%	N=729
Supplementary feeding program coverage/EOS/ 8 <sup>th</sup> round	5.8	42
Therapeutic feeding program coverage /CTC/	1.6	12

#### 4.6 Summary of Anthropometric results by MUAC

MUAC	N=729	%
Sever wasting (MUAC<11.00cm)	9	1.2
Moderate wasting (MUAC <=11.00cm to <12.00cm)	66	9.0
At risk (MUAC >=12 and <12.5)	69	9.5
Normal (MUAC>=12.5)	585	80.2

### 5. Household/Community Questionnaire Analyses

#### 5.1 Livelihoods and Income Sources

11.1% (n=24) of the 216 interviewed households were female-headed. Most households (82.9%, n=179) reported agriculture to be their main livelihood with the 13.4% of households reporting agro-pastoralists, 1.4% households are pastoralists and 2.3% households reported 'other' including daily labor (n=2), government worker /salary |(2) and (1) petty trade.

82.4% (n=178) of households are currently reliant on their own production, 16.7 %(36) bought from market and 0.9% (n=2) of households are currently reliant on gift and 0.5% depend on safety net program; source of money was reported 5.1% sale of livestock and livestock products, 10.3% sale of coffee, 25.6% sale of other agricultural products, 25.6% daily labor, 20.5% other like monthly salary and sale of ceramics.

There was very little dietary diversity reported with 69.0% (n=149) of households reporting having consumed cereals and root crops, 0.9% reported consumed vegetables and fruits and the rest 29.6% consumed "Enset" with milk, "Enset" with cabbage and teff on previous day.

When questioned on what the main food source would be for the next three months, the majority (82.4%, n=178) expected to be reliant on own production, while 15.7% (n=34) expected to buy their main foods. The remaining households expected to have to rely on gifts or bartered.

#### 5.2 Coping Strategies

13 surveyed households (6%) reported asset sale (personal) in order to get money to buy food. 42.6% surveyed households had sold livestock in the three months prior to the survey to purchase grain. All households reported eating  $\geq 2$  meals the day prior to the survey fieldwork. Only 2 household reported eating unusual foods.

Five households (3.2%) had been engaged in unusual migration in the three months prior to the survey.



### **5.3 Access to Water**

Most households (47.9%, n=93) reported using unprotected water source such as: rivers (6.0%, n=13), unprotected springs (38.9%, n=84), ponds (2.8%, n=6) and 43.5% of households use protected spring and piped water (8.8%, n=19). Only 1.9% households used water guard to treat water.

More than half of households (77.7%, n=211) of households reported a walk of more than 30 to 1 hour one way to their main water source. (2.3%) reported having to walk one to two hours one way to the closest water source.

### **5.4 Health, nutrition & sanitation practices and behaviors**

32.4% households reported to own mosquito net. 17.6% households owned one mosquito net, 13.9% households have 2 mosquito nets where as 0.9 households owned three mosquito nets. Regarding the utilization of the mosquito nets in the previous night; 42.9% households reported all household members slept under mosquito net, 40.0% reported the father and mother slept under mosquito net, 5.7% reported under five children slept under mosquito net, 7.1% reported the father used mosquito net and only 1.4% pregnant women slept under mosquito net.

68.1%(n=147) households reported washing their hands before preparing food, 19.9% households responded washing their hands before preparing food, after the child defecates and before feeding the child. 66.7% (n=144) households reported that they washed their hand after the child defecate or before preparing the last meal/food. 43.8% did use water only, 45.8% used water and soap where as 10.4% household reported to wash their hands with water and ash.

39.8% of household reported thinness /wasting as sign of malnutrition ,16.7 % households were aware of edema as sign of malnutrition, 39.4% household reported that edema and wasting as sign of malnutrition. 95.4% households reported to take sick/malnourished child to the nearest health facility. 40.7 % ( n=88) households reported to feed sick child more frequent during illness, 41.7% (n=90) households feed sick children less frequent during illness where as 17.6 % ( n= 38) households reported feed sick child same as usual.

### **5.5 Infant Feeding Practices**

All households were questioned on priority at meal times. Only 3.2% (n=7) of households gave priority at mealtimes to young children, while 88.0% (n=190) of households prioritized men.

122 of the 216 households visited had children less than 3 years of age whose mothers were asked to answer questions on how they fed their infants and young children to assess child care practices. 46.3% (n=56) of mothers reported introduction of complementary foods between 4 and 6 months to their youngest child and 53.7% (n=67) reported introduction between 7 and 12 months. 21.3%mothers did feed colostrums to their child where as 77% (n=94) of mothers did not feed colostrums to the child.

## 6. Community Questionnaire

The community questionnaire was used principally to gain subjective data on the villagers' own perceptions of the rains and crop performance, both past and future. Responses indicated that the Belg 2007 rains were above normal for 27.8% (n=10/36), normal 22.2% (8/36) and below normal 33.3% (12/36) of communities. Meher '07 rains were above normal 30.6% (11/36) and 25.0% (9/36) below normal.

Pasture was reported to be good 36.1% (13/36), average for 30.6% (n=11/36) for most communities and 33.3% n=12/36 below average. Water availability for livestock was reported as good 61.1% (22/36), average 13.9% (5/36) and below average for 25% (9/36) of the communities. 27.8% (n=10) of communities claimed there had been livestock epidemics, but were unsure of what disease had claimed the lives of livestock in most cases. Livestock physical condition was reported to be good 50.0% (n=18), poor 41.7% (n=15) and very good 8.3% (n=3). Reasons given for poor and very poor condition included lack of grazing (86.7%, n=13), disease (6.7%, n=1) and lack of water 6.7% (n=1).

Most villages had to travel less than two hour to the nearest health facility (83.3%, n=30). 2 communities (5.6%) indicated that there were disease outbreaks this year, 1 villages experienced diarrhea and 1 community reported typhoid like illness (not confirmed by any health institute/ professionals). 27.8% (n=10) of communities reported having to travel more than 2 hours to reach the nearest market and the rest 72.2% (n=26) of communities could reach a market in less than two hour.

## 7. Conclusions

The prevalence of global acute malnutrition among the surveyed population was 6.3% (4.1 - 8.5 95% C.I.) and the prevalence of severe acute malnutrition was 0.3 %(-0.1 - 0.7 95% C.I.) . The current nutritional status of under 5 children and the household food security status are more or less normal for this time of the year which is normally considered as a harvesting and coffee picking period. The malnutrition rate is considered as normal for a chronically malnourished population (DPPC, 2002).

The malnutrition rate did show significant reduction as compared with the results of May 2007 survey (GAM of 16.4%3(12.2 - 20.6 95% C.I.) and SAM of 3.2% (1.3 - 5.1 95% C.I.)). Although the reported coverage of measles immunization and vitamin A supplementation is relatively good as compared with the national and international standards; the measles vaccination coverage with card is very low. Compared to May 2007 nutrition survey report BCG, Measles vaccination and Vit.A supplementation coverage's have shown a significant improvement in Bona.

Both the crude mortality (0.08) and under-five mortality (0.14) rates are much below the average of developing countries and emergency threshold for sub-Saharan countries and are lower than the May 2007 results (CMR of 0.43 and U5MR of 1.12 deaths/10000/day). Child morbidity due to infectious diseases is also low as compared to the last survey (prevalence of reported illnesses 8.9% now Vs 21.1% in May 2007).

Although there is good potential for water in the woreda, the availability of clean or safe water are below acceptable limits.

## 8. Recommendations

- The ongoing food aid programs for emergency and safety net beneficiaries should continue
- Save the Children/USA CTC programs should hand over to the woreda health office but continue supporting the health office through monitoring until wereda can fully run the program.
- Developmental projects should be geared towards improving community's livelihood
- Developmental programs going on and planned for the wereda should give priority to the improvement of access to safe water on sustainable basis.
- Bureau of Agriculture and Rural development (BoARD) and other organizations should work on minimizing the vulnerability of the household to food shortage.
- To closely monitor food security situation at the household level in the coming three months and identify further deterioration of the situation.
- To continue providing minimal technical and logistic support and regularly follow the nutritional situation especially during the hunger gap period.
- Conduct another nutrition survey using the same methodology in the hunger period (in May 2008)