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Assessing Drivers of Malnutrition in Nigeria: A Report on Findings from Kebbi, Niger, Benue, and Cross River States to Inform Food Security Investments



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SPRING
Strengthening Partnerships, Results,
and Innovations in Nutrition Globally

ABOUT SPRING

The Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project is a seven-year USAID-funded cooperative agreement to strengthen global and country efforts to scale up high-impact nutrition practices and policies and improve maternal and child nutrition outcomes. The project is managed by JSI Research & Training Institute, Inc., with partners Helen Keller International, The Manoff Group, Save the Children, and the International Food Policy Research Institute.

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COVER PHOTOS: A mother and daughter share a laugh during the household survey in Cross River State. SPRING.

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Acronyms and Abbreviations

ADP	Agricultural Development Projects
AFSNS	Agricultural Sector Food Security and Nutrition Strategy
ANC	antenatal care
BMI	body mass index
BMZ	German Ministry for Economic Cooperation and Development
CHEW	community health extension workers
CMAM	Community Management of Acute Malnutrition
CSO	civil society organization
DGLV	dark green leafy vegetable
DHS	Demographic and Health Survey
EBF	exclusive breastfeeding
EHA	environmental health assistant
FAO	Food and Agriculture Organization
FCNS	food consumption and nutrition survey
FEWS NET	Famine Early Warning Systems Network
FGD	focus group discussion
FMARD	Federal Ministry of Agriculture and Rural Development
FOMWAN	Federation of Muslim Women Organizations of Nigeria
GAIN	Global Alliance for Improved Nutrition
GFSS	Global Food Security Strategy
GoN	Government of Nigeria
HDDS	household dietary diversity score
IDP	internally displaced person
IFPRI	International Food Policy Research Institute
IITA	International Institute of Tropical Agriculture
IR	intermediate result
IYCF	infant and young child feeding
KI	key informant
KII	key informant interview
LGA	local government area
LSMS	Living Standards Measurement Study
MAD	minimum acceptable diet
MARKETS II	Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites II
MB&NP	Ministry of Budget and National Planning
MDD-W	minimum dietary diversity score for women

MICS	Multiple Indicator Cluster Survey
MIL	mother-in-law
MOH	Ministry of Health
MNCH	maternal, newborn, and child health
MPI	Multidimensional Poverty Index
NCFN	National Committee on Food and Nutrition
NCN	National Council on Nutrition
NCRI	National Cereal Research Institute
NGO	nongovernmental organization
NiMet	Nigerian Meteorological Agency
NiWARD	Nigerian Women in Agricultural Research for Development
NNHS	National Nutrition and Health Survey
NPFNN	National Policy on Food and Nutrition in Nigeria
NSPAN	National Strategic Plan of Action for Nutrition
ORS	oral rehydration salt
PHC	Primary Health Care
PHCDA	Primary Health Care Development Agency
PHCUOR	Primary Health Care under One Roof
RA	research assistant
REFILS	Research-Extension-Farmer-Inputs Linkage System
RUTF	ready-to-use therapeutic foods
SBC	social and behavior change
SBCC	social and behavior change communication
SDG	Sustainable Development Goal
SEMA	State Emergency Management Agency
SGA	small-for-gestational age
SPRING	Strengthening Partnerships, Results, and Innovations in Nutrition Globally
SUN	Scaling Up Nutrition
UNICEF	United Nations Children’s Fund
USAID	U.S. Agency for International Development
USG	U.S. Government
VSLA	village savings and lending association
WASH	water, sanitation and hygiene
WHO	World Health Organization
WIA	Women in Agriculture
WINNN	Working to Improve Nutrition in Northern Nigeria

Executive Summary

The Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project conducted a two-phase multi-sectoral nutrition assessment for the U.S. Agency for International Development (USAID) Nigeria during August–October 2017. We undertook the study to inform the development of a five-year, Global Food Security Strategy (GFSS) interagency country plan for the U.S. Government (USG) in Nigeria. In Phase One, SPRING conducted a desk review of the drivers of malnutrition. In Phase Two, we adopted a mixed methods approach and conducted an extensive field study in three of the four GFSS target geopolitical zones, covering four out of the seven target states. SPRING designed the fieldwork to achieve the following objective: To identify the primary drivers of undernutrition in Nigeria and explore potential opportunities for strengthening nutrition investments in GFSS targeted states. This report includes the key methodology, findings, and proposed recommendations from the field study.

SPRING developed household survey questionnaires, multiple key informant interview guides, and focus group discussion guides for different types of study participants, as well as a community observation checklist. We developed our data collection instruments to address the three objectives of the GFSS results framework and drew from validated tools, where applicable. We collected quantitative data from household surveys, qualitative data in from key informant interviews and focus group discussions, and community observations. The respondents included farmers, mothers of children younger than two years of age, and community leaders; small and large private sector firms; health and agriculture workers; and stakeholders from national and state government agencies, multilateral and bilateral donors, civil society organizations, and research institutions. Our household survey used non-probability sampling. Therefore, the results do not represent all the communities in the states. However, we presented the descriptive statistics to demonstrate the variations in indicators among the four states and to reinforce qualitative findings.

We used the three GFSS objectives to organize our findings from the fieldwork and to highlight the similarities and distinct features that emerged in each of the four states where we collected data. We describe the following issues: affordability and accessibility of agricultural inputs; market-related challenges; public sector challenges; lack of early warning systems and formal and informal safety nets; lack of dietary diversity; sub-optimal infant and young child feeding practices; challenges of public health services to address malnutrition; and poor water, sanitation, and hygiene practices. We also discuss challenges related to gender equity and women's empowerment; and governance, coordination, and capacities within and among institutions that affect nutrition in the country. SPRING's combined desk review and fieldwork presents a detailed picture of the GFSS focus states in Nigeria and potential program opportunities. We recommend an investment in seven areas using strategies and interventions customized to local contexts. Each recommendation listed below is described in more detail in the report to enable USAID Nigeria's current and future investments to work together to achieve a wider reach and stronger integration for a sustainable impact on nutrition:

1. Scale up high-quality information and communication on behaviors and practices that improve nutrition.
2. Invest in a systems approach to deliver services supporting nutrition.
3. Engage and empower women and girls through context-appropriate platforms.
4. Ensure sustainable and diverse food production, consumption, and availability year-round.
5. Prioritize pro-poor investments and interventions.
6. Support nutrition coordination and roll out strategies and plans.
7. Build strong evidence on agriculture-nutrition linkages.

I. Introduction and Background

Nigeria is a new target country of the U.S. Government’s (USG) Global Food Security Strategy (GFSS). The seven selected focus states in which to implement GFSS—Benue, Cross River, Delta, Ebonyi, Kaduna, Kebbi, and Niger¹—are located within four of the six Nigerian geopolitical zones (USAID 2016). Depending on the security situation in the North East zone, the focus would also be on the four northeastern states of Adamawa, Borno, Gombe, and Yobe. The U.S. Agency for International Development (USAID)/Nigeria also prioritized five value chains: rice, maize, soybean, cowpeas, and aquaculture. The selection of the focus states and value chains were based on the criteria shown in Table 1.

Table 1. Selection Criteria for GFSS States and Value Chains

State Criteria	Value Chain Criteria
<ul style="list-style-type: none">• Level of need• Potential for ag-led growth• Opportunities for partnership• Opportunities for regional economic integration• USG resource availability.• Partner country government commitment	<ul style="list-style-type: none">• Competitiveness• Inclusive growth potential• Implementation feasibility• Resilience potential• Nutrition potential.

To inform the USAID country team’s development of its five-year GFSS interagency plan to reduce food insecurity, poverty, and malnutrition in Nigeria, the Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project conducted a two-phase multi-sectoral nutrition assessment. During Phase One, SPRING conducted a desk review of the drivers of malnutrition in Nigeria (see Annex 1). This review built on an analysis conducted in 2017 by the International Food Policy Research Institute (IFPRI), which had an expanded scope focusing more on the existing literature and the national and regional data. The SPRING desk review revealed a significant diversity of cultures, livelihoods, and commodities across Nigeria, which informed the second phase of the assessment. SPRING carried out the fieldwork in three of the four target geopolitical zones and four out of the seven GFSS target states. To meet the objectives of its scope of work with USAID Nigeria², SPRING’s fieldwork investigated the following question: What factors are responsible and what are the nutrition-specific and nutrition-sensitive interventions that should be taken to address the country-specific causes of malnutrition in the GFSS target population?

This report with the completed desk study aims to accomplish the following research objectives:

- Synthesize the existing information on the immediate, underlying, and basic causes of malnutrition in Nigeria by focus state, subject to data availability.

¹ If the security situation in Nigeria allows, the GFSS target states may expand to include Adamawa, Borno, Gombe, and Yobe in the North East zone of Nigeria.

² Scope of work objectives were (1) determine and describe the primary drivers of malnutrition in the seven GFSS target states in Nigeria; (2) Identify regional variations between the target states in Northern Nigeria and Southern Nigeria, and explain the implications for programming; and (3) in collaboration with the Nigeria GFSS country nutrition team, determine the evidence gaps and synthesize the key opportunities to address malnutrition under the Mission’s GFSS plan.

- Examine how seasonal access to markets, production practices, and food purchases impact household food security and nutrition.
- Explore how traditional practices and cultural norms may affect malnutrition to inform the most appropriate strategies to support different populations.
- Use the existing literature and data to compare the GFSS focus states in the north to the states in the south.
- Suggest lessons learned from current and past development and humanitarian activities to minimize unintended negative consequences in the design of future nutrition programs.
- Share what national, state, and local government area (LGA)-level resources are available to support nutrition-specific and nutrition-sensitive activities.

Overview of Nutrition Situation

Nigeria's Demographic and Health Survey (2013) reports small improvements in rates of stunting: from 42 percent of children in 2003 to 37 percent of children in 2013 (DHS 2013). However, as a country, Nigeria is facing a nutrition crisis on multiple fronts. One out of every three Nigerian children is stunted, and 7.8 percent of children are wasted³. An estimated 1.9 million children suffer from severe acute malnutrition, placing them at immediate risk of premature death. An estimated 71 percent of children, and 48 percent of women of reproductive age, are anemic (Stevens et al. 2013). Women's nutrition is of particular concern, with a double burden of thinness (11 percent) and obesity (25 percent) (DHS 2013). In general, undernutrition and health outcomes are worse in the North East and North West zones, compared to the Southern and Central zones; but Nigeria is a large, diverse country and the prevalence of undernutrition varies widely across, and even within, states.

Although chronic and seasonal nutrition problems are prevalent throughout the country, the impact of conflict and other shocks has resulted in acute levels of food insecurity, and potential pockets of famine in the North East zone (FEWSNET 2017a). An estimated 3.1 million people in the Borno, Yobe, and Adamawa states received emergency food assistance or cash transfers in the first half of 2017 (FEWS NET 2017a).

Nutrition in Global Food Security Strategy

The GFSS charts a course for the USG to help achieve global food security and improve nutrition by focusing on three objectives: (1) inclusive and sustainable agricultural-led economic growth, (2) strengthened resilience among people and systems, and (3) a well-nourished population (USAID 2016). Undernutrition—especially among women and children during the 1,000 days from pregnancy to a child's second birthday—leads to lower levels of educational attainment, productivity, lifetime earnings, and economic growth rates. In short, nutrition is central to sustainable development and is necessary to make progress on issues that include health, education, employment, poverty, inequality, and the empowerment of girls and women.

³ Stunting in children ranges from 16 percent in the South East zone, to 54.8 percent in the North West Zone (DHS 2013). While global acute malnutrition prevalence ranges from 4.5 percent in North Central to 10.2 percent in North West (NNHS 2014).

The GFSS aims to break silos, integrating programming across sectors for maximum impact for improved nutrition. However, the linkages across sectors are not always well understood or considered in program design and implementation. For this reason, SPRING decided it was important to use the GFSS conceptual framework as a basis for data collection and the structure of this report; this will enable us to purposefully point to opportunities for affecting nutritional outcomes across all three GFSS objectives. Under GFSS Objective 1, if nutrition-sensitive approaches are applied, the agriculture sector can increase the availability of affordable, diverse, and nutritious foods, as well as generate opportunities for income growth among the poor, increasing their ability to afford these foods, as well as to pay for health and hygiene products and services needed to reduce hunger and improve nutritional status.

Under GFSS Objective 2, increased resilience among people and systems is necessary for men, women, and families to reduce, mitigate, adapt to, manage, and recover from shocks and stresses that threaten food security and nutritional status. They can also sustainably escape poverty and be better able to access the quality foods and health care that lead to better nutrition when nutrition-sensitive agricultural livelihoods are protected.

Of course, under GFSS Objective 3, nutrition-specific interventions must be linked to sustained availability and access to nutrient-rich foods and good sanitation and hygiene. These outcomes must also be supported by Objectives 1 and 2 in order to increase consumption of nutritious and safe diets, maintain more hygienic household and community environments, and increase use of direct nutrition interventions and services to decrease disease burden and sustain a well-nourished population.

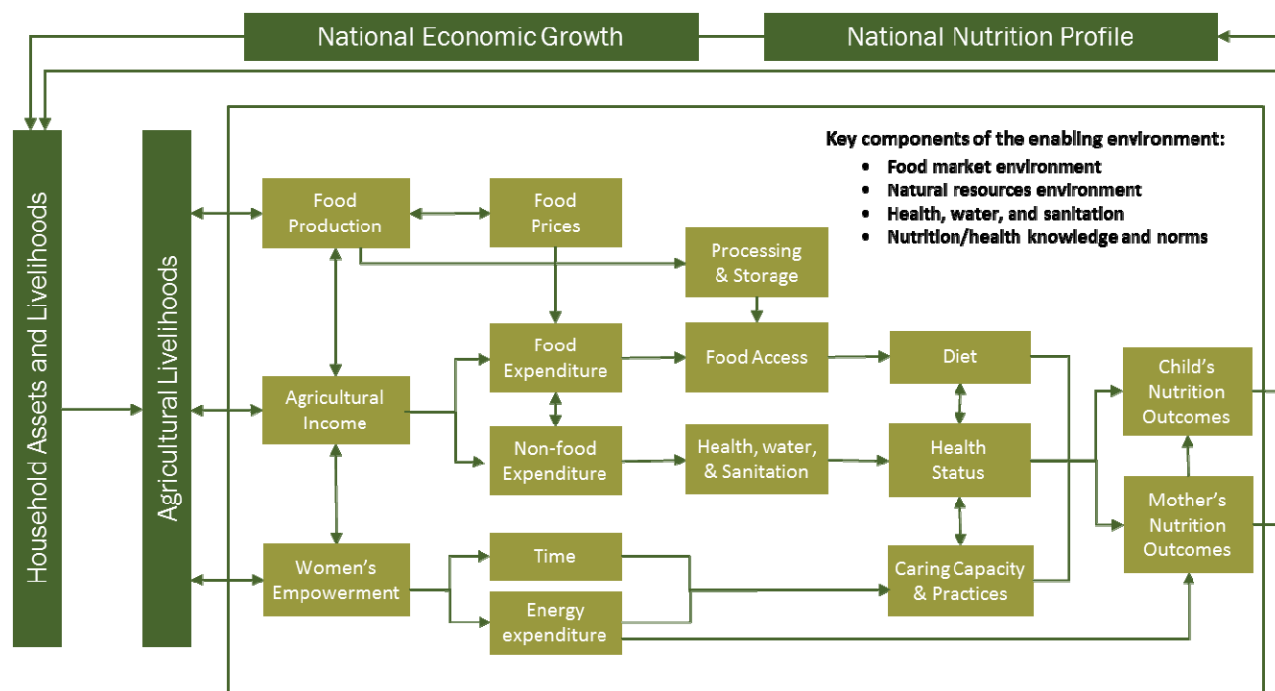
Clearly, under GFSS, both nutrition-specific and nutrition-sensitive interventions are necessary—and must work together—to achieve improved nutrition among women and children in rural communities.

Agriculture-Nutrition Linkages

In 2014, SPRING developed a conceptual framework, which was adapted from earlier work by Kadiyala et al. (2014), and that identifies three primary pathways linking agriculture and nutrition (see Figure 1):

- Food production to make diverse and nutrient-rich foods available for consumption
- Income to purchase nutritious foods and pay for health care services, as well as improved water, sanitation, and hygiene (WASH) products and services
- Women’s empowerment, including equitable access to and control over household income and productive resources, and joint decision making around time, labor, and household expenditures.

Figure 1. Agriculture-Nutrition Pathways



These pathways target individual smallholder farm households and the decisions and actions available to them to foster better nutrition. The “enabling environment” or external factors at the community, regional, or national level also affects these households. The enabling environment includes the prevailing agri-food and market system; the availability of natural resources; accessibility of health, water, and sanitation services; cultural and gender norms; and policy. The Agriculture-Nutrition pathways support the GFSS objectives and provide a guiding framework to this report to analyze challenges and opportunities to improve nutrition outcomes in Nigeria. Throughout the report, we strive to ground the findings and recommendations in the pathway(s) most relevant to their potential effect on nutrition and to reflect opportunities for linking nutrition-sensitive and nutrition-specific programming.

In section II, we describe our study design and data analysis. Section III shares our major findings presented by GFSS objectives, as illustrated in the results framework (Annex 2). Throughout, we make explicit efforts to link each finding to nutrition and to highlight the similarities and differences across the states where we conducted our fieldwork. The last section proposes a list of recommendations for the Mission to consider in their investment and program plans.

II. Methodology

SPRING employed a mixed methods approach in the assessment and conducted household surveys, key informant interviews (KIIs), focus group discussions (FGDs), and community transect walks. The SPRING team sent three study teams to four states: Kebbi, Niger, Benue, and Cross River, and we kept a base in Abuja. See Annex 3 for the details of the fieldwork timeline. A research lead and a research assistant conducted KIIs with national level nutrition stakeholders, primarily in Abuja, but also in Ibadan and by phone. The SPRING field teams comprised one team leader, five research assistants, and one SPRING support staff. All the data collection instruments are included in a separate document: Compendium of Data Collection Instruments.⁴

Data Collection Instruments

Household survey: SPRING developed a comprehensive household survey comprising six modules that correspond to GFSS intermediate results (IRs). We administered the questionnaire to the parents of children less than two years of age. In households with more than one child under two years of age, questions referred to the youngest child. Both men and women responded to questions about the home gardens. Only the household head (men or single mothers) answered questions about agricultural production, capacity to plan for stresses, and coping strategies. Only caregivers (married mothers and single mothers) responded to questions about household food consumption (24-hour recall) and infant and young child feeding (IYCF), and WASH behaviors, including knowledge and/or application of the 10 core nutrition interventions recommended by The Lancet 2013 nutrition series (Bhutta et al. 2013). SPRING research assistants administered the surveys in English, Pidgin English, or Hausa. Because not all participants provided meaningful responses to each question of the household survey, the sample size varies for a few questions. The survey included questions that allow for multiple responses and, as a result, in those cases, the sum of the corresponding percentages exceeds 100 percent. All figures shown in this report were rounded to the nearest whole number.

Key Informant Interviews: The SPRING team developed separate KII guides for different types of key informants: state and LGA personnel across sectors, nongovernmental organization (NGO) staff, community leaders, smallholder producers, commodity dealers, commodity aggregators, and market leaders. SPRING selected national-level key informants from a range of government agencies, bilateral and multilateral donors, research institutions, civil society organizations, and the private sector. To triangulate data elicited from other instruments, SPRING worded the questions in these guides to correspond to GFSS objectives.

Focus Group Discussion: SPRING developed two types of FGDs: one to assess gender dynamics and a second to assess the seasonality of food availability. Through the gender FGD, we examined individuals' perceptions of gender roles in agricultural production, processing, sales, and food preparation. Our FGDs on seasonality of food availability asked small groups to construct 12-month food calendars describing the trends in their community in terms of seasonal consumption, availability, and affordability of 12 groups of foods (Kennedy et al. 2011). Both types of FGDs were limited to 8–20 participants, segregated

⁴ To request a copy of the Compendium, please email info@spring-nutrition.org.

by gender. The gender FGD took approximately an hour to administer and the food calendar FGD averaged about two hours.

Community Transect Walk: The community transect walk guide recorded structured contextual information about communities visited. Using this tool, research team members noted their observations of transportation infrastructure, land use, agricultural processing facilities and/or equipment, electrification, the WASH environment, and characteristics of local markets.

See Table 2 for a summary of the numbers of household surveys, KIIs, FGDs, and community transect walks conducted by each state team. Annex 4 provides a more detailed description of the respondents the SPRING team collected data from and Annex 5 lists the national-level stakeholders interviewed.

Table 2. Use of Data Collection Instruments

Data Collection Methods	Kebbi	Niger	Benue	Cross River	Abuja
Household surveys	89	37	73	119	-
Key informant interviews	93	60	59	49	24
Focus group discussions	24	4	7	13	-
Community transect	6	6	8	6	-

Strengths and Limitations

Table 3 summarizes both key strengths and limitations for the current assessment:

Table 3. Strengths and Limitations

Strengths	Limitations
<ul style="list-style-type: none"> To support the triangulation of findings, we used multiple qualitative data collection methods and recruited respondents of different levels and diverse backgrounds. Our survey drew questions from proven instruments, including FAO's Food Security and Livelihood Vulnerability Survey–September 2016, as well as from the dietary diversity and IYCF indicators (WHO 2008; FAO and FHI 360 2016). We used a food groups list that includes indigenous and commonly consumed foods in Nigeria based on previous in-country work. 	<ul style="list-style-type: none"> SPRING teams purposively visited communities where the priority value chain commodities are produced. Findings are not generalizable within or between states, agroecological, or geopolitical zones. We used convenience and snowball-sampling methods to recruit households with at least one child less than two years of age; community leaders and FGD participants often referred us to households. Sample sizes for select indicators measured on young children aged 6–8 months (Introduction of solid, semi-solid, or soft foods) and 12–15 months (continued breastfeeding at 1 year) are very small ($n < 10$); therefore, we did not report results on these two indicators.

III. Findings

Objective 1: Inclusive and Sustainable Agriculture-led Economic Growth

Agriculture is the main livelihood for most households in Nigeria, particularly in the GFSS zone of influence. As noted in SPRING's desk study, farming systems—and diets—center on staple food crops. To identify opportunities for agriculture to better support nutrition outcomes, the team developed an understanding of farming systems in each state, including developing a list of major crops produced, by state (see Annex 6). Of the USAID priority crops, maize is widely grown in Niger and Benue (>60 percent of respondents), cowpea in Niger, and soybeans in Benue; most households grow rice: in Kebbi (74 percent), Niger (94 percent), and Benue (56 percent). Kebbi and Niger produce appreciable quantities of millet and sorghum, while tubers are more prominent in the central and southern states: Benue and Cross River. Production of the USAID priority value chain crops (except rice) is low in Cross River because the state has prioritized cocoa, oil palm, and rice; and both public and private support systems focus on producing these three crops.

Constraints to production in the four target states limit the ability of families to feed themselves from their own production year-round. As a result, most households are net buyers of food, and they rely on less-preferred staple foods when their own stores are low; this is illustrated by our FGD on the seasonality of food availability. However, as noted in SPRING's desk study, the Famine Early Warning Systems Network (FEWS NET) estimates that most areas of the country will have sufficient food production in the 2017/2018 harvest period to meet caloric needs (FEWS NET 2017a). In addition, agricultural production in all four states is labor-intensive, placing demands on pregnant and lactating women, especially during peak labor periods. This affects their own nutritional status, as well as that of their unborn child. Landholdings are small and fragmented and there is significant dependence on rainfed agriculture, except Kebbi, which has a strong culture of irrigated farming. The typical farmer we interacted with was a small-scale farmer. The land size of survey respondents ranged from two hectares for rice and millet in Kebbi to much smaller average landholdings in Cross River where farmers cultivated less than one hectare, on average, for all crops. See Annex 6 for a breakdown of average land size cultivated per crop and the location of study respondents.

Both availability and affordability of nutrient-rich foods affect dietary diversity, including fruits, vegetables, and animal source foods—fish, eggs, and meat and dairy products. The desk review reported low dietary diversity in Nigeria, nationally, which explains, for example, that women in six states ate an average of 5.8 different types of food out of 14 food categories (Ajani 2010). Our field survey findings corroborated this. We found that commercial vegetable production was low (less than 10 percent in all states except Kebbi), although a large percentage of respondents have home gardens (as many as 69 percent of respondents in Benue, for example). Home gardens produce a variety of fruits and vegetables (see Annex 6), which study participants reported both selling and saving for home consumption.

For livestock and fish, Kebbi had the highest percentage of animal owners—cows, poultry, goats, and sheep—for both sale and home consumption. The communities visited in every state, except Cross River, had a high percentage of poultry owners; however, the survey data suggest that households keep

chickens only for meat and not eggs, as anecdotal evidence suggests that egg consumption is low because of cultural preferences. Aquaculture is rare among smallholder farmers in these locations, although a majority is engaged in artisanal fishing for sale and home consumption. Aquaculture requires large startup capital and running costs—beyond the reach of most farmers. Annex 6 includes details on livestock production across the four states.

Affordability and Accessibility of Agricultural Inputs

The cost of necessary inputs directly affects a farmer’s ability to earn income from agriculture. At the household level, the high cost of inputs influences decisions about what to grow and how to prioritize household income. High input costs also affect what is available at local markets for purchase and, ultimately, consumption. Physical and financial access to inputs is a problem across all four states that SPRING visited. In Niger, Benue, and Cross River, good quality inputs, including seeds, chemical fertilizers, and pesticides—as well as farm implements or equipment (e.g., tractors and irrigation systems)—are not available, particularly in remote sites. The few available inputs tend to be low quality. Industry key informants (KIs) provided anecdotes about unscrupulous intermediaries filling empty fertilizer bags with sand and selling them to rural farmers. Distribution systems appear to be better in Kebbi than in the other three states, but inputs are not affordable for the average farmer across all four states. The lack of access to input limits farmers’ ability to produce a range of nutritious foods and it contributes to sub-optimal yields, compromising year-round food security. Mechanization is uniformly poor in the four states and farming requires long hours and hard labor by both men and women. Intense labor requirements place women of childbearing age at particular risk for undernutrition and ill health. Most farmers cannot afford to own their tractors or other mechanized inputs, and access to rental services is inadequate across all locations (Takeshima et al. 2013). Table 4 shows the number of respondents that reported using inputs and loans; Table 5 shows the responses to the question of adequacy for each type of input. The tables summarize responses to the questions “do you use inputs, yes or no” followed by “did you have enough, yes or no.” While the available inputs vary by location, the responses suggest that farmers are aware of the need or benefit of inputs and rarely think they have sufficient amounts.

Table 4. Respondents Using Selected Inputs and Loans (percentage)

Location	Seeds (%)	Fertilizers (%)	Herbicides/Pesticides (%)	Loans (%)
Kebbi (n=89)	97	85	82	21
Niger (n=34)	97	91	88	41
Benue (n=70)	97	71	89	9
Cross River (n=93)	39	19	28	6

Table 5. Respondents Reporting Sufficient Access to Selected Inputs and Loans (percentage)

Location	Seeds (%)	Fertilizers (%)	Herbicides/Pesticides (%)	Loans (%)
Kebbi (n=89)	66	11	9	6
Niger (n=34)	68	35	38	21
Benue (n=70)	54	14	24	0
Cross River (n=93)	24	6	9	2

Because production is seasonal, suboptimal—in quantity and variety—yields contribute to lean seasons for farming households, which lead to low household food stores, low incomes, and inadequate caloric, micronutrient, and/or protein consumption. Farmer households consume a portion of the crops they produce. The amount and quality of a harvest could suffer from insufficient or low-quality inputs, directly affecting the food security of the household. High input costs reduce net earnings and the ability of households to designate part of their budget to purchase food and health services. In the context of marginal incomes, the decision about how much to invest in the household livelihood versus meeting the costs of nutrition through diverse food purchases and meeting health and WASH expenses is made even more difficult. Avoiding high input prices may also reduce the overall availability of quality foods in local markets, thereby affecting food access for the entire community.

Market-Related Challenges

Smallholder farmers participate in markets in many ways—as producers, processors, and retailers—but also as consumers. SPRING observed that while farming households tend to keep some of what they produce for home consumption, they rely on their local market to supplement their diet. What is available for purchase and the prices of food in local markets affects the quality of diets, particularly during lean seasons. In this finding, we discuss three major market-related challenges: (1) post-harvest processing of target value chain commodities, (2) access to output markets, and (3) market seasonality and food availability.

Post-Harvest Processing

Post-harvest processing can affect nutrition through both the consumption and income pathways and contribute to year-round food security. It reduces post-harvest losses and introduces preservation practices, which, together, may extend the amount of time that food is available within households; it also increases the opportunity for value addition, contributing to increased incomes.

With improved post-harvest processing, value chain actors stand to earn more income by diversifying and improving the safety, quality, and desirability of food items available for sale and purchase in markets throughout the year. Additionally, post-harvest processing activities create employment opportunities, providing a vehicle for women’s empowerment through new roles, skills development, and opportunities to control income. The following section describes processing challenges for the USAID target value chain commodities observed in the four states.

Rice: Rice production is strongly emphasized in Kebbi, which has led to strong linkages between producers and buyers. Large agro-processing industries have outgrower schemes, which are supported by extension agents who receive a stipend for teaching farmers proper agronomic practices and that supply growers with improved seeds and other inputs. After harvested, the processors pick up the paddy directly from the farms. This outgrower approach ensures that farmers have a regular market outlet for their produce; however, these schemes appear to discourage good post-harvest handling and storage practices because farmers sell all the produce at harvest time. Other states do not have this situation. Despite Cross River’s focus on rice, rice paddy is transported to the neighboring state, Ebonyi, for processing, often placing the cost and burden of transport on the producer. Benue and Niger have functioning rice mills, but the farmer-industry linkage is not as strong as in Kebbi. Household level post-harvest practices and

processing techniques in all states are rudimentary, labor intensive, and archaic. For instance, parboiling rice is still, primarily, done in large, open pots—the paddy is put directly in contact with water instead of steam.

Smallholder households grow rice for both consumption and sale. Having a strong link to secure markets is key to household food security, even if the prices are low, because farmers can calculate how much rice to sell and how much to hold for home consumption in a specific year. Additionally, the SPRING survey team found no evidence of market demand for nutrition-sensitive processing that could add to or maintain the micronutrient content of frequently consumed foods, such as rice.

Maize, soybean, cowpea, and aquaculture: SPRING did not find any processing or value addition activities in the states associated with the other GFSS focus crops; most receive minimal processing for consumption—like pap for maize or moinmoin for cowpeas. Benue has seen some success in linking farmers to soybean markets via two major soybean processors: Hule and Sons in Wanune (producing unrefined crude oil) and Seraph oil (producing refined vegetable oil and soy milk concentrate for animal feed) in Makurdi. The USAID-funded Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites II (MARKETS II) activity linked farmers to these processors by helping them meet the processors' foreign matter and moisture standards. The examples in Benue and Kebbi show that, with appropriate support, farmers can supply formal markets.

Access to Output Markets

In the four target states, accessing formal markets is a challenge because of the inability to meet quality standards. When farmers cannot meet industry specifications, as with most crops, they face low, unreliable incomes from sales; and they are less likely to be able to afford nutritious diets and health services. Additionally, local markets are probably selling products that do not meet food safety standards, increasing the risk to local consumers—including the farming households—of consuming foods with toxins or chemicals.

The inability to meet quality standards means producers cannot supply commodities to large buyers, including processors. In particular, poor post-harvest and storage practices (e.g., damp storage leading to aflatoxin contamination) compromise their ability to satisfy moisture and foreign content standards required by industry players. Additionally, farmers sometimes use dangerous chemicals to store their produce, leaving residues that are unacceptable to large buyers trying to meet national or international food safety standards. Our KIIs and household surveys suggest that many farmers do not know or have the skills to meet industry standards, nor do they know who their potential buyers are outside their immediate environment. In addition, farmers lack the organization skills, connections, or knowledge to access these buyers. Farmers in the target area are generally not organized into cooperatives, do not aggregate or grade their production, and individual farmers produce too little produce to interest industrial buyers. As a result, most farmers sell their produce in informal, local markets with minimal quality standards. Not only is the produce usually underpriced but also potentially in violation of health and safety standards for human consumption.

Key informants stated that, with proper training, farmers could meet standards for industry and exports. Benue is attempting to do this; NGOs and the Agricultural Development Projects (ADP) are providing

training to farmers to meet the export standards for yams (e.g., uniform sizing of yams for exports). The experiences of Kebbi and Benue with rice and with soybeans show that it is possible to link small-scale producers and industry. Farmers are willing to adopt improved post-harvest practices, potentially improving the value chain, reducing post-harvest losses, and creating employment opportunities and entrepreneurship.

Market Seasonality and Food Availability

Most farmer households obtain their foods from the same local markets that they supply and, because production is generally rainfed, food availability is seasonal. The patterns of seasonal food availability are similar across all states—cheap foods are plentiful in markets during the first few months after the harvest. Food stores diminish and market prices rise as the lean season approaches, forcing farmers to buy the same foods they may have sold to markets at the time of harvest for higher prices. Diverse food items are available during the harvest, including grains, legumes, vegetables, and fruits. Because animal source foods are expensive year-round, the harvest season—when there is income from sales or around holidays—is the only time that households might include them in their food budget. Each state has different preferred food groups: in Kebbi, households consume cereals and grains year-round, while households in Benue and Cross River favor tubers (yam and cassava). Households allocate resources to purchase these staple foods year-round, regardless of price. During the lean season, the quantity of all food types consumed is drastically reduced. FGD participants revealed that they tend to switch to less preferred substitutes when certain foods are not accessible, such as gathering wild drought resistant vegetables in the dry season when vegetables are scarce in the market.

The most apparent effect of seasonality and food availability on nutrition is that household access to food is limited during the lean season. Data from a national survey done in 2013 found that one in five households nationwide experienced food shortages at some point in the past 12 months, which primarily affected urban households (23 percent) and the southern zones (34 percent in the South East and 22 percent in the South West) (Nigeria Bureau of Statistics 2016). During this season, food is not as available and more expensive, and household income is lower. Many households resort to coping mechanisms, such as limiting meal quantities and frequency, further limiting their already scarce dietary intake. Additionally, depending on the agricultural cycle, workload requirements may be higher than they are during the time of year when food is plentiful—increasing the need for food in the context of scarcity and high prices. Given this season of especially strained income, to consume enough calories, households may reduce spending on health and caregiving needs.

Public Sector Challenges

The three main channels through which state governments interact with the agricultural sector include (1) the ADP, the Government of Nigeria's (GoN) agricultural extension service, (2) research institutions, and (3) various government regulatory agencies. The SPRING team found challenges within and among all three, limiting the potential of agriculture to improve nutrition outcomes in the four states.

Agricultural Development Projects

ADPs across Nigeria play a facilitating role in the production of crops and livestock (including aquaculture), input distribution, farmer training, and adaptive research; they work alongside extension

efforts to increase productivity, incomes, and livelihoods in rural areas. Unfortunately, the ADP system in all four states is under-resourced, inefficient, and unable to serve its intended purpose. Benue had fewer than 30 ADP extension officers (resulting in a ratio of one extension agent to over 50,000 farmers), and the state government has not funded the Benue ADP for six years. Similarly, Cross River has 96 active extension agents, with a ratio of one agent to every 5,000 farmers. The ADP system across Nigeria is inadequately funded, leading to aging personnel (with no replacement hires) who are overworked, under-trained, and unmotivated. Donors such as World Bank, IFAD, and USAID—have supported extension operations in many states, leading to donor dependency. The lack of resources severely constrains the ADP from providing timely information to farmers on prices, climate shocks, and best practices. Even though the GoN recognizes their part to support multi-sectoral outcomes for nutrition, state-funded training for ADP agents is almost non-existent and standard curricula at the university level lacks nutrition-sensitive agriculture practices or concepts for agriculture majors.

Agricultural Research

Agricultural research institutions and universities are present in all the states, yet nutrition and nutrition-sensitive agriculture are not research priorities and the research-extension-farmer linkage is weak. In Kebbi, the National Cereal Research Institute (NCRI) substation has existed since 1963; it has a mandate to conduct research on rice, maize, soybean, groundnut, and sugarcane. Based on interviews with NCRI staff, SPRING learned that research efforts prioritize yields and disease resistance over nutritional value and quality. While there is a theoretical linkage between the agricultural universities (particularly in Benue) and the ADP, in practice, research findings do not reach farmers, despite the potential benefits to farmers if they have access to improved, climate-smart agricultural practices. For instance, while the soil of Benue can support cowpea production, it is difficult to produce because of severe pest infestation. Research-farmer linkages can provide information on how to manage this challenge and provide advice on alternative farming system solutions, while promoting the nutritional properties of alternative crops, like cowpeas.

Public programs like the ADP and publicly-funded research institutions can help improve nutrition by influencing behaviors and changing environments. The ADPs provide services to increase productivity and incomes, which could mean an increased accessibility of nutritious foods. Research institutions could conduct more innovative research on applicable solutions like drought or pest resistant seed or biofortification. Additionally, in testing research findings, research organizations could influence behavior change among farmers to adopt improved practices and to increase the demand for nutritious food.

Government Policy and Regulatory Systems

The policy and regulatory environment in all the states is chaotic, limiting the ability of private sector actors to engage with small-scale producers and introduce nutrition-related products and services. Agriculture is on the second schedule, part II number 18 of the concurrent list of the 1999 constitution. As a result, the federal government cannot impose policies on states; therefore, while strategies to support private sector growth exist at the national level, they do not at the state level. State governments have also struggled to provide a business-enabling environment and, as a result, very few successful agribusiness companies or other private sector players influence the types and quality of food available in the markets. Key informants complained about an unclear and extractive tax system, and a conflicting and

burdensome regulatory environment. Agencies are not coordinated, resulting in a plethora of fees and regulations that businesses perceive as oppressive. Tightly regulated private sector growth may also be stifling farmers' income, affecting their production capacity and, ultimately, their ability to provide for their households. In addition to limiting opportunities to generate income, barriers to private sector growth may also stifle innovative products and services that can improve nutrition, such as hermetically sealed bags for storage, preserved food products, convenience goods, and female-owned businesses.

Objective 2: Strengthened Resilience among People and Systems

As reported in the desk study, an assessment by Mercy Corps found that one-third of households across Nigeria reported some form of shock or hazard during 2010–2016. Five percent of households specifically reported experiencing conflict, primarily in the North East zone and the Niger Delta region; and conflict in this region was linked with increased rates of malnutrition, particularly wasting and reduced food consumption scores. The desk study also found that the largest expense for most Nigerian households is food. In 2013, 57 percent of disposable income went toward food consumed at home. Factors—such as high rates of poverty, increasing food prices, and insufficiently developed and diversified livelihood opportunities—present risks to Nigerian families' ability to purchase food and nutrition-related services. In 2013, roughly one in four households reduced the number of meals taken in the past seven days because of economic shocks, with food price increases the most frequently cited source of shock (Nigeria Bureau of Statistics 2016). Compounding these risks is a national reserve system that is inadequate for meeting national needs when shocks occur (Ndukwu, Akani, and Simonyan 2015).

To ascertain the existing levels of resilience, and to characterize common shocks and coping strategies in the target area, SPRING included questions on the household survey questionnaire to determine the contributors to vulnerability. The responses to this survey section helped us understand challenges associated with strengthening resilience at the household and systems level. In line with the findings of the desk study, SPRING's household survey identified drought, flooding, and food price increases as being the most common shocks experienced by respondent households, all contributing to food insecurity. In fact, our survey found that household food insecurity is a major issue across the four states, with approximately 25 percent of Kebbi respondents to almost 50 percent of Niger respondents indicating difficulty accessing sufficient food for their household in the past seven days (see Table 6).

Table 6. Households with Difficulty Accessing Food in the Past Seven Days (percentage)

	Kebbi (n=89)	Niger (n=34)	Benue (n=70)	Cross River (n=93)
Yes	24	49	31	37
No	76	37	62	11

SPRING's key findings showed that high food prices occur every lean season, as reflected in the affordability section of the seasonal food FGD. When food is unaffordable, households try to simply "fill the stomach," with little attention to the quality of calories consumed. To better understand events that lead to food insecurity and how households manage periods of food insecurity, the SPRING survey asked about the main types of shocks affecting families, as well as the common coping mechanisms.

All states visited are close to large bodies of water and most communities are infrastructure deficient, lacking drainage to aid in water management. As a result, floods are routine destructive occurrences that

destroy lives and properties. The recent floods in Benue in August 2017 were particularly destructive and resulted in loss of livelihoods and assets and, in many cases, food insecurity and hunger. Additionally, flooding affects health outcomes; key informants spoke of an increase in malaria from standing water after the flood, and said that their houses were more prone to mold or left structurally unsound.

Herdsmen-farmer clashes have become common across the country, but particularly in the North Central regions. This violence has resulted in loss of assets, abandonment of farmland, and internal displacement. This has a long-term negative impact on farmers, depending on their support system. States have responded by banning open grazing and mandating the use of ranches. The law against open grazing in Benue, for instance, took effect in November 2017, despite intense resistance. Other shocks mentioned in household surveys include a chronically ill household member (devastating, due to the lack of health insurance or decent rural health care system), livestock disease and death, as well as crop failure. A sizable percentage of survey respondents mentioned weeds and pest infestation as a major shock made more severe by their inability to afford the quantities and types of inputs needed to mitigate these threats. Currently, innovative input dealers are trying to provide microfinance to farmers, enabling them to access inputs in Benue. The interest rates attached to these loans—five percent per month—reflect the risk associated with working with this highly vulnerable population. Table 7 shows the percentages of households that faced the shocks most commonly named in our survey.

Table 7. Most Prominent Shocks Faced by Households in the Past Year (percentage)

Causes of Shock	Kebbi (n=89)	Niger (n=34)	Benue (n=70)	Cross River (n=93)
Drought	18	9	19	3
Flood	27	41	53	8
High food price	85	41	36	32
Lack of agricultural inputs	45	18	26	20
Late rainfall	31	50	10	18
Chronically ill household member	38	32	20	9
Weeds and pest	35	41	50	17
Crop failure	11	12	24	10
Livestock disease	36	3	26	0
Livestock death	4	6	11	3
Insecurity/violence	0	3	37	0

The most common strategies used by respondents to cope with food insecurity are to buy less expensive food and to borrow food to alleviate hunger (see Tables 8 and 9). The quality of help that poor rural households can access depends on the strength of their social networks. Information from key informants reveals that the neighbors in the affected communities that a household might turn to for help are likely facing the same challenges.

Table 8. Coping Responses within the Past Seven Days (percentage)

Coping Response within the Past 7 Days	Kebbi (n=89)	Niger (n=34)	Benue (n=70)	Cross River (n=93)
Relied on less expensive food	16	26	17	26
Borrowed food, from friend or relative	21	26	6	26
Limited portion size	11	29	7	23
Restricted consumption by adults	8	6	1	18
Reduced number of meals	13	21	7	20

Table 9. Coping Response within the Past 12 Months (percentage)

Coping Response within the Past 12 Months	Kebbi (n=89)	Niger (n=34)	Benue (n=70)	Cross River (n=93)
Sold more animals than usual	38	56	24	3
Looked for temporary job outside the community	42	56	31	14
Borrowed more money	38	44	19	29
Worked for food only	20	21	7	30
Spent savings	71	68	61	33
Sold land	2	9	11	1
Sold productive assets (e.g. grinding machine, motorcycle)	10	15	7	10
Reduced expenses on health and education	26	18	13	12
Reduced expenses on agricultural, livestock or fisheries inputs	30	21	11	8
Entire household migrated	1	3	26	1
Child labor (engaged children to earn income)	20	9	0	9
Married girls/gave them in exchange for money	2	0	0	0
Took children out of school	10	9	6	9
Sold last female animals	3	18	3	1
Sold all animals	2	9	1	0

Early Warning Systems Inadequate To Warn or Prepare Vulnerable Households before Shock/Crisis

Across the states, information systems to warn about pending disasters or emergencies function poorly. Key informants in Benue reported TV and radio ads warn about potential flooding, but the warnings only

told them to move, without offering any concrete alternatives. With nowhere to go, most remained in their homes and lost crops, animals, and, for some, human lives. Without information systems advising farmers of events that affect production, they cannot manage the potential impacts on their livelihood. The Nigerian Meteorological Agency (NiMet) regularly releases information on the climate situation in the country (through press briefings), advising of floods, early cessation of rains, and droughts. This information generally does not reach smallholder farmers, leaving them without notice or actionable plans.

Unexpected shocks deplete a household's already scarce resources. In some cases, environmental shocks also compromise future production activities. With few productive assets, the costs associated with recovering from shock forces families to face food insecurity, health risks, loss of income, or high levels of indebtedness just to access food or health care resources.

Inadequate Formal or Information Safety Nets in Place To Assist in Recovery from Shocks/Crisis

The desk review identified a lack of formal and informal safety nets within Nigeria to help families cope when shocks occur. Despite movements toward a national social protection strategy, the extremely poor and vulnerable populations have very limited formal social safety nets (Holmes et al. 2012). Living Standards Measurement Study (LSMS) data from 2012/2013 found that less than 3 percent of the population accessed social safety nets at the time of the assessment, mostly for food aid (received by 1.6 percent of respondents) (Nigeria Bureau of Statistics 2014). Current social protection efforts are scattered and are focused on areas where emergency food shortages are occurring. When shocks happen, regardless of their regularity, no safety nets or mechanisms—governmental, traditional, or communal—are in place to mitigate or reduce potential and realized risk. To deal with shocks, most respondents sought additional sources of income, took on loans, or drew on assets and/or ate less often, ate less nutritious meals, or smaller meals. As shown in Table 9, a few respondents resorted to selling their animals or their productive assets, and looked for other alternatives to cope. A significant percentage of respondents in Kebbi opted to engage their children in child labor (20 percent), but this was less likely in the other locations.

Objective 3: A Well-Nourished Population, Especially Women and Children

Improvements in nutrition rely on nutrition-sensitive interventions and approaches, but also on nutrition-specific ones. Our desk review identified poor maternal nutrition and health, particularly among very young women; poor access to health services, especially in northern states; poor IYCF; and frequent illness as drivers of malnutrition. Our fieldwork collected quantitative and qualitative data related to dietary diversity, care practices for women and children, health care provision and utilization, and WASH. We also explored stakeholders' perceptions of nutrition and the different causes of malnutrition between states.

An informant from the Kebbi ADP described the situation as “Most often you find people with what is required at hand, but its utilization is very low. It is an issue of coming in to tell people to eat what they have (rather than selling it). You'll find that people raise a lot of poultry, which gives meat and eggs, you'll find many groundnuts and many soybeans – all of these are high protein value crops. We must come in and tell them good recipes to make with their food.”

Lack of Dietary Diversity

Interviews with national-level experts all pointed to the monotonous diet consumed by small-scale producer households as a main reason for poor nutritional status. The Demographic and Health Survey (DHS) did not report on household dietary diversity score (HDDS) or the minimum dietary diversity for women (MDD-W), two key indicators for the GFSS. Many informants stated that most people do not consume a variety of food because of a lack of knowledge and because they follow traditional food consumption habits. Our household survey provided us the data to compute HDDS and MDD-W. However, we did not collect data on knowledge and awareness or monitor dietary intake over an extended period. It is worth noting that SPRING's data collection was in the second half of September, the beginning of the main harvest season in most of the country; therefore, it is likely that our results, shown in Table 10, captured above average dietary diversity and it may not represent the year-round situation.

Table 10. HDDS and MDD-W by State

	Kebbi	Niger	Benue	Cross River
Household dietary diversity score (out of 12 food groups)	6.54	7.22	7.01	7.64
Minimum dietary diversity—women (%)	56	53	57	54

Different numbers of food groups are used to calculate HDDS and MDD-W because the scores are used for different purposes. The HDDS is a proxy for household-level access to calories, which is one dimension of household food security. The difference between the lowest average score in Kebbi and the highest in Cross River is slightly more than one food group, indicating that sample households in Kebbi have a lower level of food security. Because there are no established cut-off points for number of food groups to indicate adequate dietary diversity for the HDDS, looking at the percentage of households consuming individual food groups is another important analytical and monitoring strategy (FAO and FHI 360 2016). Table 11 shows that household consumption of certain food groups is low across most categories, especially eggs and fruits; and, to some extent, the meat, poultry, and offal group (lowest in Benue). Low consumption of certain food groups is more state specific and includes roots and tubers in Kebbi, fruits in Niger, fish in Kebbi (percentage of households is less than half that in Cross River), and milk and dairy products in Benue (percentage of households is less than half that in Kebbi).

Table 11. Household Consumption of HDDS Standard Groups by State (percentage of households)

Food Groups	HDDS Standard Groups	Kebbi	Niger	Benue	Cross River
1	Cereals	98	97	89	78
2	Root and tubers	8	36	86	87
3	Vegetables	100	97	100	100
4	Fruits	18	3	16	24
5	Meat, poultry, offal	31	39	23	34
6	Eggs	4	3	5	12
7	Fish and seafood	42	72	65	86
8	Pulses/legumes/nuts	81	92	85	61
9	Milk and milk products	46	31	7	21
10	Oil/fats	79	97	93	98
11	Sugar/honey	31	58	34	67
12	Miscellaneous	97	97	97	97

A higher MDD-W percentage means that a higher percentage of women are likely to have more adequate micronutrient intakes. Our data (see Table 12) showed that, in all four states, slightly more than half the women with children under 2 met the MDD, indicating that almost half did not have adequate micronutrient intake at the best time of the year. The intake of eggs and other fruits is limited across all states, and the intake of some food groups among women in certain states is low—such as nuts, seeds, and dairy in Benue; dark green leafy vegetables in Niger; and, to some extent, meat, poultry, and fish in Kebbi. Dietary diversity indicators do not indicate the nuances of intra-household food distribution, especially the quantity and the quality of the foods allotted to the different members of the household.

Table 12. Women’s Consumption of MDD-W Standard Groups by State (percentage of women)

Food Group	MDD-W Standard Groups	Kebbi	Niger	Benue	Cross River
1	Grains, white roots and tubers, and plantains	100	100	100	99
2	Pulses (beans, peas, and lentils)	65	68	63	45
3	Nuts and seeds	39	76	7	60
4	Dairy	45	26	7	22
5	Meat, poultry, and fish	64	85	80	90
6	Eggs	6	6	4	16
7	Dark green leafy vegetables	74	12	47	42
8	Other vitamin A-rich fruits and vegetables	85	97	93	100
9	Other vegetables	74	82	91	71
10	Other fruits	10	3	17	27

Sub-Optimal Infant and Young Child Feeding Practices

Breastfeeding

Table 13 consolidates findings from the survey on IYCF indicators. Consistent with the literature reviewed, our survey results show that the early breastfeeding initiation rate is lowest in Kebbi (27 percent) compared to the other states; the highest rate is in Cross River (75 percent). The percentage of newborns given prelacteal feeds is two to three times higher in Kebbi and Niger than in Benue and Cross River. A higher percentage of children in Benue and Cross River received colostrum without prelacteal feed, with Cross River having the best combined results. Exclusive breastfeeding prevalence among our sample is higher than what is reported in DHS data, but our sample size for this indicator across the states is small (10 < n < 19), and because the question for the indicators refers to the day before, the data presented here is probably overestimated.

Giving water to infants is a widespread practice, as shown in earlier reviews. The commonly cited reasons are religious practice and traditional belief, particularly in Kebbi. Many mothers indicated that husbands and grandmothers of the children instructed them to feed water to infants, saying it is too hot to not give babies water. Respondents also cited traditional beliefs as the primary reason children receive foods other than breastmilk before 6 months of age, but our fieldwork did not have the scope to explore these beliefs in detail.

Complementary feeding

A monotonous diet is often cited as a determinant of poor nutrition among young children; however, our findings suggest that a more nuanced examination is needed. Of the 318 households with at least one child less than two years old, surveyed across all four states, more than two-thirds of children age 6–23 months received a diverse diet per the MDD indicator definition. Dietary diversity is the summary statistics that captures the “proportion of children 6–23 months of age who receive foods from four or more food groups—out of a total of seven groups.” Because the four or more groups could be any four of the seven groups, we looked into the consumption of the several nutrient-rich food groups, particularly dairy, flesh, eggs, and vitamin A-rich fruits and vegetables. We found that percentages of children consuming these food groups are still low, particularly for eggs, vitamin A-rich foods, flesh foods, and, to a lesser extent, dairy products and legumes/nuts.

In addition, barely half the children in our sample, regardless of breastfeeding status, meet the minimum meal frequency, a proxy indicator for energy intake from foods other than milk. This finding suggests that the children who were fed infrequently consumed an inadequate quantity of foods.

Table 13. Breastfeeding and Complementary Feeding Indicators by State

Indicator	Kebbi	Niger	Benue	Cross River
Early initiation of breastfeeding (%)	25	38	34	75
Colostrum was fed to the children (%)	78	47	53	80
Prelacteal feeding was given to children (%)	71	59	21	30
Exclusive breastfeeding (percentage of infants 0–5 months of age who are fed exclusively with breast milk during the previous day) (%)	58	40	50	17
Minimum dietary diversity (6–23 months) (%)	96	75	79	67
Grains, roots, tubers	91	75	73	65
Legumes and nuts	54	33	37	11
Dairy products	42	33	12	32
Flesh foods	27	25	19	15
Eggs	10	4	2	28
Vitamin-A rich fruits and veg	3	25	29	8
Other fruits and veg	60	25	42	15
Minimum meal frequency (6–23 months breastfed) (%)	47	55	39	38
Minimum meal frequency (6–23 months non-breastfed) (%) ^	21	50	53	52
Consumption of iron-rich or iron-fortified foods (%)	27	25	19	15

^Sample size for Niger is 3

Findings on influencers of maternal and child care practices

Our survey results showed that different people, in different states, influence mothers when they make breastfeeding-related decisions (see Table 14). For sources of advice on complementary feeding, our data also showed different patterns in different states (see Table 15). In general, a husband’s opinion matters in all states, but particularly in the North and Central regions (Kebbi and Niger); while women in the South and Central (Benue and Cross River) rely more on themselves, their mothers, and health workers. Child feeding practices, overall, could improve, as reflected by the fact that most caregivers reported they would

reduce the amount fed to children during illness (ranging from 78 percent in Niger to 98 percent in Kebbi; data is not in tables).

Table 14. Who Do Mothers Listen to Most about Breastfeeding-Related Decisions?

State (n)	Self	Husband	Own mother	MIL	Health Workers	Others
Kebbi (89)	12	23	11	20	4	14
Niger (33)	2	14	5	6	3	2
Benue (66)	18	11	12	12	12	1
Cross River (93)	12	7	25	7	37	0

^Others: co-wife and sister-in-law

Table 15. Who Do You Listen to Most When Making Decisions Related to How to Feed Your Child (6–23 months)?

State (n)	Self	Husband	Own mother	MIL	Health Workers	Others
Kebbi (81)	6	40	11	10	2	10
Niger (31)	4	14	5	5	1	2
Benue (67)	20	21	7	8	9	2
Cross River (89)	16	19	25	2	21	1

^Others: co-wife and sister-in-law

Our survey showed major differences in the main caretaker of mothers during the perinatal period (see Table 16). In Kebbi, women rely almost equally on co-wives and mothers-in-law. The mother-in-law is the most important in both Niger and Benue, followed by their own mothers in Benue and others in Niger. However, women in Cross River rely more on their mother, followed by husbands, health workers, and then mothers-in-law.

Table 16. Who Is the Primary Caretaker of a Mother Immediately Before and Shortly after She Gives Birth?

State (n)	Self	Husband	Mother	MIL	Health worker	Others
Kebbi (81)	0	4	11	21	9	26
Niger (31)	2	6	1	9	1	9
Benue (67)	1	6	19	22	4	6
Cross River (89)	5	15	40	12	14	5

^Others: co-wife and sister-in-law

Recently, the Federal Ministry of Health issued a social and behavior change communication (SBCC) strategy for IYCF (FMOH 2017). The strategy summarizes the behavioral analysis for IYCF; it also specifies the practices to be promoted, the objectives, innovations (with a focus on religious leaders), and mobilization processes (including seven groups of IYCF stakeholders). Although our surveys did not identify religious leaders as influencers of IYCF decisions, our key informants consistently referred to them

as influencers in their communities. The IYCF strategy also describes roles and responsibilities of various levels of government and partners.

Public Health Services Not Equipped To Address Malnutrition

The SPRING desk review reported that the use of health services for antenatal care and delivery is low, particularly in Kebbi. The review listed various reasons, including limited capacity of personnel in the facilities to provide services; social norms preventing male workers from serving women; and a preference for traditional care providers. The fieldwork confirmed these factors, and found that people are not motivated to use government facilities because of the cost and the time spent on transportation to/from a facility. There is also the tradeoff between going to primary health care facilities versus the patent medicine stores, which are typically in or around the neighborhood. These findings indicate a low demand for facility-based health care.

SPRING visited 22 health facilities and found all were poorly staffed and stocked, often missing essential drugs and micronutrient supplements or oral rehydration salts. SPRING observed that the community health extension workers (CHEWs), who are in charge of these facilities, had limited or no resources to provide the 10 core nutrition interventions.⁵ Although the CHEWs we spoke to could describe nutrition assessment and treatment protocols, indicating they had received training, based on our observations, children were not routinely assessed for acute malnutrition or given nutrition counseling and other services. CHEWs reported a lack of job aids—counseling cards, illustrations, decision trees, written protocols, manuals, etc.—and little supervision or refresher training to do nutrition counseling. CHEWs shared their frustration in the interviews that the mothers often do not follow medical recommendations. KIIs with higher-level stakeholders revealed that because of the current placement procedures and salary situations, many CHEWs do not reside in their catchment areas and do not have means (transportation or travel allowances) to perform outreach functions; they also lack motivation.

Our KIIs at the national and LGA levels found that environmental health assistants (EHAs), placed at some health facilities, who do clinical work without training. This is typical in states where there are inadequate CHEWs or other health professionals, but more EHA are trained than the communities can absorb. EHAs are a type of extension worker originally intended to work in the communities to monitor and enforce personal, household, and environmental hygiene and sanitation, and to help prevent people from falling ill. The outreach function of EHAs has also diminished over time because of the similar transportation and motivation issues as the CHEWs. We also learned that the Primary Health Care under One Roof (PHCUOR) initiative exists in some states to consolidate all public health care (immunization, nutrition, etc.) programs under a state Primary Health Care (PHC) board. Currently, the job descriptions of the nutritionists are somewhat confusing because some fall under the state the Ministry of Health (MOH) and others under the state Primary Health Care Development Agency (PHCDA).

⁵ 10 *The Lancet* recommendations: Maternal multiple micronutrient supplements to all; calcium supplementation to mothers at risk of low intake; maternal balanced energy protein supplements, as needed; promotion of early and exclusive breastfeeding for six months and continued breastfeeding for up to 24 months; appropriate complementary feeding education; vitamin A supplementation between 6 and 59 months of age; preventive zinc supplements between 12 and 59 months of age; management of diarrhea with zinc and oral rehydration salts; management of moderate MAM; management of SAM

The coexistence of high levels of chronic and acute malnutrition makes nutrition problems both a crisis and an emergency in Nigeria. The Children’s Investment Fund Foundation reports that in 2016, alone, a little more than 250,000 children received treatment for severe acute malnutrition in 11 Nigerian states. This represents an enormous burden to the health infrastructure. Chronic malnutrition often goes unnoticed because it is not as obvious or alarming as severe and acute malnutrition or other symptomatic illnesses. Per statements made by key informants at national and community levels, this results in the neglect of chronic malnutrition. Community Management of Acute Malnutrition (CMAM) is only operational in select areas (Kebbi), and findings from the desk review show that only about one-third of children with severe acute malnutrition access treatment. SPRING found that donor-supported projects enabled the government to include a budget line in 2017 for implementing CMAM in three LGAs—N200 million for purchase and local distribution of ready-to-use therapeutic foods (RUTF), food demonstrations, community volunteers’ motivation, procurement of drugs and data tools. The scalability and the sustainability of these initiatives are unclear. A government key informant also warned that turning to CMAM programming without investing in the prevention and restoration of mild and moderate malnutrition is like “trying to mop a wet floor while leaving the water tap on.”

Poor WASH Practices

Diarrhea and other illnesses are important contributors to acute and chronic malnutrition, and the 2015 National Nutrition and Health Survey found that 45 percent of children under 5 had diarrhea in the past two weeks. Overall, the WASH sector in Nigeria is in critical condition and requires immediate action, especially for poor, rural households: fewer than 30 percent of poor Nigerians have access to improved water and 34 percent of the rural population must travel at least two hours roundtrip to find a functioning improved water source (World Bank Group 2017). Inadequate WASH increases the risk of diarrhea and environmental enteropathy, which can lead to a reduced absorption of nutrients. SPRING’s household survey collected information on a few WASH indicators. Table 17 summarizes the WASH environment observations collected during the team community transect walks and the data from household surveys.

Table 17. WASH Findings

WASH Element	Observations
Water source	Open dug wells are the most common source of water for all survey households in Kebbi (75 percent) and Benue (85 percent); borehole is most common in Niger (60 percent), and river/stream in Cross River (60 percent).
Collecting water responsibilities	Of all who fetch water, women (45 percent) and children (50 percent) together share the burden in Kebbi, with sporadic help from husbands. In Benue, women fetch water in more than 90 percent of households surveyed. Women also fetch water in most households in Niger (about 75 percent) and Cross River (about 65 percent). Husbands and children help (about 10 percent each) and other women in the family (about 15 percent) also help in Cross River; only children and other women help in Niger (10 percent each).
Distance to water source	Most households in Kebbi (95 percent) and most households in Niger (75 percent) and Benue (85 percent) travel <20 minutes to their main water source; in Cross River, more than half of households surveyed travel either 20–40 minutes (30 percent) or more (25 percent) one way to the main water source.
Water treatment	More than two-thirds of households surveyed do not purify water. Half of households in Benue treat water; 80 percent of households do not do anything in Niger and Cross River. Of households that treat water, the most common method is to “strain with cloth” in Kebbi, “filter and strain with cloth” in Benue, “let settle” in Niger, and “boil and settle” in Cross River.

WASH Element	Observations
Toilet facility	Pit latrines are the most common form of toilet for households surveyed in Kebbi and Benue (about 70 percent and 65 percent), bush/field in Niger and Cross River (about 65 percent and 50 percent), indicating a great challenge of open defecation, which is acknowledged particularly widely in Cross River in the KIIs.
Hand washing	Our findings confirmed that almost all households (95–100 percent) surveyed own soap, yet washing hands with soap is not widely practiced, ranging from 3 percent in Kebbi, to 30 percent, 40 percent, and 45 percent in Niger, Benue, and Cross River, respectively. SPRING was unable to ascertain the barriers to handwashing with soap.
Storage of agricultural inputs	Most households we surveyed stored production chemicals inside human dwellings, 65 percent in Cross River, 80 percent in Benue, 90 percent in Kebbi, and 100 percent in Niger, all indicating immediate needs for behavioral change to avoid harm to health of family members.
Animal waste	SPRING observed animals wandering around the compounds of most households surveyed, ranging from 65 percent of households in Niger to 95 percent in Benue (80 percent in Cross River and 90 percent in Kebbi). SPRING observed animal droppings, ranging from 20 percent of households in Niger to 85 percent in Kebbi (55 percent in Benue and 60 percent in Cross River).

Increased Gender Equity and Female Empowerment

Our fieldwork revealed that women play critical roles in the upkeep of families and communities; however, their potential to contribute to both improved nutrition and economic development is not fully realized. Many women participate in agriculture, in part, because of the out-migration of men seeking other livelihoods; some participate along the entire value chain from production to marketing. Women tend to earn less than men, although they are responsible for a range of similar agricultural tasks. Women have childbearing and childrearing functions and care for other household members, which complicates their abilities to work outside the home. In addition, to maintain the social network that they and their families rely on during crises and emergencies, they must keep up with many of the social obligations that disproportionately fall on them.

Several experts shared their insights with us on how gender affects nutrition and other human development indicators in Nigeria. Given that the Nigerian culture defines women’s primary function as the homemaker, there is a misperception that formally educating girls is a wasteful investment. However, literature has well established the association between women’s low levels of education and poor nutritional indicators overall (Martorell and Zongrone 2012). In fact, women’s low education levels have affected program outcomes. Our KIIs shared that the MARKETS II project had to lower the target percentage of women beneficiaries because there were not enough eligible women farmers to participate. Similarly, the Federal Ministry of Agriculture and Rural Development (FMARD) nationwide social investment —Youth Educator in Agriculture—was unable to recruit the desired female participants because of the small number that could meet the selection criteria. KIIs acknowledges that, at a broader level, a lack of education compromises women’s abilities to recognize their own rights, to critically think and make decisions, and to identify and seize opportunities, all hampering women’s empowerment.

Many key informants expressed their concern about the negative impact women’s low education level has on nutrition, as shown in the contrasting data between the northern and southern states. There is a sentiment to appeal for a frank discussion about the social norm to identify ways to improve nutrition without directly confronting the norm. KIIs suggested ways to work within traditional norms to avoid direct confrontation. One strategy that stood out from our KIIs to gradually change social norms is to equip

women with knowledge and skills that enable them to earn income. Empowering women this way will not only elevate their status within their own household but also within their communities. This change, in turn, will create a stronger position for women to make better nutrition and health decisions for their households and to shape local markets to better supply more nutritious foods to make up a high-quality diet.

More Effective Governance, Coordination, and Institutions

Coordination

KIs reported duplication of effort related to the nutrition coordination in the GoN. Two multi-sectoral nutrition coordination mechanisms exist, one led by the MOH and the other by the Ministry of Budget and National Planning (MB&NP). The MOH is the Scaling up Nutrition (SUN) focal point in Nigeria. MB&NP, on the other hand, was to the Ministry of Health establish the National Committee on Food and Nutrition (NCFN), which is the national focal point for nutrition policy, program planning, and coordination, as dictated by the National Policy on Food and Nutrition in Nigeria (NPFNN⁶). Our KIs described the common perception of these duplicate efforts as slowing progress in creating a nutrition budget line, as well as slowing adoption of NPFNN among the line ministries and the states. Our fieldwork also confirmed the lack of specific budget lines to support nutrition coordination and the lack of functioning state or LGA committee on food and nutrition.

Both mechanisms have largely overlapping membership and they compete for stakeholders' time and resources. Several donors and implementing partners have formed a separate working group to push nutrition forward on the national policy agenda and budget discussion. Our review of the NPFNN document showed the 2007 approval of a National Council on Nutrition (NCN) led by the vice president of GoN (also chairperson of MB&NP) while NCFN is the designated technical arm of NCN, more than 10 years later the vice president inaugurated the NCN—November 22, 2017.

On September 16, 2017, Nigerian media widely covered the vice president's inauguration of the Presidential Council on the Sustainable Development Goals (SDGs). Because nutrition is prominently featured in SDG2: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture, the timing appears to be ripe to formalize the NCN.

Rollout

SPRING's interviews with national-level stakeholders revealed other challenges causing the slow adoption of national nutrition policies. One is that the line ministries and state governments lack the technical capacity to identify actionable entry points for nutrition. For example, public agriculture research and higher education institutions are named stakeholders on the nutrition policies and they do attend meetings, but there is little understanding of how to link their work with nutrition outcomes. We learned of a few research groups and NGOs working closely with the private sector to scale up adoption of specific nutrition-sensitive technologies, such as Aflasafe—International Institute of Tropical Agriculture (IITA)—and collapsible storage boxes and cold room storage (GAIN). However, we were unable to meet

⁶ The policy provided a clear description of the changes of nutrition coordination in Nigeria since the early 1990s.

many signatory ministries on NPFNN to explore their efforts to incorporate nutrition into their institutional mandates.

Another challenge with regard to the rollout of NPFNN is the limited political or fiscal leverage Nigeria's federal government has to encourage the state governments to adopt national policies and implement programs. Similar to agriculture, health is on the second schedule, part II number 17a of the concurrent list of the 1999 constitution; therefore, there is little "push" effect from federal government exists. One government official shared, "At the national level, we are 80 percent about policy. States have to fund implementation, but they don't." State governments have yet to commit to nutrition agendas. KIIs stated that the most useful "inroads" for a state governor would be to make a business case out of nutrition. Although no KIIs mentioned it, our review noted a World Bank costed plan for Nigeria that includes a cost benefit analysis for scaling up the 10 core nutrition-specific interventions, by state. Another way to negotiate state engagement, as stated by KIIs, is to provide evidence and show change, over time. Ironically, despite the many nutrition datasets, our KIIs expressed concern of not knowing "where things are with nutrition in Nigeria." Many KIIs were dissatisfied by the poor results of some donor-supported investments in nutrition, such as micronutrient supplements and management of acute malnutrition—citing high cost and lack of sustainability—as evidenced in the worsening trend on key indicators (personal communication in reference to MICS 2017, informed by USAID Nigeria mission, MB&NP, and the World Bank).

We learned that USAID funded Nigeria's first food consumption and nutrition survey (FCNS) in 2001 and that the data analysis never took place because of shifts in interest and lack of a food composition table. The necessary table was unveiled at the 47th Nutrition Society of Nigeria annual conference on September 17–23, 2017. A KI confirmed that data analysis of the 2001 survey has resumed. KIIs from the donor community confirmed that there has been a conversation to support a second round of FCNS survey in 2018.

Lack of awareness of the importance of malnutrition at all levels stood out as another major challenge in the rolling out of nutrition actions, because most forms of malnutrition are invisible. There is also a notion that good nutrition is inaccessible for low-income households, as evidenced by what we heard from communities and professionals in the states.

In response to questions related to how to address the aforementioned challenges, several KIIs expressed that civil society organizations (CSOs), with donor support, could potentially play a "pull" role to assist the line ministries and state governments in customizing the guidance of national policies into state-level action plans. These plans would need to address the various sectoral and context-specific drivers and causes of malnutrition, while creating strong ownership of nutrition by the respective state and institution. Some key informants mentioned that CSOs, with government and private extension systems, could help the public research entities contribute to nutrition by providing information on the development of more context appropriate nutrition-sensitive technologies and helping scale up their adoption.

IV. Summaries and Recommendations

Most of our key informants agreed that malnutrition in Nigeria is a national crisis. The prevalence of malnutrition and some known determinants is higher in the northern GFSS-focus states than in the south, and the number of malnourished children is still high everywhere.

SPRING's desk review and fieldwork provide a detailed picture of the landscape in which GFSS will operate in the focus states.

The United Nations Children's Fund (UNICEF) nutrition conceptual framework guided the structure of the desk review and organized the findings according to the five main immediate and underlying causes of malnutrition. Conversely, the fieldwork used the three objectives of GFSS and furthered the quest of a multi-sectoral design of programming that aims to improve maternal and child nutritional outcomes. Despite the organizational differences, our findings from the fieldwork confirmed that the six recommendations from the desk review were on target and led us to identify interventions that USAID may consider supporting to achieve the desired nutritional outcomes. The recommendations presented in this section are organized by the six areas from the desk review, with an additional area that emerged from our fieldwork. They are followed by examples of activities with a higher likelihood of generating measurable nutrition-specific and nutrition-sensitive outputs and outcomes. Given the complexity of food, health, and market systems in Nigeria, the recommendations we propose will need to be adapted, based on the contexts of the GFSS target states.

The goal for nutrition work in Nigeria, as put by one key informant, should be to "achieve virtual elimination of malnutrition in the south and substantial reduction in the north."

1. Scale up high-quality information and communication on behaviors and practices

Our desk review found that poor child feeding practices and other household health, agriculture, and WASH behaviors contribute to high rates of malnutrition. Misconceptions, cultural practices, and other beliefs drive these behaviors. We proposed targeted, multi-channel, and high-quality SBC interventions; including, but not limited to, information and communication for the whole household—potentially by mobile platform—as well as mother support groups that take advantage of the existing national IYCF materials. Our fieldwork findings support this recommendation, and further highlight the fact that SBC programming must include flexibility to adapt specific messages for the local context and they must be implemented at scale.

- Support behavior-centered programming—including comprehensive SBC messages, customized to local contexts—with clear, consistent information on the desired behaviors and practices. Advocacy efforts should target different types of stakeholders at different levels: including caregivers, influential family and community members, and traditional and government leaders. Multiple channels to disseminate this messaging should leverage the interest and voices of trusted community members. Formative research that provides concrete evidence on current religious practices and traditional beliefs that lead to suboptimal practices are required to construct appropriate messaging. Priorities for research and development of messages that target various groups of stakeholders must aim to create demand for nutritious and diverse foods, with particular emphasis on overcoming barriers to

immediate and exclusive breastfeeding of children 1–6 months of age, using appropriate complementary feeding, and ensuring women’s and household dietary diversity.

- Invest in strengthening the knowledge and communication skills for agricultural extension and health workers. Community health workers and health providers require better supervision, support, and resources on how to put nutrition counseling training into practice and, in many cases, require nutrition training, as well.
 - Agriculture extension workers, especially existing ADP and community volunteers, need refresher training on good agricultural practices, highlighting those particularly pertinent to nutrition, such as: pre-harvest practices and use of labor-saving technologies; safe chemical use, storage, and disposal; promotion of local production and application of organic fertilizers and pesticides; intercropping to minimize the need to apply weed killers; intermittent harvest and proper timing of harvest to extend the season; post-harvest processing and storage practices to minimize spoilage and nutrient loss; washing and sanitizing produce at the marketplace; awareness of nutrient content of locally available foods; and preparation of foods safely and hygienically.
 - Resilience-focused messages, including climate-smart agriculture practices, should be incorporated into training. Specific topics may include dry-season irrigation, water management, crop rotation, and harvesting methods to improve soil fertility, as well as information on finance and other inputs and services that would enable farmers to adopt the promoted practices.
 - Together, these efforts will sustainably increase the likelihood that diverse and nutritious foods will be grown and made available and affordable to support improved dietary intake and income to invest in better care and feeding of women and young children.

2. Invest in a systems approach to deliver services supporting nutrition

Our desk review emphasized investment in the health system to strengthen the capacity of providers to deliver nutrition services and increase service use by women and children. SPRING suggested a focus on increasing community-based service delivery in the short term and improving the overall quality of health services over the long term with better training, support, and accountability approaches. Findings from our fieldwork enabled us to identify several specific intervention entry points. We also recommend strengthening the management of acute malnutrition within routine child health services, such as ensuring that all children attending health services are screened using a MUAC tape, regardless of the reason for their visit, and incorporating CMAM training within routine health training protocols.

- USAID-funded activities can support states to clarify the job description and institutional affiliation of the nutritionists under the state PHCUOR initiative—some are currently under PHCDA, while others are under the MOH. We recommend that they be placed under PHCDA so their functions can go beyond drafting policies and guidance—which are primary functions of the MOH—to more specific actions, such as delivering nutrition services and interventions, as mandated by GoN and supported by USAID-funded activities.

- USAID could support the enhancement of the supply and demand of nutrition and health services at the community level by improving the quality and alignment between the supply and demand of such services.
 - On the supply side, strengthen hands-on nutrition skills on assessment, counseling, referral, and treatment of staff working in local GoN health facilities, and reinforce the appropriate application of such skills. Investment should be on two types of facilities: Model Primary Health Center (one in each ward) and PHC (one per group of villages). PHC center serves as the referral center for the PHC clinic. The types of staff most implicated in health facilities and outreach include CHEWs and EHAs, per requirements detailed in the Minimum Standards for Primary Health Care in Nigeria,⁷ and with additional in-service trainings. For instance, schools of health technologies that train CHEWs should establish standard operating procedures (SOPs) for nutrition, with a focus on interpersonal communication. Additionally, USAID investments can support curriculum redesign and facilitate the reform of recruitment and dispatch schemes by advocating for reinforcement of the incentives (detailed in the minimum standards but not fully implemented), such as providing accommodations for the staff of the PHC centers and clinics, and issuing the call duty allowance, as two possibilities.
 - On the demand side, in addition to SBCC discussed in recommendation 1, above, per GoN structure, ward development committees and village development committees should be established, as well as a sub-committee within these committees to work on health services. To align the supply and demand, USAID investment can support strengthening the capacities of these committees to work with the communities to identify the nutrition and health needs for the two levels of PHC facilities.
- Leverage untapped resources to deliver and demonstrate knowledge and practices on healthy diet and food preparation. For instance, in Zuru LGA of Kebbi state, we learned that the Department of Agriculture has a nutrition unit with only two staff to deliver all the nutrition programs, while their home economics unit has 50 staff to teach communities how to cook and bake. These home economics personnel could be given additional training to disseminate and demonstrate nutrition messages and practices.
- Strengthen supply and inventory management to ensure the stock of nutrition products included on the essential drugs list, as seen in the minimum standards—and those that are not part of the standards, but are required by the 10 core nutrition interventions at facility levels—identify and diagnose any bottlenecks in the supply chain. Collaborate closely with the National Essential Medicines Coordinating Mechanism, the USAID Global Health Supply Chain Program, and World Bank's Accelerating Nutrition Results in Nigeria project, which focuses on select states to increase access to a basic package of nutrition-specific interventions. Although efforts are underway to improve the local supply of RUTF, local production requires careful standardization and quality control. It may also be subject to more frequent supply chain issues, particularly as production becomes established. Poor management of RUTF poses a major risk to CMAM service delivery.

⁷ <https://www.medbox.org/nigeria/minimum-standards-for-primary-health-care-in-nigeria/preview>

3. Engage and empower women and girls through context-appropriate platforms

In Nigeria, women have most of the responsibility for feeding and caring for children, themselves, and other household members. A higher percentage of women get married and become pregnant at a young age, more so in the north than elsewhere. Our desk review called for interventions to serve women and girls' health and reproductive needs, to improve women's access to agriculture and livelihood resources, and to tackle the cultural and gender norms that prevent women's empowerment. Findings from our fieldwork provided us more insights on ways through which women could collectively build a sense of sovereignty, particularly those connected to nutrition. Ideas that emerged include the adoption and application of technologies that save labor and generate better yield and income. With more income, women's ability to purchase more and diverse foods should increase and opportunities for increased decision making power on choices of foods grown, purchased, prepared, and consumed, including WASH products and services; as well as abilities and skills that would enable them to more effectively engage in diversified livelihoods and defend their nutritional wellbeing.

- Create stronger networks for women by leveraging existing groups. One way is by linking women with role models with whom they are comfortable learning from, such as women from their own communities or professional groups. Examples mentioned to us include the Nigerian Women in Agricultural Research for Development (NiWARD) and the Federation of Muslim Women Organizations of Nigeria (FOMWAN). Role models can assist programs in designing and disseminating technologies that save women time and labor and in navigating possible behavioral changes. In Kebbi, where women's movement is restricted, WACOT and NCRI mentioned that they have successfully targeted women by encouraging small-scale at-home food processing, mainly parboiling of rice. Another potential platform is the Women in Agriculture (WIA) program of the ADP, designed to provide both production and nutrition information to women. USAID-funded programs should explore mechanisms to collaborate with these entities and encourage them to undertake outreach to and activities with adolescent girls who may not be allowed to participate in women's groups, but who offer great promise to break the intergenerational cycle of poverty and malnutrition if reached before they become pregnant and lactating mothers themselves.
- Enable women to participate effectively in value chain and/or in home garden production. GFSS investment should design interventions that provide women with access to inputs and technical assistance while they develop agricultural and livelihood skills by supporting government or project-funded extension services. In some areas of Nigeria, women are already playing prominent roles in certain parts of the value chains, such as parboiling rice. In areas where women have limited mobility, however, home garden production appeared to be a more acceptable intervention entry point, considering the current norms. Home gardening (not necessarily tended by women) is already widely practiced and the varieties produced are predominantly indigenous, often nutrient-rich species. Both approaches can contribute to improved nutrition. Home production can lead to higher consumption of more diverse foods, especially in more remote communities, far from markets. Income from the sale of excess production and proceeds from food processing can strengthen the resilience of women and her household by securing better access to nutritious foods and health services in times of difficulties.

- Promote joint decision making for household livelihoods and expenditures as a part of behavior change strategies to engage men and women in dialogs that build win-win opportunities for nutrition and livelihoods. Several of our KIIs felt strongly that programs must allow for sharing of nutrition-related decisions among family members to effect changes, such as intra-household food distribution, introduction of new foods, or women having a voice on feeding and health care for children and themselves.
- Target adolescents/youth in all programs and support the development of innovative technologies that are attractive to youth; this will engage them in all aspects of agriculture, from business to production and from marketing and sales to research. Although girls' education may be a contentious issue in parts of the focus states because of religious and/or traditional norms, USAID should advocate for and support measures to keep girls and boys in school longer and to support scholarships and curriculum development at the level of the secondary and university or trade school that addresses the agri-food system.

4. Ensure sustainable and diverse food supply for adequate dietary intake year-round

In a country where agriculture is supplying adequate calories, malnutrition is likely most associated with low availability of foods in rural markets, especially diverse, nutritious foods, and poor accessibility or affordability to such foods; this may be due to poor distribution systems and inadequate infrastructure to maintain the quality of perishable foods. Other contributing factors include poor understanding of what comprises a good age-appropriate diet and why it is important to consume such a diet; and cultural norms, tastes, and traditions that affect food demand and desirability. In the desk review, we recommend a two-pronged strategy, to overcome these issues: (1) in the short term, address household and community food insecurity as it occurs; and (2) strengthen agriculture and market systems over the longer term. To do this, immediate assistance must be made available to areas affected by severe food shortages and, at the same time, a systems-strengthening approach must be employed to improve year-round food availability—within households and local markets—in areas that have seasonal food shortages. In line with this thinking, the recommendations below are oriented toward supporting both short- and long-term interventions. The nutrition-sensitive agriculture actions described below could affect nutrition only if age-appropriate consumption practices improve; they will not improve nutrition completely on their own. The nutrition-specific ideas presented above under recommendations 1 and 2 must be implemented in an integrated way with the recommendations that follow to reduce stunting and improve year-round food security.

- Invest in partnerships with the private sector to improve farmers' access to inputs and technologies. The need for innovative solutions to increase access to services that farmers need along the value chain figured strongly in our findings. There are examples of companies who are successfully entering this space, such as AT&S Ltd, which provides inputs and microfinance to farmers in Benue via the hierarchy of religious organizations; they have faced minimal defaults. Similar strategies can be used to orient male and female members of farmer organizations to the benefits of budgeting for enhanced agricultural returns and household needs—including investments in a diversity of nutritious foods for all family members year-round, savings for health care costs, and investing in hygiene and

sanitation products and infrastructure. This approach could also promote joint decision making. As SPRING has seen in Zambia, village savings and lending association (VSLA)-type microfinance approaches, such as Catholic Relief Service's Savings and Internal Lending Communities, have already proven to be effective in promoting these nutrition-sensitive agriculture messages. Engaging the private sector can also help ease the high cost of inputs—thereby increasing smallholder earnings—by facilitating linkages between relevant players, including financial institutions, agro-input dealers, processors, seed companies, and others.

- Develop the infrastructure for communication channels for farmers to access information, such as the prices of inputs and outputs or potential weather events. Leveraging technology, such as text messaging or phone applications, is also possible, as is using agricultural extension agents to provide action-oriented nutrition-sensitive agriculture messages for farmers. Based on a landscape analysis that SPRING undertook in Ghana for the potential for agricultural information systems to be more nutrition-sensitive (i.e., to promote nutrition-sensitive agriculture practices, as well as to share price and weather information) several key findings emerged, including the need for communication channels to be reliable, accessible, and contextually specific. USAID could invest in better coordinated health, nutrition, and agriculture information systems. These systems would require a more systematic review and description of the agriculture, health, and nutrition information platforms; including details, such as catchment areas, numbers of targeted end users, gender of targeted end users, the specific actors that generate information in these platforms, and the extent to which information being shared is being taken up by end users. The review must also address whether generators of messages are aware of issues related to nutrition to enhance nutrition-related messages and build capacity at all levels. Additionally, building the capacity of the ADP system, NiMet, River Basin Development Authorities, and State Emergency Management Agency (SEMA), and facilitating their collaboration would ensure that important weather-related information reaches community members to assist with year-round planning and weather shock mitigation.
- Develop proper storage infrastructure to improve the composition of diets during the off-season. Prioritizing vegetables and fruits, particularly, would increase the availability of nutrient-dense foods in markets for more months of the year. It could help make these foods more affordable, in addition to creating an incentive for farmers to increase production. For example, GAIN's Postharvest Loss Alliance for Nutrition (PLAN) supports a pilot of community and household-based cool boxes and rooms powered by solar energy.
- Strengthen market systems by linking farmers to markets to enable them to sell surpluses at reasonable prices and by establishing protocols that improve food safety in markets. Specifically, USAID can—
 - Support or provide trainings for farmers to improve their capacity to supply larger formal markets and to receive better payment terms that enhance the growers' ability to understand and meet industry specifications; consequently, improving food safety, increasing incomes and—with guidance through agriculture and health information systems—improve purchasing power that enables them to afford good nutritional choices and outcomes.

- Improve food and market safety by training health inspectors and empowering them to provide proper oversight and enforcement of market regulations. As promoted by GAIN, USAID might consider the continued investment in strengthening food product quality and testing protocols to reduce aflatoxin and other fungal contamination that may contribute to poor nutrition, especially among young children.
- Support behavior change communication to help traders and other relevant stakeholders understand the importance of food safety and proper hygiene. Cleaner and better regulated markets will improve the food system and, consequently, the quality of foods consumed, reducing the risk of contamination.
- Continue the work done by the MARKETS II program of linking farmers to processors and markets, particularly in states where this link is poor or nonexistent: for instance, rice in Cross River. Doing this will raise farmer incomes and ensure better quality output.
- Wasting is linked to seasonal food insecurity; therefore, identify communities with children especially vulnerable to SAM and ensure that CMAM infrastructure is accessible and functional. Risks and hazards are a part of life and those most vulnerable are also those who stand to be most affected by malnutrition. The SPRING team found that, although CMAM programs exist, they are not present in all states; protocols and supplies should, at least, be available for emergencies.

5. Prioritize pro-poor investments and interventions

As noted in our findings, high rates of poverty, consistent and rapid rise of food prices, lack of appropriate infrastructure and human capacities within agri-food systems, and few opportunities for diversifying within or beyond agricultural livelihoods combine to make it very difficult for Nigerian families to purchase diverse, nutritious foods and nutrition-related products and services. Yet most current approaches applied to support agricultural and economic growth do not sufficiently target the poorest households who are at greatest risk for malnutrition because of food insecurity. In addition to holding implementing partners accountable to reaching the rural poor through their activities and reporting on benefits, USAID has an opportunity to promote longer-lasting solutions by advocating for improving the reach and access of GoN and community-based social protection systems and promoting the engagement from public and private sector actors. These opportunities for private sector participation through financial and insurance schemes may help families purchase and consume diets that are more diverse for more months of the year and ensure access to adequate calories during the lean seasons.

- Facilitate access to finance for farmers to increase their asset base and enable investment in changing agricultural practices to increase productivity, mitigate effects of climate change, and enhance year-round earning opportunities. The increased income base can contribute to enhanced resilience and, in turn, enable farmers to afford health and crop insurance and to build savings, which will enable them to mitigate against food and health care costs when shocks occur. USAID investments could encourage the private sector to identify innovative finance and insurance solutions for the rural poor, protecting families' abilities to purchase and grow food even when shocks occur. With support, implementing partners could facilitate linkages to private sector insurance and savings providers that

may help guarantee funds against loss; they could use, for example, informal mechanisms—such as VSLAs—and mobilize religious organizations to invest in the poor via traditional tithing like zakat.

- Build social support systems within communities for people to turn to when shocks occur, through community capacity building, particularly using faith/community-based organizations as anchors. These local structures are already in most communities and could be strengthened so that communities can systematically prepare for and recover from shocks. Examples of interventions for USAID investments to consider preparing the communities during times of acute shock, such as natural disasters or conflict include—
 - Encourage social and community networks to share labor associated with rebuilding or recovering assets, and mitigating high time and energy burdens for pregnant and lactating women.
 - Help mother’s groups, farmers’ groups, and other community groups plan for emergencies and identify threats to nutrition in times of shock and stress. In places where flooding is prevalent, use of raised food and crop storage structures, identification and use of raised areas of land for securing animals, or use of water-tolerant seed varieties can contribute to retaining food sources and minimizing food losses during and after floods. Mother’s groups can establish meeting points and encourage pregnant and lactating women to take the time to breastfeed, rest, and share in child care even during turmoil. Continuing to promote breastfeeding during shocks is critical to mitigating diarrhea for children under 6 months of age.
 - Facilitate emergency preparedness planning with community groups to raise awareness of the nutrition and health threats associated with poor water and hygiene infrastructure and practices. Access to potable water is perhaps the most important thing for maintaining the nutritional status of children under 2 years and all other family members, whether in acute or prolonged crisis, and whether in drought or flood conditions.

6. Support nutrition coordination and rollout of strategies and plans

Nutrition is gaining prominence as a national priority, but commitment and funding for nutrition, health, and agriculture varies widely by state. USAID’s multi-sectoral approach to nutrition offers an argument and opportunity for supporting nutrition coordination across sectors. In addition, USAID’s connections with implementing partners and local civil society can bring greater engagement and accountability for nutrition—both nutrition-specific and nutrition-sensitive programming—across stakeholder groups; this includes, for example, the SUN network or the National Nutrition Council. In addition to the recommendations included in our desk study report, which included the need for better data on nutrition financing and more up-to-date dietary guidelines, our field survey also provided insights leading to the following recommendations for improving nutrition coordination and strengthening the implementation of multi-sectoral nutrition strategies and plans at the national and state levels:

- Strengthen government coordination and support improved ownership of nutrition by multiple sectors. USAID, a respected development partner in Nigeria, is well positioned to help GoN consolidate and strengthen its nutrition coordination to accelerate the multi-sectoral buy-in of the National Policy on Food and Nutrition in Nigeria (NFPNN) required to create a designated nutrition budget line. Nutrition is a crosscutting issue that requires input from multiple ministries, departments,

and agencies, as we learned in our interview with the deputy director on NCFN.⁸ We recommend USAID investments support advocacy for a specific nutrition budget line across each of these levels of government, so they can not only articulate their use of the funds, but also include the funding in the budget required to continue to build the capacity of nutrition focal persons. USAID funding could strengthen NCFN's technical and budgeting capacities to support nutrition focal persons across ministries, departments, and agencies in identifying entry points for nutrition within their sector(s) and to coordinate their interventions with other budget line uses to ensure cost effectiveness.

- Investment to support a position in NCFN, or in the recently inaugurated NCN, could empower NCFN and its state counterparts to take further actions on nutrition. One successful example of donor-funded nutrition advisor positions in federal ministries is the Special Advisor to the Minister of FMARD, which has helped generate enthusiasm on nutrition within FMARD; this is evidenced by the fact that ADPs are currently being upgraded to become a nutrition and food security department under FMARD.
- Support advocacy to legislators on the importance of nutrition because the legislature has oversight functions and can, therefore, demand better performance on nutrition by asking ministries, departments, and agencies to submit indicators in the annual budget appropriation processes.
- Support the CSO community to assist state governments in prioritizing nutrition. Similar to assisting the line ministries in identifying priority entry points for nutrition in the nutrition budget line, USAID can assist state legislatures and state governments in customizing the guidance of national policies into action plans to address the context-specific drivers and causes of malnutrition. As a first step toward understanding geographically specific gaps for nutrition across the GFSS target area, USAID could support the implementation of Nigeria's second Food Consumption and Nutrition Survey by assisting with the survey design, capacity building and training, data collection and analysis, as well as dissemination and advocacy.
- Strengthen research—extension/NGO/private sector to farmer communications and networks—to scale up nutrition-specific and nutrition-sensitive practices and technologies. Donor funding can support and, potentially, expand the scope of Research-Extension-Farmer-Inputs Linkage System (REFILS). USAID can support the development of prototype technologies and equipment, and facilitate dissemination of research findings to end users. Innovations that merit particular attention should increase yields, improve produce quality (nutritional value, appearance, and shelf life) for consumption and sale, reduce labor and time burden, and improve WASH practices.

7. Build strong evidence on agriculture-nutrition linkages

A recent IFPRI publication (Ruel et al. 2017) points out that a growing number of governments, donor agencies, and development organizations are committed to supporting nutrition-sensitive agriculture as part of multi-sectoral nutrition strategies needed to achieve their development goals. Although consensus exists on the pathways through which agriculture can influence nutrition-related outcomes, empirical evidence on agriculture's contribution to nutrition is still weak. Although a rich body of evidence is

⁸ <http://www.enonline.net/shapingnationalfoodandnutritionpolicyinnigeria>

emerging from recent studies on the nutrition impacts of nutrition-sensitive agriculture programs and other agricultural investments, gaps remain in knowledge. The findings of Ruel et al. (2017) were very much in line with SPRING's findings from our fieldwork, reminding us that while nutrition-sensitive agriculture programs can help improve nutrition outcomes in both mothers and children, they only do so when they include, or are specifically linked to, nutrition and health behavior change communication and interventions designed to empower women. From this knowledge, USAID Nigeria has an opportunity to contribute to the growing global evidence base for improving nutrition by integrating nutrition-specific and nutrition-sensitive program approaches, as described below.

- USAID-funded activities could contribute to the global evidence on the contribution to nutrition from nutrition-sensitive programming by establishing a more rigorous data collection system at the activity level; it would monitor the pathways through which agriculture-led economic growth leads to improved maternal and child nutrition.
 - Track the dietary pattern of households, such as the sources of foods (home grown, purchase, gifted, or bartered, etc.), the kinds of foods, and the quantity of foods consumed at different times during a production year. Analyze these data together with the suite of household characteristics to improve the efficiency of targeting and effectiveness of different interventions.
 - Record the quantity of different foods consumed by women of reproductive age and children less than 2 years via repeated dietary recall. Compute the actual nutrient intake—which dietary diversity scores cannot capture—using the newly available Nigerian Food Composition Table (Version 1.0)⁹. Such data would be critical to establish the association of between USAID-supported interventions and the fluctuation and trend of nutrient intake, as well as the subsequent high-level nutrition indicators required by GFSS.
 - In addition, USAID-funded mechanisms should also collect detailed maternal and child health and care information—such as antenatal care, iron folate acid supplementation, incidences of diarrhea and pneumonia, deworming, hand washing with soap, and vaccinations—to ascertain the interaction effect nutrition-sensitive and nutrition-specific interventions have on maternal and child nutrition indicators.
- Additional research needs include—
 - Explore religious practices and traditional beliefs that discourage exclusive breastfeeding to inform the approach for future interventions and advocacy.
 - Conduct representative surveys that measure the suite of dietary and anthropometric indicators with regression analysis to determine association.
 - Determine context resilience indicators for Nigeria to track program progress

⁹ <http://nigeriafooddata.ui.edu.ng/>

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Annex 1: Drivers of Malnutrition in Nigeria: Analysis of Secondary Data Sources

Summary

This brief provides information about the status, trends, and drivers of malnutrition in Nigeria; it forms part of a wider nutrition assessment that will inform the development of a five-year, Global Food Security Strategy (GFSS) interagency country plan for the U.S. Government in Nigeria. In the first stage of this assessment, the United States Agency for International Development (USAID) asked the Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project to undertake a desk review of the available secondary evidence to summarize the current nutrition situation, identify the primary drivers of undernutrition in Nigeria, and explore the potential opportunities for strengthening nutrition investments in seven¹⁰ targeted states representing the four different geopolitical zones of the country.¹¹

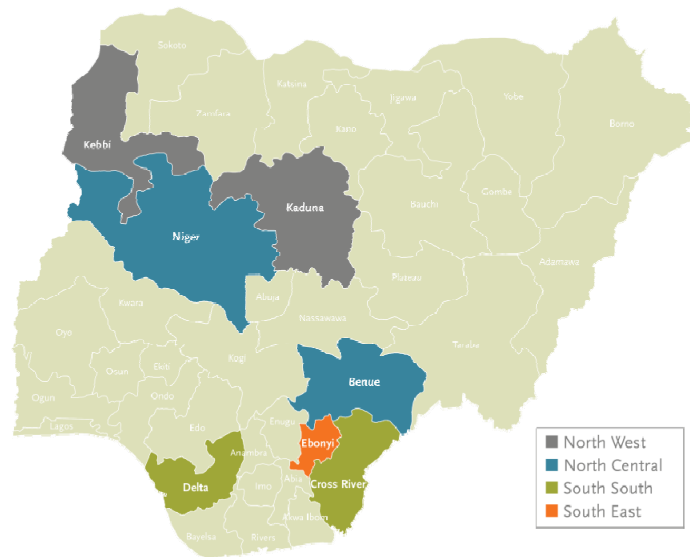


Figure 2. Seven Targeted States and Associated Geopolitical Zones of the Nigeria Global Food Security Strategy

This review drew from an analysis conducted in 2017 by the International Food Policy Research Institute (IFPRI) on the drivers of malnutrition in northern Nigeria; it expanded the scope to increase the focus on national and regional data. Data sources included survey reports from the Demographic and Health Survey (DHS), the National Nutrition and Health Survey (NNHS), and the Living Standards Measurement Study (LSMS); national policies and strategies related to nutrition; food security briefings; research reports; and other project briefs and reports. SPRING also conducted the initial key informant interviews with in-country contacts (see table 19).

The drivers of malnutrition are complex and interrelated; to analyze key drivers in a specific context, a multi-sectoral and multi-disciplinary view is required. In most settings, it is difficult to pinpoint the exact causes of malnutrition, but it is possible to identify trends, correlations, and likely contributing factors to the burden of malnutrition. The following key drivers emerged from the literature review, with major differences between states and zones noted (see table 18 for district-specific findings):

¹⁰ If the security situation in Nigeria allows, the GFSS target states may expand to include Adamawa, Borno, Gombe, and Yobe in the North East zone of Nigeria.

¹¹ The targeted states are Kebbi and Kaduna in the North West zone, Niger and Benue in the North Central zone, Ebonyi in the South East zone, and Cross River and Delta in the South South zone.

- Poor maternal nutrition and health, particularly among adolescent girls, is positively associated with higher stunting in children. Measures of maternal nutrition, adolescent reproductive health, and access to health services are markedly worse in the northern states.
- Poor breastfeeding and complementary feeding practices, which contribute to high rates of illness and poor nutrient intake among children less than two years of age. These practices are evident throughout Nigeria.
- Frequent illness among children, and the low availability and utilization of preventive and treatment services. Access to, and utilization of, health services is particularly constrained in the north.
- Seasonal food insecurity and a lack of diversity in household diets overall is driven by underdeveloped agriculture and market systems, as well as conflict and shocks. Food shortages occur seasonally throughout the country, and are exacerbated by volatile (and rising) food prices. Households in southern states may be more affected by routine, seasonal disruptions to food access, while conflict and insecurity in the North East has created additional areas of severe food insecurity.

In addition, there are cultural and gender norms that contribute to poor nutrition and health among women, including a lack of commitment and resources for nutrition that underlie and exacerbate the challenges noted above.

Overview of nutrition situation

Nigeria's Demographic and Health Survey (2013) reports small improvements in rates of stunting, from 42 percent of children in 2003 to 37 percent of children in 2013 (DHS 2013). But, as a whole, Nigeria is facing a nutrition crisis on multiple fronts. One out of every three Nigerian children is stunted, and 7.8 percent of children are wasted.¹² An estimated **1.9 million children** suffer from severe acute malnutrition, placing them at immediate risk of premature death. An estimated 71 percent of children and 48 percent of women of reproductive age are anemic (Stevens et al. 2013). Women's nutrition is of particular concern, with a double burden of thinness (11 percent) and obesity (25 percent) (DHS 2013). In general, undernutrition and health outcomes are worse in the North East and North West zones, compared to the Southern and Central zones. However, Nigeria is a large, diverse country and the prevalence of undernutrition varies widely across, and even within, states.

For many children, stunting begins at birth and deteriorates soon afterwards. The prevalence of stunting in children in the North East and North West zones increases rapidly after birth, compared to the southern zones, where stunting begins to increase at about 5–6 months of age (IFPRI 2017). Much of the stunting may occur even before the infant is born because of poor maternal nutrition. Although country-level data are sparse, a global analysis indicates that 23 percent of full-term Nigerian babies—born at 37 weeks or later—are born small-for-gestational age (SGA) (Lee et al. 2013). A meta-analysis of 137 countries found that being born SGA is the leading risk factor for stunting among children under the age of 5 (Danaei et al. 2011).

¹² Stunting in children ranges from 16 percent in the South East zone, to 54.8 percent in the North West zone (DHS 2013). while global acute malnutrition prevalence ranges from 4.5 percent in the North Central to 10.2 percent in the North West (NNHS 2014).

Although chronic and seasonal nutrition problems are prevalent throughout the country, in the North East zone the impact of conflict and other shocks has resulted in acute levels of food insecurity and potential pockets of famine (FEWS NET 2017a). This situation requires immediate action to prevent an increase in acute malnutrition and mortality. An estimated 3.1 million people in Borno, Yobe, and Adamawa states received emergency food assistance or cash transfers in the first half of 2017 (FEWS NET 2017a). However, much of the North East zone has been inaccessible to aid agencies, so the number of people who need assistance is probably much higher.

Drivers of malnutrition in Nigeria

The primary findings from this review are organized according to the [UNICEF conceptual framework for nutrition](#), which identifies the immediate, underlying, and basic causes of malnutrition (UNICEF 2015).

Immediate causes

Nutrient intake: The challenges to children’s nutrient intake begin before birth, with many mothers either too young or too undernourished themselves to provide sufficient nutrition to their growing fetus. IFPRI’s analysis found that both younger mothers and underweight mothers were significantly more likely to have stunted children. The higher rates of stunting in northern Nigeria may be linked to the higher rates of teenage pregnancy and thinness among young girls in these zones (IFPRI 2017). Young girls are still growing, and they compete for nutrients with the fetus, resulting in higher rates of SGA children to adolescent mothers, increasing the risk of stunting. In Nigeria, 23 percent of females age 15–19 have begun childbearing. This figure is as high as 36 percent among teenage girls in the North West zone (DHS 2013). These young mothers tend to have shorter average birth intervals, and are less likely to attend antenatal care (ANC) or deliver in a health facility (DHS 2013), further increasing the risks to the child’s nutrition in utero and reducing the opportunities for nutrition and breastfeeding counseling. The recent NNHS found that females age 15–19 were four times more likely to be acutely malnourished compared to adult women (age 20–49) (Rossi 2015).

Inadequate nutrient intake continues after the infant is born. Although 98 percent of Nigerian children are breastfed at some point, more than half these children are exclusively breastfed for less than one month, and only 17 percent of children under six months of age are exclusively breastfed (DHS 2013). Mothers commonly give water in addition to breastmilk, potentially displacing breastfeeding and increasing the risk of diarrhea (DHS 2013). Formative research by the Alive & Thrive project found a deep, ingrained fear of children becoming dehydrated if they are not given water, in addition to breastmilk (Alive and Thrive 2014). Other qualitative assessments have found a wide range of cultural and individual factors that affect children’s diets in Nigeria, such as women’s concerns about having insufficient breastmilk, lack of knowledge about nutrition, and the influence of older women on infant and young child feeding (IYCF) practices (Alive and Thrive 2014; Agunbiade and Ogunleye 2012).

Statistical analysis conducted by IFPRI showed that children fed a larger number of foods from different food groups were less likely to be stunted. Yet, across all zones, only 12–28 percent of children are given a minimally diverse diet of at least four food groups per day. The most commonly consumed foods for children are grains (64 percent); vitamin A-rich fruits and vegetables (31 percent); meat, fish, or poultry (23 percent); and legumes/nuts (20 percent). All other food groups were consumed by less than 20 percent of

children. Only 58 percent of all children age 6–23 months receive the recommended number of meals—meaning the quantity of food given is probably insufficient (DHS 2013).

The lack of diversity in children’s diets is mirrored by poor household dietary diversity. Although data are limited, one analysis of diets in six states found that women ate an average of 5.8 different types of food, out of a list of 14 food categories (Ajani 2010). A separate study—including Kngebbi, Niger, and Cross River—found similarly low dietary diversity scores among women, ranging from 4.02 in Katsina to 5.82 in Niger, out of nine food groups (BMZ Nigeria 2015). The specific types of foods eaten vary widely by location and season, particularly for fish, vitamin-A rich vegetables, and other vegetables. In both studies, consumption of cereals and legumes was high across all states, while consumption of meat, fruits, eggs, and milk was generally low. Although Nigeria has dietary guidelines, were last updated in 2006 (Save the Children 2009), and qualitative research suggests that households are not familiar with dietary guidelines and receive little information on healthy diets (Reboot & Picture Impact 2017).

Illness: Illness and infectious diseases are important causes of acute malnutrition, stunting, and anemia. Young children throughout the country are frequently ill; the 2015 NNHS found that 45 percent of children under the age of five experienced diarrhea in the past two weeks, and approximately 25 percent had fever. Only one-quarter of the children with diarrhea, and one-third of the children with fever, received any treatment. High rates of illness, particularly diarrhea, may be driven by poor breastfeeding and complementary feeding practices, inadequate hygiene and sanitation, and low utilization of preventive health services, including vitamin A supplementation (42 percent of children under 5 received vitamin A in the past six months) or routine immunization (one in five children do not receive vaccinations) (DHS 2013). Finally, 3.1 percent of the population is HIV-positive, representing the second-largest population of people living with HIV and AIDS in the world. HIV prevalence is higher in the South South zone (5.5 percent) and lowest in the South East zone (1.8 percent). Half of all people living with HIV and AIDS are not currently accessing antiretroviral treatment therapies (AVERT 2015). While the relative contribution of HIV infection to childhood malnutrition may be small, an integrated approach to managing nutrition and HIV is warranted because of the number of individuals affected.

Underlying causes

Food Security: The Famine Early Warning Systems Network (FEWS NET) estimates that most areas of the country will have sufficient food production in the 2017/2018 harvest period, and levels of food insecurity are expected to be low for most of the population (FEWS NET 2017a). However, national-level data can mask pockets of food insecurity and seasonal lean periods, particularly for the poor and vulnerable households. In 2013, one in five households nationwide experienced food shortages at some point in the past 12 months, affecting urban households (23 percent) and the southern zones (34 percent in the South East zone and 22 percent in the South West zone) the most (Nigeria Bureau of Statistics 2016). The 2010/2011 round of the LSMS assessment found similar results, with higher percentages of urban and southern households reporting at least one instance of food shortages in the past year. Nigeria’s food system is market-based, and 75 percent of the food consumed in rural areas is purchased, leaving lower-income households at greater risk for food shortages (Liverpool-Tasie, Adjognon, and Reardon 2016). Lack of storage facilities and high levels of post-harvest loss also reduce household food availability. Even

where food security is considered adequate in terms of calories, the nutritional diversity and content of foods may be poor, increasing the risk of micronutrient deficiency.

The agriculture system remains underdeveloped despite growing government emphasis on strengthening this sector (Downie 2017). The current land tenure system constrains access to land—the average land-holding size is 1.8 hectare/farming household—and less than 1 percent of cropped land is under irrigation (FAO 2017). Other challenges to agriculture include the high cost of farm inputs, poor access to credit, inefficient fertilizer procurement and distribution, and inadequate storage facilities (FAO 2017). As a result, the average agricultural productivity of 1.2 metric tons of cereals/hectare struggles to keep up with growing populations, a quantity further reduced by high postharvest losses and waste. For example, the annual tomato production lost almost half after harvest—0.7 million tons out of the 1.5 million tons produced (Nigeria Bureau of Statistics 2016). Likely contributors to losses include insufficient processing facilities, inadequate storage options, and lack of refrigeration for cold transport (Downie 2017).

Agricultural crops are typically grown for sale, rather than for household consumption, contributing to the lack of household food stocks, and leaving households vulnerable to shifts in food prices (FAO 2016a). Staple food prices typically increase during the lean season, but they have had overall increases for the past two years; the prices of staple foods in 2017 are 40–100 percent higher than in 2016 (FEWS NET 2017b). More than 70 percent of food purchased is processed and semi-processed. This shift is happening in both rural and urban areas, and not only with the middle class, but in households across income levels (Liverpool-Tasie, Adjognon, and Reardon 2016).

An assessment by Mercy Corps found that one-third of households across the country reported some form of shock or hazard from 2010–2016. Conflict, in particular, was experienced by 5 percent of households, primarily in the North East zone and the Niger Delta region,¹³ and it was closely linked with increased rates of malnutrition and reduced food consumption scores. In 2013, roughly one in four households reduced the number of meals taken in the past seven days because of economic shocks, with food price increases the most frequently cited source of shock (Nigeria Bureau of Statistics 2016). Compounding these risks is a national food crop reserve system that is inadequate to meet national needs when shocks do occur (Ndukwu, Akani, and Simonyan 2015).

Food safety, also a persistent problem, affects the agriculture sector in Nigeria. A review of the Nigerian Food Safety system found it to be outdated, with a lack of understanding of food safety and quality standards across the food industry, and an inability to enforce compliance with international standards and global best practices (Nigeria Ministry of Health 2014). The studies, however, reported a willingness on the part of the industry to work to improve food safety practices. The Nigerian government is also working on the Food Safety and Quality Bill that it hopes will “bring fundamental changes in the way food safety is managed in Nigeria and will lay down the foundation for a modern, efficient and effective national food control system for Nigeria” (FAO 2016b).

Caring practices: The time between conception and the first two years of a child’s life is a critical period for nutrition and childhood development. The care that women and children receive during this period plays

¹³ States in the Niger Delta include Abia, Akawa Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo, and Rivers.

an important role in feeding practices and health. Cultural norms on infant feeding practices and care for women during and after pregnancy vary across the country, but are key factors in determining nutrition-related behaviors. Formative research by Alive & Thrive found that close female relationships, such as grandmothers and sisters, play an important role in providing support and guidance for new mothers, particularly in rural communities. In addition, the assessment found that fathers currently do not play a major role in influencing household nutrition practices, but they have significant potential as influencers (Reboot & Picture Impact 2017).

LSMS data from 2015 shows that women are somewhat less likely to be involved in agriculture work than men, but a large percentage of women aged 15–44 work in agriculture, and women are more likely to work as traders, in the manufacturing sector, or spend time on tasks such as collecting firewood. All these practices can take mothers away from children, placing additional risks on breastfeeding and complementary feeding. Possibly, as a result, some 16 percent of children under the age of 1 year are fed with a bottle (DHS 2013). Bottle-feeding carries an increased risk for bacterial contamination and the resulting diarrhea (WHO 2005). Although Nigeria has a supportive policy environment for women, with legislated maternity leave and breastfeeding breaks, most women involved in the informal labor sector cannot benefit from these policies (IFBAN 2015).

Access to water, sanitation, hygiene, and health services: The lack of adequate water, sanitation, hygiene, and health (WASH) facilities and practices is reflected in the fact that only 29 percent of Nigerians have access to improved sanitation and 130 million Nigerians do not meet the Millennium Development Goal standards for sanitation. One-quarter of Nigerian households lack access to a toilet; in the North Central zone, this is as high as 55 percent (Nigeria Bureau of Statistics 2016). Overall, the WASH sector is in critical condition and requires immediate action, especially for poor and rural households. Fewer than 30 percent of poor Nigerians have access to improved water and 34 percent of the rural population must travel at least two hours roundtrip to find a functioning improved water source (World Bank Group 2017). Inadequate WASH increases the risk of diarrhea and environmental enteropathy, which can lead to a reduced absorption of nutrients.

Overall, livestock ownership is high, and three-quarters of households keep goats, pigs, and sheep, while two-thirds own poultry (Nigeria Bureau of Statistics 2016). While further investigation into livestock management practices is needed, for most smallholder farming households, it is likely that the animals are kept in and around the house/compound and that animal feces are a key contributor to diarrhea and environmental enteropathy in both the northern and southern states. Findings from a recent survey in Yobe state found animal or human excreta in the courtyards of 78.3 percent of households (ACF International 2017). IFPRI's analysis of the risk factors for stunting found that inadequate access to hygiene and sanitation were not significantly linked to higher rates of stunting in northern Nigeria, but it should be noted that exposure to animal feces was not included in this analysis.

For many households, access to health services in the north is constrained by expense, distances to facilities, and dissatisfaction with health services (DHS 2013). Even where families have access to services, utilization of maternal and child health care is low in many states, particularly in the northern zones. ANC is a critical entry point for providing nutritional care and counseling to mothers, but nationally, less than two-thirds of women receive any ANC. This varies widely by state, from 71 percent of women in Kebbi

going without ANC, to only 7 percent of women in Ebonyi. Younger women and those in the poorest households are least likely to access ANC (DHS 2013).

Barriers to accessing care are compounded in the north, where cultural norms that discourage women from making decisions on healthcare are more prevalent (Fagbamigbe and Idemudia 2015). Low numbers of female health practitioners further limits health care access in predominantly Muslim communities, because of the religious norms that prohibit women from obtaining care from male health providers (IFPRI 2017).

The integration of nutrition services within facility- and community-based health services has significant room for improvement. A national assessment found that the training health providers receive on IYCF counseling and nutrition is inadequate (IFBAN 2015). Community-based management of acute malnutrition (CMAM) is being scaled up in 11 northern states, with support from UNICEF and the Children's Investment Fund Foundation, but currently only about one-third of children with severe acute malnutrition in these states receive treatment (CIFF 2017; Valid International 2014). Efforts have been made to strengthen micronutrient supplementation through Maternal, Newborn, and Child Health Weeks; these campaigns are an opportunity to expand supplementation and screening for acute malnutrition (Pittore and Garbarino 2015). A number of programs have successfully worked with community volunteers to expand IYCF counselling, including SPRING in Kaduna state and Working to Improve Nutrition in Northern Nigeria (WINNN) in Kebbi, but significant challenges remain to retain and replace volunteers, over time (SPRING 2017).

Basic causes

Access to resources: Poverty is an important risk factor for malnutrition, and it is widespread throughout the country, with more than half of all Nigerians estimated to live below the poverty line (Mayah et al. 2017). The 2013 DHS found that children in the poorest households are almost three times more likely to be underweight than children in the wealthiest households, and that 69.2 percent of women in the poorest households had at least one problem accessing health care, compared to 33.6 percent of women in the wealthiest households (DHS 2013). Despite movements toward a national social protection strategy, very limited formal social safety nets remain for the extreme poor and vulnerable populations (Holmes et al. 2012). LSMS data from 2012/2013 found that less than 3 percent of the population accessed social safety nets at the time of the assessment, mostly in food aid (received by 1.6 percent of respondents) (Nigeria Bureau of Statistics 2014).

Approximately two-thirds of Nigerians earn their income from agriculture, but these households face numerous barriers to achieving food security and adequate livelihoods (FAO 2016c). Approximately 20 percent of households face barriers to market access, and other elements of the value chain require strengthening—for example, processing, storage and transportation facilities are limited. Access to land and agricultural inputs—especially fertilizer, seeds, and tools—is a major barrier to improved food production, and 35 percent of farmers cite access to credit as the primary barrier to their agricultural livelihood activities (Downie 2017). Women are even less likely to have access to credit, land, and other agricultural inputs (Federal Ministry of Agriculture and Rural Development and World Bank 2016). Finally, land degradation and climate change will probably result in increased and more frequent shocks to households, representing an additional barrier to improved nutrition. As one key informant described, the

severity and type of shocks vary across the seven target states, and they should be explored in more depth. These can include conflicts, flooding, land erosion, theft and crime, deforestation, and desertification (Orji, personal communication, 2017).

Cultural and social norms: The IFPRI assessment highlights the critical role that gender inequality and women’s empowerment play in nutrition, health, and livelihoods in Nigeria. Throughout the country, women are disadvantaged in terms of access to resources, such as land, agricultural inputs, credit, and primary education (Nwagbara, Etuk, and Baghebo 2012). Gender inequality is particularly a challenge in northern states, where female literacy is significantly lower than in other zones, and women typically get married at a younger age (DHS 2013; Ayevbomwan, Popoola, and Adeoti 2016). In the North West zone, the median age when women get married is only 15.3 years old, compared to 22.7 years in the South East zone (DHS 2013).

The IFPRI analysis describes several ways in which gender norms affect nutrition in the northern states. Women are largely financially dependent on their husbands, and have little power to make decisions about diets, health care, and other household expenditures. Adolescent girls—many already mothers by the age of 19—are at an even greater disadvantage in terms of health care access, decision making, and economic wellbeing. Data on women’s empowerment varies widely across districts and can sometimes appear contradictory; these trends should be explored further. For example, the 2013 DHS found that women in the North East and North West zones are twice as likely to have decision making control over their own earnings versus those in South East and South South zones, but are nearly three times *less* likely to be able to make decisions about their own health care. Overall, women in the North West state are least likely to have the ability to make decisions, as measured by three decisions: health care, major household purchases, and visiting family (12 percent for all three decisions); while those in the South West zone have the most decision making power (62 percent for all three decisions) (DHS 2013).

Traditional and cultural beliefs are described as major determinants of household nutrition practices, such as breastfeeding (Reboot & Picture Impact 2017). In one study in Northwestern Nigeria, the primary reason for not giving colostrum to an infant after birth was simply “tradition” (Matthew et al. 2009). However, the specific beliefs influencing feeding behaviors can be very context-specific, and require further exploration and formative research to design locally appropriate intervention strategies.

Policy environment: Nigeria has invested in sectoral nutrition strategies and policies, but the rollout of these strategies has been slow. Key guiding strategies and programs include the National Strategic Plan of Action for Nutrition (NSPAN), the National Policy on Infant and Young Child Feeding, the Agricultural Sector Food Security and Nutrition Strategy (AFSNS), and the National Policy on Food and Nutrition. Progress is underway in developing a harmonized social and behavior change (SBC) strategy for IYCF practices (Reboot & Picture Impact 2017). With support from UNICEF, the Government of Nigeria has begun scaling up community IYCF counseling nationally. Reports show that the government plans to train and roll out community health volunteers throughout the country, but to-date progress has been limited (One Million Community Health Workers-Nigeria 2017). Plans are also underway to train and roll out agriculture extension agents who provide nutrition-sensitive services, including nutrition education at the community level (The Federal Republic of Nigeria 2017).

The NSPAN identified a large shortfall in the available budget for nutrition compared to the funding needed to scale up nutrition (Annett et al. 2014). Nigeria's decentralized government system results in significant variations in priorities and funding at the state level, but provides opportunities for working at the local level through state-level champions, and through ward and village development committees. Some work has started on identifying nutrition champions, particularly at the state level; a national alliance of civil society actors has been formed around nutrition (Annett et al. 2014). These platforms represent possible platforms and entry points for strengthening multi-sectoral coordination and action for nutrition.

Opportunities for investment

Many government and externally funded activities, implemented by a range of stakeholders, are active in the seven targeted states. However, programs and funding levels vary widely across states, and there are still many opportunities to strengthen and coordinate multi-sectoral nutrition programming. It is important to remember that no single strategy or approach implemented in isolation is likely to result in a noticeable improvement in nutrition. For real change, a combination of approaches, engaging multiple sectors, and working at different levels will be necessary. Based on the findings of this review, the following are key opportunities to improve nutrition:

1. **Scale up high-quality information and communication on nutrition:** High rates of malnutrition are closely linked to poor child feeding practices and other household health, agriculture, and WASH behaviors. These behaviors, in turn, are driven by misconceptions, cultural practices, and other barriers to behavior change. While information alone will not result in widespread behavior change, it is possible to foster sustained SBC through targeted, multi-channel, and high-quality SBC interventions; including, but not limited to, information and communication. SBC approaches will be most effective when they are informed by a contextually specific understanding of the barriers that households and caregivers face. High rates of mobile phone ownership—with 89 percent of people over the age of 10 having access to a mobile phone—is an opportunity to reach large numbers. Other interventions have been successfully implemented in Nigeria, including mother support groups, which can successfully target to adolescent mothers (Perera 2015). The development of national IYCF materials is already underway, and these should be complemented with information on nutrition-sensitive topics, such as health, WASH, and agriculture. Because of the wide cultural diversity in Nigeria, it is important that SBC programming includes flexibility to adapt specific messages for the local context. Of course, it must be implemented at scale, targeting the whole household: mothers, fathers, and other influential individuals.
- **Invest in a health system capable of meeting nutrition needs:** Health services in Nigeria currently represent a missed opportunity to prevent malnutrition. Service utilization is low, and providers have a limited capacity to deliver nutrition services. This means that even when mothers, children, and adolescents visit health facilities, they may not get the nutrition or health services and guidance they need. In the short-term, a focus on increasing **community-based service delivery**, using platforms like Maternal, Newborn, and Child Health (MNCH) Weeks or community health worker networks, may be a more appropriate entry point for health services, supplementation, and nutrition counseling. MNCH Weeks are currently being implemented

widely, but coverage and quality is inconsistent. To achieve potential gains in health and nutrition outcomes, this approach will require extensive support, strengthening, and complementary social mobilization efforts (UNICEF Nigeria 2016). Over the long term, **health services need to be strengthened** through better training and support for health providers, quality improvement for service delivery, and social accountability approaches that allows community input. Given the large burden of acute malnutrition, providers must be capable and equipped to treat acute malnutrition as a common childhood illness within the routine health services.

2. **Meeting the needs of women and girls:** The precarious health and nutrition situation of adolescent girls is a key driver of undernutrition in Nigeria, resulting in high rates of acute malnutrition in girls aged 15—19 years, and it contributes to high rates of low birthweight. Specific **intervention is required to prevent early marriage and pregnancy, and to improve access to health services**—including sexual and reproductive health—and other resources for young girls. For women overall, efforts to **improve equitable access to agriculture and livelihood resources**—including land, agricultural inputs, and education—are needed. Over the longer term, this will require tackling cultural and gender norms that prevent women’s empowerment.
3. **Ensuring sustainable and diverse food production and consumption throughout the year:** The primary barriers to healthy diets appear to be seasonal food shortages and the inability of many households to purchase sufficient, nutritious food year-round. It is unclear whether this is due to a lack of foods on the market, the price of foods, or a lack of consumer demand for healthy foods; it requires further assessment. Food insecurity is further exacerbated by conflict and other shocks and hazards, particularly in the hardest-hit North East zone, leading to potential emergency conditions. Outside the North East zone, more predictable shocks occur, leading to food shortages and price fluctuations that are seasonal and less severe. Essentially, two responses are required: (1) immediate assistance to areas affected by severe food shortages, and (2) a systems-strengthening approach to improve year-round food availability for the poorest households in areas that usually experience seasonal food shortages. Short-term strategies should use a range of approaches to focus on **eliminating the hunger gap**. These include increasing the capacity and availability of storage and processing facilities—including for nutrient-rich foods like fresh fruits and vegetables—promoting improved household-level storage and processing, and increasing production of nutrient-rich crops and animal source foods. In addition, there is a need to stimulate awareness and **demand for healthy diets**; for example, through SBC programming or strategic partnerships with the private sector—using entry points such as the Scaling Up Nutrition (SUN) Business Network, which currently includes 44 members. On their own, rising incomes and agricultural production will not necessarily result in better nutrition. However, market strengthening, including **improved access to agricultural inputs, irrigation, credit, and markets** is a key long-term strategy to improve food security and reduce poverty in Nigeria. The private sector can be engaged to create profitable networks that increase access to inputs and services. ACDI/VOCA recently announced the piloting of an initiative for shared irrigation systems (ACDI/VOCA 2017).
4. **Prioritizing pro-poor investments and interventions:** The greatest expense for most Nigerian households is food (Nigeria at a Glance: FAO 2017). High rates of poverty, rapidly increasing food prices, and insufficiently developed and diversified livelihood opportunities all contribute to major

risks for Nigerian families' ability to purchase food and nutrition-related services. The poorest households are at the greatest risk for malnutrition, yet current approaches to supporting agriculture and economic growth do not appear to sufficiently target the most vulnerable households or populations. Efforts to increase food production must do so equitably, **facilitating access of the most food-insecure households to credit, agricultural inputs, markets, and infrastructure.** Strategies could include scaling up village savings and loan approaches, cash transfers for highly vulnerable families, or restructuring market systems interventions to overcome the barriers to participation for women and the extreme poor. During the longer term, an **investment in systematic approaches to building resilient communities** is needed, adapting livelihoods to meet the challenges of a changing climate and providing safety nets for the most vulnerable households.

5. **Supporting nutrition coordination and rollout of strategies and plans:** Nutrition is gaining prominence as a national priority, but commitment and funding for nutrition, health, and agriculture varies widely by state. USAID's multi-sectoral approach to nutrition is an opportunity to support nutrition coordination across sectors, building on USAID's experience strengthening coordination and collaboration, as was done in other countries, such as Rwanda. USAID's connections with implementing partners and local civil society can be harnessed to bring more engagement and accountability for nutrition across stakeholder groups; for example, by **building the capacity of existing platforms**, such as the national SUN network; or advocating for the creation of sustainable national coordination, such as the proposed National Nutrition Council. Over the long term, **better data on nutrition financing and results** are needed for advocacy and to accelerate commitments. Clear, up-to-date food-based dietary guidelines will also be important. In addition, USAID can support the implementation of priorities in national strategies and plans, such as scaling up community health provision, strengthening service provider capacity, harmonizing SBC communication materials, and assisting states to implement nutrition-sensitive agriculture practices and policies.

Table 18. Table of Relevant Indicators

KEY
Better than national average by 25% or more
Within 25% of the national average
Worse than national average by 25% or more

	Kebbi (NW)	Kaduna (NW)	Niger (NC)	Benue (NC)	Ebonyi (SE)	Cross River (SS)	Delta (SS)	NATIONAL
Poverty								
Multidimensional Poverty Index (MPI) (DHS 2013)	0.553	0.311	0.324	0.28	0.265	0.146	0.107	0.303
Food security								
Percentage of households that experienced food shortage in past 12 months by zone (LSMS 2015/2016)	15.0 (North West zone)	15.0 (North West zone)	10.2 (North Central zone)	10.2 (North Central zone)	34.3 (South East zone)	16.6 (South South zone)	16.6 (South South zone)	19.6
WASH								
Percentage of households with improved drinking water source (DHS 2013)	21.9	65.8	48.1	37.3	67.7	69.6	68.8	60.6
Percentage of households without toilet (GHS 2015)	14.5 (North West zone)	14.5 (North West zone)	53.0 (North Central zone)	53.0 (North Central zone)	23.7 (South East zone)	13.9 (South South zone)	13.9 (South South zone)	24.3
Stunting								
Percentage of children under 5 who are stunted (<-2Z) (NNHS 2015)	58.3	52.1	38	23.8	20.6	18.5	19.9	36.8
Wasting								
Percentage of children under 5 who are wasted (<-2Z) (DHS 2013)	18.1	41.7	17.7	7.8	10.5	9.8	17	16.2
Underweight								
Percentage of women with BMI <18.5 (DHS 2013)	11.1	10.1	6.5	8	12.8	8.7	7.4	11.4

	Kebbi (NW)	Kaduna (NW)	Niger (NC)	Benue (NC)	Ebonyi (SE)	Cross River (SS)	Delta (SS)	NATIONAL
Obesity								
Percentage of women with BMI > 25 (DHS 2013)	14.3	16.3	18.1	14.8	13.3	20.7	20	24.7
Breastfeeding								
Percentage of children age 0–5 months exclusively breastfed (MICS 2011)	6.6	8.4	13.9	28.2	30	18.5	9.3	15.1
IYCF Practices								
Percentage of all children 6–23 months fed 4+ food groups (DHS 2013)	20.7	18.4	5.2	24.8	30.3	34.5	15.2	19.3
Prevalence of diarrhea								
Percentage of children under age 5 who had diarrhea in the two weeks preceding the survey (DHS 2013)	13.6	13.5	8.2	9.5	13.2	8	2.8	10.2
Teenage pregnancy								
Percentage of women aged 15–19 who have begun childbearing (DHS 2013)	34.4	33.2	27.3	22.5	9.6	18.4	8.3	22.5
Women's health								
Percentage of women receiving no ANC (DHS 2013)	71.2	44.2	28.2	39.6	7.1	13.8	17.9	33.9
Percentage of women delivering in health facilities (DHS 2013)	8.5	32.4	25.3	50.9	59.6	40.4	57.6	35.8
Women's empowerment								
Percentage of women with high level of participation in decision making (DHS)	1.9	41.9	16.2	20.4	33.5	54	67.7	31.3
Percentage of indicators worse than national average	9	6	4	3	3	0	1	

Table 19. Remote Key Informants¹⁴

Name and Title	Organization	Date of Discussion
Bassey Archibong Director of Household Economic Strengthening	MARKETS II project (Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites project), Chemonics International Inc.	July 27, 2017
Todd Benson Senior Research Fellow	IFPRI International Food Policy Research Institute	August 1, 2017
Wasiu Akinloye Afolabi Senior Lecturer	University of Agriculture, Abeokuta, Nigeria	August 2, 2017
Babajide Adebisi Deputy Chief of Party	SPRING/Ghana	August 3, 2017
Philomena Orji Country Director	HKI/Nigeria (Helen Keller International)	August 4, 2017

¹⁴ This lists the remote key informants that SPRING spoke with before submitting the first draft of this brief on August 15, 2017.

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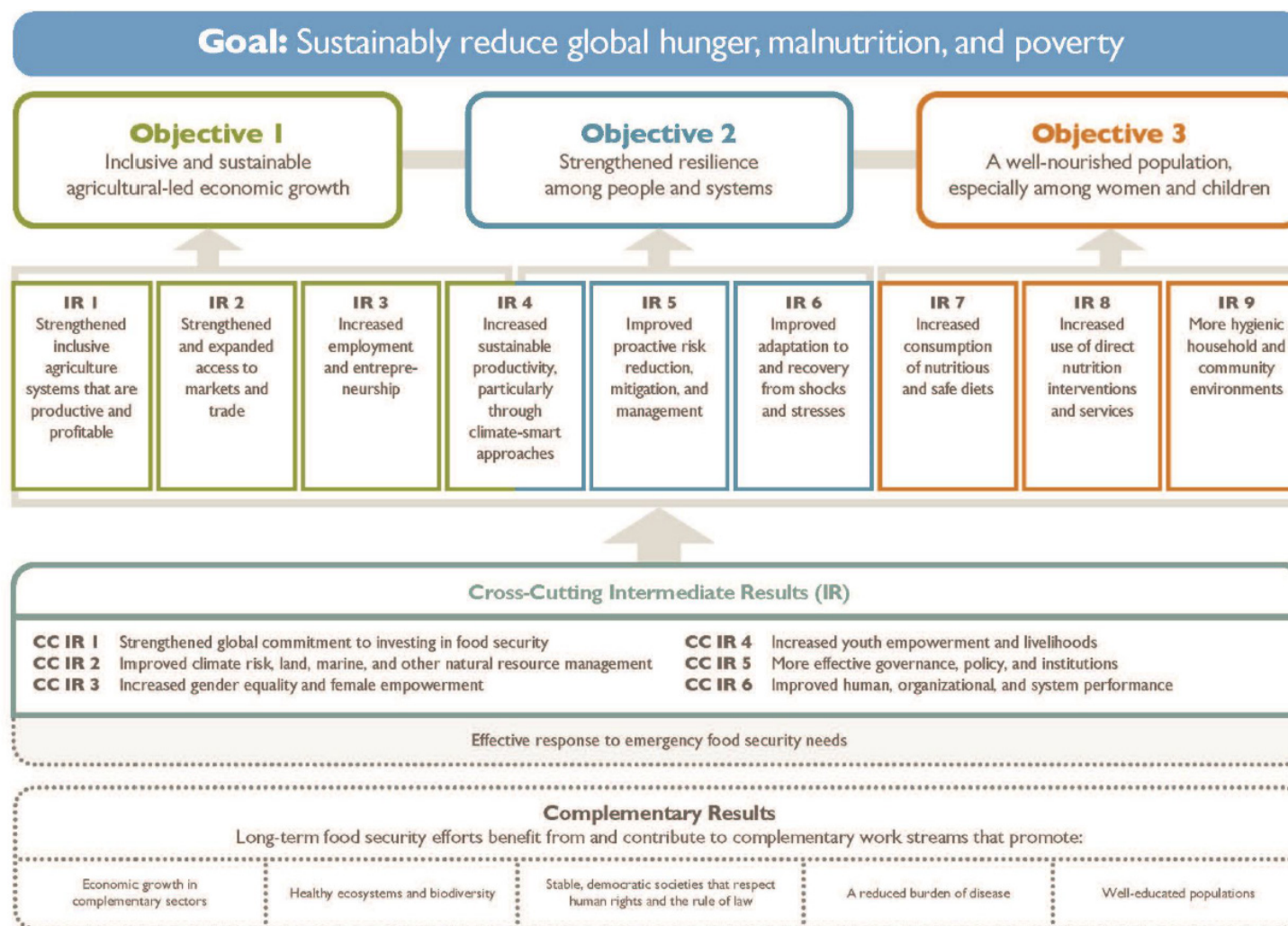
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Annex 2: GFSS Results Framework



Annex 3: Research Timeline

Date	Location	Activities
Sep 8	<i>In transit</i>	<i>Field team arrived in Abuja</i>
Sep 9-10 Sep 11 Sep 11-13	Abuja	<ul style="list-style-type: none"> • Revisions of the battery of data collection instruments • USAID In-brief • Training and orientation of research assistants, and finalization of data collection instruments
Sep 14	<i>In transit</i>	<i>3 state teams departed to various sites</i>
Sep 15 – Sep 30	Kebbi Niger/Benue Cross River	<ul style="list-style-type: none"> • Survey data collection and entry • Notes transcription and translation
	Abuja	<ul style="list-style-type: none"> • Key informant interviews with national level stakeholders • Notes transcription
Oct 1	<i>In transit</i>	<i>3 state teams returned to Abuja</i>
Oct 2-4	Abuja	Data compilation and preliminary analysis
Oct 5	Abuja	<ul style="list-style-type: none"> • USAID out-brief • SPRING teams left Abuja

Annex 4: Details of Key Informants

	Kebbi	Niger/Benue ¹⁵	Cross River	Abuja
Household Surveys	89	110	119	
Key Informant Interviews				
National				24
Government	0	0	0	6
Donors (multi-/bi-laterals)	0	0	0	6
Research	1	1	0	4
NGOs	0	0	0	5
Private sector	1	0	0	1
State level	4	7	4	
ADP: Program Manager, or director of extension	0	3	2	
ADP: Women in Agriculture head	1	2	1	
State Primary Health Care Board Director and/or State Nutrition Officer	1	0		
Ministry of Health: Director / Commissioner	1	1	0	
Ministry of Agriculture: Director / Commissioner	1	2	0	
Farmers Council Head	0	0	1	
Agriculture university				1
NGO				1
LGA	13	6	7	
Agric: Director	2	1	2	
Primary health care: Director	2	0	1	
Nutrition focal person	2	0	1	
Agriculture focal person/ ADP	2	1	5	
Private sector	2	3	0	
NGO	3	1	0	
Community level				
Community leader	6	11	6	
Health facility / Primary care center officer in charge (OIC)	9	5	8	
Market leaders	7	6	4	
Commodity producer	20	47	7	
Commodity Aggregator	9	6	8	

¹⁵ One research team visited two states: Niger and Benue. This was the only fieldwork team that visited more than one state.

	Kebbi	Niger/Benue ¹⁵	Cross River	Abuja
Commodity Retailer	7	28	6	
Focus Group Discussions				
Men: Gendered Activity	6	3	4	
Women: Gendered Activity	6	2	3	
Seasonality – focused	12	5	6	
Resilience- focused	0	1	0	
Community Transect	6	10	6	

Annex 5: Multisectoral Stakeholders Interviewed at the National Level

No.	Title	Organization	Date of Interview
1	Country Director	HKI, Nigeria	9/13
2	Senior Advisor on Food Security and Nutrition to the Honourable Minister	Federal Ministry of Agriculture and Rural Development	9/15
3	Head of Nutrition / SUN Focal Point	Dept. of Family Health, Federal MOH	9/18
4	Nutrition division chief,	FMARD	9/18
5	Acting Director, Agriculture Research Council	Agricultural Policy Extension and Socioeconomic Research	9/19
6	Programme Director, CARI	GIZ, Nigeria	9/21
	Country Operations Manager, CARI	GIZ, Nigeria	
7	Senior Scientist Food and Nutrition Sciences Laboratory	IITA	9/22
8	Country Manager, Nigeria	HarvestPlus	9/22
9	Senior Program Officer, Nutrition	Bill and Melinda Gates Foundation	9/22
10	Consultant of JICA	KMC	9/25
	Senior Representative	JICA	
11	Project Director	CSO-SUN	9/25
12	Nutrition Officer	Dangote Foundation	9/25
	Senior Associate and Team Lead	SUN - Business Network, GAIN	9/26
13	Project Manager, Food Fortification	GAIN, Abuja	
	Senior Project Manager, (Postharvest Loss Alliance for Nutrition)	GAIN, Abuja	

No.	Title	Organization	Date of Interview
14	Horticultural Unit (Seed Production), Department of Crop Production,	College of Agronomy, University of Agriculture, Makurdi, Benue	9/26
15	State Project Manager, Cross River	Save the Children	9/26
16	Nutrition Specialist	UNICEF Nigeria Country Office	9/27
17	Deputy Director, Food and Nutrition	Ministry of Budget and National Planning	9/27
18	Team Lead Nutrition and WASH	CRS	9/27
19	Programme Leader (LL), Human Development	<i>World Bank -DC</i>	9/27
20	Associate	Private Sector Health Alliance of Nigeria (PHN)	9/28
21	AgResults Country Lead, Agribusiness and Development Specialist, Partnerships for Delivery	IITA	9/28
22	Maternal and Child Health Manager	Society for Family Health, Abuja	9/28
	Manager, Rapid Access Expansion Programme (RACe)	Society for Family Health, Abuja	
23	Asst Director, Women in Extension, ADP	FMARD	9/29
24	Head of Nutrition	National Primary Health Care Development Agency	10/4

Annex 6: Snapshot of Crops, Livestock, and Landholdings by State

Table 20. Crop Production (% of respondent households)

Crop	Kebbi (%) (n=85)	Niger (%) (n=33)	Benue (%) (n=65)	Cross River (%) (n=32)
Cassava	0	38	73	31
Cowpea	19	68	19	0
Groundnut	11	53	44	2
Maize	35	71	60	11
Millet	60	68	1	0
Plantain	7	6	1	4
Rice	74	94	56	14
Sorghum	47	53	50	0
Soybean	8	6	67	0
Vegetable (commercial)	13	9	6	6
Yam	0	6	41	22
Home gardens	n=85	n=35	n=70	n=93
% with home garden	38	37	69	37

Table 21. Livestock Production (% of respondent households)

	Kebbi	Niger	Benue	Cross River
Aquaculture	1	3	0	1
Cow	54	12	4	0
Egg	12	0	17	2
Goat	73	59	76	14
Poultry	82	74	80	17
Sheep	45	21	21	0

Table 22. Average Land Size Cultivated Per Crop and Location (hectares)

Crop	Kebbi	Niger	Benue	Cross River
Sorghum	2	1	1	0
Millet	2	1	1	0
Maize	2	1	1	0
Rice	3	2	1	1
Groundnut	2	1	1	1
Cowpea	2	1	1	0
Vegetable	1	2	1	0
Cassava	1	1	2	1
Plantain	1	0	0	1
Yam	0	0	1	0
Soybean	1	1	2	0

Table 23. Diversity of Productions in Home Gardens by State

Kebbi	Cross River	Niger	Benue
Banana	Amaranthus	Amaranthus	Amaranthus
Bitter leaf	Banana	Atorado	Beans
Garden egg (eggplant)	Bitter leaf	Callejo	Bitter leaf
Jute	Cassava	Corn	Curry leaf
Mango	Coco yam	Egusi	Eshuie
Moringa	Corn	Jute	Garden egg (eggplant)
Okra	Cucumber	Okra	jute
Onion	Curry leaf	Peppers	Melon
Oyoyo	Draw leaf	Potato	Ngishi
Pawpaw	Garden egg (eggplant)	Spinach	Okra
Pear	Green leaf	Tomato	Onion
Peppers	Groundnut	Ugu	Oyoyo
Pumpkin leaf	Melon		Passionfruit
Sanda	Moringa		Pineapple
Spinach	Okra		Plantains
Sugar cane	Orange		Pumpkin leaf
Sure	Pawpaw		Scent leaf
Tafasa	Pear		Spinach
Tatasai	Peppers		Tomato
Tomato	Pineapple		Ugu
Ugu	Plantains		Water leaf
Watermelon	Pumpkin leaf		Yakwa
Yakwa	Scent leaf		
Yar'unguwa	Spinach		
	Sugar cane		
	Tomato		
	Ugu		
	Water leaf		
	Water yam		
	Yam		

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