THE 2012 POPULATION-BASED SURVEY - *THE WHERE, HOW AND WHEN*

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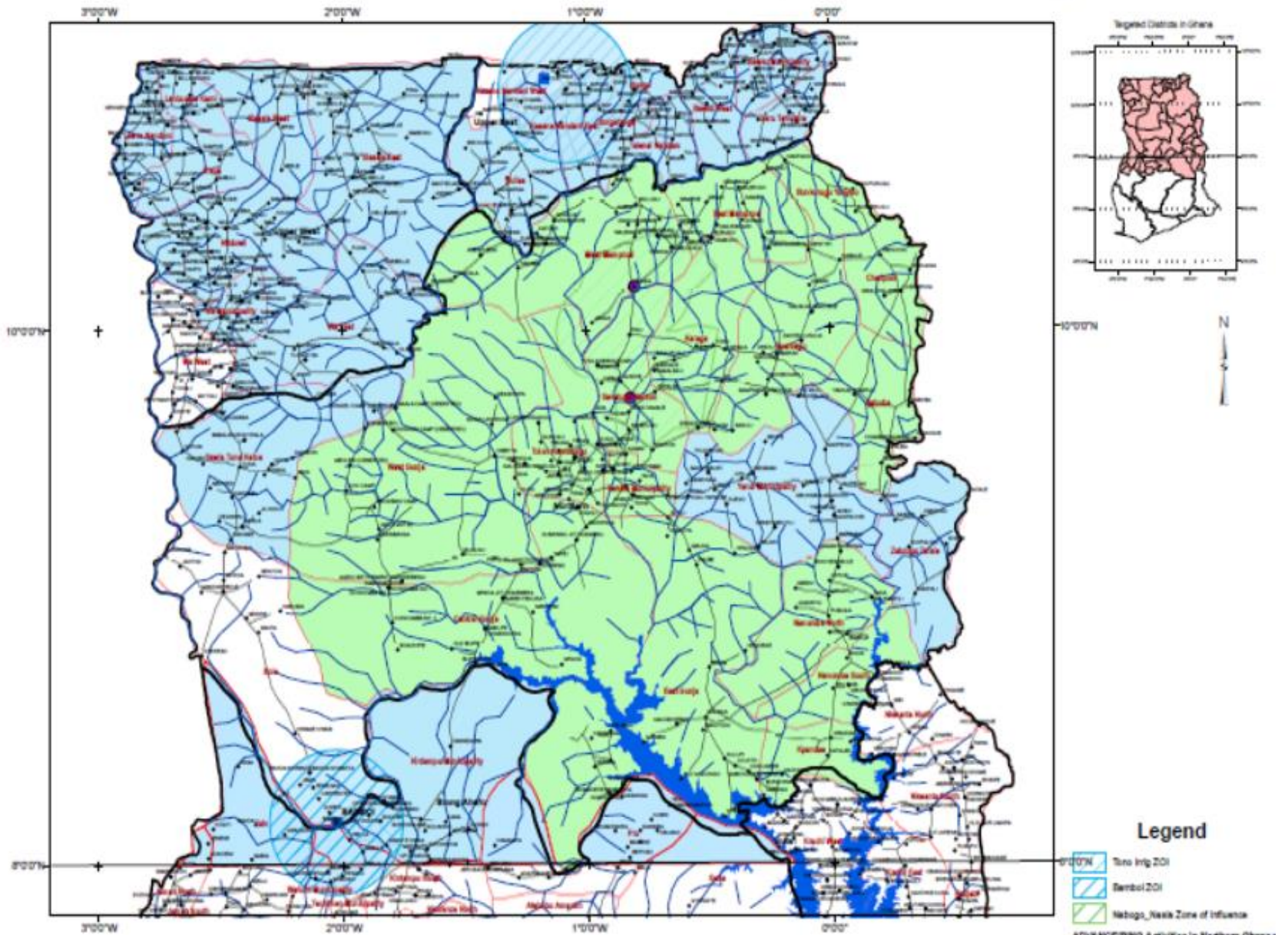
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INTRODUCTION

Background & Survey Objectives

- The PBS is a baseline survey intended to facilitate accurate monitoring and evaluation of the United States Government's (USG's) Feed the Future (FTF) initiative in Ghana.

- The overall goal of FtF is to improve nutritional status, especially of women and children less than five years of age, and assist with inclusive agricultural sector growth.

- The objective of the survey is to provide baseline data on the prevalence of poverty, per capita expenditures, nutritional status, women's empowerment, household hunger, dietary diversity and infant and young child feeding behaviours.

- Conducted through collaborative efforts of:
    USAID-Ghana Monitoring Evaluation and Technical Support Services (METSS) program
    Kansas State University (KSU)
    University of Cape Coast (UCC)
    Ghana Statistical Service (GSS)
    Institute of Statistical, Social and Economic Research (ISSER)

- Baseline data was collected on the following key elements:
    Comprehensive household demographic information
    Dwelling characteristics
    Consumption expenditure
    Food Security (Household Hunger Scale)
    Women's Dietary Diversity
    Women's Anthropometry
    Women's Empowerment in Agriculture (WEA)
    Breastfeeding and Minimum adequate diet
    Children's Anthropometry

2. WHERE?

- The FTF is being implemented in the three northernmost regions of Ghana, namely: Upper West, Upper East, and Northern Region, as well as some districts in the Brong Ahafo Region.

- These areas are designated as the FTF Zone of Influence (ZOI).

- The expectation is that after five years of targeted programming, poverty, hunger and malnutrition within the ZOI will decrease.

Legend

Tono Irrig ZOI

Bembel ZOI

Nabogo_Nasia Zone of Influence

ADVANCE/RING Activities in Northern Ghana

No Coverage, Out of ZOI

RING: Nutrition/Agriculture

ADVANCE/GCAP: Agriculture Only

Targeted Districts in Ghana

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- For the program the ZOI is partitioned into two main strata based on the activities to be implemented:

  - The agriculture-nutrition intervention zone
    – RING Zone; and

  - The agriculture-only intervention zone
    – the Non-RING Zone.

- RING   – Selected districts in Northern Region

- NON-RING   – Selected districts in Northern, and
                   - All districts in BA, U/E, and U/W

3. HOW?

SURVEY DESIGN : Estimation of the Sample Size

- Three things are critical in the PBS: measurement of poverty prevalence, stunting and underweight among children less than five years of age in the ZOI.

- The sample size calculation is therefore designed to enable measurement of changes between the baseline and end-line results of these key indicators with sufficient significance and power.

- Also being guided by cost and need to maintain quality of data.

- Estimation procedures:

- Current status of indicators (p1) and anticipated (p2)

- 5%, type I error (α);

- 20%, type II error (β);

- The standard Z scores at 95% and at 80% respectively given as:

  $Z_{1-\alpha}$ and $Z_{1-\beta}$ respectively

- The design effect for the selected sampling design (*Deff*)

- Using data from the Ghana Living Standards Surveys (GLSS3-5) and the Ghana Demographic and Health Survey of 2008 (GDHS, 2008), current status of the indicators were established.

- The design anticipates a 1 percentage point reduction per year in the prevalence of poverty (5 percentage point drop at the end of 5 years of the FTF program);

- 1.32 percentage point reduction per year in the ZOI for children under five stunting rates (6.6 percentage point drop after 5 years of the program); and 0.86 percentage point reduction for underweight (4.3 percentage point drop in 5 years).

- The design effects (DEFF) were also calculated from the GLSS5 data and GDHS 2008.

- The computational formula used in determining the required sample size:

$$n = \left\{ \left[\frac{(p_1 q_1) + (p_2 q_2)}{(p_2 - p_1)^2} \right] \times \left(Z_{1-\alpha} + Z_{1-\beta} \right)^2 \right\} \times Deff,$$

$$n = \left\{ \left[\frac{(p_1 q_1) + (p_2 q_2)}{(p_2 - p_1)^2} \right] \times \left(Z_{1-\alpha} + Z_{1-\beta} \right)^2 \right\} \times Deff,$$

Table 1: Nominal Sample Size Computation based on the three Design Indicators

Design indicators	p_1	p_2	α	$1-\beta$	$Z_{1-\alpha}$	$Z_{1-\beta}$	DEFF	n'
Prevalence of poverty	0.567	0.517	0.050	0.800	1.645	0.842	3.40	4164
Prevalence of stunting	0.322	0.256	0.050	0.800	1.645	0.842	1.21	702
Prevalence of underweight	0.219	0.176	0.050	0.800	1.645	0.842	1.25	1321

- Adjusted for the possibility of not finding children in some households in the age group 0-59 to measure stunting and underweight indicators.

- Also adjusted for non-response

Table 2: Effective sample Size based on the three design indicators

Design indicators	Nominal	Inflated for no child in HH (n')	Inflated for non-response (10% of n')	Effective (n)
Prevalence of poverty	4164	0	416	4580
Prevalence of stunting	702	1140	114	1254
Prevalence of underweight	1321	2144	214	2358

- Three possible sample sizes: 4,580, 1,254 & 2,358.

- The sample size for the poverty indicator which is the maximum of the three (4580) is preferred for the entire ZOI.

- Furthermore, since the underweight indicator gives a larger sample size than the stunting indicator, it would be required to obtain a sample size of at least, 2,358 within the RING zone and this can cater for the estimation of the stunting indicator with sufficient power (0.8) and significance (0.05).

- Based on the foregoing, an effective sample size of 4,580 was considered appropriate (rounded up to 4,600 to give further cushion for the likelihood of non-response or to further boost the power if the sample size is achieved).

Selection of survey sample

- The usual practice for living standards and general household surveys in Ghana is a selection of either 15 or 20 households per enumeration area (EA).

- A selection of 15 households per EA however tends to be more expensive as one has to cover many geographical areas.

- Therefore, based on cost considerations 20 households were interviewed in each EA, giving us a total of 230 EAs across the ZOI.

- This sample size is allocated to the two strata as shown in Table 2.3.

Table 3: Allocation of Sample to Strata

Strata	Allocated households	Required EAs
RING Zone	2360	118
Non-RING Zone	2240	112
Total (ZOI)	4600	230

- A two-staged probability sampling methodology used.

- The 230 EAs were selected in stage one from all the EAs within the ZOI based on the Ghana 2010 Census data.

- Ghana Statistical Service (GSS) selected the EAs using the probability proportional to size (PPS) method, blocking by zone of intervention to ensure that the sample allocation was achieved.

- METSS conducted on-the-ground mapping and comprehensive listing of households in the EAs.

- ISSER then systematically selected households from among those listed in each selected EA based on systematic sampling.

- Appropriate weighting procedures are included to account for the differential probabilities of selection.

Survey instrument and method of data collection

- A comprehensive and mostly indicator-specific modules questionnaire were adapted from standard sources to ensure consistency in the computation of the indicators, but also to ensure that items were suitable to the local context.

- The survey instrument had 11 modules, covering:
– Food Security (Household Hunger Scale);
– Women's Dietary Diversity;
– Women's Anthropometry;
– Women's Empowerment in Agriculture (WEA);
– Breastfeeding and Minimum adequate diet;
– Children's Anthropometry;
– etc.

- A field manual was designed to guide training of the enumerators and for use as a reference guide on the field.

Data Collection

- The survey adopted the Computer-Assisted Personal Interview (CAPI) approach to collect the data.

- Each enumerator was provided with a Dell laptop for the exercise.

- The eNCORE application software was used to programme the survey instrument for data collection.

- There was real-time receiving of data from the field through email.

- Various other strategies adopted for backup; e.g. TLs copied kept data on external drives, monitoring teams also copied data on drives, etc.

- A total of 95 persons were recruited and trained and 75 selected as field assistants for the survey.

- Key considerations in the recruitment: educational levels, ability to speak some of the local languages common in the ZOI, as well as computer literacy.

- A fourteen-day residential training program was organized between 14th June and 1st July, 2012.

- Interviewers were first taken through the paper versions of the survey instrument and later the computer based version of the questionnaire.

- Training facilitated by ISSER with support from METSS.

- At the end of the training, a written test was conducted and the final list of interviewers selected.

4. WHEN?

Organization and implementation of fieldwork

- Fieldwork took place between 2nd July and 17th August, 2012.
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- Field enumerators were deployed mainly in teams of 5: 4 enumerators and 1 supervisor.

- Enumerators were expected to make at least three visits to each household: first visit to establish contact and subsequent two visits to administer questionnaire.

- However, when there was good reason to believe that the household would not be available for the third visit, then the enumerator could go on to complete the survey in two visits.

- Monitoring by ISSER and METSS was regular.

Survey completion and adequacy

- The completion rate is far in excess of the nominal sample size that was required to assess the poverty indicator (4164)

Table 5: EA and household completion rate by strata

Strata	Req. EAs	No. of EAs completed	Allocated hholds	No. of hholds completed	Completion rate
RING Zone	118	117	2360	2260	95.8
Non-RING Zone	112	112	2240	2140	95.5
Total (ZOI)	230	229	4600	4410	95.9

5. CONCLUSION

Challenges

- Identification and enumeration of households
    - Location of written numbers on walls of houses
    - Street addresses/names (local and interesting)
    - Use of official/given names and nicknames

- CAPI issues and data transfer
    - No power to charge batteries in rural areas
    - No mobile network/internet
        - Migration from paper to CAPI has to be gradual

- Logistics
    - Some institutions that we made arrangements to get some of the equipment (infantometer, microtoiles, electronic scales, weighing scales) failed to honour their promises at the last minute.

- Timing of survey and weather related issues
  - Flooding and muddied roads affected field movement and made it difficult to reach certain areas for the survey.
  - Field work period overlapped with the annual month of feast among Muslims (Ramadan); (might have affected consumption patterns, with implications for the women's dietary diversity and children's minimum acceptable feeding practice)

Thank you