NIGERIA

DATA COLLECTION SURVEY ON NUTRITION AND AGRICULTURE IN NIGERIA

SITUATION ANALYSIS OF NUTRITION-SENSITIVE AGRICULTURE AND FOOD-BASED APPROACHES TO IMPROVE NUTRITION

FINAL REPORT

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JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

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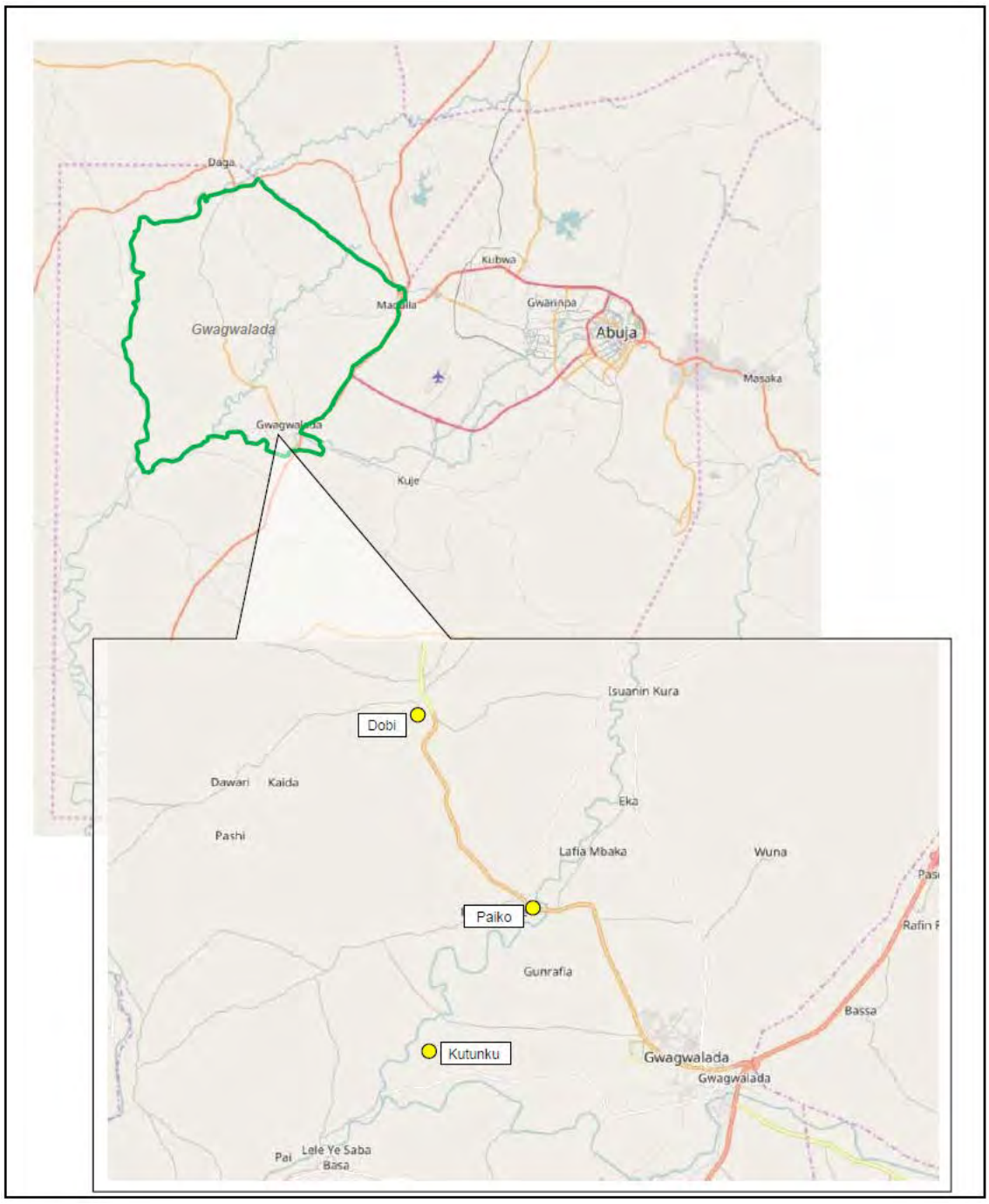

MAP OF SURVEYED AREAS (Federal Capital Territory, Nigeria)

PHOTO GALLARY

Photos taken by the study team between January 9th and 20th, 2017.

Dobi Community in Gwagwalada Area Counci (conducted dietary intake survey)

Selling yam at an open market in Dobi Community

Dried Okura sold at Kutunku Market

Primary Health Care Centre in Kuje Area Council (conducted group discussion)

Products made and sold by women farmers (such as dried vegetables and flours) with support from Women in Agriculture

Samples collected for nutritional analyses and development of recipes (Federal Ministry of Agriculture and Rural Development)

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ABBREVIATIONS

AC	Area Council
ACCFN	Area Council Committee on Food and Nutrition
ADP	Agricultural Development Programme
AEW	Agricultural Extension Worker
AARR	Annual Average Rate of Reduction
BFHI	Baby-Friendly Hospital Initiative
BMI	body mass index
CBO	community-based organization
CDC	US Center for Disease Control and Prevention
CFN	Committee on Food and Nutrition
CGIAR	Consultative Group on International Agricultural Research
CHEW	Community Health Extension Worker
CIMMYT	International Maize and Wheat Improvement Centre
CSO	Civil Society Organization
DHS	Demographic and Health Survey
DRI	Dietary Reference Intakes
EPRS	Economic Planning, Research and Statistics
FAO	Food and Agriculture Organization of the United Nations
FCT	Federal Capital Territory
FCTA	Federal Capital Territory Administration
FGD	focus group discussion
FMARD	Federal Ministry of Agriculture and Rural Development
FMBNP	Federal Ministry of Budget and National Planning
FMoH	Federal Ministry of Health
GAIN	Global Alliance for Improved Nutrition
HFA	height-for-age
HKI	Helen Keller International
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IITA	The International Institute of Tropical Agriculture
IOM	Institute of Medicine
JICA	Japan International Cooperation Agency
LGA	Local Government Area/Authority
LGCFN	Local Government Committee on Food and Nutrition
MT	Master Trainer
M&E	Monitoring and Evaluation
MNCH	Maternal, Newborn and Child Health

NAFDAC	National Agency for Food and Drug Administration and Control
NCD	non-communicable diseases
NCFN	National Committee on Food and Nutrition
NGN	Nigerian Naira
NGO	Non-Governmental Organization
NNHS	National Nutrition and Health Survey
NPFN	National Food and Nutrition Policy
NSA	Nutrition-Sensitive Agriculture
NSPAN	National Strategic Plan of Action for Nutrition
NRCRI	National Root Crop Research Institute of Nigeria
PHB	Primary Health Board/Primary Health Care Board
PHD	Public Health Department
QPM	quality protein maize
SC	Save the Children
SD	standard deviation
SCFN	State Committee on Food and Nutrition
SMS	Subject Matter Specialist
SUN	Scaling Up Nutrition Movement
TOR	Terms of Reference
TOT	Training of Trainers
UBEC	Universal Basic Education Commission
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WAAPP	West Africa Agricultural Productivity Program
WB	World Bank
WDC	Women Develop Centre
WFA	weight-for-age
WFH	weight-for-height
WFP	UN World Food Programme
WHO	World Health Organization

1. Introduction

1.1 Background

Combatting malnutrition is increasingly recognized as one of the most cost-effective development strategies of the current world. For the past decade, there have been multiple international and national efforts towards ending malnutrition, such as the multi-stakeholder Scaling Up Nutrition (SUN) Movement started in 2010, the Nutrition for Growth Summits in London (2013) and in Rio de Janeiro (2016), and the Sustainable Development Goals unanimously adopted by UN member states in 2015. JICA has also played a lead role in launching the Initiative for Food and Nutrition Security in Africa (IFNA) in August, 2016. One of the highlighted issues in these global events and dialogues is the need to accelerate multi-sectoral approaches to nutrition; in other words, the world has recognized the need for combating malnutrition from across different sectors, including agriculture, health, education, water, sanitation and hygiene (WASH) and social protection.

The Government of Nigeria has placed a high priority on nutrition improvement in its development agenda and launched the reviewed National Policy on Food and Nutrition in April, 2016, led by the Federal Ministry of Budget and National Planning (FMBNP) which coordinates all relevant multi-sectoral stakeholders through the National Committee on Food and Nutrition (NCFN). While a number of programmes are being implemented in various parts of the country, there appears to be a value in further exploring effective linkages between nutrition and agriculture in order to contribute to Nigeria's efforts to expand multi-sectoral approaches to nutrition.

1.2 Purpose of the Study

The purposes of the study is to collect information regarding major policies/strategies/programmes at the federal level and of the Federal Capital Territory (FCT) as an example at the state level, that relate to nutrition improvement, as well as other relevant information that will be used for considering nutrition improvement mainly through nutrition-sensitive agriculture and food-based approaches.

1.3 Target Area

The study mainly targeted rural areas of FCT while national level information were also collected on relevant issues.

1.4 Schedules

The overall situation analysis was conducted from December 2016 through February 2017, following the study flow and schedules shown in Figure 1 below. The actual information/data collection in Nigeria was done in two phases: the first phase from the 13th through the 16th of

December 2016, focusing on the review of policies and programmes; and the second phase from the 9th through the 21st of January 2017, including all the other components.

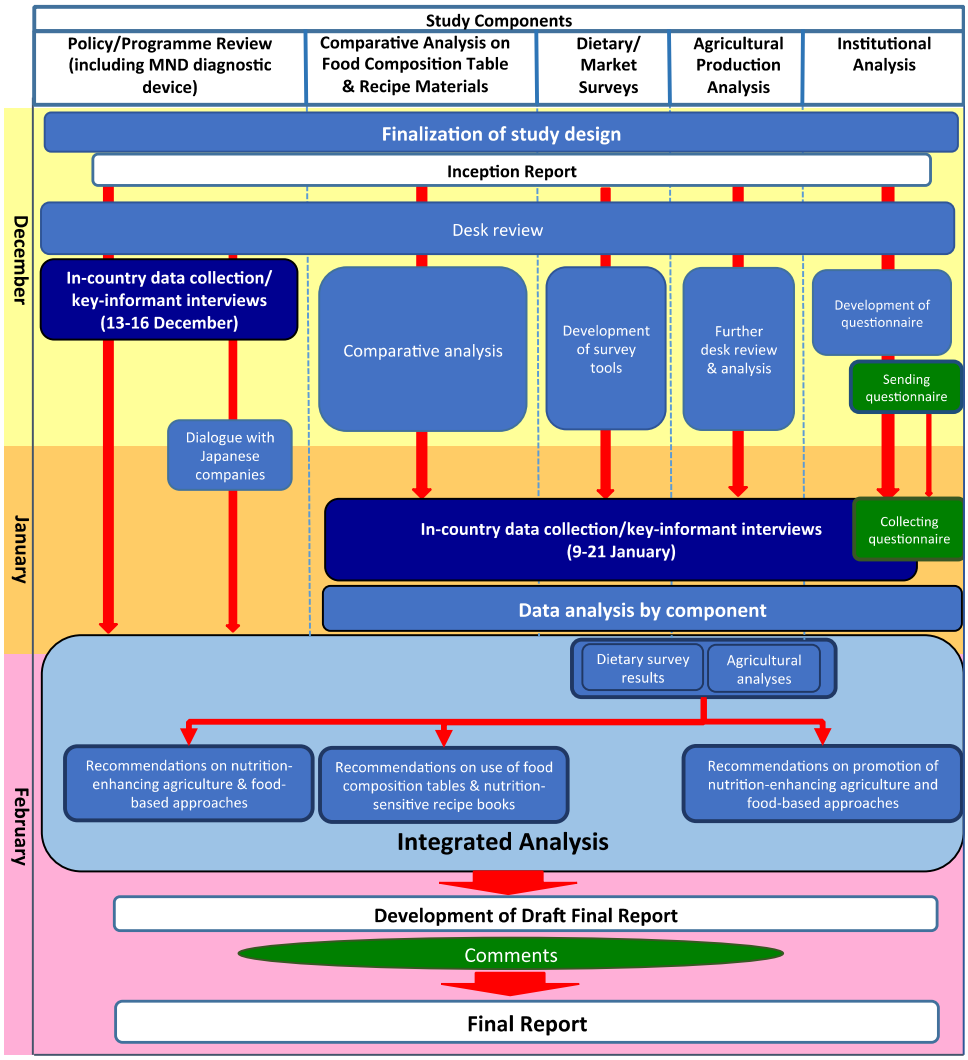


Figure 1: Study Design and Schedules

2. Study Components and Methodologies

2.1 Study Components

The study consists of the following components:

1) Review of Existing Policies and Programmes
2) Review and Exploration of Institutions/Mechanisms to Promote Nutrition-Sensitive Agriculture and Food-Based Approaches
3) Review of Nutrition Assessment and Dietary Information Tools Used in Nigeria and Other Places
4) Dietary Intake and Market Surveys in FCT
5) Review and Exploration of Nutrition-Sensitive Agricultural Production

2.2 Methodologies

Combinations of different methodologies (e.g. desk review, questionnaire, key informant interviews, focus group discussions, dietary intake/anthropometric survey, market survey, etc.) were used to gather relevant information for each component, followed by collation/triangulation and integrated analysis based on the analytical framework below (Figure 2), to draw final recommendations (details of the study methodologies can be found elsewhere[1]).

Desk review was conducted across the five components, followed by questionnaires to fill in with more in-depth information. Key informant interviews were conducted with key government officials at the federal and Federal Capital Territory Administration (FCTA) levels, donor organizations, local government workers (mainly Subject Matter Specialists under ADP and Nutrition Officers under PHB) as well as key persons at the community level (e.g. community leaders and market managers).

The dietary intake/anthropometric and market surveys were conducted in Gwagwalada Area Council, in agreement between FCTA and the study team in the meeting of the 9th January, 2017 because of time constraints and existence of master trainers/extension workers in both health and agriculture sectors operating in rural areas. Three rural communities were purposively selected based on the following criteria:

(1) Expected magnitude of the nutritional problem;

(2) With/without easy access to/influence by urban market; and

(3) Potential cultural differences (a community of long-term resident farmers' from old time vs. a community of domiciliation of nomads)

Kutunku (urban market), Paiko (rural market + former nomads), Dobi (rural market + long-time farmers) communities in Gwagwalada Area Council, FCT, were suggested and finally selected in the meeting on the 9th January, 2017. From each community, 20 households were randomly selected where 24-hour dietary recall (plus a short structured interview with the respondent) and anthropometric measurements were undertaken, followed by market surveys conducted in most commonly accessed local markets near each of the three communities. Three focus group discussions were organized in each of the three communities: the first group with mothers (non-pregnant), the second with pregnant mothers, and the third with adolescent girls, all drawn from the three targeted communities. More detailed methodologies for each component are described under "3. Results" as appropriate.

[1] More detailed descriptions of the methodologies can be shared upon request.

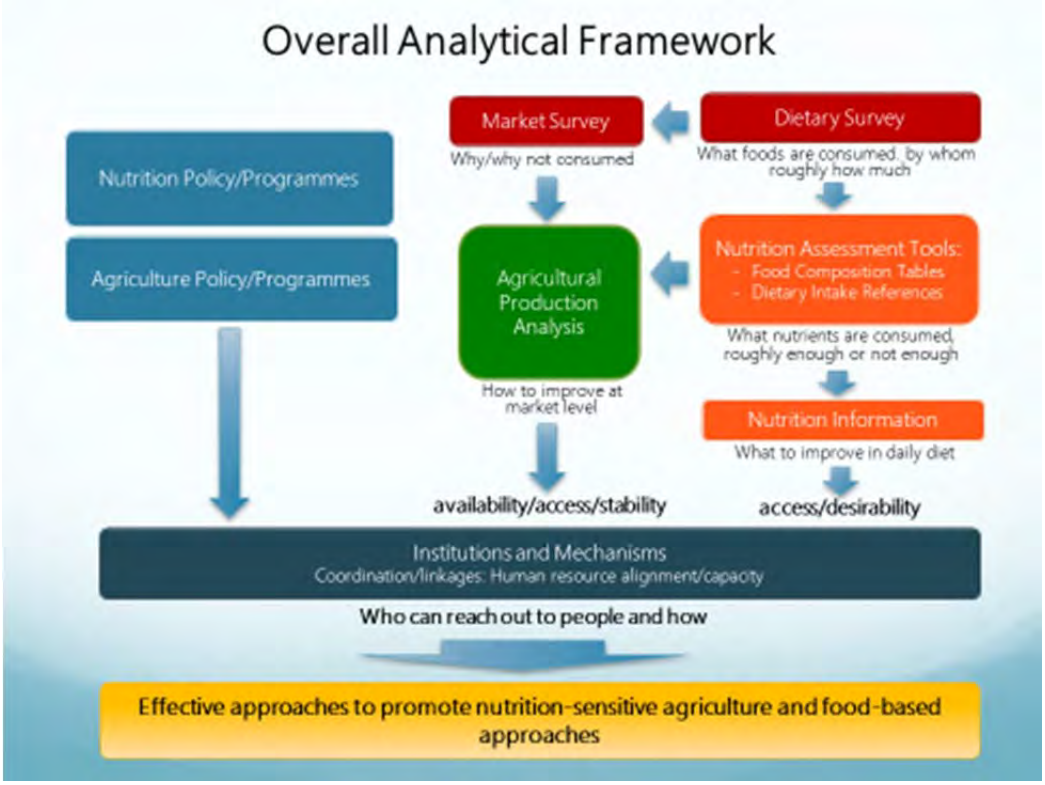


Figure 2: Overall Analytical Framework

3. Results

3.1 Policy and Programme Frameworks

Nigeria launched its National Policy on Food and Nutrition in 2002. A decade later, Nigeria started to gear up its efforts to strengthen nutrition governance, including the participation in the Scaling Up Nutrition (SUN) Movement, creation of multiple coordination mechanisms that include different stakeholder groups (i.e. overall, government, donor/CSO and business networks), and finally the revision of the National Policy on Food and Nutrition in 2016, under the leadership of the Federal Ministry of Budget and National Planning.

The Federal government is actively developing a nutrition-sensitive policy environment, especially in health and agriculture. However because of the differences in strategic framework structures and time periods covered under the main strategic documents of the two sectors (Health Sector Component of National Food and Nutrition Policy 2014-2019 vs. Agriculture Sector Food Security and Nutrition Strategy 2016 – 2025), it was not fully comprehensible from these documents alone how these sectoral strategies complement each other. From key informant interviews, it was

understood that these sectoral strategies were developed with a clear intention not to overlap and complement each other to contribute to the overarching policy[2]. Education sector is also planning to develop a nutrition strategy while it has the National School Health Policy (2006), under which there is a movement to activate the school feeding programme.

FCTA's Committee on Food and Nutrition (CFN) is increasingly active as a multi-sectoral coordination body at the sub-national level. FCTA CFN is also creating an enabling policy environment through regular multi-stakeholder meetings and development of its Food and Nutrition Policy and Action Plans (awaiting approval; the draft documents requested but not available).

These policy and institutional environments need to be further strengthened and sustained through frequent multi-stakeholder dialogues with clear objectives and actual implementation and monitoring of joint activities, which would create real demands for effective policy and coordination mechanisms.

3.2 Nutrition Situation

Malnutrition problem exists in every country on the planet, affecting people's lives and causing significant economic loss – of 11% of GDP per year in Africa and Asia[3]. Undernutrition affects the lives of people, especially the most vulnerable and is disproportionately a heavy burden in Africa and Asia[4] where 58 million and 91 million children are stunted, respectively. What is concerning in recent analyses of malnutrition trends is that in Africa the number of stunted children has not decreased as opposed to the other regions in the world[5]. Nigeria, with its large population size ranked number one in Sub-Saharan Africa, is also the number one ranked in Africa in terms of the absolute number of stunted children (and the second behind India in the world) [6]. As an overview of Nigeria's nutrition situation, Table 1 presents the situation in Sub-Saharan Africa and Nigeria based on five of the six Global Nutrition Targets adopted in the World Health Assembly in 2012[7], with additional indicators on infant and young child feeding and consumption of foods rich in major micronutrients, namely vitamin A and iron.

[2] Based on key informant interviews.
[3] IFPRI. 2016. Global Nutrition Report 2016.
[4] Regions defined by UN.
[5] IFPRI. 2016. Global Nutrition Report 2016.
[6] http://www.prb.org/pdf15/nigeria-malnutrition-factsheet.pdf
[7] The six targets include child stunting, child wasting, low birth-weight, anemia in women of reproductive age, exclusive breast feeding and child overweight, from which the table includes the first five indicators related to undernutrition.

Table 1: Nutrition Situations in Nigeria Compared to Sub-Saharan Africa

Indicators	Sub-Saharan Africa[8]	Nigeria	Nigeria's Rank in the World
Stunting in children aged under five	35.2% (2015)	32.0% (2015)	98 (out of 132)
Wasting in children aged under five	8.2% (2015)	7.9% (2015)	93 (out of 130)
Low birth-weight	14% (2008)	15% (2011)	
Overweight in children aged under five	4.5% (2015)	1.6% (2015)	9 (out of 126)
Anemia in women of reproductive age (15-49 years old)	48% (2011)[9] (in central/west Africa)	66.7% (1993)	172 (out of 185)
Exclusive breastfeeding for the first six months of life		17% (2013)	117 (out of 141)
Children aged 6-23 months meeting the Minimum Acceptable Diet		19.3% (2013)	
Children aged 6-23 months consuming iron-rich foods		47.3% (2014)	
Children aged 6-23 months consuming vitamin A-rich foods		51.6% (2013)	

Source: Nigeria Demographic and Health Survey 2013 (Nigeria National Population Commission and ICF International, 2014); Multiple Cluster Indicator Survey 2011 (Nigeria National Bureau of Statistics, UNIEF, UNFPA, 2013); Report on the Nutritional and Health Situation of Nigeria 2014 (Nigeria National Bureau of Statistics, 2014); National Nutrition and Health Survey 2015 (Nigeria National Bureau of Statistics, 2015); Joint Child Malnutrition Estimates 2015 (UNICEF?WHO/World Bank); Stevens et al (2014).

In terms of child stunting, wasting, low birth-weight, Nigeria is at or slightly below the Sub-Saharan Africa's average, although their ranks in the World is far from ideal. Anemia in women of reproductive age, though the data is outdated, is considerably higher than the average of the Central and Western Africa and also ranked very close to the bottom in the world.

While the situation requires continuous attention, what is noteworthy about Nigeria's nutrition situation is that the country is seemingly making good progress in tackling undernutrition in the past few years. Figure 3 shows the trend of child stunting dating back to 2003. Nigeria has made a commitment to reducing stunting prevalence to 28% by 2019 in the Nutrition for Growth Compact in 2013. Considering the Annual Average Rate of Reduction (AARR) from 2003 to 2015 was modest at 0.41%points (the superimposed fitted line in red), Nigeria had to dramatically increase AARR to 1.3%points between 2013 and 2019 in order to achieve the 2019 target (the dotted line in red). This is actually happening since 2013 that AARR between 2013 and 2015 was 1.3%points. It is very important to make every effort to maintain this rate of progress not only until 2019, but also till 2025 when the world looks at achievements against the World Health Assembly's Global Nutrition Targets and till 2030 for the Sustainable Development Goals.

[8] The geographical coverage of "Sub-Saharan Africa" is based on the World Bank definition (http://apps.who.int/gho/data/node.wrapper.nutrition-2016?lang=en).

[9] Stevens et al. 2013. Global, regional, and national trends in haemoglobin concentration and prevalence of total and severe anaemia in children and pregnant and non-pregnant women for 1995–2011: a systematic analysis of population-representative data. *Lancet Glob Health* 2013; 1: e16–25.

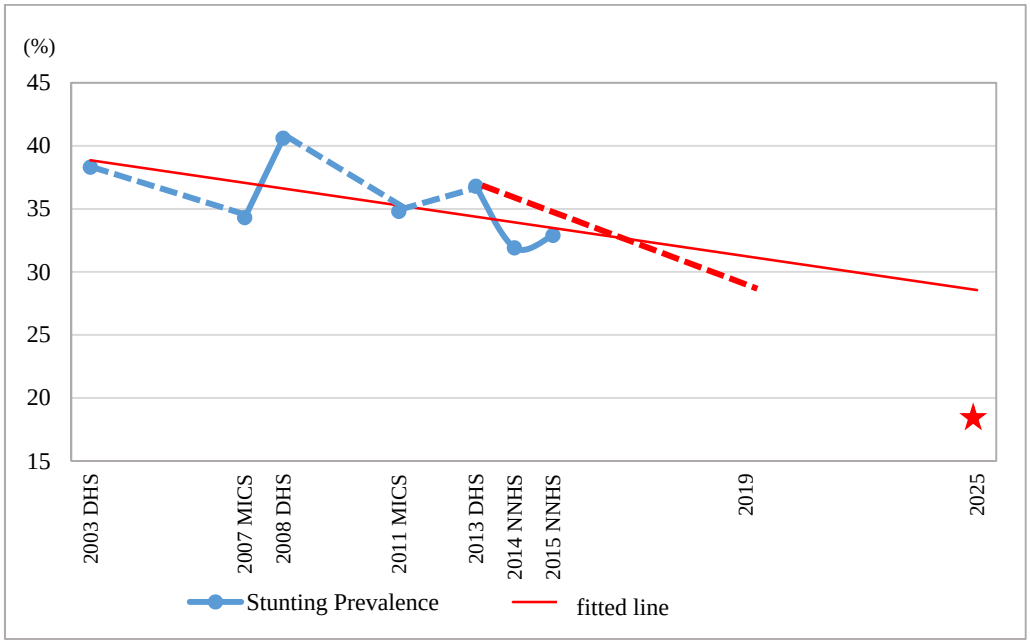


Figure 3: Trend of Child Stunting and Rates of Progress in Nigeria

To realize the country's desire to achieve these global targets, there appear to be two important dimensions that draw attention: improving major underlying drivers of nutrition through multi-sectoral approaches; and narrowing inequalities and gaps within the country. For the former, the Global Nutrition Report 2016 assessed the country situations based on a set of indicators reflecting major underlying drivers, such as total calories in food supply (quantity of diet); % of calories from non-staples (quality of diet); access to piped water and improved sanitation (WASH); female secondary school enrolment ratio (education), and female to male ratio in life expectancy (women's empowerment) by setting a threshold value for each indicator for achieving a stunting rate of less than 15% (a simulation of the situation when a country has achieved less than 15% of stunting rate)[10]. As shown in Table 2, Nigeria falls below the thresholds on all the indicators, highlighting the need for accelerating multi-sectoral actions on nutrition. The latter (inequality) is also extensively discussed in Omilola's analysis in 2010[11] and also in the World Bank's costing analysis in 2014[12].

[10] IFPRI. 2015. *Global Nutrition Report 2016.*
[11] Omilola, B. 2010. "Patterns and Trends of Child and Maternal Nutrition Inequalities in Nigeria". IPRI Discussion Paper.
[12] Shekar et al. 2014. Costed Plans for Scaling Up Nutrition: Nigeria. Health, Nutrition and Population (HNP) Discussion Paper, World Bank.

Table 2: Nigeria's Situation on Underlying Drivers of Nutrition against Threshold Values for Achieving Stunting <15%

	Stunting (%)	Total calories in food supply (kilocalories per day per capita)	Calories from nonstaples (%)	Access to piped water (%)	Access to improved sanitation (%)	Female secondary school enrollment rate (%)	Ratio of female-to – male life expectancy
Nigeria	**32.9**	2,706	34	9.7	30.6	53.5	1.01
Threshold values for achieving a stunting rate < 15%	**15.0**	2,850	51	69	76	81	1.072

Source: Nigeria Demographic and Health Survey 2013；National Nutrition and Health Survey 2015; UNICEF (https://www.unicef.org/infobycountry/nigeria_statistics.html); UNESCO Institute for Statistics (http://uis.unesco.org/en/country/ng); IFPRI (http://ebrary.ifpri.org/utils/getfile/collection/p15738coll2/id/129994/filename/130205.pdf); https://knoema.com/atlas/Nigeria/topics/Agriculture/Food-Supply-Total-Energy-kcalcapitaday/Total-food-supply.

The study team also assessed the anthropometric status of children and their mothers in the selected three communities in rural areas of FCT. The weight and height of the sampled children 6 to 23 months old were measured, and the results were analyzed using WHO Anthro to calculate the z scores for height-for-age (HFA to estimate "stunting"), weight-for-height (WFH to estimate "wasting") and weight-for-age (WFA to estimate "underweight") in order to understand their nutritional status despite the small sample sizes. The body mass index (BMI) of their mothers (non-pregnant) was also calculated. The results are shown in Table 3.

Table 3: Results of Anthropometric Survey in Children Aged 6 to 23 Months and Mothers

Children	Kutunku (n=17)	Paiko (n=17)	Dobi (n=13)	Total (n=47)
Stunting (HFA <-2SD)	17.6%	11.8%	53.8%	25.5%
Severe: HFA <-3SD	11.8%	0.0%	30.8%	12.8%
Moderate: -3 SD ≤ HFA≤ -2SD	5.9%	11.8%	23.1%	12.8%
Mean Z score	-0.34	-0.94	-2.36	-1.11
Wasting (WFH <-2SD)	17.6%	11.8%	15.4%	14.9%
Severe: WFH <-3SD	5.9%	0.0%	0%	2.1%
Moderate: -3 SD ≤ WFH < -2SD	11.8%	11.8%	15.4%	12.8%
Overweight: WFH >2SD	0%	0%	7.7%	2.1%
Mean Z score	-0.73	-0.65	-0.71	-0.69
Underweight (WFA <-2SD)	17.6%	17.6%	46.2%	25.5%
Severe: WFA <-3SD	17.6%	0%	15.4%	10.6%
Moderate: -3 SD ≤ WFA < -2SD	0%	17.6%	30.8%	14.9%
Mean Z score	-0.62	-0.97	-1.75	-1.06
Mothers	Kutunku (n=13)	Paiko (n=16)	Dobi (n=13)	Total (n=42)
Underweight (BMI<18.5)	15.4%	6.3%	0%	7.1%
Normal: 18.5 ≤ BMI < 25	38.5%	75%	84.6%	66.7%
Overweight: 25 ≤ BMI < 35	30.8%	12.5%	15.4%	19.0%
Obese: BMI ≥ 35	15.4%	6.3%	0%	7.1%
BMI – Median	21.1	22.3	21.5	
BMI – Max.	47.1	32.7	28.5	
BMI – Min.	17.1	17.1	19.0	
BMI - Mean	24.7	23.0	22.0	

The results for children surveyed in the three communities of rural FCT were compared with the FCT average (including both rural and urban) and the national average (NNHS 2015). The comparisons are shown in Table 4 and Figure 4, while it should be noted that sample sizes are very small and statistical analyses are not undertaken. The prevalence of stunting, wasting and underweight of the the children in Dobi are higher than those of the FCT and national averages. On the contrary, the prevalence of underweight in mothers of the same community is lower than that of the FCT and national averages. It is noteworthy that there may be a phenomenon that even when mothers' nutritional status is not the worst, their children still suffer from a high degree of malnutrition. It is also concerning that in Dobi only 3 out of 10 children seem to be free from malnutrition.

Table 4: Comparison of Nutritional Status across Three Surveyed Communities and with FCT and National Averages (%)

	Children				Mothers
	Stunting	Wasting	Under-weight	Non-malnourished children	Underweight(BMI<18.5)
Kutunku	17.6	17.6	17.6	76.5	15.4
Paiko	11.8	11.8	17.6	76.5	6.3
Dobi	53.8	15.4	46.2	30.8	0
Total - 3 Communities	25.5	14.9	25.5	63.8	7.1
FCT average	19.2	3.4	9.3	-	4.9
National Average	32.9	7.2	19.4	-	11.4

Source: Based on the anthropometric measurements conducted by the survey team, compared with NNHS 2015 and DHS 2013.

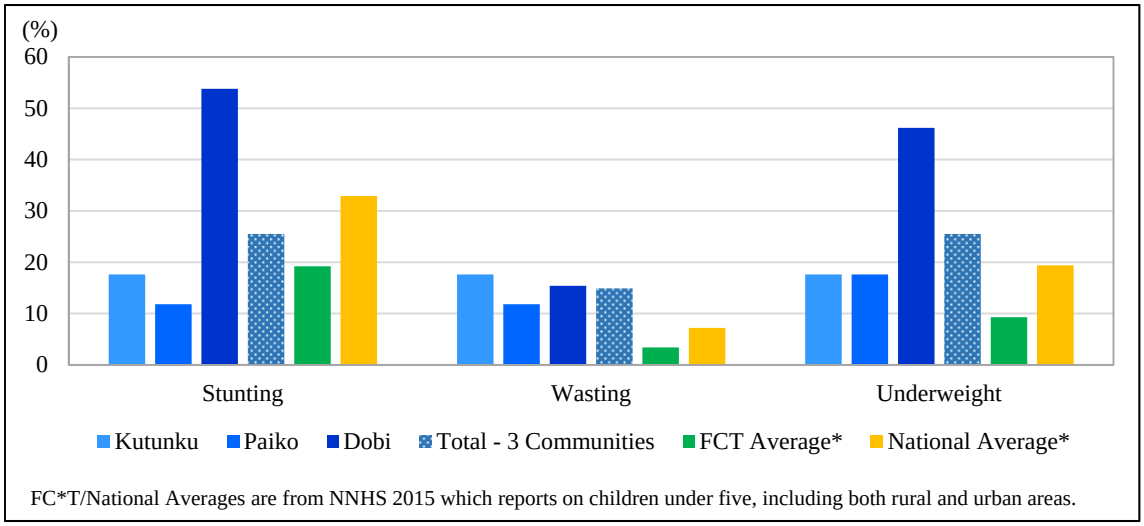


Figure 4: Comparison of Child Nutritional Status between Surveyed Communities, FCT and National Averages

Attention should also be given that there are considerable levels of overweight and obesity also observed in the three communities, as shown in Table 5, indicating double-burden of malnutrition appearing in rural communities of FCT.

The nutrition status of pregnant women were not examined because of lack of relevant information, such as pregnancy weight gain records.

3.3 Dietary Intakes and Practices

In order to obtain detailed information about quality and quantity of foods and drinks consumed by the three surveyed groups, i.e. children 6 to 23 months old, their mothers (non-pregnant) and pregnant women, 24-hour dietary recall, household interviews and focus group discussions were conducted in 20 households randomly selected from each of the three survey communities (details shown in Table 5).

Table 5: Details of Dietary Intake, Anthropometric and Market Surveys

Methodology	Purpose	Sample Sizes
1) 24 hour-dietary recall	To obtain detailed information about quality and quantity of food and drink consumed by children 6 to 23 months old, women including mothers of the children and pregnant women, and how to prepare them: ➢ To identify chronic food and nutrition problems in different conditions such as distance from the capital city and possible cultural influences ➢ To understand dietary intake patterns and identify food groups that tend to be eaten more or less in their daily meals	➢ First 24 hours diet recall: - Children 6 to 23 months old (17~18/ community x 3 communities); - Mothers of children 6 to 23 months old (17~18/community x 3 communities); - Pregnant women (2~3/ community x 3 communities). ➢ Second 24 hour diet recall: - Children 6 to 23 months old (5~6/ community x 3 communities) ; - Mothers of children 6 to 23 months old (5~6/community x 3 communities); - Pregnant women (1~2 /community x 3 communities) . * Second 24 hour diet recall will be conducted with 6 to 7 people who answered the first recall to check the variation of food consumed by day.
2) Anthropometry	To identify overall nutritional status (based on anthropometric measurements) of children 6 to 23 month old, mothers of the children and pregnant women. ➢ Age, height and weight of children 6 to 23 months old ➢ BMI of mothers of children 6 to 23 month old ➢ BMI of pregnant women	
3) Seasonal Calendar for Food Security	To understand varying and changing availability of food and drink, the sources of food and drink and the hunger period at community level to identify issues and possible ways to address seasonality. ➢ Availability of food produced in HH through the year ➢ Availability of food purchased through the year ➢ Availability of forest products through the year	➢ 1~2 seasonal calendar/s in each community x 3 communities ➢ No of participants per activity - 6 to 12 participants/ activity. ➢ Participants: - Mothers of children 6 to 23 months old; - Pregnant women.
4) Focus Group Discussions	To understand dietary habits and taboos related to foods and drinks of children 6 to 23 months old, mothers of the children and pregnant women, and adolescent girls to identify promoting and prohibiting factors. ➢ Decision makers about menus of daily meals and complementary foods. ➢ Existing communication channels that the decision makers and adolescent identified above can easily access. ➢ Existing and preferred community forums/interactions that women and adolescent girls get involved/influenced	➢ 2-3 FGDs in each community (6 – 7 participants each) x 3 communities ➢ Participants: - Mothers of children 6 to 23 months old; - Pregnant women; - Adolescent girls
5) Market Survey	To obtain detailed information about foods and drinks available and fluctuation of the prices in the local market to identify different market conditions that may affect food intakes and nutrition problems of the local residents (situations such as distance from the capital city/urban market economy; consumers' background; seasonality). ➢ Foods and drinks available in the market throughput the year ➢ Prices and their fluctuations throughout the year ➢ Processes from producers to the market ➢ Sources of supplies ➢ Hygiene conditions	➢ 3 local markets that the people in the targeted 3 communities frequently use. ➢ The Manager of each market

The 24-hour dietary recall data were analyzed based on the Dietary Reference Intakes (DRIs) developed by the Institute of Medicine in the United States. Results are shown in Table 6–8 below.

Table 6: Dietary Intakes of Mothers of Children Aged 6 to 23 Months on Selected Key Nutrients – by Community

	IOM		Kutunku					Paiko					Dobi				
Nutrients	Age	DRIs	Min	25 %ile	50 %ile	75 %ile	Max	Min	25 %ile	50 %ile	75 %ile	Max	Min	25 %ile	50 %ile	75 %ile	Max
Energy Kcal	14-18y	-	279.6	975.5	1074.1	1844.0	2840.4	80.3	1412.1	1649.7	2176.3	6121.4	958.2	1581.5	1983.2	2291.0	3313.6
	19-30y	-															
	31-50y	-															
Protein gms	14-18y	71	6.1	17.7	30.1	51.7	89.0	2.1	31.5	48.2	68.2	126.5	22.8	31.5	40.7	64.6	90.2
	19-30y	71															
	31-50y	71															
Carbo gms	14-18y	210	27.7	106.1	187.1	273.8	417.2	9.0	142.6	261.0	339.2	938.9	127.5	256.4	353.7	411.9	614.0
	19-30y	210															
	31-50y	210															
Fat gms	14-18y	ND	7.5	14.4	26.4	46.0	144.0	3.5	17.7	40.6	77.0	180.4	11.1	21.1	37.0	47.0	88.9
	19-30y	ND															
	31-50y	ND															
Fe mg	14-18y	10	2.0	7.4	10.7	22.2	45.0	0.9	8.8	15.2	21.5	48.8	5.5	10.6	12.9	18.6	26.5
	19-30y	9															
	31-50y	9															
Zn mg	14-18y	13	1.0	4.0	5.4	10.2	16.1	0.4	6.6	9.6	12.1	26.7	3.2	6.9	9.4	12.2	18.0
	19-30y	12															
	31-50y	12															
Vitamin A mcg	14-18y	1200	3.8	185.3	752.9	1357.1	1795.3	25.2	202.0	754.7	2050.7	5971.8	12.4	393.1	848.0	1382.8	2740.0
	19-30y	1300															
	31-50y	1300															

Table 7: Dietary Intakes of Pregnant Women on Selected Key Nutrients – by Community

	IOM		Kutunku					Paiko					Dobi				
Nutrients	Age	DRIs	Min	25 %ile	50 %ile	75 %ile	Max	Min	25 %ile	50 %ile	75 %ile	Max	Min	25 %ile	50 %ile	75 %ile	Max
Energy Kcal	14-18y	-	1308.8	1502.6	1696.3	2299.5	2902.7	1474.8	1885.3	2295.9	2943.0	3590.1	1203.1	1604.1	2012.6	2397.3	2727.1
	19-30y	-															
	31-50y	-															
Protein gms	14-18y	71	37.9	40.0	42.1	51.2	60.4	36.6	41.5	46.4	73.9	101.3	40.5	44.3	45.8	47.8	52.7
	19-30y	71															
	31-50y	71															
Carbonhy gms	14-18y	175	228.2	260.6	293.1	392.9	492.8	246.5	315.7	384.9	527.7	670.5	168.7	248.4	320.1	371.0	388.4
	19-30y	175															
	31-50y	175															
Fat gms	14-18y	ND	17.5	26.3	35.2	51.4	67.7	32.0	32.5	33.0	41.5	50.0	29.0	39.6	45.9	63.4	107.2
	19-30y	ND															
	31-50y	ND															
Fe mg	14-18y	27	12.0	12.2	12.5	13.1	13.8	15.5	15.9	16.4	25.2	34.0	8.9	12.5	13.8	14.4	16.1
	19-30y	27															
	31-50y	27															
Zn mg	14-18y	12	6.7	7.1	7.5	8.7	9.9	7.7	8.8	9.9	15.0	20.1	5.6	7.5	9.2	10.5	11.0
	19-30y	11															
	31-50y	11															
Vitamin A mcg	14-18y	750	46.9	49.1	51.4	923.4	1795.5	22.9	55.3	87.7	171.0	254.3	1109.1	1518.8	1726.6	2710.3	5447.7
	19-30y	770															
	31-50y	770															

Table 8: Dietary Intakes of Children Aged 6 to 23 Months on Selected Key Nutrients – by Community

	IOM		Kutunku					Paiko					Dobi				
Nutrients	Age	DRIs	Min	25 %ile	50 %ile	75 %ile	Max	Min	25 %ile	50 %ile	75 %ile	Max	Min	25 %ile	50 %ile	75 %ile	Max
Energy Kcal	6-12m	-	30.0	75.2	184.9	291.2	625.8	11.5	114.8	354.1	523.7	1443.7	32.9	131.3	210.6	471.3	796.3
	1-3y	-															
Protein gms	6-12m	11	1.0	2.2	5.1	8.5	20.4	0.3	1.9	7.6	15.0	34.8	1.0	3.8	5.5	9.7	20.6
	1-3y	13															
Carbo gms	6-12m	95	10.7	14.0	32.4	49.4	80.1	2.1	12.8	38.0	90.4	216.1	6.0	18.9	35.7	62.4	167.2
	1-3y	130															
Fat gms	6-12m	30	0.7	0.8	3.0	4.5	14.1	0.1	1.1	5.8	38.0	43.4	0.3	1.9	3.3	7.0	24.8
	1-3y	NDc															
Fe mg	6-12m	11	0.1	1.1	1.8	2.1	2.9	0.1	0.5	1.7	4.2	8.6	0.4	1.0	1.6	2.9	5.5
	1-3y	7															
Zn mg	6-12m	3	0.2	0.3	0.8	1.2	2.2	0.1	0.5	0.9	2.9	5.9	0.2	0.6	0.9	1.6	4.0
	1-3y	3															
Vitamin A mcg	6-12m	500	0.0	0.0	11.4	83.2	536.4	0.0	1.2	47.0	507.9	1783.8	0.0	0.6	9.5	76.0	1313.8
	1-3y	300															

Of the noteworthy is that for iron, which is one of the causes of maternal mortality, the DRI substantially increases during pregnancy. However the consumption levels by pregnant women do not differ much from the non-pregnant times, resulting in large gaps between the recommended (27 mg per day) and actual intakes (median rages from 11 to 16 mg per day, depending on the community).

When it comes to the vitamin A intake, it seems largely dependent on consumption volumes of red palm oil (the data also indicates a possibility of exceeding the tolerable upper intake level although in a very few cases).

For the five major problem nutrients, namely protein, fat, iron, zinc and vitamin A, the proportions not meeting the age-specific standards and those above the tolerable upper limits are calculated for each of the three population groups (Table 9). Table 9 also includes the other nutrients, namely vitamin E, riboflavin, niacin, folate and vitamin B12, because all the three groups observed more than 50% of the samples not meeting the respective DRIs. It is concerning that the children's group has very big proportions not meeting the DRIs for all the key nutrients. Also, the pregnant mothers group has considerable proportions not meeting the DRIs for protein, iron, zinc and vitamin A, especially iron, that is critical during pregnancy. It also poses a question, together with the anthropometric analysis results, that even for the nutrients that most of the mothers (non-pregnant) are adequately taking, such as fat and iron, the majority of their children are not.

Table 9: Percentage of Mothers, Pregnant Women and Children Not Meeting IOM's Dietary Reference Intake Levels (%)

Nutrients	Mothers (n=50)	Pregnant women (n=10)	Children (n=49)
5 Key Nutrients			
Protein	84	90	76
Fat	18	10	67
Fe (upper limit)	30 (2)	90	96
Zn	74	90	90
Vitamin A (upper limit)	66 (8)	60 (10)	78 (8)
Nutrients that All Three Groups having >50% not meeting DRIs			
Ca	96	100	98
Na	74	50	76
Vitamin E	92	90	98
Riboflavin	86	90	90
Niacin	81	90	86
folate	96	100	94
Vitamin B12	98	90	92
Vitamin C	64	50	77

The results of the 24 hours dietary recall for the 3 target populations were also analyzed against 13 food groups presented in the West African Food Composition Table (Table 10 - 12). The study team then disaggregated the data by two groups of children – those children who meet the DRIs for protein; and the others not meeting – and tried to see if there are any differences between the two groups in terms of intakes of the other key nutrients. The same was done for mothers – those mothers whose children meet the required protein intake levels; and the others whose children not meeting. As shown in Table 13 and Figure 5, it is clear that the group of children whose protein intakes are not adequate tend to be also deficient in all the other key nutrients. It was found that children meeting the DRIs for protein" appear to meet DRIs for other important nutrients as well, such as zinc and fat, while their iron and vitamin A intake levels did not meet the DRIs. Therefore rigorous interventions are needed for those "not-meeting- protein" children to improve both quantity and quality of their diet, while "meeting protein" children also require substantial improvements in intakes of iron- and vitamin A-rich foods. It could be plausible that those children not consuming enough protein and the other key nutrients at the same time may be in high risk of being stunted – though such analyses were not done because of too small sample sizes and lack of information about other factors that may be causing stunting. As stunting can be more easily measured, further analyses looking at relationships between stunting and dietary intakes may provide more concrete information for programme targeting.

Table 10: Dietary Intakes of Mothers of Children Aged 6 to 12 Months by Food Group – by Community

(Unit: grams)

Food Groups		Kutunku					Paiko					Dobi				
#	Food	Min	25 %ile	50 %ile	75 %ile	Max	Min	25 %ile	50 %ile	75 %ile	Max	Min	25 %ile	50 %ile	75 %ile	Max
1	Cereals	26.8	129.8	150.4	242.6	703.8	0	53.3	239.3	392.4	600.4	11.0	93.0	145.8	324.2	546.0
2	Starchy roots	0	0	0	166.0	576.1	0	0	132.0	480.0	1500.0	0	411.5	651.8	916.3	1459.0
3	Legumes	0	0	0	52.1	181.0	0	0	0	60.0	250.0	0	0	0	0	54.4
4	Vegetables	0	7.0	30.7	97.7	712.0	0	25.0	62.7	91.3	360.1	0	10.1	32.7	175.7	225.6
5	Fruits	0	0	0	0	250.0	0	0	0	0	55.8	0	0	0	0.0	0
6	Nuts	0	0	0	0	0.0	0	0	0	0	175.1	0	0	0	0.0	42.2
7	Meat	0	0	0	0	25.0	0	0	0	0.1	83.3	0	0	0	0.0	150.0
8	Eggs	0	0	0	0	232.0	0	0	0	0	0	0	0	0	0.0	43.5
9	Fish	0	0	0	0	6.9	0	0	0	4.0	1000.0	0	0	0	7.6	516.7
10	Milk	0	0	0	0	0.0	0	0	0	0	20.0	0	0	0	0	0
11	Fats & oils	0	4.9	18.7	25.7	114.5	0	3.0	25.0	44.3	160.5	0	12.0	20.4	28.3	65.1
12	Beverages	0	0	0	0	10.0	0	0	0	0	0	0	0.0	0	0	0
13	Miscellaneous	2.7	6.5	10.3	22.5	62.4	0.8	3.9	8.1	17.3	27.4	2.4	6.2	18.2	31.7	50.6

Table 11: Dietary Intakes of Pregnant Women by Food Group – by Community

(Unit: grams)

Food Groups		Kutunku					Paiko					Dobi				
#	Food	Min	25 %ile	50 %ile	75 %ile	Max	Min	25 %ile	50 %ile	75 %ile	Max	Min	25 %ile	50 %ile	75 %ile	Max
1	Cereals	183.0	264.0	345.0	509.6	674.1	342.0	353.8	365.6	610.6	855.6	46.9	73.6	195.9	314.5	330.0
2	Starchy roots	0	0	0	300.0	600.0	0	222.2	444.4	497.2	550.0	220.0	302.5	465.0	751.5	1206.0
3	Legumes	0	0	0	0.0	0	0	0	0	0	0	0	0.0	0	0	0
4	Vegetables	2.4	28.7	55.0	78.7	102.3	12.0	26.0	40.0	91.3	142.6	18.1	39.7	52.8	115.7	286.7
5	Fruits	0	0	0	27.9	55.8	0	0	0	0	0	0	0	0	0.9	3.6
6	Nuts	0	0	0	0	0	0	0	0	0	0	0	0	0	7.8	31.2
7	Meat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Eggs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	Fish	0	0	0	0	0	0	0	0	73.3	146.7	0	0	7.7	66.1	218.3
10	Milk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Fats & oils	0	13.8	27.6	36.7	45.7	0.0	11.4	22.9	28.7	34.5	16.0	25.0	29.2	46.4	94.6
12	Beverages	0	0	0	0	0	0	0	0	0	0	0	0	0	0.8	3.0
13	Miscellaneous	4.8	6.8	8.8	10.3	11.8	7.8	13.3	18.9	21.5	24.1	10.2	12.4	23.3	34.5	37.7

Table 12: Dietary Intakes of Children Aged 6 to 12 Months by Food Group – by Community

(Unit: grams)

Food Group		Kutunku					Paiko					Dobi				
#	Food	Min	25 %ile	50 %ile	75 %ile	Max	Min	25 %ile	50 %ile	75 %ile	Max	Min	25 %ile	50 %ile	75 %ile	Max
1	Cereals	0	19.8	25.0	32.0	108.0	3.3	9.2	28.2	73.1	216.2	9.6	14.2	32.6	59.6	127.4
2	Starchy roots	0	0	0	0	26.6	0	0	0	50.0	300.0	0	0	19.0	47.8	532.5
3	Legumes	0	0	0	0	17.7	0	0	0	0	32.5	0	0	0	0	3.5
4	Vegetables	0	0	0	25.6	42.3	0	0	1.8	32.6	99.9	0	0	0	5.9	40.8
5	Fruits	0	0	0	0	72.5	0	0	0	0	11.0	0	0	0	0	0
6	Nuts	0	0	0	0	0	0	0	0	0	3.1	0	0	0	0	0
7	Meat	0	0	0	0	0	0	0	0	0	50.0	0	0	0	0	0
8	Eggs	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	14.5
9	Fish	0	0	0	0	18.3	0	0	0	0	2.5	0	0	0	0	0
10	Milk	0	0	0	0	20.0	0	0	0	0	20.6	0	0	0	0	0
11	Fats & oils	0	0	0	0.8	9.2	0	0	0	10.1	29.1	0	0	1.2	2.3	22.9
12	Beverages	0	0	0	0	10.0	0	0	0	0	0	0	0	0	0	0
13	Miscellaneous	0	0	2.6	4.4	8.9	0	0	1.1	4.5	11.6	0	0	1.0	2.6	39.9

Table 13: Comparison of Dietary Intakes between Children Meeting Protein Requirements vs. Children Not Meeting, and Their Mothers

		Infants						Mothers					
		Children whose protein intake meet the requirement (n=12)			Infants whose protein intake do not meet the requirement (n=37)			Infants whose protein intake meet the requirement (n=12)			Infants whose protein intake do not meet the requirement (n=37)		
		Med	Min	Max	Med	Min	Max	Med	Min	Max	Med	Min	Max
Nutrients	Energy_kcal	609	354	1,444	130	11	620	1,624	958	2,410	1,757	80	6,121
	Protein g	16	11	35	4	0	13	41	17	65	41	2	126
	Fat Energy %	25	3	50	11	3	65	26	8	56	20	4	58
	Fe_mg	5	1	9	1	0	3	12	6	21	14	1	49
	Zn_mg	3	1	6	1	0	2	7	3	13	9	0	27
	Vitamin A_mcg	387	7	1,784	6	0	1,314	1,403	35	5,972	725	4	3,984
Food Groups (grams)	1 Cereals	98	18	216	20	0	108	227	0	433	154	0	704
	2 Starchy roots	12	0	533	0	0	300	208	0	1,459	325	0	1,500
	3 Legumes	0	0	33	0	0	18	0	0	171	0	0	250
	4 Vegetables	21	0	100	0	0	45	63	3	321	30	0	712
	5 Fruits	0	0	11	0	0	73	0	0	56	0	0	250
	6 Nuts	0	0	3	0	0	2	0	0	6	0	0	175
	7 Meat	0	0	50	0	0	0	0	0	83	0	0	150
	8 Eggs	0	0	0	0	0	15	0	0	58	0	0	232
	9 Fish	0	0	3	0	0	18	0	0	1,000	0	0	517
	10 Milk	0	0	20	0	0	21	0	0	20	0	0	20
	11 Fat	7	0	29	0	0	23	26	3	100	19	0	161
	12 Beverages	0	0	0	0	0	10	0	0	0	0	0	10
	13 Miscellaneous	5	0	12	1	0	40	13	2	31	10	1	62

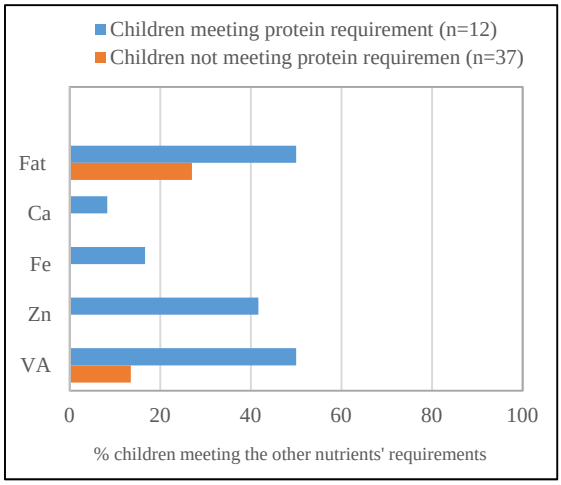


Figure 5: Nutrient Intakes of Children Meeting/Not Meeting Protein Requirements

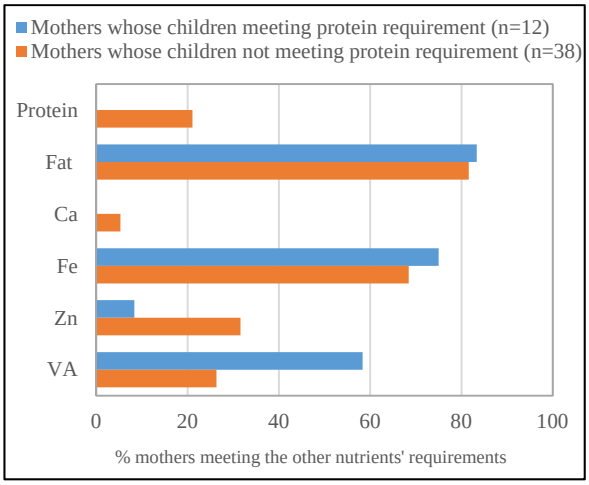


Figure 6: Nutrient Intakes of Mothers Whose Children Meeting/Not Meeting Protein Requirements

The survey team revisited a few of the same respondents in each surveyed communities a few days after the first 24-hour dietary recall in order to check if their diets have varieties day by day or rather monotonous patterns. The latter (i.e. monotonous diet) was more common in the revisited households.

There are also a few other important points that were noted during household interviews and focus group discussions:

- While adults' diet seem to have a certain level of diversity, small children are mostly fed only with staples (often as porridge). Disaggregation of dietary intake data by food groups revealed that despite the fact that the surveyed adults seem to take certain amounts of legumes, meat/poultry and eggs (which means that they are available in the household), children's intake levels are nil in most cases.
- In terms of decision-making patterns on household food choices, the survey identified household heads (often husbands) as the main decision-makers; plus mothers/fathers-in-law are also influential because women seem to respect their experiences and knowledge.
- The same is true for complementary feeding choices for children. Household heads (husbands) makes most decisions (or endorses mothers' suggestions) because the child belongs to them, while mothers-in-law also influences because they have more experiences than young mothers.
- The important point derived from the focus group discussions is that mothers seem to have knowledge about nutritious foods, but there seems to be "knowledge-practice gap" given the poor dietary intake levels observed in the 24-hour dietary recalls, especially of children. Through communications with community members, extension workers should find out factors that prohibit the translation of their knowledge into actual practices.
- People tend to stop breastfeeding between 12 and 18 months after birth, normally around the time when the baby starts walking.
- Adolescent girls, from their focus group discussions, seem to have decent levels of knowledge about good nutrition, possibly because of various information sources they access, such as school programs, radio and peer education. They recognized the importance of reaching out to out-of-school girls who may be in greater need for information and would benefit from peer learning opportunities.
- About one third of the respondents' households experienced the hunger level 1[13] within four weeks before the survey, while one out of six even reached the hunger level 3[14].

[13] The level 1 is defined that "there was no food to eat of any kind in the household in the past 4 weeks because of lack of money to get food."
[14] The level 3 is defined that "any household member went a whole day and night hungry without eating anything in the past 4 weeks because there was not enough food."

3.4 Agricultural Production and Market Situations

To consider how nutrition-sensitive agriculture and food-based approaches could effectively contribute to nutrition improvement, the study team collated basic information about agricultural production and the market situations of potential food products with high nutritional values. This component also explored bio-fortified crops explored in Nigeria, possibilities of producing and promoting certain local food products that appeared to be beneficial in improving the nutritional status of the rural population.

3.4.1 Basic agricultural conditions in Nigeria and FCT

In Nigeria, climatic zone is divided into three main categories: a tropical forest from the south to the north; a savanna in the middle with 800 to 1,200 mm of annual rainfall; and a Sahel, semi-arid land in the north, with 300 to 800 mm of annual rainfall. There are two climatic seasons, rainy season (May to October) and dry season. Since agricultural production mainly relies on rainfalls, the crop cultivation is influenced by seasonality and the amount of rainfalls every year. Furthermore, it is reported that small scale farmers being engaged in semi-subsistence farming in rural areas often face a shortage of food starting in the late dry season into the seeding time (mostly in August) through the harvest time (mostly in October). This is generally called a hunger season/period and caused by insufficient agricultural infrastructures such as irrigation, farm road and storage facilities as well as a defect of food supply chains. This trend appears remarkably in the north Sahel and the middle savanna. Domestic animals such as goat, sheep and chicken are kept in farmers' garden to get cash income mainly in emergency situations.

In FCT, consisting of wooden savanna and grassland, the soil fertility is generally low due to existence of little organic matter and insufficient total nitrogen and phosphorus in the soil. However, in places where water is available, it is possible to implement intensive agriculture with appropriate soil management, such as fertilizer application, rotational cropping and mixed farming, etc. While the main sources of water supply in this area are boreholes, wells, rivers, streams and springs, water shortage consistently occurs in rural areas in dry season.

3.4.2 The current situation of bio-fortified crops in Nigeria

Currently, Vitamin A fortified cassava developed by the International Institute of Tropical Agriculture（IITA）and the National Root Crop Research Institute of Nigeria (NRCRI) have been in the stage of dissemination since 2014. With the financial support by both the Harvest Plus Program of the United States and the Cassava Transformation Agenda of the Federal Ministry of Agriculture and Rural Development (FMARD), vitamin A-cassava is expected to reach 10 million farmers by 2018. Vitamin A- cassava has a high yield and strong resistance against

viral diseases. If the current vitamin A-cassava could replace all the ordinary cassava consumed by children (aged under five) in their diet, it could provide up to 40% of the recommended intake level of vitamin A per day.

Another interesting potential lies in the Quality Protein Maize (QPM) developed by the International Maize and Wheat Improvement Centre (CIMMYT) in the 1990's, which contains higher levels of essential amino acids that are important for growth and other physical functions (lysine and tryptophan), compared to ordinary maize.

Table 14: Current Status of Research and Development of Bio-fortified Crops

	Nutritional Benefits	Farmers' Benefits	Countries Introducing
Vitamin A-cassava	Provides up to 40% of daily vitamin A needs	High yielding, virus resistant	Nigeria, DRC
Vitamin A-yellow maize	Provide up to 25% of daily vitamin A needs	High yielding, disease and virus resistance, drought tolerance	Nigeria , Zambia
Vitamin A- orange sweet potato	Provides up to 100% of daily vitamin A needs	High yielding, virus resistant, drought tolerant	Uganda
Iron beans	Provides up to 50% of daily iron needs	High yielding, virus resistant, heat and drought tolerant	DRC, Rwanda, Uganda
Iron pearl millet	Provides up to 80% of daily iron needs	High yielding, mildew resistance, drought tolerant	India
Zinc rice	Provides up to 60% of daily zinc needs	High yielding, disease and pest resistant	Bangladesh, India
Zinc wheat	Provides up to 50% of daily zinc needs	High yielding, disease resistant	India, Pakistan

Source: HarvestPlus website (last accessed in February 2016).

3.4.3 Possibilities of Producing Nutrient-Rich Agro-Products in FCT

Table 15 lists the top 6 nutrients that were found deficient in survey respondents' diet, food items that are rich in those deficient nutrients, and whether those food items are grown in FCT. As shown in the table, most of the food items rich in the deficient nutrients are already grown in FCT. The underlined food items are the ones observed in the markets of Kutunku, Paiko and Dobi communities at the time of the survey in January 2017, indicating that while protein- and carbohydrate-rich foods are relatively more available, none of the iron-rich foods were in those markets.

Table 15: Ranking of Deficient Nutrients in Survey Respondents' Diet, Food Items Rich in Those Deficient Nutrients, and Possibility of Growing Them in FCT

Nutrient Ranking	Food items that are rich in the deficient nutrients according to West African Food Composition Table (nutrient contents in 100gms：Unit grams）*except for cooked food			
	Food items	Grown in FCT	Food items	Grown in FCT
1 Protein	Game meat, dried (66.7)		Chicken, light meat, flesh, raw (23.6)	
	Groundnut flour, defatted (42.3)	*	Groundnut, shelled, dried, raw (22.4)	*
	Ant flying, dried (38.8)		Beef, meat, lean, boneless, raw (21.7)	
	Pumpkin leaves, dried (34.5)	*	Cowpea, brown, dried, raw (21.2)	*
	African locust bean, seeds, dried (32.3)	*	Cowpea, black, dried, raw (21.1)	*
		*	Lamb, liver, raw (20.2)	
	Soya bean, dried, raw (32.0)	*	Bambara groundnut, dried, raw (20.1)	*
	Melon seeds, slightly salted, raw (27.5)	*		
	Cowpea leaves, dried (24.4)			
2 Carbo-hydrate	Cassava, tuber, dried (81.4)	*	Dates, dried (70.1)	*
	Cassava flour (78.8)	*	Yam tuber, flour (67.9)	*
	Maize, yellow, grit, degermed (76.6)	*	Sorghum, whole grain, white, raw (65.5)	*
	Rice, brown, raw (73.8)	*	Pearl millet, whole grain, raw (with bran) (64.8)	*
	Sorghum, flour, degermed (70.4)	*		*
			Maize, yellow, flour of whole-grain (64.3)	
3 Fat	Coconut oil (100)		Soya oil (100)	
	Groundnut oil (100)	*	Vegetable oil (100)	
	Palm oil, red (100)	*	Coconut, kernel, dried, raw (66.9)	
	Palm oil, refined (100)		Palm nut kernel, shelled, raw (55.3)	
4 Fe	Cumin, seed (66.4)		Game meat, dried (9.9)	
	Bay leaf, dried (43.0)		Beef liver, raw (8.8)	
	Cowpea leaves, dried (34.0)	*	Chicken, liver, raw (8.7)	
	Tamarind, leaves, dried (19.4)		Lamb, liver, raw (8.7)	
	Pumpkin leaves, dried (18.8)	*	Cowpea, brown, dried, raw (8.7)	*
	Baobab leaves, dried (15.4)	*	Cowpea, white, dried, raw (8.5)	*
	Wheat, bran (14.8)	*	Soya bean, dried, raw (7.3)	*
	False sesame, leaves, dried (14.2)	*	**Bio-fortified Iron beans**	?
	Sesame seeds, whole, dried, raw (11.8)	*	**Bio-fortified Iron Perl cassava**	?
5 Zn	Sesame seeds, whole, dried, raw (7.75)	*	Lamb, liver, raw (4.66)	
		*	Cashew nut, raw (4.59)	*
	Wheat, bran (7.49)		Cowpea, white, dried, raw (4.58)	*
	Melon seeds, slightly salted, raw (7.12)	*	Cowpea, brown, dried, raw (4.37)	*
			False sesame, leaves, dried (4.23)	*
	Game meat, dried (6.06)	*		
	Beef, ground, 10 % fat, raw (4.79)			
	Soya bean, dried, raw (4.73)			
6 Vitamin A	Chicken, liver, raw (7890)		Spinach, raw (409)	*
	Palm oil, red (5720)	*	Sweet potato, deep yellow, raw (397)	*
	Beef liver, raw (4970)		Mango, deep orange flesh (393)	*
	Lamb, liver, raw (4970)		**Bio-fortified Orange Sweet Potato**	?
	Carrot, raw (713)	*	**Bio-fortified Vitamin A Cassava**	?
	Parsley, fresh (583)	?	**Bio-fortified Vitamin A Yellow Maize**	?
	Sweet potato, leaves, raw (489)	*		

* The foods observed in the markets in Kutunku, Paiko and Dobi at the time of the survey in January 2017 were underlined.

**The foods that can be cultivated in FCT are marked *, and the foods not known to be cultivated in FCT are marked "?".

Main crops and animal source foods that are/can be produced in FCT include the following: vitamin A-cassava, maize, sorghum, cassava, sweet potato, yam, cowpea, soybean, groundnut, sesame, tomato, okra, pumpkin, eggplant, spinach, orange, mango, cashew, goat, sheep, chicken,

cat fish, tilapia, and so on. Among them, those that are rich in protein, vitamin A or iron are listed and relevant information was summarized in Table 16.

Table 16: List of Protein-, Vitamin A- and Iron-Rich Products Grown in FCT

	Nutrients			Seed Acquisition		Processing	Note
	Protein	Vitamin A	Iron	Easy	Possibility of Home Seed Raising		
Vitamin A-cassava		○		Easy	Yes	Easy	Official letter is necessary
Yellow maize		○		Easy	No	Easy	Buy from seed company
Sorghum			○	Easy		Easy	Residue is valued for animal feed
Orange sweet potato		○		Easy	Yes	Easy	Leaves have also vitamin A
Cow pea	○		○	Easy	Yes	Easy	Residue is valued for animal feed
Soybean			○	Easy	Yes	Easy	Residue is valued for animal feed
Ground Nut	○		○	Easy	Yes	Easy	Residue is valued for animal feed
Tomato		○		Easy	No	Easy	Easy to cultivate in summer
Pumpkin		○		Easy	Yes	Easy	Leaves have also vitamin A
Spinach		○	○	Easy	No	Easy	Easy to cultivate in summer
Mango		○		Easy	Yes	Easy	Fruit
Cashew			○	Easy	Yes	Easy	Fruit
Goat	○		○	Easy	Yes	Easy	Animal feed is crop residue
Sheep	○		○	Easy	Yes	Easy	Animal feed is crop residue
Chicken	○			Easy	Yes	Easy	Kept in garden
Cat fish	○			Easy	No	Easy	Natural pond
Tilapia	○			Easy	No	Easy	Artificial pond

Source: Prepared by the survey team based on key informant interview with extension workers of Gwagwalada ADP Program.

3.4.4 Factors Affecting Demand and Supply of Food Products – Price Elasticity and Seasonality

What became evident in the market surveys around the study communities is that food prices are normally influenced by demand and supply as well as seasonality; and more recently tend to be affected by sever inflation (for example, although the prices of palm and coconut oils are normally stable through the year, it is observed that their prices have also increased).

The market survey also revealed that the variety of food commodities is limited in the more interior market because prices of vegetables, fruits and meat are generally higher and more elastic than other common food products, which affects consumer demands more easily, which in turn tends to suppress supply of those commodities in the market.

Cropping patterns and systems of major nutrient–rich crops are presented in Table 17, based on key informant interviews conducted in Gwagwalada Area Council. Most of the crops are cultivated in the rainy season, i.e. from May to October. Cassava is planted in June, requiring one year before harvesting. Yam is planted in March, requiring 10 months before harvesting. Beans are sowed mixed with maize, millet and sorghum in the middle of rainy season (August) and harvested at the beginning of dry season (November). Pumpkin and melon are cultivated with irrigation water by hand in small gardens by a river or in lowland along a valley.

Table 17: Cropping Patterns and System of Existing and Potential Nutrient-Rich Agricultural Products in FCT

No	Crops	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Cropping System
1	Maize					←	—	—	—	→				Mixed planting
2	Rice							←	—	—	—	—	→	single planting
3	Millet					←	—	—	—	→				Mixed planting
4	Sorghum					←	—	—	—	→				Mixed planting
5	Cassava	←	—	—	—	—	—	—	—	—	—	—	→	single planting
6	Sweet Potato					←	—	—	—	—	—	→		single planting
7	Yam			←	—	—	—	—	—	—	—	—	→	single planting
8	Cowpea								←	—	—	→		Mixed planting
9	Soymean								←	—	—	→		Mixed planting
10	Groundnut					←	—	—	—	→				Mixed planting
11	Sesami								←	—	—	→		Mixed planting
12	Tomato					←	—	—	—	→				single planting
13	Melon										←	—	→	Irrigation
14	Okura					←	—	—	—	→				single planting
15	Pumpkin	←	—	→							←	—	→	Irrigation
16	Spinach					←	→							single planting
17	Egg plant				←	—	—	→						single planting

Source: Prepared by the Survey Team by conducting key informant interview.

According to the result of the seasonal calendar, it was observed that all the three communities had so-called “hunger period” which starts when a farming family’s crop stockpiles start to run out and continues until the next harvesting time.

Table 18: Huger Period of Three Surveyed Communities

Hunger Period												
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Kutunku												
Dobi												
Paiko												

Some dried products, such as dried okra, are commonly consumed and relatively free from the price movements, but the variety sold in the rural markets was limited. One reason identified in the study was that some of the dried products, such as dried yam, do not last through the hunger season even in a dried status. To help people obtain and consume nutritious foods throughout the year, it is critical to institute measures to be taken during the hunger periods; for example, introduction of and support for local technologies in post-harvest processing, storage and preservation of agricultural commodities, such as drying of vegetables, fruits and other crops. Also for animal protein sources, introduction of appropriate drying/preservation technologies, that are relatively simple, localized and meeting safety standards, could help increase the availability of nutrient-rich food items throughout the year and provide income generating opportunities.

3.4.5 Possible Approaches to Nutrition-Sensitive Agriculture

Based on the findings above, the survey team recognized the importance of developing a clear understandings of how the "Nutrition-Sensitive Agriculture" is defined and what it entails, in order to effectively translate the concept into programme components.

Nutrition-Sensitive Agriculture (NSA) is a newly emerging concept that is broadly defined in different ways. FAO defines NSA as "a food-based approach to agricultural development that puts nutritionally rich foods, dietary diversity, and food fortification at the heart of overcoming malnutrition and micronutrient deficiencies"[15]. Under this definition, FAO recommends three main areas for implementation: **(1) Making food more available and accessible** by increasing agricultural production and income, which in turn has a sizeable effect on reducing malnutrition; **(2) Making food more diverse and production more sustainable** by make a wider variety of crops available at the local level in a sustainable manner; and **(3) Making food itself more nutritious** through fortification, foods processing, plant breeding and improved soil fertility. The USAID-supported SPRING project defines NSA through three main pathways to actually create impact on people's nutritional status: **(1) Food Production Pathway**, affecting the food available for household consumption as well the price of diverse food; **(2) Agricultural Income Pathway** for expenditure on food and non-food items; and **(3) Women's Empowerment**, which affects income, caring capacity and practices, and female energy expenditure[16]. In both cases, there is an important assumption that increasing food production and bringing agricultural income for farmers would not automatically improve their diet and nutritional status, but it requires availability/accessibility of nutritious and diverse foods in local market as well as consumer demand for such products. Consumer demands can be created when desirability for/values of such products

[15] http://www.fao.org/3/a-as601e.pdf

[16] Herforth, Anna, and Jody Harris. 2014. Understanding and Applying Primary Pathways and Principles. Brief #1. Improving Nutrition through Agriculture Technical Brief Series. USAID/SPRING Project.

are established and the products are affordable. Moreover, empowerment of women, which is known to be effective in raising motivation and promoting behavior changes toward better dietary practices and nutrition improvement, is a key area under NSA.

In order to design effective NSA activities, it is necessary to combine activities that would address production/availability, price/income/affordability and knowledge/desirability through different pathways. Finally, it is critical to pay a particular attention to the most vulnerable segment of the population, including small subsistent farmers and women farmers who may not be capable of engaging in new agricultural activities without extensive support. Since they are the ones that may suffer most from malnutrition, it is of a critical importance that any NSA programmes are designed with sensitivity towards those population groups, either through careful targeting, introducing innovative income generation activities, or linkages with social protection programmes. In this regard, the guidelines developed by FAO, titled ”Designing nutrition-sensitive agriculture investments: checklist and guidance for programme formulation” (FAO, 2015) seems useful for designing future projects/programmes in this area.

3.5 Available Nutrition Assessment Tools

3.5.1 Food Composition Table

The study team listed the following seven food composition tables for possible analysis, and finally included six, excluding the fifth table (Tanzanian) because it is relatively old.

1) FAO Composition of selected foods from West Africa, 2010 (WAFCT)
2) A food composition table for Central and Eastern Uganda, 2012 (UFCT)
3) Food composition table for use in the Gambia, 2011 (GFCT)
4) USDA National Nutrient Database for Standard Reference, Release 23, 2010 (USDA)
5) Tanzania Food Composition Tables, 2008(outside for analysis this time)
6) Standard Tables of Food Composition in Japan, 2015 (JN)
7) Nigeria Food Composition Table, draft (NFCT, draft)

The following points were derived from the comparative analysis:

- The West African Food Composition Table contains 27 nutrients and 479 food items, while the draft Nigerian Food Composition Table contains 29 nutrients and 282 food items (adding two nutrients, i.e. magnesium and vitamin K).
- It was observed that the West African Food Composition Table did not contain 14 items found in the present dietary intake survey (Table 19) and 69 food items used in the major Nigerian recipe books, namely the Recipes for Commonly Eaten Meals in Nigeria[17], the All Nigerian

[17] Produced by the FCT Agriculture and Rural Development Secretariat.

Recipes[18], and the Dooney's Kitchen[19] (Table 20).

- The US and Japanese food composition tables included information about amino acids contents.
- Neither the West African Food Composition Table nor the draft Nigerian Food Composition Table did contain weight conversion information, which prohibits their direct use for dietary analyses. The study team tried to use alternative sources such as the Ugandan food composition table, which still created difficulties because they did not fully match with actual measurements of Nigerian food items.

Table 19: Foods Appearing in Dietary Intake Survey but Not Listed in West African Food Composition Table – 14 items

No	Food Items	Reference Resource
1	Iodomi noodle	JN（Common wheat, instant Chinese noodles, dried by frying, seasoned)
2	Coca-cola	JN（Carbonated beverage, cola）
3	Cabin Biscuit	JN（Biscuits, hard biscuits）
4	Stockfish	JN（Fish, cod, Pacific cod, dried split）
5	Rice flour	JN（Rice, non-glutinous rice products, fine）
6	Tofu	JN（Soybeans, tofu, "Momen-tofu" (regular tofu)）
7	Semolina flour	USDA（Semolina, enriched）
8	Lolipop	USDA（CHOCOLATE LOVERS SWEETHEART LOLIPOP）
9	Pumpkin seed	USDA（Seeds, pumpkin and squash seed kernels, dried）
10	Mango seed	Yatnatti S, Vijayalakshmi D, Chandru R. Processing and Nutritive Value of Mango Seed Kernel Flour. Curr Res Nutr Food Sci 2014;2(3). doi : http://dx.doi.org/10.12944/CRNFSJ.2.3.10
11	Cerelac (complomentary food)	Nestle HP
12	Water leaf	NFCT(draft） 05_23_02 Waterleaf, Talinum triangulae
13	Star Apple	NFCT(draft） 06_03_01 African Star Apple (Combined Varieties), Chrysophyllum albidum
14	Crayfish	NFCT(draft） 10_05_01 Crayfish,Dried Cambarus spp

[18] http://www.allnigerianrecipes.com/
[19] http://dooneyskitchen.com/

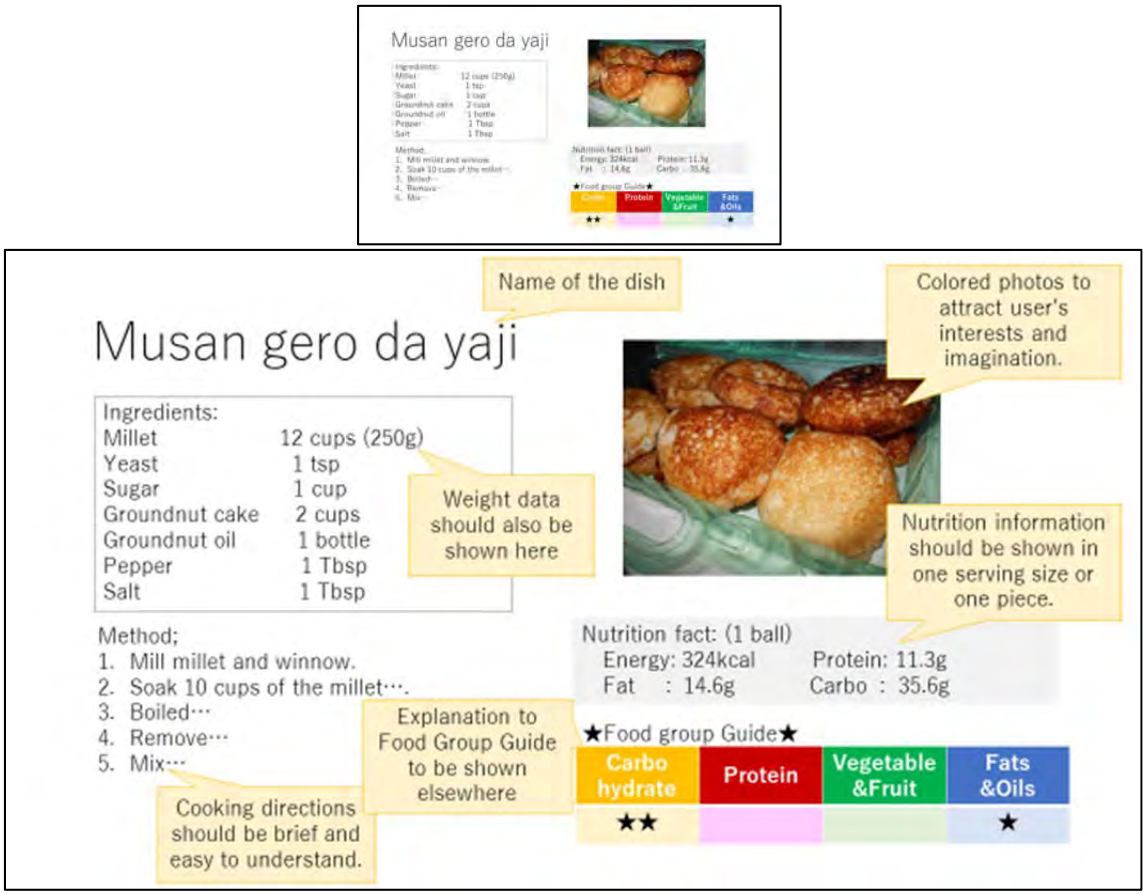
Table 20: Foods Appearing in Major Cooking Recipes but Not Listed in West African Food Composition Table – 69 items

No	Ingredient (English name)	Ingredient (Local name)	No	Ingredient (English name)	Ingredient (Local name)
1	achara	elephant grass	36	ogiiri igbo (traditional seasoning)	
2	african nutmeg	ehiri	37	oha leaves	
3	african or caribbean thyme		38	oreos peanut butter flavour	
4	aidan fruit	uyayak	39	osu	parasitic plant
5	baking powder		40	pectin	
6	banga spices		41	quinoa	
7	barbecue sauce		42	salad cream	heinz classic salad cream
8	bone marrow		43	salad dressing	
9	calabash nutmeg	ehuru/iwo/posa/erhe/gudan miya	44	sausage filling	
10	calcuim carbonate		45	semovita flour	
11	callaloo	efo shoko	46	shrimp	
12	clams	ngolo	47	smoked red prawn	
13	cloves	konofuru	48	soft chewable bones	biscuit bone
14	curry leave	nkong leaves	49	strawberries	
15	curry powder		50	suya spice	suya pepper
16	dried cod fish	stockfish	51	Thaumatococcus Danielli	Uma leaves
17	dried thyme		52	thinly sliced mix veg	
18	dry uziza		53	thyme	
19	flavours		54	turmeric powder	
20	fresh uziza		55	vanila pod	
21	grated nutmeg		56	vodka	
22	hake fish		57		cadaba fruits
23	heinz salad cream		58		bonga fish
24	iced fish		59		chopped uziza (optional)
25	kale		60		tapioca
26	kiwi fruit		61		atarondo
27	kuli kuli		62		okpokpo leaves
28	leeks		63		local spice and ogbonno
29	lobsters		64		ground ibaba powder, Ukpo
30	mayonnaise		65		grenadine syrup
31	mucuna beans		66		angostura aromatic bitters
32	multivitamin		67		fanta orange
33	nigerian curry powder		68		sprite
34	nut meg		69		ribena blackcurrant
35	oats				

3.5.2 Cooking Recipe Guides as Nutrition Information Tools

- 38% of the dietary survey respondents had access to some forms of cooking recipe guides, with half of them receiving the cooking information through radio, and other sources included grand-mothers, TV, mothers, books and church/mosque/hospital/school/communal groups.
- The existing Recipes for Commonly Eaten Meals in Nigeria, developed by the Agriculture and Rural Development Secretariat, FCT was not yet well-known, but community members seemed interested in improved recipes aiming to assist nutrition promotion, particularly on the following aspects (an example developed by the study team is shown in Figure 7:
    - Posting of colored photos
    - Inclusion of easy-to-understand nutrition information
    - Serving sizes

  It is currently only in English, and there is already a demand for similar recipe books in local languages.



Source: Prepared by the survey team based on the result of the dietary survey

Figure 7: Example of Recommended Cooking Recipe Contents

- It would be useful to include information about estimated target intake amounts per day by food groups, which would help users know what kinds of food they should try to incorporate in their diet and roughly how much (as shown in Table 21).

Table 21: Target Intake Amounts per day and Examples of Food Items to Meet the Targets

Food group	Food weight per one unit	**Children** 12-24 months	**Mothers** lactating light activity	**Pregnant women** 2nd trimester light activity
Carbohydrate Energy: 100kcal	Bread: 40g Maize whole kernel dried: 30g Maize flour: 30g Millet: 30g Rice raw: 30g Sorghum : 30g Yam tuber: 80g	5-6 units	10-12 units	8-10 units
Protein Protein: 4g	Beans (cowpea): 20g Soybean: 15g Meat (goat, lamb, chicken): 20g Fish (mackerel, tilapia): 20g Egg: 30g Milk powder: 15g	1 units	6-8 units	4-6units
Vegetables & Fruits Vegetables:20g, Fruits:50g	Green leafy: 20g Tomato raw: 20g, Okra fruit: 20g, Pumpkin squash: 20g, Orange: 50g, Mango: 50g, Cashew apple: 50g	Vegetables 2-3 units Fruits: 1unit	Vegetables: 6-9 units Fruits: 3 units	Vegetables: 6-9 units Fruits: 3 units
Fats & Oils Energy: 30kcal	Groundnuts: 5g, Sesame: 5g, Melon seed: 5g Groundnut oil: 3g (Palm oil: 3g)	1-2 unit	5-6 units	5-6 units

Children (12-24 months)	Breakfast	Morning snack	Lunch	Afternoon snack	Dinner
Carbohydrate	1	1	2	-	2
Protein	-	-	0.5	-	0.5
Vegetables & fruits	1	-	1	1	1
Fats & oils	-	-	0.5	-	0.5
Mothers (lactating)	Breakfast	Morning snack	Lunch	Afternoon snack	Dinner
Carbohydrate	2	1	4	1	4
Protein	2	-	3	-	3
Vegetables & fruits	2-3	1	2-3	1	2-3
Fats & oils	-	2	3	-	3
Pregnant women	Breakfast	Morning snack	Lunch	Afternoon snack	Dinner
Carbohydrate	2	1	3	1	3
Protein	-	-	3	-	3
Vegetables & fruits	2-3	1	2-3	1	2-3
Fats & oils	-	2	3	-	3

Source: Prepared by the survey team based on the results of the dietary survey.

3.5.3 Measurement/Diagnosis of Micronutrient Status and Deficiencies

Iron, vitamin A and iodine deficiencies are known to be the three problem micronutrients, plus zinc also draws attention, as in the Nigerian National Policy on Food and Nutrition 2016, because of its contribution to treatment of diarrheal diseases that often exacerbate nutritional status of children. While those micronutrients affect growth and development of children through many pathways, it is now well-known that anemia negatively affects future productivity of a child.

In Nigeria, the last population-based sample survey on micronutrient deficiencies was conducted more than ten years ago (IITA, 2004). Although there is a plan to conduct a new survey in the near future, the latest data available at the time of this study are from the National Food Composition and Nutrition Survey 2001-2003 (IITA, 2004) as shown in Table 22.

Table 22: Micronutrient Deficiencies of Children Aged Under Five, Mothers and Pregnant Women in Nigeria

Types of Micronutrient Deficiencies	Indicators	Children aged under 5	Mothers (15-49 years old)	Pregnant women	Cut-offs for public health significance defined by WHO
Vitamin A deficiency	Serum retinol	29.5%	13.1%	19.2%	20% (significant)
Iron deficiency	Serum ferritin	71%	49%	58%	
Anemia (data from 1993)	Blood hemoglobin	76.5%	62.7%	66.7%	40% (very serious)
Zinc deficiency	Serum/ plasma zinc	20.0%	28.1%	43.8%	
Iodine deficiency	Urinary iodine excretion	27.5%	30.7%	26.5%	

Source: IITA, Nigeria Food Consumption and Nutrition Survey 2001–2003 (2004); http://data.worldbank.org/indicator/SH.ANM.CHLD.ZS

While vitamin A deficiency is still of public health significance for children aged under five, anemia prevalence exceeds the very serious level defined by WHO not only in children, but also mothers and pregnant women as well. There are very few data showing the situations in FCT as well as research findings that highlight main factors that affect the micronutrient status of the population.

3.6 Institutional Set-Up and Effective Channels for Nutrition Promotion

3.6.1 Multi-Sector Nutrition Improvement in Nigeria: Organizational Outlines

Multi-sectoral food and nutrition committees are established at the federal, state, and Local Government Area (LGA)/Area Council[20] levels. Mandates of these food and nutrition committees at

[20] In Nigeria, the first administrative level below the State is called Local Government Area (LGA) while the equivalent in FCT is called Area Council.

each level are summarized in Table 23 below.

Table 23: Mandates of Food and Nutrition Committees at Federal, State and LG/AC Levels

<table>
<tr><th>National Committee on Food and Nutrition (NCFN）</th><th>State Committee on Food and Nutrition (SCFN)</th><th>Local Government / Area Council Committee on Food and Nutrition (LGCFN/ACCFN)</th></tr>
<tr><td rowspan="2">Food and nutrition policy making, technical and expert support to the secretariat (MB&NP) towards effective implementation of NFNP</td><td colspan="2">Provision of technical and expert support to the administrative office in the course of implementing food and nutrition planning and programme implementations</td></tr>
<tr><td colspan="2">Provision of sufficient and timely funding to allow implementation of the state development plans</td></tr>
<tr><td colspan="3">Continuing proposal and demonstration of programmes which could potentially affect food and nutrition-related issues</td></tr>
<tr><td colspan="3">Encouraging related sectors to incorporate effective nutrition improvement measures into their policies and plans</td></tr>
<tr><td>Advice on establishment of appropriate strategies for policy/work monitoring/evaluations</td><td colspan="2">Advice on establishment of appropriate strategies for work monitoring/evaluations</td></tr>
<tr><td rowspan="2">Monitoring support to the secretariat (MB&NP) conducting food and nutrition awareness-raising</td><td colspan="2">Monitoring support to the administrative offices conducting food and nutrition awareness-raising</td></tr>
<tr><td>Supporting the administrative office (State Planning Ministry) in the creation and maintenance of a database on nutrition improvement activities</td><td>Coordination of local-level nutrition improvement activities</td></tr>
</table>

Source: FMBNP. 2016. National Policy on Food and Nutrition in Nigeria 2016.

3.6.2 FCT Committee on Food and Nutrition (FCT-CFN)

The Committee on Food and Nutrition, established by the FCT as a cross-sectional committee to coordinate sectors relevant for nutrition improvement, has been regarded as one of the major stakeholders in this survey.

(1) Organizational Outlines

The FCT Committee on Food and Nutrition is equivalent to the SCFN, and was established in 2011. Chairmanship is undertaken by FCTA Economic Planning, Research and Statistics (EPRS), and the secretariat is located in the FCT Primary Health Care Development Board (PHB).

Table 24: Composition of the FCT Committee on Food and Nutrition

No.		Content
1	Director	Economic Planning Research and Asatistics FCTA (Chairman)
2	Executive Secretary	FCT Primary Health Care Board (Secretary)
3	Secretary	Area Concil services Secretariant
4	Director	FCDA Admin and Finance
5	Secretary	Education Secretariant
6	Director	Information-Minister Office
7	Secretary	Social Development Secretariat
8	Secretary	Agriculture/Rural Development Secretariat
9	FCT Director	Standard Organization Nigeria(SON)
10	FCT Director	NAFDAC
11	Director	Public Health Department HHSS
12	Head of Department(Nutrition)	Abuja University Teaching Hospital
13	Head of Department Nutrition	FCT College of Education
14	Head of Nutrition Unit	School of Nursing and Midwifery
15	Chairperson	Nutrition Association of Nigeria FCT Branch
16	FCT,UNICEF Programmes Focal Officer	Health and Human Services Secretariat
17	FCT Primary Health Care	Director Primary Health Care Dept.
18	State Nutrition Officer	PHC Department, FCT PHCB(Secretary)
19	Partner in Nutrition	HKI, SPRING, NANET, SC, RWF, SFH, WHO, UNICEF
20	Head of WASH	FCT Waterboard
21	NOA	
22	Secretariat Staff from FCT PHCB and EPRS	
23	University of Abuja	

(2) Roles/Purpose of FCT Committee on Food and Nutrition

The role of the FCT Committee on Food and Nutrition (hereinafter “FCT CFN”) is as follows:

- Close partnership with the NFNC on all kinds of activities relating to food and nutrition, and on nutrition planning, monitoring, adjustment and administration
- Coordination of various food and nutrition related work undertaken in the FCT
- Provide a forum for sharing of opinions and experience among various organizations involved in nutrition improvement activities
- Review of policies and programmes related to potential effects on issues related to FCT nutrition
- Effective implementation of various policies and business through M&E (monitoring/evaluation)
- Continuation of ongoing advocacy for issues related to food and nutrition
- Sufficient and timely allotment of yearly budget, and financial security
- Securing nutrition improvement initiatives which can be acted on within the development strategies of development partners

- Realizing FCT nutrition policy
- Partnering with international institutions which provide financial and material support, as well as the private sector, CBOs, and NGOs
- Set up and conduct work adjustment for administrative district food and nutrition committees (also called Area Council CFN in FCT; hereinafter "AC CFN")

(3) Achievements

The major achievements of FCT CFN are shown below:

- Establishment of the FCT Policy on Food and Nutrition in line with the NPFN (revised April 2016)
- Establishment of the 4-year FCT Strategic Plan of Action for Nutrition
- Conducting quarterly meetings between the FCT CFN and nutrition-related development partners, with support from development partners, such as the Save the Children
- Placement of a Monitoring & Evaluation consultant with the support from the Bill & Melinda Gates Foundation
- Coordination of nutrition information collection surveys by FCT and JICA

(4) Nutrition improvement platforms conducted in FCT

- Maternal Infant and Young Child Feeding
- Growth Monitoring and Promotion
- Management of Severe Acute Malnutrition in health facilities
- Provision of micronutrient supplements
- Food fortification
- Activities related to water, sanitation and hygiene
- Mass De-worming
- Livelihoods and Food Security
- Baby Friendly Hospital Initiative[21]
- Nutrition Information and Surveillance System
- Prevention of diet-related Non Communicable Diseases (NCDs)
- Nutrition Assessment, Counseling & Support

(5) Current Status

The nutrition committee itself was established quite some time ago (in 2011) and holds meetings every three months, for a total of four times per year. Through discussions and interviews with relevant parties, it was not possible to obtain concrete information about the time of its establishment

[21] Breastfeeding support activities started in 1991 by WHO and UNICEF

(answers included “don’t know,” “quite a while ago,” “in the 1990’s,” etc.). When asking about duties and expected roles of the committee, no special information was provided. Because work handover was tenuous due to transfer or retirement of committee members, most people do not know about previous situations of the committee or its circumstances.
However, in recent years, especially in 2016 after the national level nutrition policy was renewed and launched, expectations for the committee functions and roles seem to be rising. Though some staff members appear not to be conscious about this, it seems that the health sector has begun to foster a considerable readiness to take the lead.

Nigeria is a federation where the local governments, including LGAs/Area Councils enjoy considerable level of autonomy, including their budgetary management, leading to isolated programme implementation without much coordination and synergy across sectors and local areas. To address the issue of imbalanced concentration of activities and their coverage areas, it was suggested to convene the food and nutrition committee where participating parties collectively plan and utilize their budgets and enable more effective and efficient allocation of funds to implement activities which had previously been impossible. It can be surmised that indeed, the importance of the committee has been recognized through the process of planning nutrition improvement activities that require multi-sectoral approaches in nature, allowing the funding to be put to use.

It appears that there is no TOR (regulations on adjustment of area of responsibility and daily duties, etc.) that demand desired academic background or qualifications for the committee participants. It was perceived that the committee is still in its formation stage since multi-sectoral nutrition improvement activities have not yet been implemented in actual terms.

3.6.3 Capacity for related Organizations and Human Resources

The study team also conducted capacity analyses of relevant organizations and human resources in the agriculture and health sectors working under FCTA, through a questionnaire survey, interviews and group discussions, in order to identify challenges and opportunities for nutrition promotion programmes on the ground.

The questionnaires were distributed to the following respondents at different levels and in different sectors (Table 25).

Table 25: Target for Questionnaire Survey

Job Category	Affiliation	Number of Respondents
Master Trainer (Subject Matter Specialist/ Nutrition Officer)	ADP	12
	PHB	9
Agricultural Extension Worker	ADP	13
	Kuje Area Council	13
Community Health Worker	PHD/PHB	14
Total		61

Note: Status in each job category is based on self-declaration of the respondents. The questionnaires were distributed and collected from January 9 to 16, 2017[22].

The assessment was done based on the set of criteria shown in Table 26.

Table 26: Evaluation Criteria

Evaluation Criteria	
Core Capacity	Ownership
	Resources
	Management
	Communication
Technical Capacity	Planning
	Operations
	Reporting
	Monitoring
	Collaboration
	Information Sharing

The following points were derived from the capacity assessment:

- In terms of implementation of nutrition programmes and activities on the ground, the key is to actively involve LGA/Area Council-level leaders and officials who are the decision-makers of local development, and to ensure adequate budget allocations to nutrition-related activities.
- Subject Matter Specialist in the agriculture sector and Nutrition Officers in the health sector appear to be active in in-house and multi-stakeholder collaboration in their own work; while they may benefit more from technical training on nutrition, ideally in consolidated manner between the two sectors.
- Extension workers in both agriculture and health sectors showed good communication capacity; while they would also benefit from more nutrition-oriented training programmes that could be practiced in their actual extension work at the community level.
- To utilize the technical knowledge and skills effectively, it is critical for extension workers to learn about 'extension techniques' more systematically, including community mobilization and sustainable engagement, group formation and facilitation, and behavioral change communication, based on local cultures, lifestyles and social dynamics.

[22] The analyses are based on self-assessment information without supporting documents. Also job categories (Master Trainer, Community Health Extension Worker, and Agricultural Extension Worker) were self-declared, creating large differences in years of experience between respondents even within the same job category.

- In the surveyed communities, quite a few mothers had received educational information about health and nutrition from health professionals, mainly through antenatal and postnatal care. However, given the observed knowledge-practice gap on child feeding, more rigorous support for improving family and community practices, that is a core value of extension programmes, seems to be needed. Community support groups can be formed/activated for self-motivated nutrition actions, while extension workers could play a role in effectively linking the community actions and administrative services.

3.6.4 Promotional Capacities at Community Level

Group discussions revealed the following points:

(1) Situations of organized activities

- It should be noted that there were few formal or informal group activities in the communities visited during this survey. However, it was confirmed that cooperation in agricultural work and community gatherings exist.
- In most cases, either agriculture, women, or youth groups have been formed in each community but without strong ties. Most of formal agricultural groups that have registered to the local government seem to be formed in areas where activities were supported by such resource persons as subject-matter specialists.

(2) Existing group activities and challenges

- In the Kutunku Community, mutual financing activities are conducted in one of the groups of which any residents can become a member. Women can join the group if they are married. There are 60 members including a leader, a sub-leader, a secretary and a cashier. Meetings are held every month, and female members seem to participate in meetings/activities as their husbands understand the value. The entrance fee is 500 NGN.
- In addition, a Christian group financially sponsored, such as the ECWA Women Fellowship International Group in Kutunku Community, have been implementing activities steadily. They always attend the worship on Sundays and gather for bible studies on weekdays. They were interested in introducing nutrition improvement actions in their activities.
- Some women stated that “I would like to join if a nutrition improvement group is established” and men also commented that “I would let my wife and daughter to take part in because I’m also interested in it.”
- Rural women who could watch TV had practiced cooking based on information from TV shows. However, it seemed that they do not share information nor teach other rural women who can’t watch TV. Group activities could provide space for information/experience sharing and mutual encouragement, but unfortunately most communities do not have such space.

4. Recommendations

The following section presents the Action Framework for nutrition-sensitive agriculture and food-based approaches to improve nutrition, with an extensive list of key actions that try to address the key factors affecting the nutritional status and dietary practices of the population surveyed. The key factors were derived through an integrated analysis based on findings from each study component as shown in Figure 8.

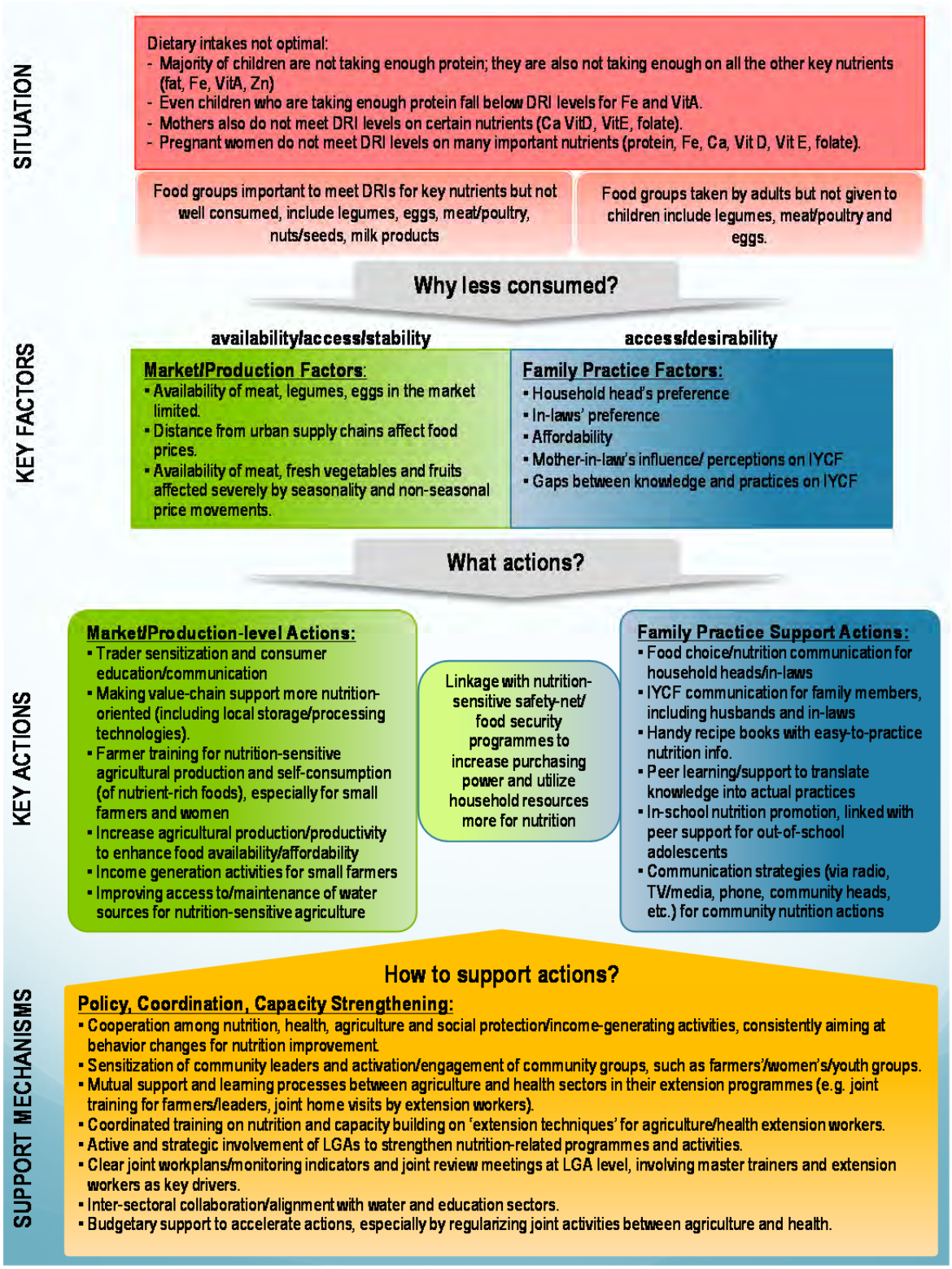


Figure 8: Action Framework for Nutrition-Sensitive Agriculture and Food Based Approaches to Improve Nutrition

While the present study was conducted in rural areas of FCT in a limited scale, it appears to be revealing a snapshot of situations, which deserves attention and support for much-needed improvements in people's nutritional status and related dietary practices. Although the study findings are mainly from the FCT, many of the findings and recommended actions may also be applicable and important in other areas of the country to tackle nutrition problems.

As shown in Figure 8, the key actions are divided into three groups: "Market/Production-level Actions", "Family Practice Support Actions", and "Policy, Coordination, Capacity Strengthening". While specific actions within each group can be further prioritized and targeted, the study team recommends to cover all three groups and align the activities across those groups so that impact from each group would be mutually enhancing (for example, availability of nutrient-rich foods would be increased when there is consumer demand, which could be sustainably created if community/family members understand malnutrition as their own and community's problem and ways to tackle the problem). In addition to the alignment of activities, it is also important to ensure careful and strategic targeting of farmers based on agricultural income and food production pathways described in 3.4.6. Medium scale farmers, and even some small scale farmers, may be capable of increasing agricultural income substantially through certain commercially oriented production approaches, while most of small subsistent farmers may not be able to or willing to take part in such activities and thus require different approaches. Additionally, linkages with safety-net and/or food security programme activities would not only ensure targeting the most vulnerable population with necessary nutritional inputs, but also help small farmers improve their livelihood and thus re-orient their family resources more towards nutrition.

Market/Production-level Actions:

- Trader sensitization to increase supply of nutrient-rich foods, combined with consumer education/communications to create demand for such products.
- Value-chain support, oriented more towards nutrition outcomes, including local storage/processing technologies (e.g. drying technologies) to improve availability of nutrient-rich food products throughout the year.
- Agricultural inputs/support to be made more nutrition-sensitive. Nutrition-sensitive supports could include those for small farmers, especially for women, such as access to seeds, fertilizers and other agricultural inputs as well as technologies.
- Strategic support for small and medium scale farmers who have capacity for commercially oriented agriculture, which includes increased production and improved quality. This would help increase availability and affordability of better quality food products in the market and at the same time bring in more surplus for farmers that could be used for nutrition improvement of their own family.

- Farmer training for nutrition-sensitive agricultural production and self-consumption of nutrient-rich foods as well as promotion of alternative nutrient sources during hunger season.
- Income generation support for small farmers, which may help them re-orient their resource utilizations from merely meeting their daily survival needs to nutritional considerations.
- Improving access to and maintenance of community water sources, which is an important factor to enable nutrition-sensitive agriculture production in a sustainable manner.

Family Practice Support Actions:

- Food choice/nutrition communication for household heads (often husbands) and mothers/fathers-in-law.
- Infant and Young Child Feeding communications for family members, including targeted messages for husbands and mothers-in-law.
- Development and utilization of handy recipe books with easy-to-practice nutrition information, including what to feed small children with available food items/groups.
- Peer learning/support to translate nutrition knowledge into actual daily practices at home.
- In-school nutrition promotion programmes targeting adolescent girls and boys to help maintain their own nutrition status and also protect their future children from malnutrition from early stages of their life. This should be linked with peer support activities targeting out-of-school adolescents who may be in greater need for such knowledge and support.
- Communication strategies to promote community nutrition actions, for example: via radio (for husbands), TV/other media (for adolescents), direct phone calls (for all), community heads/traditional rulers' announcements (for all), community gatherings/outreach (for all); and school programs linked with peer education for out-of-school adolescents (for adolescents).

Enabling Small Farmers and Most Vulnerable to Benefit from Nutrition-Sensitive Agriculture and Food-Based Approaches and Improve their Nutritional Status

- Linkages with existing safety-net and/or food security programmes to mitigate small farmers vulnerability and encourage/maintain their motivation to improve their own livelihood and welfare, by allocating their limited resources more effectively for nutrition improvement.

Policy, Coordination, Capacity Strengthening:

- Building synergy among nutrition, health, agriculture and social protection/income-generating activities, consistently aiming at nutrition improvement.
- Sensitization of relevant policy makers and community leaders, as well as activation/engagement of community groups, such as farmers'/women's/youth groups.

- Development of effective community extension techniques, including agricultural development and health promotion extension, in order to equip and enable extension workers to have conducive dialogues with community members and bring about positive changes in various aspects of people's life, which would in turn help maintain the motivation of the extension workers to serve their people.
- Mutual support and learning processes between agriculture and health sectors in their extension programme activities (e.g. joint training for farmers/community leaders, joint home visits by extension workers).
- Active and strategic involvement of LGAs/Area Councils to activate/strengthen locally developed extension programmes with a clear aim to improve nutritional status of the residents.
- Development of joint workplans/monitoring indicators and regularization of joint review meetings at LGA/Area Council level, involving master trainers and extension workers as key drivers.
- Coordinated capacity strengthening of master trainers and extension workers (in both health and agriculture), including provision of more nutrition-oriented technical training as well as development of 'extension technique' guidelines and training curriculum to enhance their skills in community mobilization and behavioral change promotion.
- Inter-sectoral collaboration and alignment with education and water sectors, including joint planning processes to expand water resources into nutrition target communities, as well as the development of comprehensive nutrition strategies in schools, linked with out-reach activities, strategically meeting the needs of adolescents.
- Increased budgetary support to accelerate nutrition actions, especially by regularizing joint activities across government sectors, such as health, agriculture, water and education while ensuring budget tracking for accountability and transparency.

APPENDICES

Appendix 1: List of Documents/Materials Collected

Title, Authors, Year of Publication	Source	Format
Federal Ministry of Education Senior Secondary Education Curriculum, Foods and Nutrition for SS1-3	Federal Ministry of Education	Book
Recipes and Activities of Women in Agriculture, FCT Agricultural Development Project, Gwagwalada Abuja (2015)	Ms. Aisha Abubakar, FCT-ADP	Book
ORGANAZIATIONAL CHART OF DEPARTMENT OF PUBLIC HEALTH	Dr. Adamu Jatau Noma	Electronic (Word)
Ogranizational Chart of _Primary Health Care Development Board	Ms. Okoro Clementina Ebere, FCT-PHB	Electronic (PDF)
Support to Agricultural Research for Development of Strategic Crops in Africa (SARD-SC)	IITA Abuja station	Leaflet
Support to Agricultural Research for Development of Strategic Crops in Africa (SARD-SC)News letter, January-March 2016, Issue No.0011	IITA Abuja station	Leaflet
Rice Production, Processing, Utilization and Marketing in Nigeria, Extension Bulletin No.230 (2013)	WAAPP-Nigeria	Report
Economics of Aquaculture Production, Extension Bulletin No.107, Fisheries Series No.5 (2013)	WAAPP-Nigeria	Report
Feed Formulation and Feeding Practices in Fish Culture, Extension Bulletin No.152, Fisheries Series No.7 (2013)	WAAPP-Nigeria	Report
Prevention and Control of Common Diseases of Fish in Ponds, Extension Bulletin No.169, Fisheries Series No.9 (2013)	WAAPP-Nigeria	Report
Transporting Fish for Culture, Extension Bulletin No.169, Fisheries Series No.9 (2013)	WAAPP-Nigeria	Report
Water Quality Management in Fish Culture, Extension Bulletin No.98, Fisheries Series No.3 (2013)	WAAPP-Nigeria	Report
Shikakabrown Chicken: Best Choice for Profitable Egg Production and Marketing in Nigeria, Extension Bulletin No.231 (2013)	WAAPP-Nigeria	Report
Cassava Production , Processing and Utilization in Nigeria, Extension Bulletin No.224 (2013)	WAAPP-Nigeria	Report
Fish Culture in Ponds, Extension Bulletin No.103, Fisheries Series No.4 (2013)	WAAPP-Nigeria	Report
Industrial Project Opportunities in 50 Selected Agro-Processing Technologies, For Micro, Small and Medium Entrepreneurs (2015)	FIIRO/WAAPP	Book
Integrated Aquaculture Technologies for Fish Farmers, Extension Bulletin No.229 (2013)	WAAPP-Nigeria	Report
Fish Pond Site Selection and Construction, Extension Bulletin No. 96, Fisheries Series No.2 (2013)	WAAPP-Nigeria	Report
Maize Production, Marketing, Processing and Utilization in Nigeria, Extension Bulletin No. 217 (2013)	WAAPP-Nigeria	Report
SARD-SC Annual Report 2014, IITA	IITA Abuja station	Leaflet
Yam Improvement for income and Food Security in West Africa, Enhancing Productivity Through Research	IITA Abuja station	Leaflet
IITA Our science	IITA Abuja station	Leaflet
IITA Genetic Resources Center(GRC),	IITA Abuja station	Leaflet
SARD-SC Wheat Value Chain Achievement	IITA Abuja station	Leaflet
Engaging Youth in Agribusiness, Fisheries and Livestock Production, IITA Youth Agripreneurs Abuja	IITA Abuja station	Leaflet
Engaging Youth in Agribusiness, Marketing and Processing, IITA Youth Agripreneurs Abuja	IITA Abuja station	Leaflet
SARD-SC Rice value chain achievements	IITA Abuja station	Leaflet
SARD-SC Cassava value chain achievements	IITA Abuja station	Leaflet
Our Commodities and Processed Products, IITA Youth Agripreneurs Abuja	IITA Abuja station	Leaflet
IITA Business Incubation Platform	IITA Abuja station	Leaflet
Banana & Plantain, Crop Fact Sheet	IITA Abuja station	Leaflet
4 Post-harvest Technologies, Yams for Livelihoods	IITA Abuja station	Leaflet
Zero Hunger, Profiles, Nigeria Zero Hunger Strategic Review, 29 April (2016)	IITA Abuja station	Book
Regional Highlight (2013), IITA	IITA Abuja station	Book
IITA 2014 Annual Report, Moving Forward	IITA Abuja station	Leaflet
IITA Research Nourish Africa CGIAR	IITA Abuja station	Leaflet
Guidelines for Implementing Maternal Newborn and Child Health Week in Nigeria, National Primary Health Care Development Agency, Second Edition: March 2016.	UNICEF Nigeria	Report

Appendix 2: List of Persons Interviewees

Organization	Title	Name
JICA		
JICA Nigeria Office	Chief Representative	Mr. Hirotaka Nakamura
JICA Nigeria Office	Deputy Director	Ms. Makiko Okumura
JICA Nigeria Office	Deputy Director	Mr. Hiroshi Kodama
JICA Nigeria Office	Project Formulation Advisor	Ms. Yuriya Teragaki
Federal Government		
Federal Ministry of Agriculture and Rural Development	Director	Mr. Akeju Olagbaju Musdasiru
Federal Ministry of Health	Deputy Director/Head of Nutrition Division	Dr. Chris Osa Isokpunwu
Education Support Service Department, Federal Ministry of Education	Director	Mr. Peters Ojonuba
Federal Capital Territory (FCT) Administration		
Economic Planning, Research and Statistics (EPRS)	Director	Mr. Abubakar Sani Pai
Agriculture & Rural Development Secretariat (Agri Sec.)	Deputy Director/Head PRS	Mr. Yahaya Husseini
Agri Sec., Department of Crop Production	Director	Mr. Ekele D.V.
Agri Sec., Department of Fishery	Director	Ms. Okele Ify
Agricultural Development Programme	Agricultural Director	Mr. Musa Sulemand Doma
Dobi Community	Community leader	Mr. Ismaila NDA Daggbma
Kutunku Community	Community leader	Mr. Mohammad Sawi Philip
Kutunku Community	Farmer	Mr. Jerry I Yusuf
Kutunku Community	Farmer	Mr. Adamo Shara
Paiko Community	Community leader, Farmer	Mr. Yusuf Bauwa
Paiko Community	Farmer	Mr. Osman Saile
Dobi Community	Farmer	Mr. Ishaku Danladi
Dobi Community	Farmer	Mr. Shaibu Noma
International Cooperation, EPRS	Deputy Director	Mr. Lawal
Public Health Department (PHD), Environmental/ Occupational Health Division, Health Promotion & Education Unit	Nutrition Officer	Ms. Hawa Suleimon
PHD Epidemiology Division, Disease Surveillance and Epidemic	MT, Researcher	Mr. Henry Ekech
Primary Health Care Board (PHCB)	Nutrition Officer	Ms. Okoro Clementina Ebere
Primary Health Care Board (PHCB)	Executive Secretary	Dr. Rilwanu Mohammed
Primary Healthcare Centre (PHC) Office at Kuje	Nutrition Coordinator	Ms. Airetu S Kworiya
PHCB Kuje	CHEW	Mr. Ahmej Jami
Kuje	Community Secretary Leader	Mr. Giwa Samuel
FCT UBEB	Executive Director	Dr. Adamu Jatau Noma
FCT UBEB	Officer	Ms. Christie Wihwoka
Social Development Secretariat (SDS), Women in Agriculture	Subject Matter Specialist	Ms. Aisha Abubakar
Social Development Secretariat (SDS), FCT	Director	Ms. Asmau Wala
Children and Gender Department, SDS	Assistant Director	Francyce Lily Edoh
Gender Development, FCT Social Department, SDS	Director	Mr. Atabo Philip
Gender Development, FCT Social Department, SDS	Officer	Ms. Igbolwe Elizabeth
LANYA PETTE-GA BWAPA Women Association of Kutunku	Group leader	Ms.Justina Sarki
International Organizations		
Bill & Melinda Gates Foundation, Nigeria	Senior Program Officer, Nutrition	Mr. Victor Ajieroh
FAO Nigeria	Nutrition Officer	Dr. Olutayo Adeyemi
GAIN Headquarters, Agriculture and Nutrition	Director	Ms. Bonnie McClafferty
GAIN Nigeria	Country Director	Dr. Francis Aminu
GAIN Nigeria - Agriculture and Nutrition Programme	Associate	Ms. Ayodele Tella
GAIN Nigeria/SUN Business Network	Senior Associate	Ms. Uduak Igbeka
IITA	AgResults Aflasafe Country Lead	Mr. Debo Akande
IITA	Assistant Leader	Mr. Aminu Abubakar, a
UNICEF Nigeria	Chief, Nutrition	Mr. Arjan de Wagt
UNICEF Nigeria	Nutrition Officer	Dr. Annette Imohe
World Bank - Saving One Million Lives Programme (SOML)	Chief, Health Nutrition & Population /Lead Health Specialist for SOML	Dr. Benjamin Loevinsohn
WB WAAP, Nigeria	Program Officer	Mr. Umar Abdullah
WB WAAP, Nigeria	Assistant Director	Mr. Madugu Shuaibu

Appendix 3: Questionnaire for 24-Hour Dietary Recall

Situation Analysis of Nutrition-Sensitive Agriculture and Food-Based Approaches to Improve Nutrition

Diet Recall Questionnaire

Name of enumerator	
Date of interview	
Community	
Interview time started	
Questionnaire ID	

Section 1. General Information of Interviewee

1-1. Name	
1-2. Address/Landmark	
1-3. Contact No.	
1-4. Status	(1) A Mother of Children 6 to 23 months old (2) Pregnant woman
1-5. Marital Status	(1) Single (2) Divorced (3) Married (4) Widowed
1-6. Currently pregnant?	(1) Yes (2) No
1-7. If Yes, what is the stage of the pregnancy	(1) First Trimester (1-3months) (2) Second Trimester (4-6months) (3) Third Trimester (7-9months)
1-8. Birthday (DD-MM-YY)	
1-9. Age	
1-10. Occupation of respondent [*Probe for detail*]	
1-11. Occupation of household head [*Probe for detail*]	

Section 2. Socio Demographic Factors

3-1. Number of Household Members	
3-2. Key decision maker on food consumption	

Section 3. Household Cash Income

2-1. Average monthly income of respondent	
2-2. Average monthly income of household head	
2-3. Proportion of income spent on food	
2-4. Where do you get your foods from? (multiple option)	[1] Market [2] Farm/Home garden [3] Gifts [4] Others Outline others:

Section 4. Diet Related Questions

4-1. Are you the person most responsible for preparing the meals in your household?	(0) No (1) Yes
4-2. Have you participated in any health talk before?	(0) Never (1) Yes
4-3. Source of health talk did you attend?	(1) Ante-natal care (2) Post-natal care (3) Child health week (4) Religiously conveyed health talk (5) Other ( )

4-4. What is the information content of the health talk? (Multiple response)	(1) Strictly health oriented (2) Breastfeeding Practices (3) Complementary feeding (4) Hygiene and sanitation (5) Others ( ) Outline others:
4-5. In the past 4 weeks, was there ever no food to eat of any kind in your household because of lack of money to get food?	(0) No (1) Yes
4-6. In the past 4 weeks, did you or any household member go to sleep at night hungry because there was not enough food?	(0) No (1) Yes
4-7. In the past 4 weeks, did you or any household member go a whole day and night hungry without eating anything because there was not enough food?	(0) No (1) Yes
4-8. Do you have a cooking recipe guide?	(0) No (1) Yes
4-9. Do you use a cooking recipe guide?	(1) No (1) Yes
4-10. If yes, how often?	(1) Rarely (2) Sometimes (3) Often
4-11. Source of cooking recipe guide?	
4-12. Are you satisfied with your present eating pattern?	(1)I am very much satisfied. (2)I am satisfied. (3)I am seldom satisfied. (4)I am not satisfied at all.
4-13. Do you regard yourself as a healthy?	(0) No (1) Yes
4-14. Did you ever visit the hospital in the last one month?	(0) No (1) Yes
4-15. If yes, what was your reason for the visit	
4-16. In order to ensure you and your family are healthy, what do you think of the following things? a. Eating at least 3 times a day will make you and your family healthy? b. Eating at least 2 times a day will make you and your family healthy? c. Eating at least once a day will make you and your family health?	 (1) Agree (2) Disagree (3) Don't know (1) Agree (2) Disagree (3) Don't know (1) Agree (2) Disagree (3) Don't know

Section 5-1. 24 hours diet recall for Mother 6~23 months old/Pregnant woman

Quick List of Food Item	Time	Occasion	Name. Dish/Food/Drink	Details/Ingredients (In case of Fortified food, please indicate)	Amount of Ingredients for whole dish	Total Yield	Amount consumed	Proportion Consumed	Source of food/Drink Ingredient

Section 5-2. 24 hours diet recall for Infant

Quick List of Food Item	Time	Occasion	Name. Dish/Food/Drink	Details/Ingredients (In case of Fortified food, please indicate)	Amount of Ingredients for whole dish	Total Yield	Amount consumed	Proportion Consumed	Source of food/Drink Ingredient

Section 6.

6-1. For Mother of Children 6 to 23 months old:	
(1) Height	Cm
(2) Weight	Kg
6-2. For Pregnant woman	
(1) Current pregnancy stage? (trimester based)	(1) First Trimester (2) Second Trimester (3) Third Trimester
(2) Do you attend antenatal?	(1) No (2) Yes
(3) If Yes, where do you access antenatal care	(1) PHCs (2) Private Hospitals (3) Faith-based Clinics (4) TBAs (5) Others (specify)
(4) If No to Q 2, why?	
(5) Height before pregnancy	Cm
(6) Weight before pregnancy	Kg
(7) Current Height	cm
(8) Current Weight	Kg
6-3. For Children 6 to 23 months old	
(1) Birthday (DD/MM/YYYY)	
(2) Age in Month	Months
(3) Height in cm	cm
(4) Weight in grams	grms
(5) Are you still breastfeeding?	(0) No (1) Yes
If No, when did you stop when do you intend to stop	If Yes,

Interviewer comment [if any]	
Interview time ended	

Appendix 4: Focus Group Discussion Guides

Focus Group Discussion Guide for Mothers of Children 6 – 23 Months Old

1. What are those times of the year that foods are unavailable in your household?
2. i. Are there foods that you consider pregnant women should eat more? Outline these foods and why?
   ii. Are there foods that pregnant women should not eat? Outline these foods and why?
3. i. Are there foods that you consider infants 6 – 23 months should eat more? Outline these foods and why?
   ii. Are there foods that infants 6 – 23 months should not eat? Outline these foods and why?
4. i. Who decides the meals you eat? Why?
   ii. Who prepares the meals you eat? Why?
5. i. Who decides the complementary meals your infant eats? Why?
   ii. Who prepares the complementary meals your infant eats? Why?
6. Who else influences the choice of your daily meals in your household and why?
7. In order to improve the quality of foods produced at home, what are the best ways the decision makers can be reached with information on eating well?
8. List all foods [and drinks] available all through the year that your household;
   i. Produced [Farms or home gardens]
   ii. Purchased [Market]
   iii. Forest products
9. What is/are those hunger periods [period of food scarcity] in your household?

Focus Group Discussion Guide for Pregnant Women

10. What are those times of the year that foods are unavailable in your household?
11. Are there foods that you consider pregnant women should eat more? Outline these foods and why?
12. Are there foods that pregnant women should not eat? Outline these foods and why?
13. Who decides the household daily meals? Why?
14. Who prepares the household daily meals? Why?
15. Who else influences the choice of your daily meals in your household and why?
16. In order to improve the quality of foods produced at home, what are the best ways the decision makers can be reached with information on eating well?
17. List all foods [and drinks] available all through the year that your household;
    iv. Produced [Farm or home garden]
    v. Purchased [Market]
    vi. Forest products
18. What is/are those hunger period in your household?

Focus Group Discussion Guide for Adolescent Girls

1. i. What can you say about eating well?
   ii. Where did you get the information from?
   iii. Why do you think people of your age should eat well?
2. i. Are there are foods that you think people of your age should eat more?
   ii. List them and why do you consider them important?
3. What actions do you take at home and in school to ensure you eat well?
4. What are the foods you don't eat and why?
5. What are the foods you don't commonly eat and why?
6. i. What can you say about the number of times people of your age should eat in a day?
   ii. How many times do you eat daily and why?
7. If you want to know more about nutrition [eating well], which way do you think is best for you to know about it? [Differentiate between in-school adolescents and out-of-school adolescents]

Appendix 5: Questionnaire for Market Survey

Market Survey Questionnaire

Market Background Information

Name of the Interviewer	
Date of Interview	
Name of Market	
Location of Market	
Size of Market	
Number of Stalls in the Market	
Average number of customers in the Market	
Is it a daily or weekly market	
Market setting	[ ] All day [ ] Morning [ ] Evening
Market hours	
Market structure	_
Conditions of setting up business in the Market (costs, licenses, technology, specific skills, access to resources etc)	
Food/commodities sold in the market (multiple choice)	Vegetable ( ) , Fruits ( ) Legumes/Beans ( ), Grains/Cereals ( ) Meats ( ) , Fishes & Sea Foods ( ) Eggs ( ), Dairy Products ( ) Others ( )
The actors involved in value chain from the production to consumption for each Food/commodities selected above? What is the relationship between them? Which activities are they performed? Where are they located? What are the attribution of value corresponding to the activities and actors in the chain?	
Name of Informant	
Role/Office of the Informant	

Market Walkthrough

Food groups sold in the market	Vegetable ( ) , Fruits ( ) Legumes/Beans ( ), Grains/Cereals ( ) Meats ( ) , Fishes & Sea Foods ( ) Eggs ( ), Dairy Products ( ) Others ( )
Food commodities sold in the Market (Including locally processed and post-harvest handling food, and fortified food.)	
Food commodities in season (Including locally processed and post-harvest handling food, and fortified food)	
Food commodities going out of season [outgoing] (Including locally processed and post-harvest handling food, and fortified food)	
Food commodities coming in into season [incoming] (Including locally processed and post-harvest handling food, and fortified food)	

The qualities of each kind of food commodities sold different stalls are very similar?	Vegetable : (1) Yes, (2) No Fruits : (1) Yes, (2) No Legumes/Beans : (1) Yes, (2) No Grains/Cereals : (1) Yes, (2) No Meats : (1) Yes, (2) No Fishes & Sea Foods : (1) Yes, (2) No Eggs : (1) Yes, (2) No Dairy Products : (1) Yes, (2) No Others ( ) : (1) Yes, (2) No			
How are the environments of storing and selling food commodities?	(1) Hygienic (2) Unhygienic			
Wholesale or retail service				
Unit price of identified food commodities	Season Categorization	Wet season	Dry season	Current price

Unit price of identified food commodities	Season Categorization	Wet season	Dry season	Current price

Appendix 6: Questionnaire for Capacity Assessment

Dec. 2016

Questionnaire to Master Trainers

T. Hattori (Rural Development in charge), JICA study team,

This survey is being implemented under the study of "Data Collection Survey on Nutrition and Agriculture in Nigeria: Situation Analysis of Nutrition-Sensitive Agriculture and Food-Based Approaches to Improve Nutrition" as agreed between Federal Government and Federal Capital Territory, Abuja (FCTA) in Nigeria and Japan International Cooperation Agency (JICA) to conduct for the purpose of acquiring the better understanding of the existing extension service institutions/mechanisms to reach farmers and their families for nutrition promotion in FCTA, Nigeria. The information provided by you through this survey will be used by the JICA study team for the analysis of issues and to find out the possible ways/alternatives to promote nutrition-sensitive agriculture and food-based approaches from institutional and human resource perspectives.

Your cooperation would be appreciated.

【This survey format is for Subject Matter Specialist/Nutrition Officer as Master Trainer】

1. General Information	
Name	＊Leave the column blank if you do not wish to write your name
Region	□…Abuja □…Gwagwalada □….Abaji □…Kuje □…Kwali □…Bwari
Age	Sex □…….Male □…….Female
Your organization	□…….PHB If you tick PHB, please specify your division/section:_____ If you are attached to a hospital or referral health centre, please specify the name of the hospital/centre: _____ □…….ADP If you tick ADP, please specify your division/section:_____ □…….Other, specify: _____
Years of service	
Highest grade completed	□…….Secondary school □……. Post Secondary □…….Technical/vocational □…….Graduate □……. Postgraduate
Specialty ＊ Select more than one if applicable	□……. Nutrition □……. Agriculture □……. Public Health □……. Gender □……. Clinical/Medical Service □…….Other, specify: _____

2. Questions regarding core capacity

Q1-1. Do you recognize that you understand and share a common vision of Nutrition Committee with other staff?

□…….Yes □…….No

Q1-2. Are you aware of your duty/TOR? □…….Yes □…….No

Q1-3(1). The following questions are only for Subject Matter Specialist (belonging to ADP):

How often do you see Agricultural Extension Workers?

□…Not at all □…(…*Number*…) times per year □…Once in a month

□…More than once in a month □…Other(_____)

If you tick "not at all", what is the reason? □…No time because of being busy with other work

□…No means of transportation □…No allowance for remote assignment

□…It is not required as per mandate of the TOR □…Other(_____)

What kinds of assistance/cooperation have you provide to Agricultural Extension Workers?

□…Agricultural technical skills □…Extension skills □…Human Resource Management

□…Administrative issues □…Other(_____)

Q1-3(2). The following questions are only for Nutrition Officer:

How often do you see Community Health Workers?

□…….Not at all □……(…*Number*…) times per year

□…….Once in a month □…….More than once in a month □…….Other(_____)

If you tick "not at all", what is the reason? □…No time because of busy at other works

□…No means of transportation □…No allowance for remote assignment

□…It is not required as per mandate of the TOR □…Other(_____)

What kind of things have you supported to Community Health Workers?

□…Expertise of Health/Nutrition, etc □…Extension skills □…Human Resource Management

□…Administrative issues □…Other(_____)

Q1-4.Are you keeping your task records/relevant project document safely? □…….Yes □…….No

Q2-1. Is the number of Master Trainers sufficient in your office/health center? □…….Yes □…….No

Q2-2. Do you have your own desk in the office/health center? □…….Yes □…….No

If yes, who provided it? □…Your organization □…Donor □…NGO □…Other(_____)

Q2-3. What is your means of transportation? □…A car □…A motor bike □…A bicycle □…Nothing special

Q2-4. Who provided the means of transportation? □…It is personally owned □…Donor □…NGO

□…Other(_____)

Q3-1. Does your organization conduct evaluation exercise of the staff? □…….Yes □…….No

If yes, □…….Once a year □…….at random time interval

Do you get feedback? □…….Yes □…….No

If yes, from □….Direct supervisor □….Manager of your division/section □….Other(_____)

Q3-2. Does your organization hold staff meeting regularly? □…….Yes □…….No

If yes, how often? □…….Once a week □…….Once a month □…….Once in 3 months □……. Other(_____)

If yes, have minutes of the meetings been recorded? □……. Yes □…….No

Are the minutes shared among the staff? □……..Yes □…….No

Q3-3. Are you mostly able to attend the staff meeting? □…….Yes □…….No

If no, why? □…….Because your organization do not hold meeting □…….You are not informed □……. Other(_____)

Q3-4. Do you possess a contact list of master trainers and staff of your organization? □…….Yes □…….No

Q3-5. How do you usually communicate with them?

□….Mobile phone □…E-mail □…Other(_____)

Q3-6. In the case of absence from your duty for private purpose, who gives you approval?

□…….Direct supervisor □…….Colleague □…….No need to get approval

Q3-7.Do you regularly make contacts with the head office of your organization (i.e.ADP or PHB office in Abuja)?

If yes, how frequently? □…Once a week □…Twice a week □…Other(_____)

What is the purpose? □…Report your activity □…Due to provision of rule □…Other(_____)

If no, why? □…Out of my task □…I think there is no need to do □…Other(_____)

Q3-8(1).The following questions are only for Subject Matter Specialist (belonging to ADP)

Do you have a supervisor? □…….Yes □…….No

If yes, please specify of title: _____

(Select more than one if applicable)

How often do you see your supervisor?

□…Not at all □…(…*Number*…) times per year

□…Once in a month □…More than once in a month □…Other(_____)

If you tick "not at all", what is the reason? □…Supervisor is too busy to see you

□…It is not required as per mandate of the TOR □…Other(_____)

Q3-8(2). The following questions are only for Nutrition Officer:

Do you have a supervisor? □…….Yes □…….No

If yes, please specify of title: _____

(Select more than one if applicable)

How often do you see your supervisor?

□…Not at all □…(…*Number*…) times per year

□…Once in a month □…More than once in a month □…Other(_____)

If you tick "not at all", what is the reason? □…Supervisor is too busy to see you

□…It is not required as per mandate of the TOR □…Other(_____)

3. Questions regarding technical capacity

Q4-1.What kind of tasks are you engaged in?

In the office: □…Staff management □…Data collection □…Reporting □…Training

□…Other(_____)

In the field: □…To supervise extension workers □…Monitoring □…Data collection

□…Training □…Coordination work with stakeholders □…Other(_____)

Q4-2.Do you usually make annual plans of your activities for yourself? □…….Yes □…….No

If no, who makes your activity plans? □…Your Supervisor □… Other(_____)

Q4-3.Do you usually/regularly prepare the financial estimates? □…….Yes □…….No

Q4-4.Do you usually/regularly prepare the financial implementation reports? □…….Yes □…….No

Q4-5.Have you ever faced challenges in performance of your duty? □…….Yes □…….No

If yes, what kind of challenges? □…Inadequate technical skills □…Inadequate fund

□…Lack of interpersonal relations □….Other(_____)

Q4-6.Did you ask for any help to overcome the challenges? □…….Yes □…….No

If yes, who provided you consultation? □…Direct supervisor □…Colleagues □…Local leaders

□…Donors □…NGOs □…Research Institute □…Other(_____)

Q5-1.Do you conduct monitoring of your related project regularly? □…….Yes □…….No

If yes, do you make operation and monitoring plans? □…….Yes □…….No

If yes, do you prepare reports based on the monitoring results to your organization? □…Yes □…No

Q6-1(1).The following questions are only for Subject Matter Specialist (belonging to ADP):

Do you collaborate with other Master Trainers or different organization staff? □…….Yes □…….No

If yes, who? □…Other Master Trainer as Subject Matter Specialist

□…Nutrition Officer □…Donors □…NGOs

□…Research Institute □…Other(_____)

Why? □…To increase efficiency □…To complement the information

□…To complement capabilities □…It is mandatory as per project's rule

□…Other(_____)

If no, why? □…No opportunity to do so □…Unprecedented □…Bureaucratic sectionalism

□…No benefit from collaboration □…Other (_____)

Q6-1(2).The following questions are only for Nutrition Officer:

Do you collaborate with other Master Trainers or different organization staff? □…….Yes □…….No

If yes, who? □…Other Master Trainer as Nutrition Officer

□…Subject Matter Specialist □…Donors □…NGOs

□…Research Institute □…Other(_____)

Why? □…To increase efficiency □…To complement the information □…To complement capabilities □…It is mandatory as per project's rule □…Other(_____)

If no, why? □…No opportunity to do so □…Unprecedented □…Bureaucratic sectionalism □…No benefit from collaboration □…Other(_____)

Q7-1.Are you able to get information about training resources? □…….Yes □…….No

If yes, from where? □…Colleagues □…Supervisor □…Other (_____)

Q7-2.Have you attended any training in the past 3 years? Please select all that apply.

If yes, what kind of training was it?

□…Nutrition □… Public Health □…Clinical/Medical Service □…Farming Technical issue □… Agricultural Business □…Extension Method □…Other(_____ _)

For how long usually? □…One day □… A few days □…Other(_____)

Which training is the most appropriate for you out of all as mentioned above ?:_____

Who was the trainer?: _____

Who was the sponsor? □…PHD □…PHB □… ADP □… Donors □…NGOs □…Other(_____)

7-3.The following questions are only for those who have experiences of attending trainings related to nutrition improvement

What kind of trainings were received? □…Basic Dietetics □…Public Health □…Food Sanitation (Select all that apply) □…Food Processing □…Education for Nutrition □…Cooking □…School Lunch Management □…Other (_____)

Who was the trainer?: _____

Who was the sponsor? □…PHD □…PHB □… ADP □… Donors □…NGOs □…Other(_____)

What kind of training materials did you receive? :_____

Were those materials useful for you? □…….Yes □…….No

If no, why: □…Not practical □…Hard to understand □… inconsistent with your work □…Other(_____)

Which training was the most appropriate for you out of all the above mentioned? _____

Q7-4.Do you prepare a training report after attending it? □…….Yes □…….No

Q7-4.Do you keep the training manual well so that you can refer anytime? □…….Yes □…….No

Q7-5.Do you share what you learn in the training among colleagues? □…….Yes

□…….No

Q7-6.Have you applied what you have learned in the training to your job?

If yes, what kind of methods, skills and techniques? Please explain it in detail.

_____

Q7-7.What kind of trainings do you want to attend in the future?

□……. Master Training □……. TOT training

□……. On the Job Training □……. Other(_____)

In the case of technical training, which field do you want to choose?

□…… Nutrition □……Public Health □…… Clinical/Medical Service

□……Farming Technical issue □…… Agricultural Business □…….Extension Method

□……. Other(_____)

Why? □……. Your personal interest □……. Belong to relevant theme of your job

□……. Necessary for promotion □……. Other(_____)

Q8-1.Currently, do you implement any projects or provide services related to nutrition improvement?

□…….Yes □…….No

If yes, what is the project title/service activity? _____

Period:_____ ex) June 2016～May 2018

Where does it take place? (_____)

Which sector is responsible mainly? □…PHD □…PHB □…ADP □…Other(_____)

Who is engaged in the project/service activity besides you?

(Select more than one if applicable) □…Nutrition Officer (PHD) □…Nutrition Officer (PHB) □…Community Health Worker □…Subject Matter Specialist (ADP) □…Agricultural Extension Worker □…Other (_____)

Q9-1.What is the important criteria necessary for Master Trainer?

(Select more than one if applicable)

□…Technical skills and knowledge □…Academic background □…Practical experience

□… Ability of supervision □… Ability of management □… Ability of communication

□… Passion □…Other(_____)

Thank you for your cooperation!

Dec. 2016

Questionnaire to Extension Workers

T. Hattori (Rural Development in charge), JICA study team,

This survey is being implemented under the study of "Data Collection Survey on Nutrition and Agriculture in Nigeria: Situation Analysis of Nutrition-Sensitive Agriculture and Food-Based Approaches to Improve Nutrition" as agreed between Federal Government and Federal Capital Territory, Abuja (FCTA) in Nigeria and Japan International Cooperation Agency (JICA) to conduct for the purpose of acquiring the better understanding of the existing extension service institutions/mechanisms to reach farmers and their families for nutrition promotion in FCTA, Nigeria. The information provided by you through this survey to us will be used by the JICA study team for the analysis of issues and to find out the possible ways/alternatives to promote nutrition-sensitive agriculture and food-based approaches from institutional and human resource perspectives.

Your cooperation would be appreciated.

【This survey format is for Agricultural Extension Worker】

4. General Information	
Name	＊Leave the column blank if you do not wish to write your name
Region	□…Abujya □…Gwagwalada □….Abaji □…Kuje □…Kwali □…Bwari
Age	Sex □…….Male □…….Female
Your organization	You belong to ADP. Please specify your division/section:_____ Ex) Women in Agric
Years of service	
Highest grade completed	□…….Secondary school □…….Post Secondary □…….Technical/vocational □……. Graduate □…….Postgraduate
Specialty ＊Select more than one if applicable	□…….Agriculture If you tick agriculture, please specify your major:_____ Ex) livestock, fisheries □…….Education □…….Other, specify: _____

5. Questions regarding core capacity

Q1-3. Do you recognize that you understand and share a common vision of Nutrition Committee with other staff? □…….Yes □…….No

Q1-2.Are you aware of your duty/TOR? □…….Yes □…….No

Q2-1.How often do you see Subject Matter Specialists?

□…Not at all □… (…*Number*…) times per year □…Once in a month

□…More than once in a month □…Other(_____)

Q2-2.How many Agricultural Extension Workers are there in your responsible Area Council.

□…(_____) person □…I do not know

Q2-3.Is the number of Agricultural Extension Workers sufficient in your area?

□…Yes □…No

If no,why? □…Due to excessive work load □…More workers required to cover remote area

□…Other (_____)

Q2-4.Do you have a meeting with other Agricultural Extension Workers?

If yes, how often do you see them? □…More than once a month □…Once a month

□…A few times a year □…Once a year

□…Other(_____)

What is the objective or agenda? □…To share lessons' learnt from each activities
□…To share information □….Other(_____)

If no, do you think you need to hold a meeting? □…….Yes □…….No
If yes, why? □….Need to exchange information □…Need to share experiences
□…Other(_____)

Q2-5. What is your means of transportation?
□…A car □…A motor bike □…A bicycle □…Nothing special

Q2-6. Who provided the means of transportation?
□…It is personally owned □…ADP □…Donor □…NGO □… Other(_____)

Q3-1.Do you conduct exercise of self-evaluation?
If yes, □….(…*Number*…)times every year □….At random time interval

Q3-2.Do you get feedback? □…….Yes □…….No
If yes, from □….Direct supervisor □….Manager of your sector □….Other(_____)

Q3-3. Do you possess a contact list of extension workers and staffs of your organization?
□…Yes □…No

Q3-4. How do you usually communicate with such staffs?
□…….Mobile phone □…….E-mail □…….Other(_____)

Q3-5. In the case of being absent from your duty for private purpose, who gives you approval?
□…….Direct supervisor □…….Colleague □…….No need to get approval

Q3-6. Are you keeping your task/relevant project documents safely? □…….Yes □…….No

6. Questions regarding technical capacity

Q4-1. What are your schedules of activities? Please list all.

_____

Q4-2. Do you usually/regularly make annual plans of your activities for yourself?
□…….Yes □…….No
If yes, does your Master Trainer give approval to your annual plan? □…….Yes □…….No
If no, who makes your activity plans? □…Your supervisor □… Other(_____)

Q4-3.Do you report community's needs/demands/requests to Master Trainer/your supervisor?
□…….Yes □…….No
If yes, how often? □…….Once a year □……. Less than once every three years
□……. Other(_____)
If no, why? □…….No time □……. No transportation to visit the site
□……. Not my duty □……. Other(_____)

Do you get any feedback on your report from Master Trainer/your supervisor?
□…Yes □…No

Q5-1. Do you monitor your project regularly? □…….Yes □…….No
Q5-2. Do you report your observation after monitoring to your organization? □…Yes □….No
Q6-1.Have you ever faced challenges in performance of your duty? □…Yes □…No
If yes, what kind of challenges? □…Inadequate ability □…Inadequate fund
□…Lack of interpersonal relations
□….Other(_____)

Q6-2.Did you ask for any help to overcome? □…….Yes □…….No
If yes, who provided you the consultation ?
□…Master Trainer □…Colleagues □…Local leaders
□…Donors □…NGOs □…Other(_____)

Q7-1.Do you find problems in your target area?
If yes, what are such problems? (Select more than one if applicable)

□…High stunting rate □…High mortality rate □…Low life expectancy

□…Low agricultural production □…Other(_____)

Q7-2.Do you think that the problem has reduced through your extension activities?

□…Improved considerably □…Improved a little

□…Hasn't improved □… Other(_____)

Q7-3.Have you ever been asked for help by people of your target area?

□…….Yes □…….No

If yes, what kind of assistance did they ask you? _ _____

Q7-4.Do you mobilize/encourage community's people for project implementation?

□…….Yes □…….No

Q8-1.Are you able to get information about training resources?

If yes, from where? □…Colleagues □…Supervisor □…Other (_____)

Q8-2.Have you attended any trainings in the past 3 years?

If yes, what kind of training was it? (Please select more than one if applicable.)

□…Farming Technical issue □… Agricultural Business □…Extension Method

□…Other(_____)

For how long usually? □…One day □… A few days □…Other(_____)

Which training was the most appropriate for you out of all as mentioned above ? _____

Who was the trainer? _____

Who was the sponsor? □…ADP □…Donors □…NGOs □…Other(_____)

Q8-3.The following questions are only for those who have experiences of attending trainings related to nutrition improvement

What kind of trainings were they? □…Basic Dietetics □…Public Health □…Food Sanitation

(Select more than one if applicable) □…Food Processing □…Education for Nutrition □…Cooking

□…School Lunch Management □…Other(_____)

Who was the trainer? :

Who was the sponsor? □…PHD □…PHB □… ADP □… Donors □…NGOs

□…Other (_____)

What kind of training material did you receive? :

Q8-4.Do you prepare a training report after attending it? □…….Yes □…….No

Q8-5.Do you keep the training report well so that you can refer anytime? □…….Yes □…….No

Q8-6.Do you share what you have learnt in the training among colleagues? □…….Yes □…….No

Q8-7.Have you applied what you have learnt in the training to your job?

If yes, what kind of issue? Please explain it in detail:_____

Q8-8.What kind of training do you want to attend in the future?

□……. Master Training □……. TOT training

□……. On the Job Training □…….

Other(_____)

In the case of technical training, which field do you want to choose?

□…… Nutrition □……Public Health □…… Clinical/Medical Service

□……Farming Technical issue □…… Agricultural Business □…….Extension Method

□……. Other(_____)

Why? □……. Your personal interest □……. Belong to relevant theme of your job

□……. Necessary for promotion □……. Other(_____)

Q9-1.Currently, do you implement the project or provide services related to nutrition improvement?

□…….Yes □…….No

If yes, what is the project title/service activity? _____

Period: _____ ex) June 2016～May 2018

Where does it take place? (_____)

Which sector is responsible mainly? □…PHD □…PHB □…ADP □…Other(_____)

Who is engaged in the project/service activity beside you?

(Select more than one if applicable) □…Nutrition Officer (PHD) □…Nutrition Officer (PHB) □…Community Health Worker □…Subject Matter Specialist (ADP)

□…Agricultural Extension Worker □…Other (_____)

Q10-1.What is the important criteria necessary for an Agricultural Extension Worker?

(Select more than one if applicable)

□…Technique skills and knowledge □…Academic background □…Practical experience

□…Ability of supervision □…Ability of management □…Ability of communication

□…Passion □…Other(_____)

Thank you for your cooperation!

Dec. 2016

Questionnaire to Extension Workers

T. Hattori (Rural Development in charge), JICA study team,

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Your cooperation would be appreciated.

【This survey format is for Community Health Worker 】

7. General Information	
Name	＊Leave the column blank if you do not wish to write your name
Region	□…Abujya □…Gwagwalada □…Abaji □…Kuje □…Kwali □…Bwari
Age	Sex □…….Male □…….Female
Your organization	□…….PHD □…….PHB □…….Other(_____)
Years of service	
Highest grade completed	□…….Secondary school □…….Post Secondary □…….Technical/vocational □……. Graduate □…….Postgraduate
Specialty ＊Select more than one if applicable	□…….Nutrition □…….Public Health □……. Clinical/Medical Service □…….Education □…….Other, specify: _____

8. Questions regarding core capacity

Q1-4. Do you recognize that you understand and share a common vision of Nutrition Committee with other staff? □…….Yes □…….No

Q1-5. Are you aware of your duty/TOR? □…….Yes □…….No

Q2-1.How often do you see the Nutrition Officers?

□…Not at all □… (…*Number*…) times per year □…Once in a month

□…More than once in a month □…Other(_____)

Q2-2.How many Community Health Workers are there in your responsible Area Council?

□…(____) person □…I do not know

Q2-3.Is the number of Community Health Workers sufficient in your area?

□…Yes □…No

If no, why? □…Due to excessive work load □…More workers required to cover remote area

□…Other

(_____)

Q2-4.Do you have a meeting with other Community Health Workers?

If yes, how often do you see them? □…More than once a month □….Once a month

□…A few times a year □….Once a year

□…Other(_____)

What is the objective or agenda? □….To share lessons' learnt from activities

□…To share information

□…….Other(_____)

If no, do you think you need to hold a meeting? □…….Yes □…….No

If yes, why? □….Need to exchange information □…Need to share experiences

□….Other(_____)

Q2-5.What is your means of transportation?

□…A car □…A motor bike □…A bicycle □…Nothing special

Q2-6.Who provided the means of transportation?

□…It is personally owned □…PHD □…PHB □…Donor

□…NGO □… Other(_____)

Q3-1.Do you conduct exercise of self-evaluation?

If yes, □….(…*Number*…)times every year □….At random time interval

Q3-2.Can you get feedback? □…….Yes □…….No

If yes, from □…Direct supervisor □…Manager of your sector □…Other(_____)

Q3-3. Do you possess a contact list of extension workers and staffs of your organization?

□…Yes □…No

Q3-4. How do you usually communicate with such staffs?

□…….Mobile phone □…….E-mail □…….Other(_____)

Q3-5. In the case of being absent from duty for private purpose, who gives you approval?

□…….Direct supervisor □…….Colleague □…….No need to get approval

Q3-6. Are you keeping your task/relevant project documents safely? □…….Yes □…….No

9. Questions regarding technical capacity

Q4-1. What are your schedules of activities? Please list all.

_____

Q4-2. Do you usually/regularly make annual plans of your activities for yourself?

□…….Yes □…….No

If yes, does your Master Trainer give approval to your annual plan? □…….Yes □…….No

If no, who makes your activity plans? □…Your supervisor □…Other(_____)

Q4-4.Do you report community's needs/demands/requests to Master Trainer/your supervisor?

□…….Yes □…….No

If yes, how often? □…….Once a year □……. Less than once every three years

□……. Other(_____)

If no, why? □…….No time □……. No transportation to visit the site

□……. Not my duty □……. Other(_____)

Do you get any feedback on your report from Master Trainer/your supervisor?

□…Yes □…No

Q5-1. Do you monitor your project regularly? □…Yes □…No

Q5-2. Do you report your observation after monitoring to your organization? □…Yes □….No

Q6-1.Have you ever faced challenges in performance of your duty? □…….Yes □…….No

If yes, what kind of challenges? □…Inadequate ability □…Inadequate fund

□…Lack of interpersonal relations

□….Other(_____)

Q6-2.Did you ask for any help to overcome? □…….Yes □…….No

If yes, who provided you the consultation ?

□…Master Trainer □…Colleagues □…Local leaders

□…Donors □…NGOs □…Other(_____)

Q7-1.Do you find problems in your target area?

If yes, what are such problems? (Select more than one if applicable)

□…High stunting rate □…High mortality rate □…Low life

expectancy

□…Low agricultural production □…Other(_____)

Q7-2.Do you think that the problem has reduced through your extension activities?

□…….Improved considerably □……. Improved a little

□…….Hasn't improved □…….

Other(_____)

Q7-3.Have you ever been asked for help by people of your target area?

□…….Yes □…….No

If yes, what kind of assistance did they ask you?_____

Q7-4.Do you mobilize/encourage community's people for project implementation?

□…….Yes □…….No

Q8-1.Are you able to get information about training resources?

If yes, from where? □…Colleagues □…Supervisor □…Other (_____)

Q8-2.Have you attended any trainings in the past 3 years?

If yes, what kind of training was it? (Please select more than one if applicable.)

□…Nutrition □…Public Health □…Clinical/Medical Service

□…Extension Method □…Other(_____)

For how long usually? □…One day □…A few days □…Other(_____)

Which training was the most appropriate for you out of all as mentioned above ?_____

Who was the trainer?_____

Who was the sponsor? □…PHD □…PHB □…Donors

□…NGOs □…Other(_____)

Q8-3.The following questions are only for those who have experiences of attending trainings related to nutrition improvement

What kind of training were they? □…Basic Dietetics □…Public Health □…Food Sanitation

(Select more than one if applicable) □…Food Processing □…Education for Nutrition □…Cooking

□…School Lunch Management □…Other(_____)

Who was the trainer?: _____

Who was the sponsor? □…PHD □…PHB □… ADP □… Donors □…NGOs

□…Other(_____)

What kind of training material did you receive? :_____

Q8-4.Do you prepare a training report after attending it? □…….Yes □…….No

Q8-5.Do you keep the training report well so that you can refer anytime? □…….Yes □…….No

Q8-6.Do you share what you have learnt in the training among colleagues? □…….Yes □…….No

Q8-7.Have you applied what you have learnt in the training to your job?

If yes, what kind of issue? Please explain it in detail:_____

Q8-8.What kind of training do you want to attend in the future?

□……. Master Training □……. TOT training

□……. On the Job Training □……. Other(_____)

In the case of technical training, which field do you want to choose?

□…… Nutrition □……Public Health □……Clinical/Medical Service

□……Farming Technical issue □…… Agricultural Business □…….Extension Method

□……. Other(_____)

Why? □……. Your personal interest □……. Belong to relevant theme of your job

□……. Necessary for promotion □……. Other(_____)

Q9-1.Currently, do you implement the project or provide service related to nutrition improvement?

□…….Yes □…….No

If yes, what is the project title/service activity? _____

Period: _____ ex) June 2016～May 2018

Where does it take place? (_____)

Which sector is responsible mainly?

□…PHD □…PHB □…ADP □…Other(_____)

Who is engaged in the project/service activity beside you?

(Select more than one if applicable) □…Nutrition Officer (PHD) □…Nutrition Officer (PHB)

□…Community Health Worker □…Subject Matter Specialist (ADP)

□…Agricultural Extension Worker □…Other (_____)

Q10-1.What is the important criteria necessary for a Community Health Worker?

(Select more than one if applicable)

□…Technique skills and knowledge □…Academic background □…Practical experience

□… Ability of supervision □… Ability of management □… Ability of communication

□… Passion □… Other(_____)

Thank you for your cooperation!