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# Fill the Nutrient Gap Nigeria

Report



July 2022

This summary and further information can be found electronically at: [wfp.org/fillthenutrientgap](http://wfp.org/fillthenutrientgap)



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# Preface

The Ministry of Finance, Budget and National Planning as the coordinating Ministry for all sectors of the economy and the secretariat for nutrition policy, coordinated the Fill the Nutrient Gap (FNG) analysis from 2021-22 with oversight from the Office of the Vice President (OVP) and technical and financial support provided by the World Food Programme (WFP). The FNG takes on a food systems approach to understand the costs and the barriers to accessing a nutritious and healthy diet. The analysis is a step that aligns with the goals of the Pathways to Food Systems Transformation pathways for Nigeria that was developed by the Federal Government of Nigeria and presented and submitted to the UN Food Systems Summit in September, 2021. Findings from the FNG will no doubt support the implementation of the National Multi-Sectoral Plan of Action for Food and Nutrition (NMPFAN) 2021-2025. The Ministry of Finance, Budget, and National Planning is presenting this report as a veritable instrument to sectoral planning and policy formulation.

The FNG as a multi stakeholder engagement included the government, academia, civil society organisations and development partners. It involves multiple sectors including agriculture, education, social protection, and health. Inputs were received on defining the scope of the analysis as well as identifying interventions for improving access and affordability of nutritious diets. The process also supported recommendations built from consensus.

The report shows that a third of the households in Nigeria are unable to afford a nutritious diet and highlights the role that different sector can play in making nutritious diets more accessible and affordable, especially for the most vulnerable groups. This is an important pathway to improving nutrition outcomes in Nigeria and investing in our people for a stronger and more prosperous future.

I encourage all stakeholders across sectors to use the FNG findings not only to advocate for integrating nutrition in programming but also to consider the recommendations for their own programming. Lastly, I would like to recognise the proactive steps taken by the Social Development department in the Budget and Planning arm Of the Ministry in coordinating the FNG process. I also wish to acknowledge the Office of the Vice President for the consistent support and to the World Food Programme for carrying out the analysis.



**Prince Clem Ikanade Agba**  
Honourable Minister of State  
Budget and National Planning

# Acknowledgements

The final Report on analysis of Fill the Nutrient Gap (FNG) in Nigeria takes on a food systems approach that is designed to understand the barriers in accessing a nutritious and healthy diet. It provides information at the national and subnational levels of government on what it would cost a household to meet nutrient requirement given local food prices. It is also an opportunity to estimate the proportion of households that would not be able to afford a diet that meets their nutrient needs. The FNG analysis also models the impact of interventions from key sectors such as social and economic sectors including health, education, agriculture and some intervention programmes such as social protection. The evidence generated by the FNG in Nigeria will be useful to advocate for a multisectoral approach to increasing access to healthier diets and improving nutrition outcomes.

It is my sincere pleasure to express my deep appreciation to the Honourable Minister of State Budget and National Planning for the thorough supervision of the coordination of this Report by the Budget, and National Planning arm of the Federal Ministry of Finance, Budget and National Planning. I also appreciate the guidance provided by the Permanent Secretary Mrs. Olusola Olayinka Idowu particularly by her meticulous supervision of the data management for the Report. Let me also seize this opportunity to appreciate the support received from the Office of the Vice President particularly Mrs Abimbola Adesanmi. The efforts of the Deputy Director Food and Nutrition Mrs. Chitto Nelson is acknowledged as well as the technical staff of Food and Nutrition Division of the Federal Ministry of Finance, Budget, and National Planning.

I also appreciate the World Food Programme that provided technical and financial support to this analysis. I want to specifically recognise the efforts of the Nigeria Country Office with my appreciation to the following actors including Pierre Momcilovic, Darline Raphael, Patience Ajiboye, Serigne Loum, Serena Mithbaokar, Oveka Obroh, Adeyinka Timothy, Beluolisa Uzowulu, Martha Asugu and Samuel David. It is also important to recognise the System Analyst from Nutrition team at WFP Headquarters particularly Mysbah Balagamwala, Saskia de Pee and Jane Badham.

The Contributions to data collection by Bishop Ohioma (National Bureau of Statistics), Eunice Kodak and Zubair Umar Tinau (Federal Ministry of Health) and Okorie Agwu Ama (National Programme for Food Security, Federal Ministry of Agriculture and Rural Development) are also acknowledged. The enumerators that participated in data collection are duly appreciated.

Finally, our profound appreciation goes to all relevant stakeholders in all the key MDAs, civil society organisations (CSOs), academia as well as development partner and other stakeholders that provided inputs and contributed to the FNG analysis. Their collaborative support made the FNG analysis a stakeholder-driven for a strong, well-informed analysis on food systems and nutrition in Nigeria.

The smooth coordination between all government entities and WFP must be commended and this was made possible by the effective coordination by the Federal Ministry of Finance, Budget and National Planning.



**Sanjo O. Faniran, Ph. D**  
Director Social Development  
Federal Ministry of Finance  
Budget and National Planning

# Executive Summary

Nigeria experiences a multiple nutrition burden with high rates of child and maternal undernutrition existing alongside overweight and obesity. In 2018, around 37 percent of children under 5 were stunted, 28 percent of women of reproductive age were overweight or obese, and 58 percent of them were anaemic. High rates of malnutrition are a concern as nutrition is a crucial pillar in the development of a healthy and productive nation. Healthy and nutritious diets are one of the main pathways for improved nutrition but being able to afford and access adequate nutritious foods is a challenge for many households in Nigeria.

In 2021-2022, the Federal Ministry of Budget, Finance and National Planning and the World Food Programme (WFP) conducted a Fill the Nutrient Gap (FNG) analysis with the support of the Office of the Vice President. Using a systems approach, the FNG identifies bottlenecks across the food system that result in inadequate dietary intake and ultimately malnutrition; the FNG's emphasis is on availability, cost, and affordability of nutritious foods. The FNG analysis is designed to contribute to policy and programming across different sectors including health, agriculture, social protection and education. In Nigeria, the FNG supports the National Multi-Sectoral Plan of Action for Food and Nutrition (2021-2025) and Nigeria's commitments for food systems transformations.

## Process

The Nigeria FNG analysis took place from June 2021 to July 2022. A wide range of stakeholders provided inputs throughout the analysis including government ministries, civil society, United Nations agencies and bilateral donors, the private sector, and academia. Inception workshops were held in Abuja and Maiduguri in November 2021 to validate baseline results and to develop a modelling plan. This was followed by a workshop in May 2022 where stakeholders validated results and used them to formulate recommendations.

## Methodology

The FNG analysis identifies nutrient gaps and barriers to adequate nutrient intake within the food system. There are two components: a Cost of the Diet (CotD) analysis and a secondary literature review. The CotD analysis is a linear optimization tool to estimate the lowest cost of a nutritious diet and its affordability. The Nigeria CotD analysis used food price data which were collected from June to August 2021 in 185 urban and rural markets across all 36 states and Federal Capital Territory (FCT), and it used expenditure data which came from the Nigeria Living Standards Survey (NLSS) 2018-19.

Stakeholders use the FNG findings to identify and prioritize interventions that could be implemented by different sectors to improve accessibility and affordability of nutritious diets.

## Main findings

1. Malnutrition in all its forms is a key concern in Nigeria. Nutrition outcomes vary widely across geographic and socioeconomic groups and these inequities have worsened over the years.
2. The average diet in Nigeria is not diverse and is heavily based on starchy staples. 62 percent of an average household's caloric intake comes from staples with the proportion being higher in northern states. Households in higher consumption quintiles are more likely to consume a diverse diet that includes animal source foods, fruit and vegetables.
3. The cost of meeting nutrient needs is more than twice the cost of meeting energy needs. The cost of a nutritious diet for a five person household in Nigeria was found to be 1,687 Nigerian Naira (NGN) per day on average, ranging from NGN 1,035 to 3,219 depending on location.
4. One in three households was not able to afford the lowest cost nutritious diet. The non-affordability rate varies greatly across states, ranging from 9 percent to 76 percent. The cumulative affordability gap was estimated to be NGN 3.3 trillion - this is the amount that would be needed for all households to be able to afford nutritious diets.
5. Infrastructure development has not kept up with demographic development, a situation that has negative implications for access to nutritious diets. Households in rural and urban areas predominantly rely on markets for their food, making them vulnerable to market shocks. In conflict-affected areas, access to, and functionality of, markets is further restricted due to worsening security.
6. Adolescent girls and pregnant and breastfeeding women have high nutritional needs, translating into high cost and putting them at higher risk of malnutrition. This risk can be reduced by targeted interventions that improve nutrient intake, such as micronutrient supplements or specialised nutritious foods.
7. Poor infant and young child feeding practices and lack of diverse diets lead to malnutrition which can have lifelong consequences. Suboptimal breastfeeding leads to higher nutritious diet costs for children as more nutrient-dense complementary foods are needed to meet nutrient needs.

8. Large-scale food fortification can provide additional micronutrients for vulnerable households and individuals who cannot access diverse, nutrient-dense foods. Biofortification leverages the agriculture sector to improve intake of essential micronutrients for households with limited access to centrally processed foods.
9. Continued high levels of inflation and economic slowdown due to COVID-19 have pushed nutritious diets further out of reach of Nigerians. Social assistance programmes can improve access to nutritious diets for the most vulnerable if designed to adequately close the affordability gap, including through linking programmes with interventions targeted to the most nutritionally vulnerable.
10. Many people in the Northeast continue to need humanitarian assistance. Household assistance can cover a household's nutritious diet cost if adequate in size (cash-based transfers) and nutrient composition (in-kind transfers).
11. Home grown school feeding programmes encourage the inclusion of nutritious and fortified foods in school meals, which can contribute towards the nutrient intake of school-going children. A nutritious school meal reduces the risk of nutritional deficiencies and the economic burden on the household of providing nutritious foods.
12. Agriculture policy in Nigeria prioritizes staple production. A lack of production diversification leads to underdeveloped value chains of nutritious foods. Food supply is also affected by high rates of post-harvest loss arising from inadequate farm practices, poor access to markets by producers, and weak infrastructure.
13. Multisectoral interventions have the potential to make nutritious diets more accessible and affordable and to improve micronutrient intake, leading to better nutrition outcomes. Existing momentum on the multisectoral approach to nutrition and food systems transformation should be leveraged.

## Stakeholder recommendations

### Cross-cutting recommendations

- Ensure development and use of systems to tag nutrition and food system for appropriate allocation, monitoring, release and utilization of funds.
- Ensure evidence-based decisions for programme planning and implementation, and strengthen monitoring and information systems throughout the programme cycle.
- Build subnational institutional capacity for multisectoral planning, coordination and implementation. Where needed, provide technical support to domesticate federal level policies into state level plans.

### Social assistance

- Use FNG findings to sensitize decision-makers at national and subnational levels on investing in nutrition-sensitive social assistance.
- Make the National Cash Transfer Programme more nutrition-sensitive by regularly reviewing transfer size, considering food availability, prices and the affordability gap, and exploring the feasibility of providing nutrition-specific interventions. Update the National Social Register to capture nutritionally vulnerable individuals for more inclusive targeting.

### School feeding

- Use FNG evidence to advocate for increasing the coverage of the National Home Grown School Feeding Programme (NHGSFP) to include nurseries and grades 4 to 6.
- Advocate for including nutrient-dense foods, including fortified foods, to make school meals more nutritious and to create institutional demand for these foods.
- Use schools as a platform to provide complementary nutrition interventions and behaviour change campaigns.
- Improve availability and use of programme manuals and strengthen evidence-based monitoring throughout the programme cycle.





## Emergency assistance

- Improve nutritional adequacy by including fortified and nutrient-dense foods in in-kind assistance, using nutritious diet cost to inform the cash-based transfers, and providing specialized nutritious foods to nutritionally vulnerable groups.
- Use FNG findings to inform the size and list of foods included in the fresh food voucher programme.
- Provide an integrated package of nutrition-specific and -sensitive interventions, including behaviour change communication to households receiving emergency assistance.
- Design a “Food for Asset” programme targeted towards small-scale farmers to support the development of community infrastructure.

## Agrifood systems

- Promote production of nutritious foods and scale up capacity building of smallholder farmers to cultivate nutritious crops, including biofortified crops.
- Raise awareness among producer households to encourage consumption of nutritious foods rather than selling everything they produce.
- To reduce post-harvest loss, improve storage facilities at farm level, invest in infrastructure at market level and set up post-harvest management training centres.
- Strengthen linkages between farmers and markets to ensure farmers are not selling their produce at lower than market prices.

## Health system

- Strengthen capacity on nutrition among health staff involved in the design, planning and implementation of nutrition activities.
- Ensure integration, prioritization and monitoring of nutrition interventions among other interventions delivered by the health system.
- Pilot the provision of the multiple micronutrient tablet (MMT) to pregnant and lactating women (PLW), followed by advocacy to ensure scale-up.

## Fortification

- Strengthen public sector capacity to monitor and enforce fortification standards at different levels (production, retail). Provide incentives such as tax breaks or subsidies to the private sector to encourage fortification and to follow standards.
- Link national programmes such as school feeding and social assistance to become additional distribution points of fortified foods and create institutional demand.
- Build private sector capacity to produce specialized nutritious foods and fortified complementary cereals, providing incentives to encourage investment and production.







## Fill The Nutrient Gap Nigeria | SUMMARY

# Introduction to Fill the Nutrient Gap (FNG) analysis

Nutrition is a crucial pillar in the development of a healthy, productive nation. Good nutrition enhances physical and cognitive development, prevents disease, and increases the potential of the workforce and society. Improving diets, especially of children and women, brings immediate and long-term health, education and economic benefits.

The two Lancet series (2013 and 2021) on maternal and child undernutrition identified a variety of nutrition interventions that have proven effective. However, improving the nutrition situation in a country requires coordinated actions across the food, social protection, health and education systems. They need to be grounded in a good understanding of the local context, its opportunities and bottlenecks, and a synthesis of global and local evidence.

Nigeria experiences a multiple nutrition burden with high rates of child and maternal undernutrition existing alongside overweight and obesity.

In 2018, around 37 percent of children under 5 were stunted, 28 percent of women of reproductive age were overweight or obese and 58 percent of them were anaemic.(1) Healthy and nutritious diets are one of the main pathways for improved nutrition but being able to afford and access adequate nutritious foods is a challenge for many households in Nigeria.

In 2021-2022, the Federal Ministry of Budget, Finance and National Planning and WFP conducted a Fill the Nutrient Gap (FNG) analysis in Nigeria with the support of the Office of the Vice President. Using a systems approach, the FNG identifies bottlenecks across the food system that result in inadequate dietary intake and ultimately malnutrition, with an emphasis on availability, cost, and affordability of nutritious foods.(2) The FNG is designed to contribute to national policy, programming and planning across different sectors and will support Nigeria's National Multi-Sectoral Plan of Action for Food and Nutrition (2021-2025) and



commitments for food systems transformations.(3,4) The FNG is a stakeholder-led process whereby actors from multiple sectors, including health, agriculture, social protection and education, are engaged at all stages of the analysis. Stakeholders include government ministries, civil society, United Nations agencies and bilateral donors, private sector, and academia. The FNG aims to create a shared understanding and ownership of the findings among stakeholders to ensure that the analysis is strategically relevant and to enable uptake of the evidence generated.

This report presents findings from the FNG analysis and a discussion of its process, methodology and limitations. It highlights recommendations and priorities identified by stakeholders. By identifying and contextualizing new findings, the FNG contributes towards building consensus around a vision and a path forward for improved nutrition in Nigeria in a sustainable way that is integrated across the country's food systems.

## **FILL THE NUTRIENT GAP: SITUATION ASSESSMENT FOR MULTISECTORAL DECISION-MAKING ON THE PREVENTION OF MALNUTRITION**

Malnutrition has two direct causes: inadequate dietary intake and disease. The FNG assessment focuses on gaps in dietary intake to inform national policies and actions that can be taken across food, social protection, and health systems to improve nutrition, with a focus on the most vulnerable populations. The FNG considers whether nutritious foods are available, accessible, and affordable in a specific context, and identifies the barriers that lead to gaps in nutrient intake. The analysis focuses on the extent to which vulnerable people have choices in the foods they consume and how those choices are made. The FNG process identifies and models the impacts of context-appropriate interventions to improve diets and nutrient intake across food, health, education, and social protection systems. The results are used to identify entry points across systems, to refine programmes, and to make recommendations to policymakers.

The assessment comprises two components:

1. A country-specific review of secondary data and information on factors that reflect or affect dietary intake. This includes malnutrition trends over time, characteristics of the food system and food environment, and population behaviour related to food and feeding.
2. An assessment of the extent to which economic barriers prevent adequate nutrient intake. This uses the Cost of the Diet (CotD) linear programming software developed by Save the Children (UK), and includes modelling of the economic impact of possible interventions to increase nutrient intake and fill nutrient gaps.

Preventing malnutrition, including through improved access to nutritious foods, cannot be achieved by one sector alone. FNG is designed to inform multisectoral decision making and therefore engages stakeholders from all sectors including food, health, agriculture, education, and social protection.

It is the stakeholders who define the scope and focus of the assessment. They contribute data and sources of information for identification of context-specific barriers and entry points and together with the analytical team develop a shared understanding of the issues and possible solutions. They then identify appropriate nutrition-specific and nutrition-sensitive interventions that can be implemented by different sectors using their existing delivery platforms. These could be social safety nets, food processing and markets, antenatal care, school feeding programmes, etc.

The FNG methodology has been developed by WFP with technical support from partners including the University of California Davis, the International Food Policy Research Institute (IFPRI, Washington DC), Epicentre (Paris), Harvard University (Boston), Mahidol University (Bangkok), Save the Children (UK), and UNICEF.

Between 2016 and early 2022, FNG analyses were in process of completed in over 40 countries.

For more information on the concept and the method of the analysis, see Bose I, Baldi G, Kiess L, de Pee S, The 'Fill the Nutrient Gap' Analysis: An approach to strengthen nutrition situation analysis and decision-making toward multisectoral policies and systems change. *Matern Child Nutr* 2019; DOI: 10.1111/mcn.12793

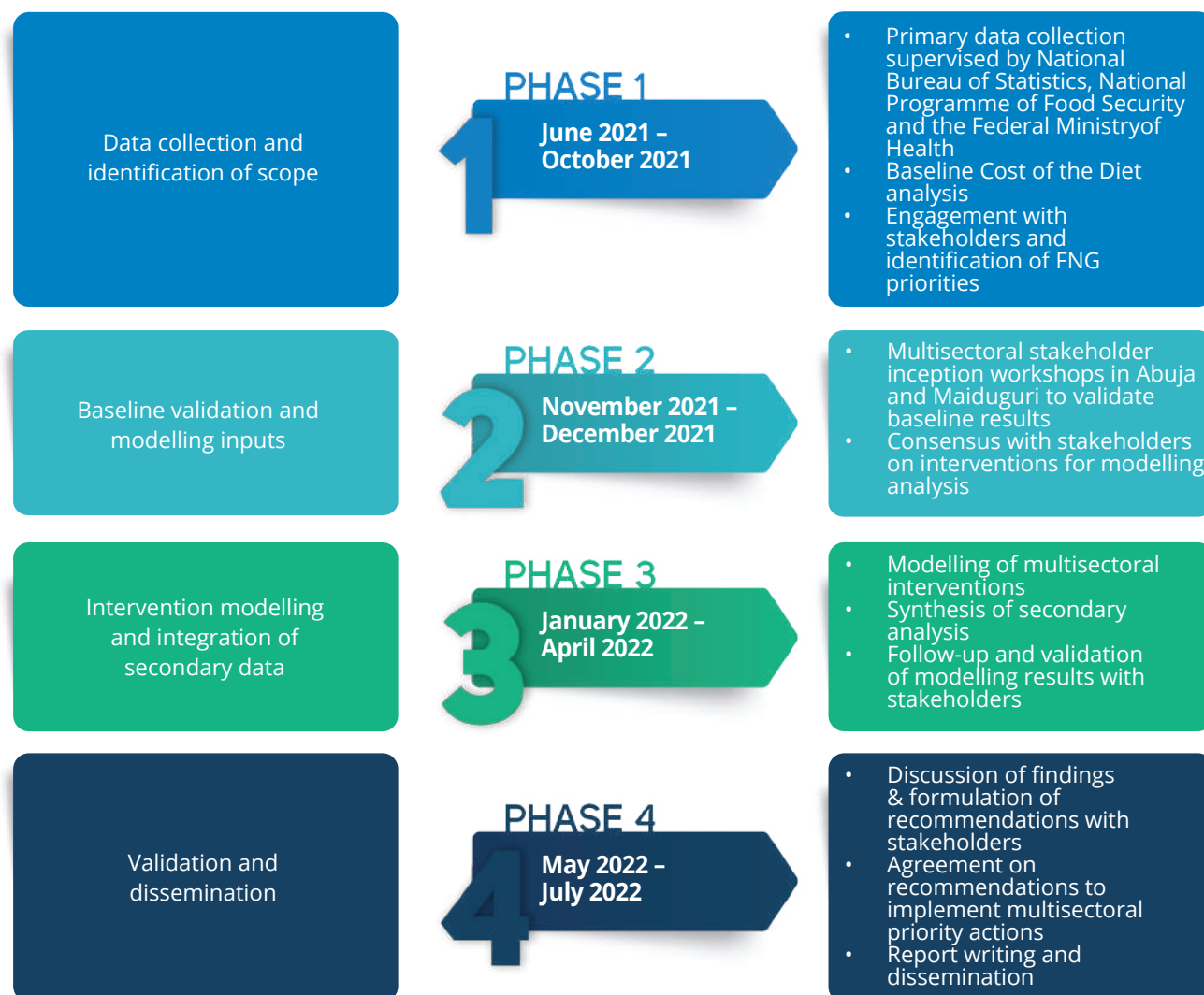
# Process and Scope of the Analysis

## Process of the FNG Analysis in Nigeria

The FNG process in Nigeria took place from June 2021 to July 2022 in close collaboration with the Ministry of Finance, Budget and National Planning (Figure 1). Primary data collection on food prices was conducted by WFP, supervised by the National Bureau of Statistics,

National Programme of Food Security and the Federal Ministry of Health. The analytical team engaged with stakeholders throughout the process. Two inception workshops were held in November 2021 in Abuja and Maiduguri respectively to validate baseline results and develop a modelling plan. This was followed by a workshop in May 2022 to validate results and to formulate recommendations with stakeholders.

**Figure 1:** The FNG process followed in Nigeria



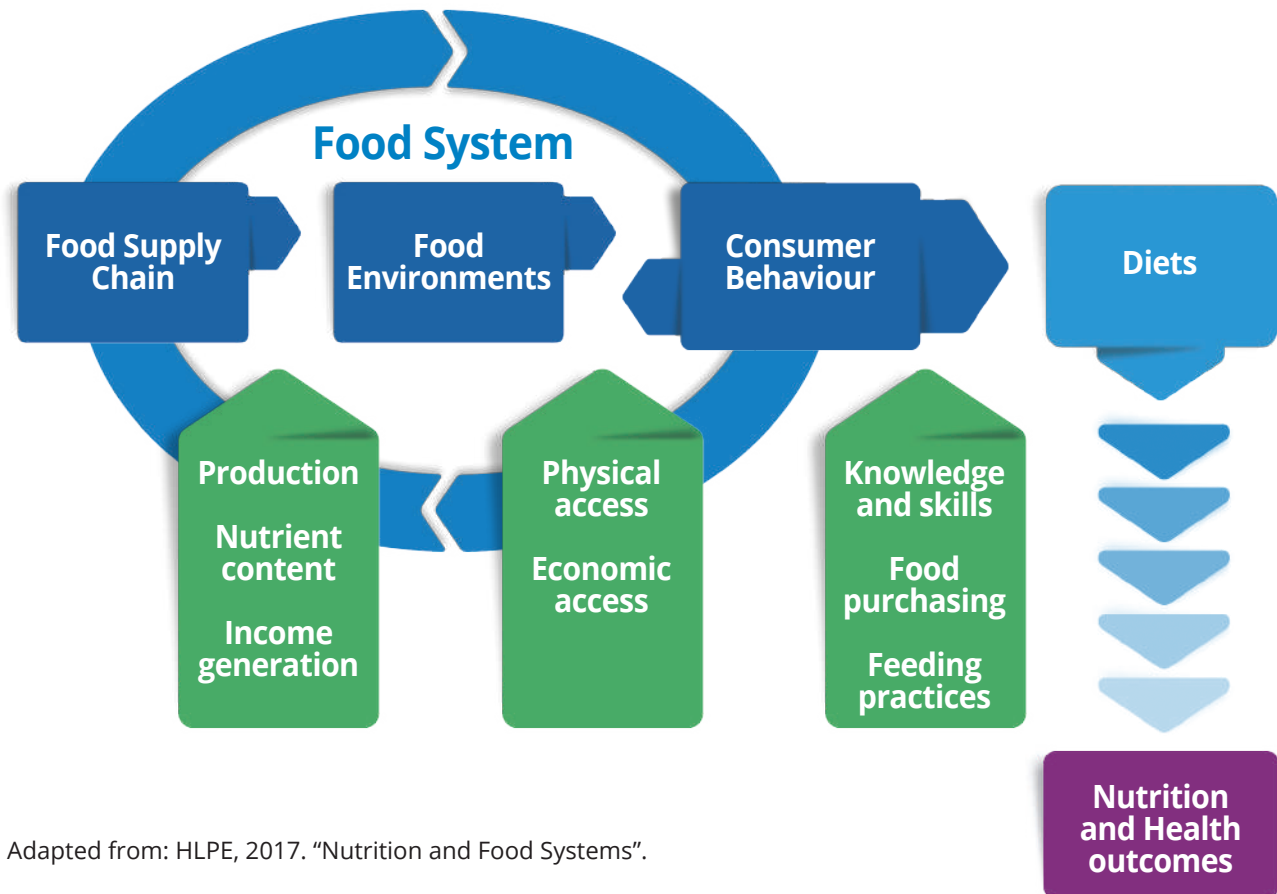


## Framework and methodology

Long term solutions to malnutrition require transformation of the food system and the food supply chains, the food environments and consumer behaviour patterns (Figure 2). The FNG analysis identifies nutrient gaps and barriers to adequate nutrient intake within the food system. The analysis is composed of a secondary literature review focusing on entry points for current and potential interventions to

improve diets and meet nutritional requirements, and a Cost of the Diet (CotD) analysis. The CotD analysis uses linear optimization to provide a detailed look at availability, cost and affordability of nutritious diets (Figure 3). Using the CotD analysis, solutions of interest for improving availability of nutritious foods, lowering their cost and/or increasing income are then assessed for their potential to improve affordability. In this way, the context-specific potential for impact of proven interventions can be quantified.

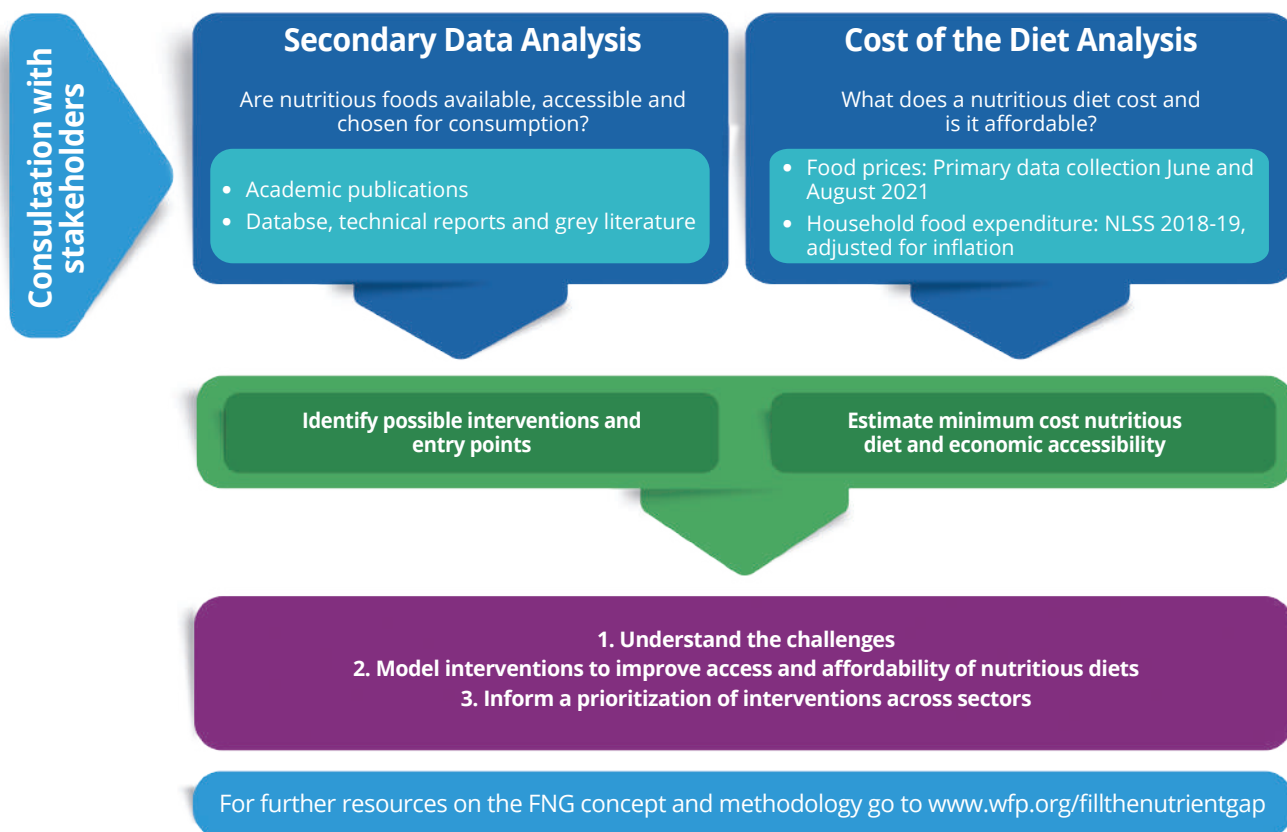
**Figure 2:** Food systems for diets, and nutrition and health outcomes framework



Adapted from: HLPE, 2017. "Nutrition and Food Systems".



**Figure 3:** FNG analytical framework



## Secondary Data Analysis

The FNG secondary data analysis provides an understanding of the current status of malnutrition and diets in the country. It identifies barriers to accessing

healthy diets, platforms for reaching nutritionally vulnerable groups in the population, and opportunities for policy and programme interventions to improve access to nutritious foods through multiple sectors, including agriculture, health, social protection and education.





## Cost of the Diet (CotD)

The CotD was undertaken at the state level for each of the 36 states and the Federal Capital Territory (FCT) at

the rural and urban levels. Modelled household & main target groups for the analysis.

### COST OF THE DIET (CotD) ANALYSIS

CotD software uses linear programming to understand the extent to which poverty, food availability and food prices may affect the ability of people to meet their nutrient needs. Using price data collected from markets or from secondary sources, the software calculates the amount, combination, and lowest possible cost of local foods that are required to provide individuals or households with their average needs for energy, and their recommended intake of protein, fat and micronutrients<sup>1</sup>. These diets are calculated within defined constraints to prevent the inclusion of unrealistic types or amounts of food and the provision of excessive amounts of nutrients.

The FNG approach defines the 'Staple Adjusted Nutritious Diet' as the lowest cost nutritious diet that includes a typical staple food and excludes foods that are prohibited<sup>2</sup>. This diet is referred to as the 'nutritious diet' throughout this summary. It meets requirements for nutrients, including protein, nine vitamins and four minerals, and does not exceed energy and fat requirements. The nutritious diet is conceptually similar to the 'nutrient-adequate' diet estimated as the second level of diet quality in the 2020 and 2021 State of Food Insecurity (SOFI) reports.<sup>(5,6)</sup>

Population food expenditure data is compared to the cost of the nutritious diet and is used to estimate the proportion of the population that would not be able to afford it. This non-affordability can be estimated and compared across different regions, seasons or countries. The estimate of non-affordability is a conservative estimate of the proportion of households unable to afford the lowest cost nutritious diet, assuming optimized selection of nutritious foods. The real cost and non-affordability of a nutritious diet is likely to be higher, as reflected by a healthy diet which includes foods from several food groups and has greater diversity within food groups.

The FNG Nigeria has additionally estimated the aggregate and individual level affordability gaps. The affordability gap is the difference between food expenditure per capita and the per capita cost of the nutritious diet and represents how much additional food expenditure each household would, on average, require to reach the cost of a nutritious diet. The cumulative affordability gap is calculated by summing up the per capita affordability gaps in an assessment area, which can then be summed up by using population weights to obtain a national-level estimate.

<sup>1</sup> As defined by the Food and Agricultural Organization (FAO) and the World Health Organization (WHO).

<sup>2</sup> This diet is not intended to reflect what individuals or households are currently eating nor should it be used to develop food-based recommendations or dietary guidelines. Some foods are prohibited for customary or health reasons, e.g., raw meat during pregnancy in some parts of the world.

<sup>3</sup> FAO, IFAD, UNICEF, WFP, WHO (2020, 2021). The State of Food Security and Nutrition in the World

## Data sources

### Food prices:

WFP, NBS, the NPFS and the Federal Ministry of Health conducted a market survey to collect price information for all foods available. In each state, five markets (two urban and three rural or peri-urban) were selected. Data collection took place in June 2021 in 20 northern states and in August 2021 in the remaining southern states.

### Food expenditure:

The NLSS 2018-19 was used to obtain data on household food expenditure.<sup>(7)</sup> This includes expenditure on food and non-alcoholic beverages consumed within and away from home and monetised value of foods produced for self-consumption. Given that NLSS 2018-19 represents

only the state level, rural and urban disaggregation was not possible for affordability analysis. To account for the time gap between NLSS 2018-2019 and food price data collection in June-August 2021, food expenditure data were adjusted for inflation using food Consumer Price Index (CPI) data from the NBS.<sup>(8)</sup>

### Staple adjustment:

The NLSS 2018-19 was used to identify the most consumed staples in each state in urban and rural locations, which were then validated by stakeholders<sup>1</sup>. Two daily portions of staples were included in the nutritious diet to account for approximately half of energy requirements for all household members, except for the young child for whom one portion of staple food was added to complement breastmilk.

<sup>1</sup> For a list of staples selected for each assessment area, please refer to the FNG Nigeria Full Report (*forthcoming*).

## Modelled household & main target groups for the analysis

Diet costs were estimated for a modelled household of five people, selected to represent the average household size in Nigeria<sup>2</sup>. The household composition used for the analysis reflects the different stages of the life cycle with different nutrient needs.

The household is composed of the following:

- breastfed child (12-23 months);
- school-age child (6-7 years);
- adolescent girl (14-15 years);
- breastfeeding woman;
- adult man.

## Cost of a healthy diet

The price data were also used to estimate the cost of a healthy diet indicator which represents the cost of meeting food-based dietary guidelines (FBDG) and is calculated by using the least expensive foods available in each food group category in the guidelines.<sup>(9)</sup>

As Nigeria does not have quantitative FBDG, the FNG analysis used the Healthy Diet Basket, which is “a global standard set of criteria that represents commonalities across most FBDG globally”.<sup>(10)</sup> The Healthy Diet Basket typically uses a non-pregnant or lactating woman of reproductive age as the reference individual to define caloric needs (2330 kcal). For the FNG analysis, however, caloric needs were scaled to match those of the five person modelled household (2073 kcal)<sup>3</sup>.

The following steps are taken to estimate the cost of a healthy diet. The recommended amount to purchase

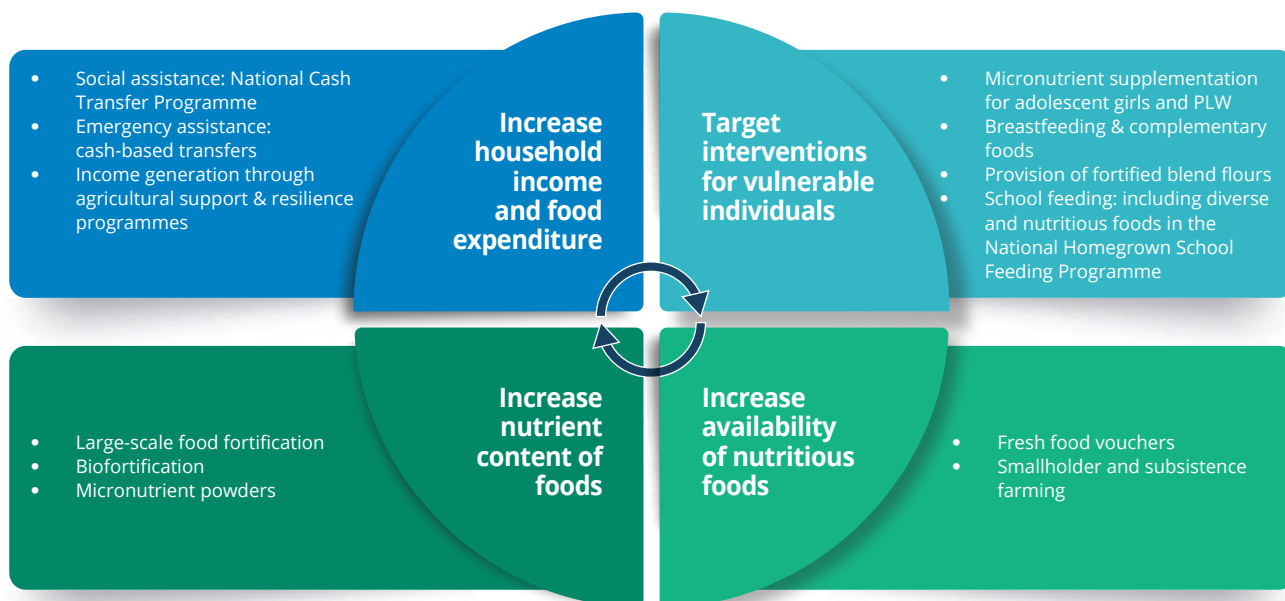
per day is calculated for each food item. This amount depends on the recommended energy requirements of the food group to which the food items belong. Food items are then sorted by the cost to purchase the recommended amount, and one to three of the least expensive foods are selected from each food group. These food items are used to compute the cost of meeting the energy requirements for each food group. The cost of a healthy diet is calculated by summing up the cost of all food groups.

## Intervention modelling

The selection of interventions modelled in the FNG analysis was defined by stakeholders during workshops and consultations. These interventions, outlined in Figure 4, were modelled using the CotD software to highlight their potential impact on the cost of nutritious diets.

Ten states were selected for intervention modelling. One state was selected from each of the geopolitical zones based on a score constructed using nutrition outcomes, non-affordability rates and population sizes. In the North East and North West three states were selected, given the additional focus on emergency assistance in this analysis. The ten states selected were: Adamawa, Borno, Yobe (North East), Katsina, Sokoto, Zamfara (North West), Nasarawa (North Central), Lagos (South West), Rivers (South South) and Anambra (South East). However, for some interventions modelling was not carried out in these 10 states but in a different state, e.g., the school feeding modelling was done in FCT because school menus were available for this area.

**Figure 5:** Entry points and interventions modelled to estimate reduction in cost of a nutritious diet



<sup>2</sup> According to the Nigeria DHS 2018, the average household size was 4.7 persons.

<sup>3</sup> The Healthy Diet Basket is composed of the following: starchy staples (50 percent of kcal, 2 items), vegetables (5 percent of kcal, 3 items), fruit (7 percent of kcal, 2 items), animal-source foods (13 percent of kcal, 2 items), legumes, nuts, seeds (13 percent of kcal, 1 item) and oils and fats (12 percent of kcal, 1 item).



## Considerations for interpretation and data gaps

Data on food availability and prices were collected at one point in time thus it is not possible to capture seasonal variation in the cost and affordability of nutritious diets. The price data therefore also reflect the market conditions on the specific dates of data collection. However, given that the price data were collected during the lean season, the cost estimates in the FNG represent the worst case scenario when food availability and diversity are likely to be lower and prices comparatively higher.

Price data were collected from main markets which were selected to ensure a comprehensive list of foods. However, households in more remote areas further away from these markets, could experience lower availability of food, higher food prices and/or additional costs related to travelling to the market.

In some states, particularly in the North East states of Borno, Yobe and Adamawa, markets were selected

in areas which enumerators could safely access, introducing a bias in results. Markets in areas which are more insecure are likely to have higher prices and/or less availability of foods. For similar reasons, food expenditure data from the NLSS 2018-19 in Borno is not statistically representative of the state as enumerators were unable to access all the survey enumeration areas.

For non-affordability estimates, food expenditure data from 2018-19 has been used and therefore the following caveats apply:

1. Data were collected before the COVID-19 pandemic and high food inflation in Nigeria. This could have changed food consumption and expenditure patterns which are not accounted for.
2. Food price data have been adjusted for inflation, however, there may be a bias as substitution effects cannot be captured. As prices rise, households may purchase less expensive items or a different basket of goods and therefore their total food expenditure may not rise proportionately to inflation, as is assumed in our analysis.



# Findings

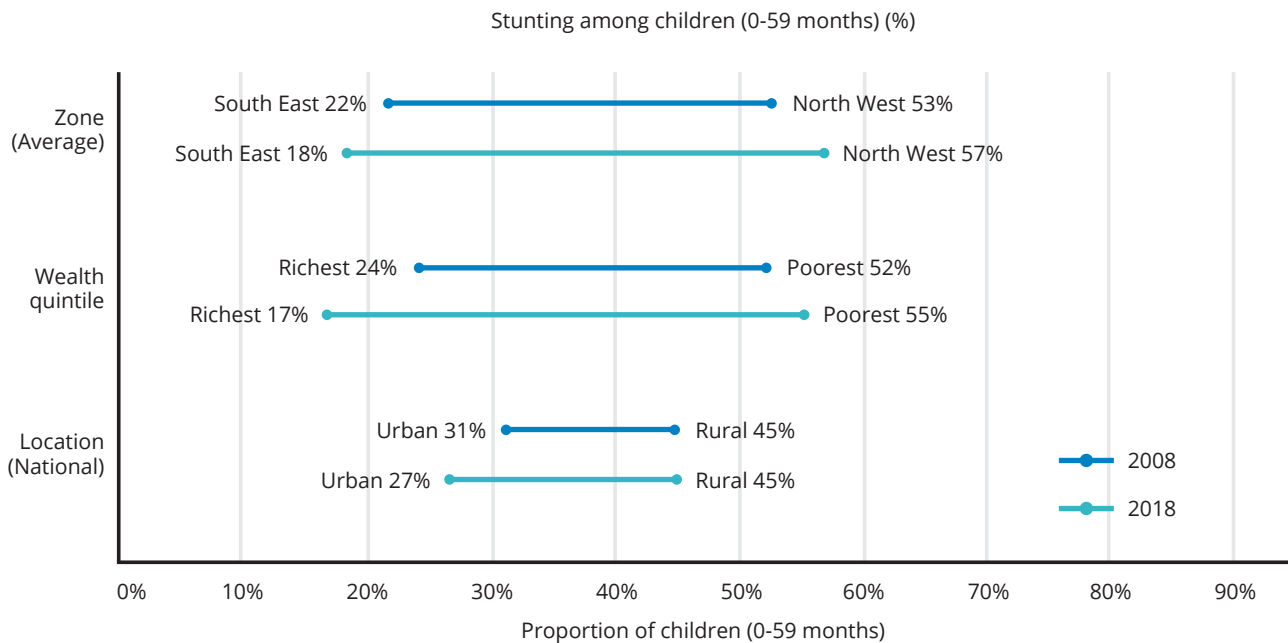
## 1. Malnutrition in all its forms is a key concern in Nigeria. Socioeconomic & geographical inequities in nutrition outcomes are substantial and have worsened over the years.

Malnutrition is widespread in Nigeria - in 2018, 37 percent of children under 5 were stunted and 7 percent were wasted. Stunting rates, as classified by the World Health Organization, were very high. However, stunting prevalence differs widely across Nigeria based on where children live and their household's socioeconomic status. There is a higher proportion of stunted children in the North (e.g. as high as 57 percent in the North West) compared to the South (e.g. as low as 18 percent in South East). At state level, the gap is even wider, with stunting rates ranging from

14 percent in Anambra to 66 percent in Kebbi. Similarly, wasting prevalence in the North East (9-10 percent) is about twice that of other regions (ranging from 4-6 percent).(1)

These inequalities in child undernutrition have increased over the last decade. Figure 5 uses data from 2008 and 2018 and shows the variation in stunting prevalence between the poorest and richest wealth quintiles, rural and urban locations, and the two zones with the highest and lowest stunting rates. There was a decline of 4 percent in stunting in the South East (from 22 percent to 18 percent) between 2008 and 2018. However, in the North West, where prevalence of stunting was already very high, stunting increased from 53 percent to 57 percent during this period.(1,11) A similar unequal change in stunting can be observed between the richest and poorest households and between urban and rural households.

**Figure 5:** Stunting among children (0-59 months) in 2008 and 2018 by geopolitical zones, wealth, and location (Nigeria Demographic Health Survey (DHS) 2008-2018)

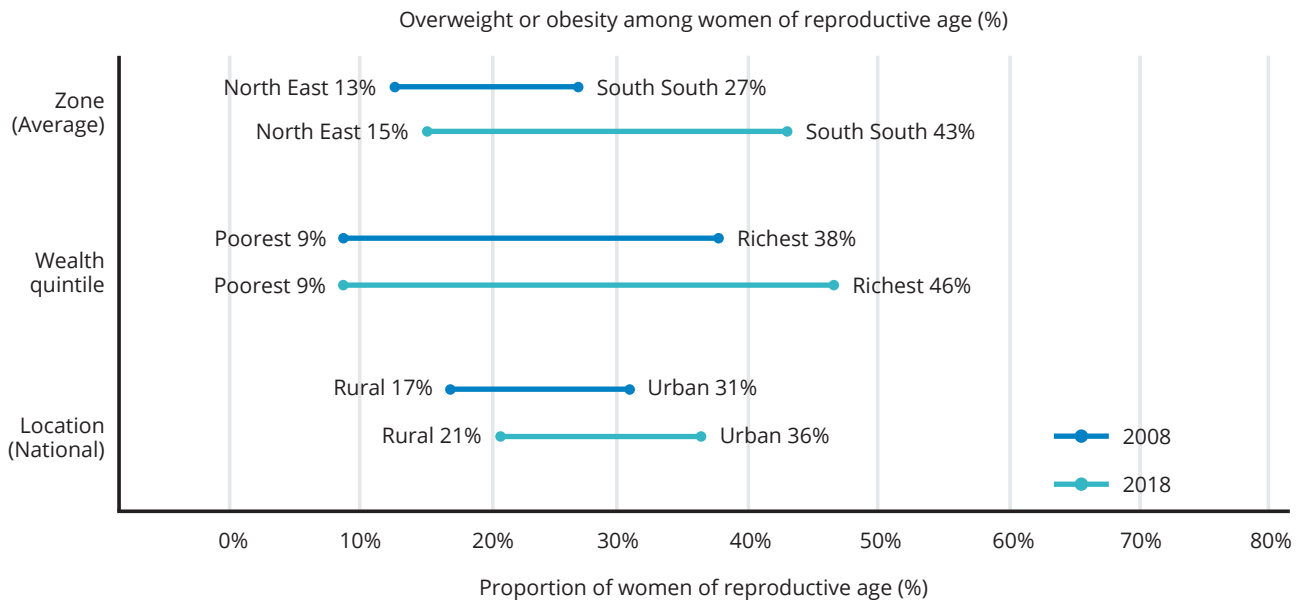


When overweight and obesity among women of reproductive age are considered, the trends are reversed. As shown in Figure 6, the prevalence of overweight and obesity increased by 8 percent among the richest households, while no change was observed for women living in the poorest households. Similarly, there has been a large increase in overweight and obesity among women in the South-South with rates nearly doubling from 27 percent to 43 percent. During this period, there was only a small increase of 2 percent (from 13 percent to 15 percent) in the North West.(1,11)

A study on the drivers of stunting reduction shows that half of the changes between 2013-2018 are correlated with maternal undernutrition (low Body Mass Index (BMI)), health-seeking behaviour (antenatal care, delivery in a health facility), child illness, household's socioeconomic status (asset index) and parental education.(12) However, the other half of the change in stunting remains unexplained by Nigeria's Demographic Health Survey (DHS) indicators. This implies that stunting improvements could be explained by other factors, including dietary quality and dietary diversity.



**Figure 6:** Overweight and obesity among women of reproductive age (15-49 years) in 2008 and 2018 by geopolitical zones, wealth, and location (Nigeria DHS 2008-2018)

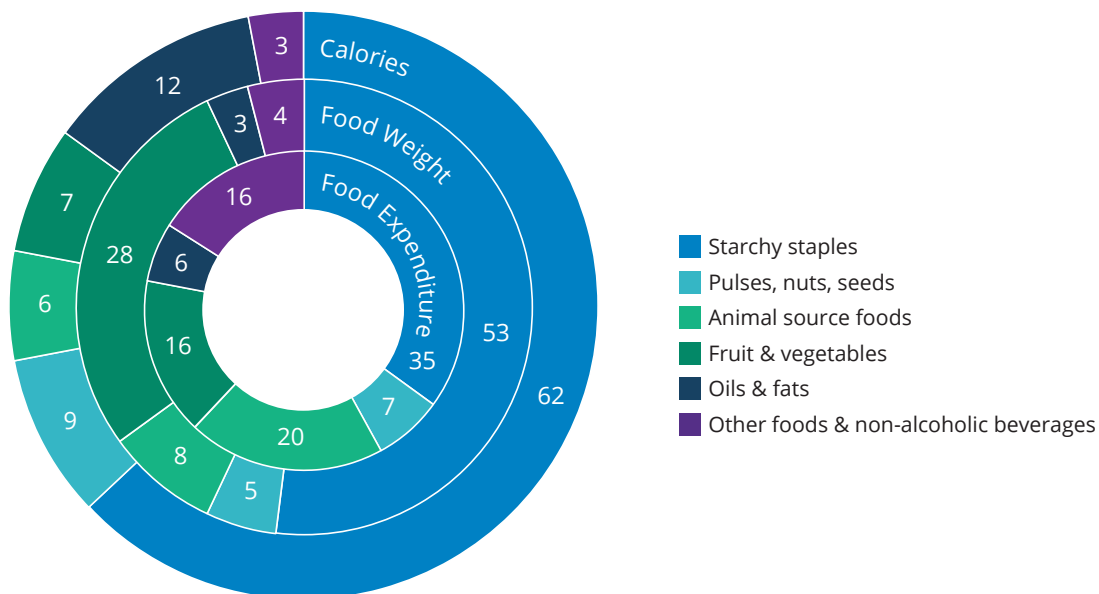


**2. Poor diets are a root cause of all forms of malnutrition. The average diet in Nigeria is not diverse and is heavily based on starchy staples.**

The diet of an average household in Nigeria is not diverse. Starchy staples contribute 62 percent of food items at 35 percent of expenditure (Figure 7)<sup>4</sup>.

A relatively large proportion of food expenditure (16 percent) goes towards 'other foods and non-alcoholic beverages' which, apart from spices and condiments, includes items such as sugar-sweetened beverages and confectionary. An average household dedicates around 20 percent of its food expenditure to (nutritious) animal-source foods which only provides 6 percent of calorie intake, reflecting the relatively higher caloric prices of animal-source foods.

**Figure 7:** Contribution of food groups to diets (foods consumed at home) by calories, food weight and food expenditure (NLSS 2018-19)



<sup>4</sup> The data on diets reported in this section refers only to foods consumed at home; foods consumed away from home are excluded as the NLSS 2018-19 does not disaggregate the latter by food group. Food consumption is based on a weekly recall, while food expenditure is based on the quantity and value of food purchased in the last 30 days.

Unpacking these results further shows that diets depend on the location and wealth of a household. Households in the bottom quintile are less likely to consume animal-source foods compared to households in higher quintiles. Dairy consumption, which is low across wealth quintiles, is substantially lower among the lowest quintile (36 percent of households) compared to the highest quintiles (76 percent). However, these differences are less pronounced for food groups such as fruit and vegetables.

Diets tend to be relatively more diverse in the Southern states with starchy staples contributing 53-60 percent to calorie intake compared to 68-73 percent in the Northern states. Given the larger contribution of staples to diets in the Northern states, the relative share of calories from other food groups such as animal-source foods, fruit and vegetables, is lower.

Diets also tend to get more diverse the higher the household's total food expenditure gets, implying that wealthier households are able to afford more fresh, nutritious foods. For example, households in the highest consumption quintile obtained 52 percent of their calories from staples, while households in the lowest quintiles obtained 72 percent of their calories from staples. Additionally, wealthier households receive a larger share of their calories from oils and fats, which could be a contributory factor to higher rates of overweight and obesity among such households (see Finding 1).

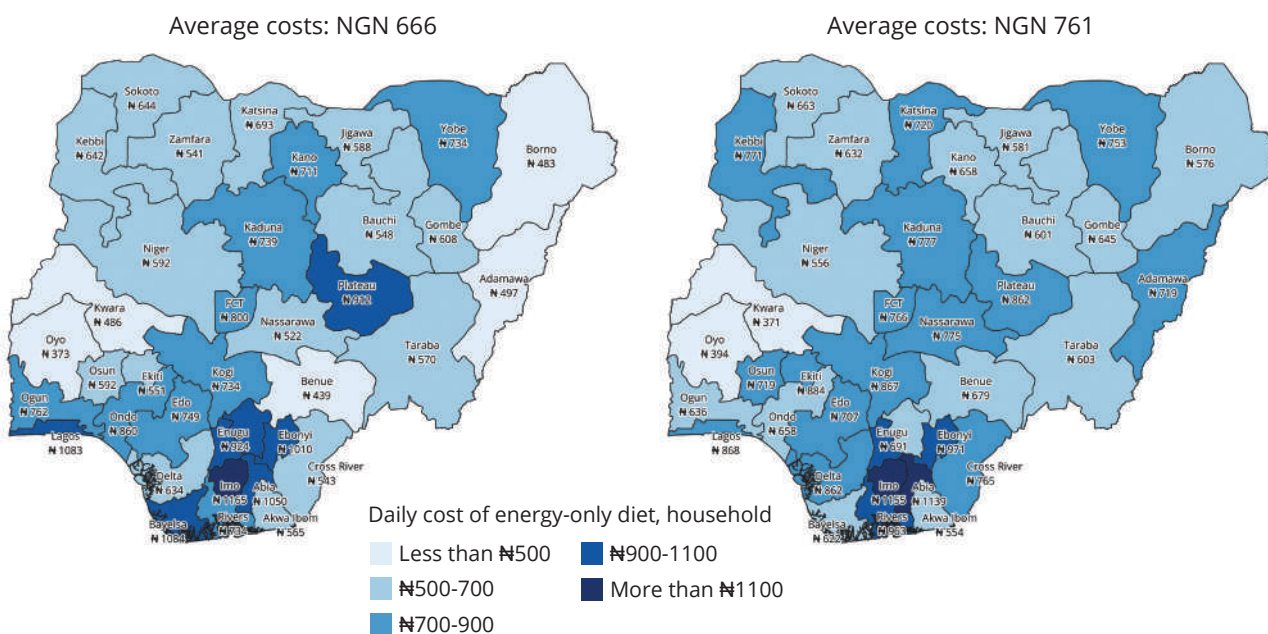
### 3. The cost of meeting nutrient needs is more than twice the cost of meeting energy needs. The nutritious diet cost varies greatly across states.

The FNG analysis estimated the cost of meeting energy requirements (energy-only diet) and the cost of meeting nutrient requirements (nutritious diet). The national average cost of the energy-only diet in Nigeria was NGN 707 (USD 1.72) per five person household per day, while the cost of the nutritious diet was NGN 1,687 (USD 4.09). The nutritious diet costs around 2.5 times more than energy-only diet. This is because the energy-only diet usually contains a mix of starchy staples, oils and fats while the nutritious diet includes diverse and nutrient-rich foods such as green leafy vegetables and animal-source foods which tend to be more expensive.

The costs of the energy-only diet and the nutritious diet were found to be higher on average in the south compared to the north, and in urban areas compared to rural areas (Figures 8a, 8b, 9a and 9b). The average<sup>5</sup> daily cost of the energy-only diet for the five person household was NGN 788 in the south compared to NGN 666 in the north, and NGN 761 in urban areas compared to NGN 666 in rural areas. The nutritious diet cost per day was NGN 2,069 in southern states while in the northern states it was NGN 1,362, and NGN 1,912 and NGN 1,511 in urban and rural areas respectively. This implies that in general food prices tend to be higher in urban areas and in the southern states.

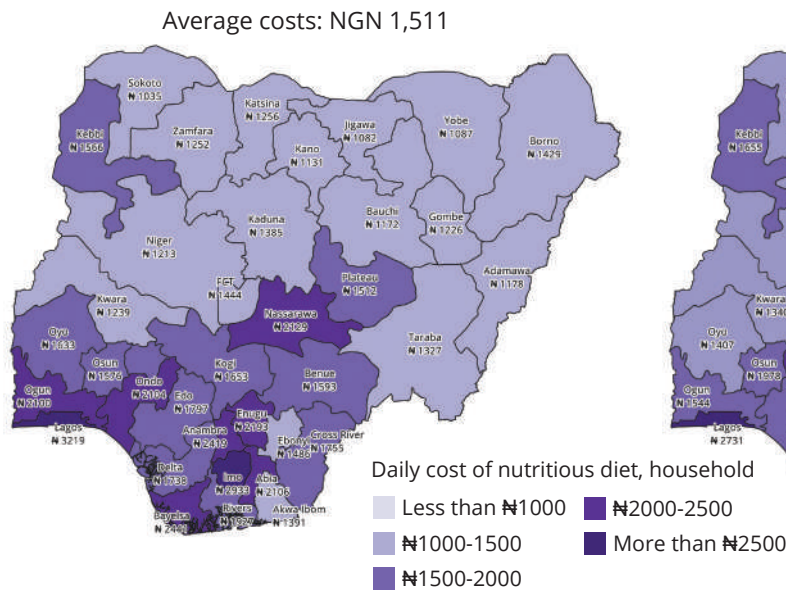
**Figure 8a:** Daily cost of an energy-only diet for a five person household in rural areas

**Figure 8b:** Daily cost of an energy-only diet for a five person household in urban areas

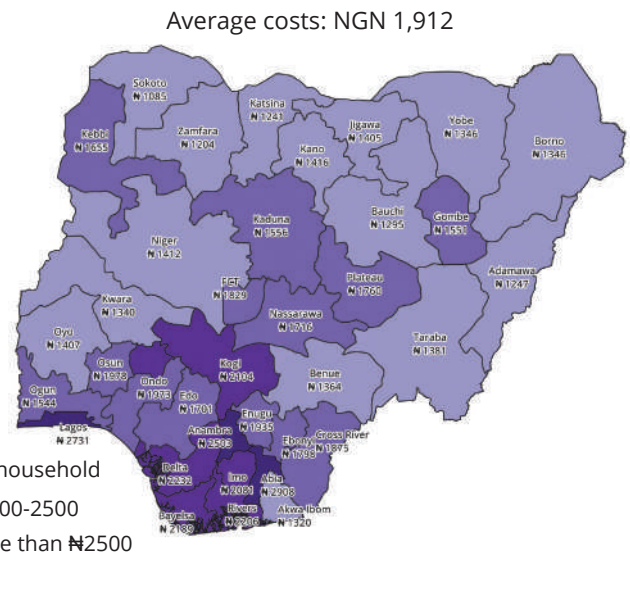


<sup>5</sup> Population-weighted averages to estimate national level average. Population weights were obtained from the 2018 Nigeria DHS.

**Figure 9a:** Daily cost of a nutritious for a five person household in rural areas



**Figure 9b:** Daily cost of a nutritious for a five person household in urban areas



The CotD analysis identifies the “limiting nutrients” that are particularly challenging or costly to meet given food prices and availability in an area. In most areas of Nigeria, iron and calcium were the main limiting nutrients, indicating these micronutrients are less likely to be consumed in adequate amounts, and policies and interventions should focus on making foods rich in iron and calcium more accessible and affordable. Common sources of calcium in Nigeria include milk and other dairy products, small dried fish and green leafy vegetables, while meat and offal, eggs and soybeans are rich sources of iron.

There were secondary limiting nutrients too, for example, pantothenic acid (vitamin B<sub>5</sub>) was found to be a limiting nutrient for lactating women in most areas, vitamin A for lactating women in half of the southern areas and vitamin B<sub>12</sub> for lactating women and children under two in more than half of the assessment areas in the North West.

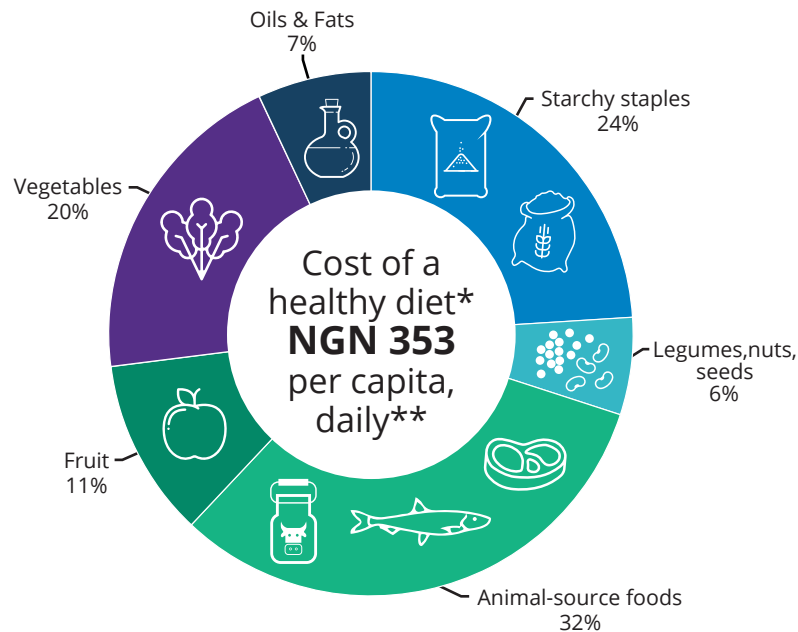
### Cost of a healthy diet

In addition to the cost of the nutritious diet, the FNG also calculated the cost of a healthy diet. As explained in the introduction section, the cost of a healthy diet uses a different methodology than the cost of the nutritious diet and represents the lowest cost of meeting FBDG. In Nigeria, the national average cost of a healthy diet is NGN 353 per day per person or NGN 1765 per day for a household of five members. The slightly higher cost reflects the additional cost of consuming a more diverse diet that meets dietary recommendations in terms of portion sizes. However, this cost is not substantially higher. An assessment of the nutritional adequacy of the healthy diet as selected, i.e. the combination of foods that the cost was based on, shows that it did not fully meet nutrient needs, in particular for iron and/or calcium. This does not imply that a diet that meets FBDG would not be nutrient-adequate, but that to achieve this the cost may be higher. The largest contributors to the cost of a healthy diet are animal-source foods which make up 32 percent of the cost, followed by starchy staples (24 percent) and vegetables (20 percent).





**Figure 10:** Daily cost of a healthy diet per capita disaggregated by food group



\*Cost = national weighted average

\*\* Scaled to match energy requirements of an FNG modelled household

#### 4. One in three households was not able to afford the lowest cost nutritious diet. It would take NGN 3.3 trillion (around USD 8 billion) for all these households to be able to afford a nutritious diet.

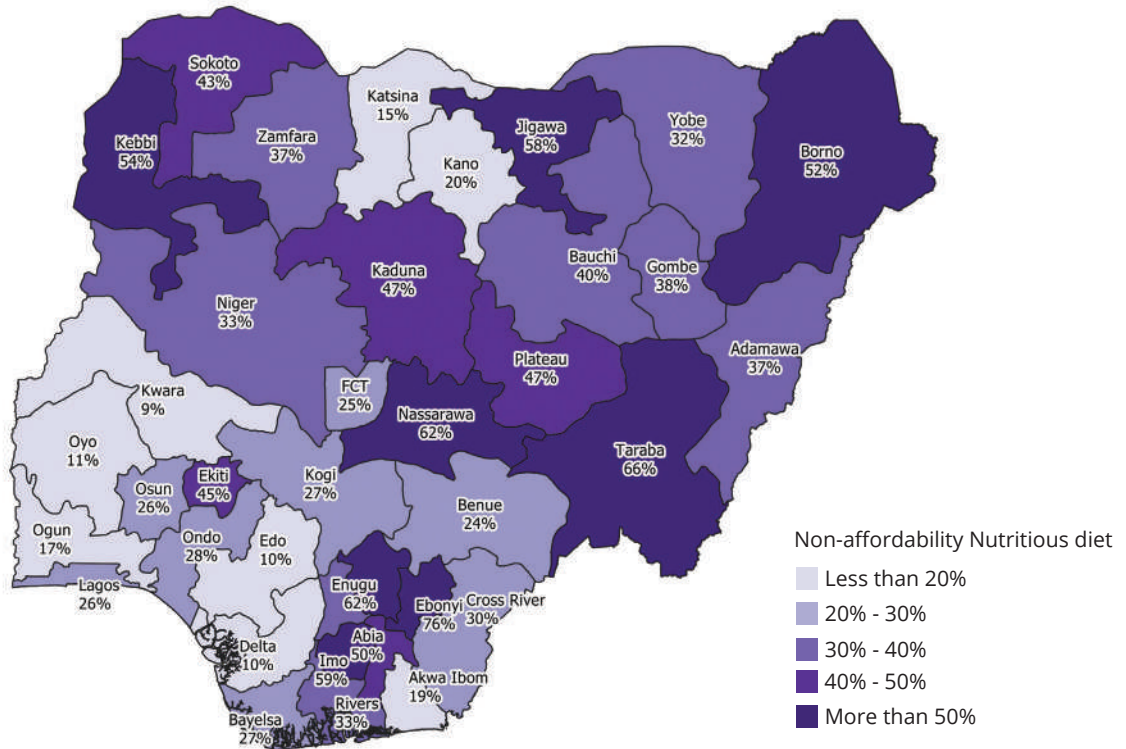
Nationally, only 4 percent of households would not be able to afford an energy-only diet, indicating that a large proportion of the population is able to cover basic energy needs. However, in some states even the lowest cost of meeting basic food needs is out of reach for households, for example, in Ebonyi and Taraba where the non-affordability rate for the energy-only diet was 36 percent and 20 percent respectively.

The proportion of those unable to afford the lowest cost of a nutritious diet is higher. At the national level,

the rate of non-affordability of a nutritious diet was 34 percent. This indicates that a third of the population was not able to afford the lowest cost of meeting nutrient needs. This proportion is the lower bound and would tend to be higher in reality given that actual diets reflect food preferences and tastes and additional costs such as travelling to a market. The non-affordability rate varies greatly across states from as low 9 percent in Kwara to as high as 76 percent in Ebonyi (Figure 11). Apart from some exceptions such as Ebonyi (76 percent), Enugu (62 percent), Imo (59 percent) and Ekiti (45 percent), states with the highest non-affordability rates are in the north, which is opposite to what we saw with the cost of the nutritious diet (see Finding 3), showing that while food prices may be higher in the south, income levels tend to be lower in the north. This indicates that households in the northern states face more economic challenges in accessing, affording and consuming nutritious foods.



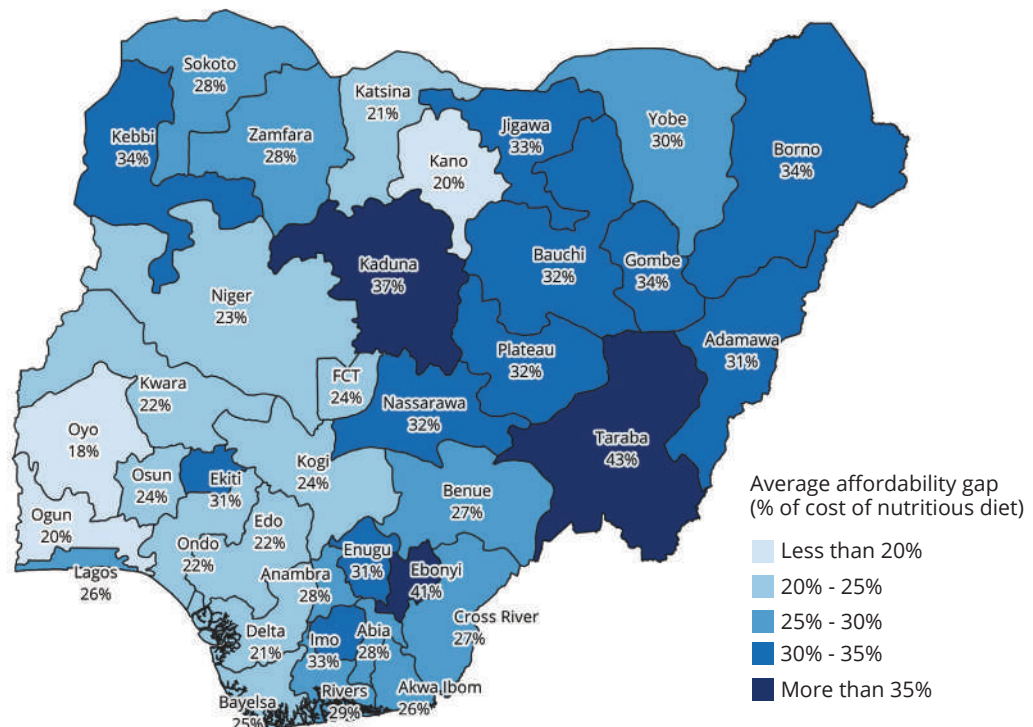
**Figure 11:** Non-affordability of a nutritious diet for a five person household



The affordability gap of a household shows how far it is from being able to afford the lowest cost nutritious diet. The cumulative affordability gap, which sums up individual affordability gaps, represents the monetary amount that would be needed to enable all households to reach the lowest cost nutritious diet. At the national level, the affordability gap was estimated to be NGN 3.3 trillion (around USD 8 billion) a year.

Figure 12 shows the average affordability gap as a proportion of the cost of the nutritious diet for each state, representing the intensity of non-affordability. The depth of non-affordability ranges from as low as under 20 percent in Oyo and Ogun to over 40 percent in Ebonyi and Taraba. The individual needs for closing the gap are therefore higher in states such as Ebonyi and Taraba.

**Figure 12:** Depth of non-affordability (percentage gap of the cost of the nutritious diet)



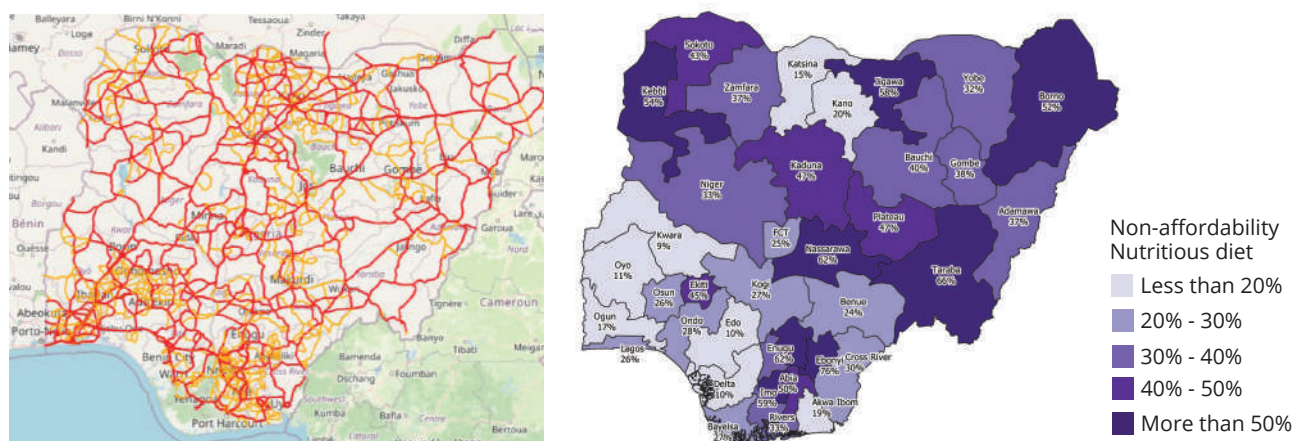
## 5. Infrastructure development has not kept up with demographic development which has negative implications for overall economic growth and for a household's access to a nutritious diet. Access is further restricted due to the worsening security situation.

Nigeria's basic physical infrastructure has not been able to keep up with its rapid population growth and has been slower to improve than other similar middle income countries. In 2016, fewer than 70 percent of Nigerian households had access to clean water, while in other middle income countries nearly 90 percent of households had access to clean water. Similarly, only about a third of Nigerians had access to improved sanitation facilities compared to over half in peer countries. Road infrastructure, too, is relatively underdeveloped in Nigeria with 16 percent of roads being paved compared to more than 50 percent in other middle income countries. Nigeria also faces substantial challenges with power deficits which has significant economic implications.

Although nearly 9 out of 10 companies in Nigeria use private generators which provide up to two thirds of their electricity needs, an estimated 9 percent of sales is lost annually due to electricity outages.(13)

Poor infrastructure negatively impacts the ability of the food system to provide nutritious diets. It limits access to markets for consumers and for producers, with impacts on food availability and on labour market opportunities and household income. In Nigeria the density of roads is concentrated in the South with some pockets in the centre, around the capital and selected parts of the North.(14) Less developed road infrastructure is one of the drivers of non-affordability of nutritious diets; when comparing road network and non-affordability rates, we can see that non-affordability is high in areas such as the Taraba and Borno where the road network is less dense (Figure 13). Electricity outages are a barrier to ensuring a safe cold chain for perishable nutritious foods which can limit the domestic supply and impact on prices. As discussed in Finding 12, post-harvest loss is a big concern in Nigeria and the weak road and electricity infrastructure are among the main reasons a large proportion of food spoils after harvest.(15)

**Figure 13:** Comparison of Nigeria's road network (main roads) with non-affordability rates (WFP GeoNode)



In the North East states of Borno, Adamawa and Yobe, food environments are further weakened by conflict. A WFP assessment using the Market Functionality Index (MFI) shows that markets suffer most from poor infrastructure, food quality<sup>6</sup> and customer services<sup>7</sup>, and price volatility.(16) Another study showed that due to repetitive attacks, only a third of the markets

in these states have shown normal activity at any period since November 2014.(17) This is of concern as the percentage of food expenditure of urban and rural households that comes from their own production is only 11 percent and 34 percent respectively<sup>8</sup>. The reliance on markets for food makes households vulnerable to shocks.

<sup>6</sup> The MFI assesses food safety against key principles of hygiene and cleanliness, material separation, temperature control and stock management. The reliable supply of products – in both adequate quantity and quality – is a key characteristic of good market functionality.

<sup>7</sup> The service dimension looks at the service provided while shopping as well as during check-out. The level of service is directly or indirectly associated with different features of a well-functioning market such as transparency, competition or reliability.

<sup>8</sup> Authors' analysis using NLSS 2018-19.



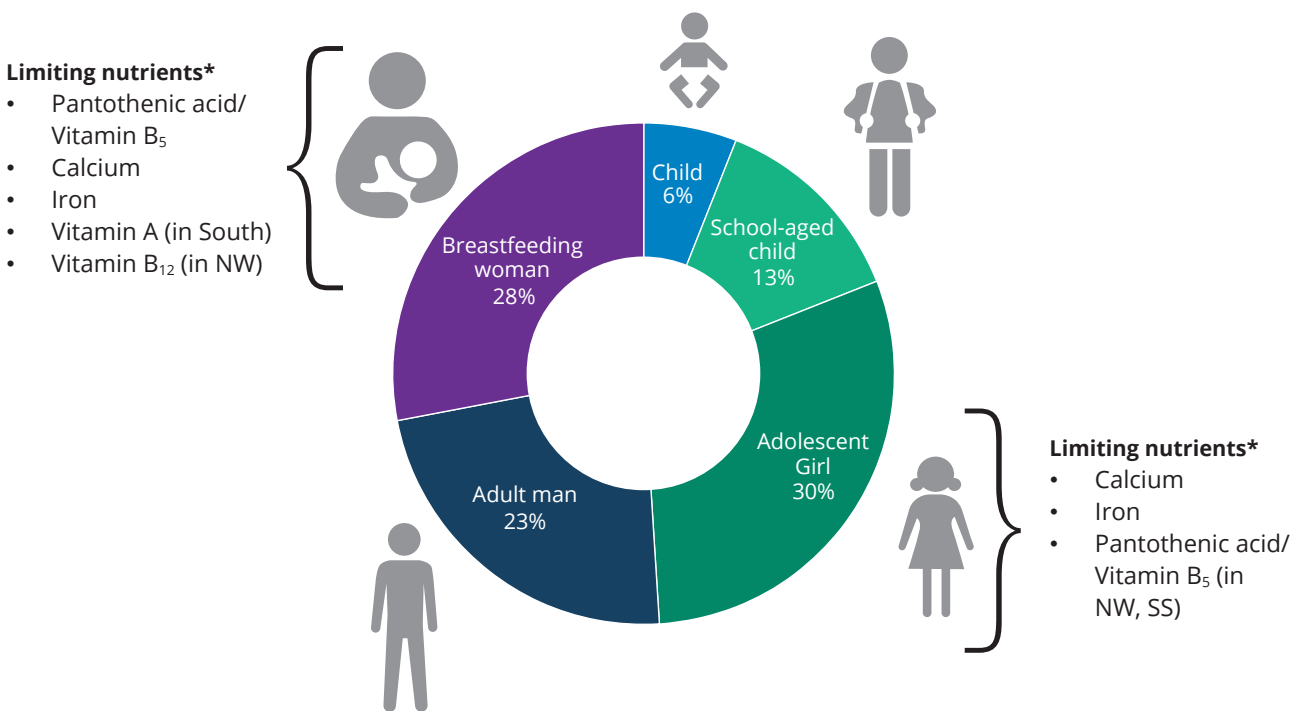
**6. Adolescent girls and pregnant and breastfeeding women have high nutritional needs, translating into high cost and putting them at higher risk of malnutrition. Targeted interventions that improve their nutrient intake can reduce their risk of malnutrition.**

Increasing rates of overweight and obesity is a concern in Nigeria. Between 2008 and 2018 the proportion of women of reproductive age (15-49 years) who were overweight or obese increased from 22 percent to 28 percent.(1,11) As discussed in Finding 1, the increase in overweight and obesity has been greater in urban areas, among wealthier households and in southern states. While overweight and obesity have increased, the prevalence of thinness (BMI < 18.5) among women of reproductive age has remained stable from 2008 to 2018 at 12 percent, with prevalence being as high as 23 percent in the North East and 22 percent among women in the poorest households.(1,11)

Lack of diverse diets is a cause of malnutrition. The 2018 Nigeria DHS found that women aged 15-49 years in urban areas consumed nutritious foods more frequently than those in rural areas including meat, fish and poultry (84 percent vs 59 percent) and eggs (22 percent vs 11 percent).(1) Women in urban areas also consumed sugary foods (19 percent vs 13 percent) and sugar-sweetened beverages (32 percent vs 13 percent) more often. Similar trends can be observed with more consumption of animal-source foods and sugary products among wealthier women.

In Nigeria, 60 percent of pregnant women and adolescent girls were anaemic in 2018.(1) The CotD analysis found that adolescent girls account for 30 percent of the modelled household's total cost of the nutritious diet, followed by the breastfeeding woman (28 percent) (Figure 14). The higher cost of their diets reflects their higher nutritional needs, in particular for micronutrients such as iron, vitamin B<sub>12</sub> and pantothenic acid. They require twice as much iron per kilocalorie than an adult man or school-age child and iron-rich foods tend to be relatively more expensive. Their micronutrient needs are more difficult to meet which puts them at an elevated risk of micronutrient deficiencies.

**Figure 14:** Daily cost of the nutritious diet disaggregated by household member (national average)



Weighted average, FNF 2021  
 \*Limiting nutrient in more than 50% of assessment areas

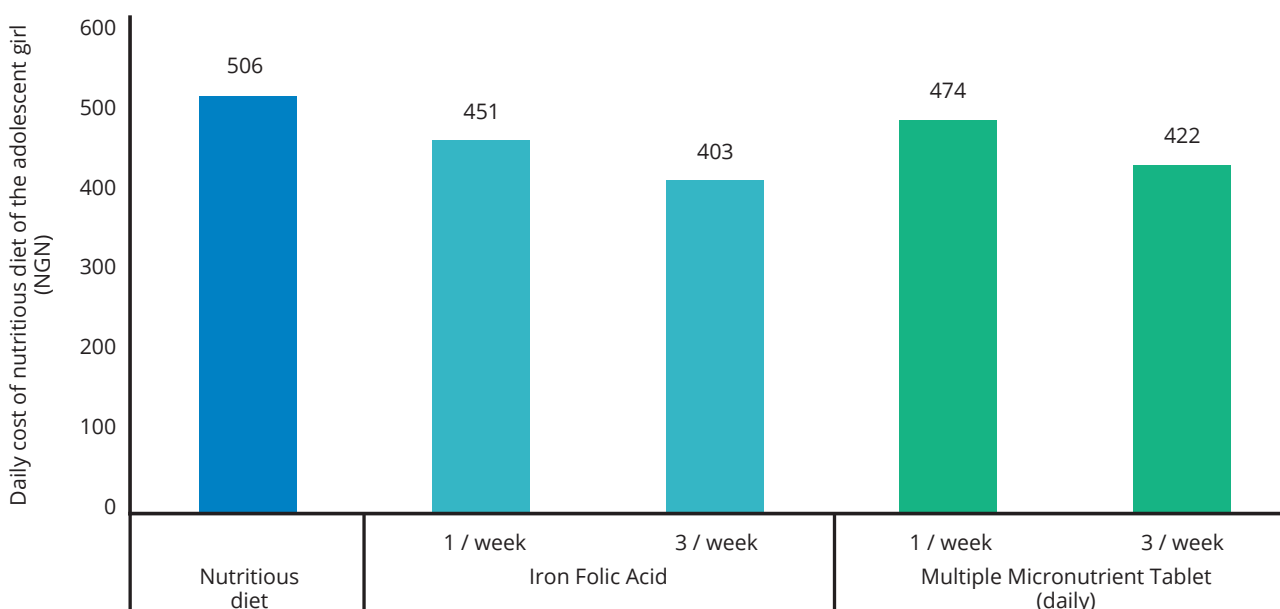
Pregnancy increases the already high micronutrient needs of an adolescent girl which further increases malnutrition risk, especially if she does not have an adequate nutrient intake. This is of particular concern in Nigeria due to early childbearing. The Nigeria DHS 2018 reports that 28 percent of women aged 20–24 years had had their first child by the age of 18.(1)

The WHO recommends iron/folic acid (IFA) supplementation as a public health intervention for adolescent girls, particularly in areas with anaemia prevalence of 40 percent or higher, and daily supplements for pregnant women in all contexts.(18) The FNG analysis shows that the cost of the nutritious diet for a lactating woman reduces by 14 percent when given a daily IFA supplement. For the adolescent girl, the cost of the nutritious diet reduces by 11 percent if provided with an IFA supplement once a week, but reduces to 20 percent if the supplement is provided 3 times a week (Figures 15a and 15b).

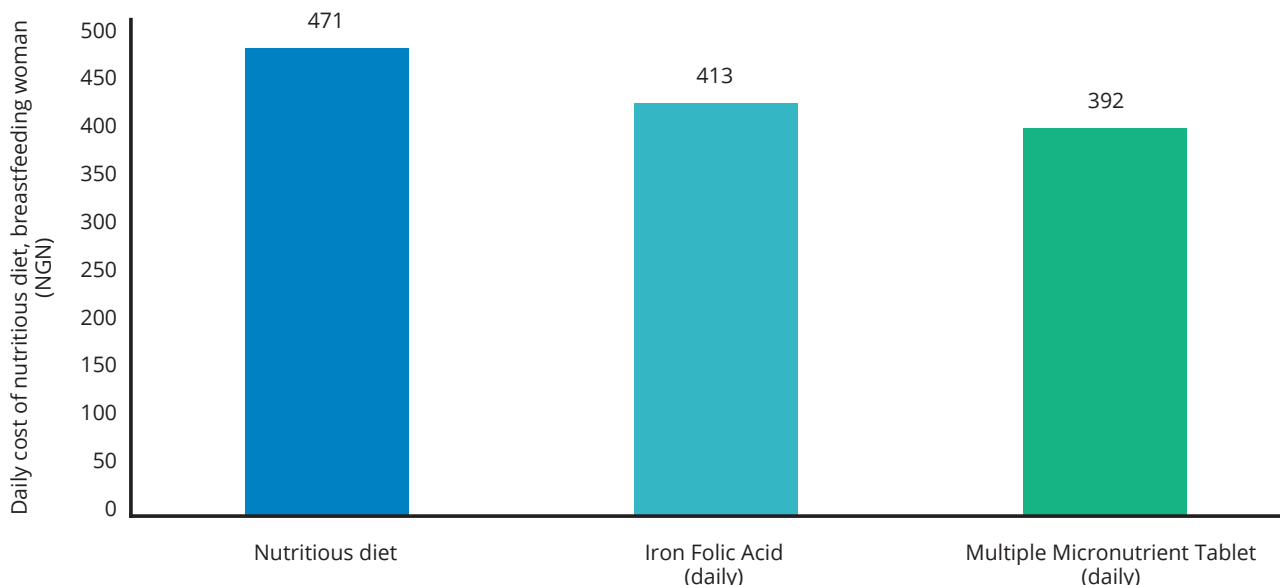
Coverage of supplementation among pregnant women in the poorest households is very low, with only half of them taking an IFA supplement and only 17 percent of them taking more than 90 supplements during the course of the pregnancy.(1)

In recent years, there has been a global consensus on moving from IFA to MMT where appropriate.(19) When a lactating woman is given MMT in place of IFA, there is a further reduction of 6 percent (or a total reduction of 20 percent) in the cost of a nutritious diet (Figure 15b). This reflects the additional micronutrients covered by the MMT including, among others, vitamin A, B vitamins and zinc. For the adolescent girl, the IFA provides a bigger nutritious diet cost reduction than the MMT (20 percent vs 17 percent when provided thrice a week) because of the higher iron content of the IFA supplement, but she would very likely also benefit from the other micronutrients in the MMT.

**Figure 15a:** Daily cost of the nutritious diet for the adolescent girl with micronutrient supplementation (average of the modelled areas)



**Figure 15b:** Daily cost of the nutritious diet for the lactating woman with micronutrient supplementation (average of the modelled areas)



### Women’s role in the food system

Women and girls in Nigeria face additional barriers throughout their lives, including in livelihoods and employment. Women receive a lower salary (22 percent) compared to male colleagues, even for the same jobs. Women entrepreneurs earn a third less than men.(20) There are significant gender inequalities within the agrifood system. Women are important contributors as 40-60 percent of all hours spent on agricultural production are spent by women. They also undertake 60-90 percent of processing. However, women land managers produce 30 percent less per hectare farmed compared to their male counterparts, arising from their lack of access to agricultural inputs and resources, financing and training.(21) Women receive less than 10 percent of the credit offered to small-scale farmers, less than 10 percent of them own land and, because of poverty, are unable to buy products such as improved seedlings and fertilizer. Women’s participation in farmer training is low due to their lack of awareness of such training, societal barriers, and limited transportation.

Global evidence shows that if women had similar access to productive resources as men, agricultural yields would increase by 20-30 percent.(22) While there is no evidence specific to the Nigerian context, reducing gender inequalities is likely to improve food production and availability in Nigeria and therefore strengthen the food supply.

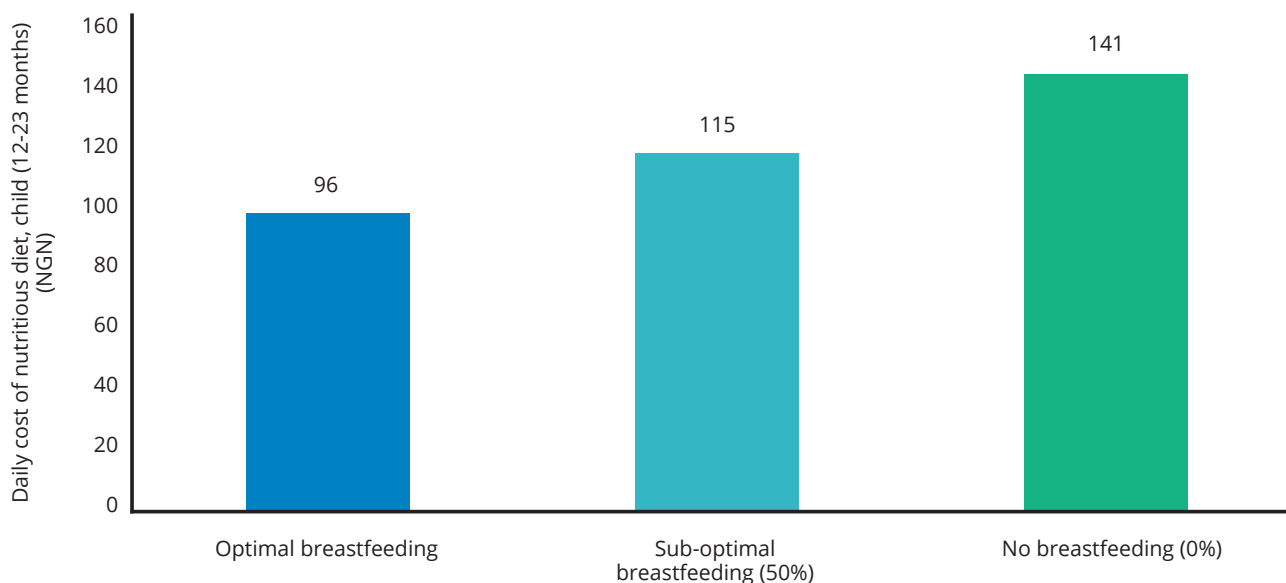
## 7. Suboptimal infant and young child feeding practices and lack of diverse diets lead to poor nutrition outcomes which can have lifelong consequences.

Poor dietary diversity and feeding practices lead to nutritional deficiencies among infants and children. Ensuring optimal infant and young child feeding practices in the first two years of a child’s life (and in the period between conception and birth) is essential as this is a window of growth and development with lifetime implications for health and cognitive capacity. Breastfeeding practices in Nigeria have shown improvement in the last decade but there is a need for more improvement. Between 2008 and 2018, exclusive breastfeeding among children aged 0-5 months increased from 17 percent to 29 percent and the mean duration of exclusive breastfeeding increased from 1.8 months to 2.8 months.(1,11)

Breastmilk is packed with nutrients and the benefits of optimal breastfeeding are proven, as reflected in the WHO recommendations related to early and continued breastfeeding. The FNG analysis shows that if a child receives half of the WHO recommended amount of breastmilk, their cost of the nutritious diet would increase by 20 percent (Figure 16). When the child is not breastfed at all, the cost of the nutritious diet would increase by 48 percent. The higher cost indicates that the nutrient requirement would have to be met through additional complementary foods which should be nutritious as children have relatively low energy requirements and can consume only small quantities of food.



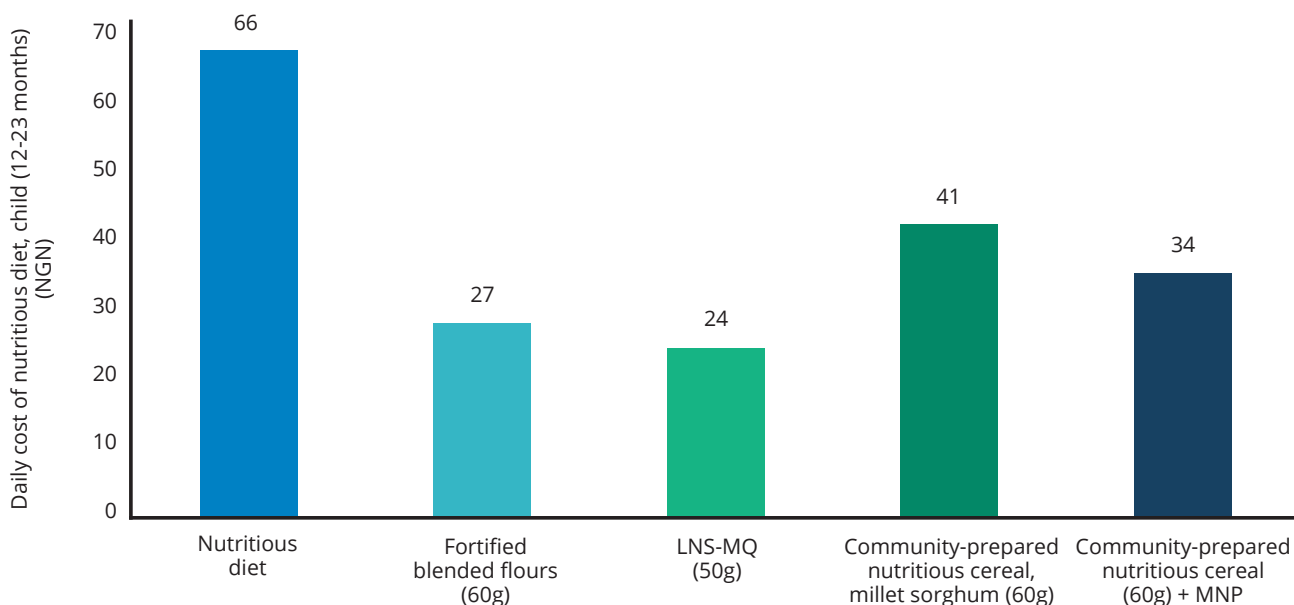
**Figure 16:** Daily cost of the nutritious diet for a child aged 12-23 months with no or breastfeeding (average of the modelled areas)



Dietary indicators for children aged 6-23 months are unsatisfactory, with only one in 10 receiving a minimum acceptable diet. Anaemia among children aged 6-59 months is very high - 73 percent of children in rural areas and 62 percent of children in urban areas were anaemic in 2018.(1) Akseer et al (2021) compared the diets of mothers and their children using data from the 2018 DHS. They found that among mother-child pairs, the following food groups were consumed by the mother but not the child: legumes and nuts (36 percent), vitamin A rich fruit/vegetables (39 percent) and other fruit/vegetables (57 percent).(23) This indicates availability of these food groups within the household but a failure to feed them to children.

In contexts where the food environment is weak and/or where households have limited economic access (e.g. in an emergency context), in-kind provision of specialized nutritious foods and complementary foods can contribute to improving the nutrient intake of children. The FNG analysis modelled the impact of fortified blend flour (60g), lipid-based nutrient supplement – medium quantity (LNS-MQ) (50g), and community-prepared nutritious cereal (60g) with and without micronutrient powder (MNP). As shown in Figure 17, the cost of the nutritious diet reduces by over 60 percent when fortified blend flour or LNS-MQ are provided. The largest decrease in the cost results from these foods being provided free of cost to the household and because they contain a range of micronutrients.

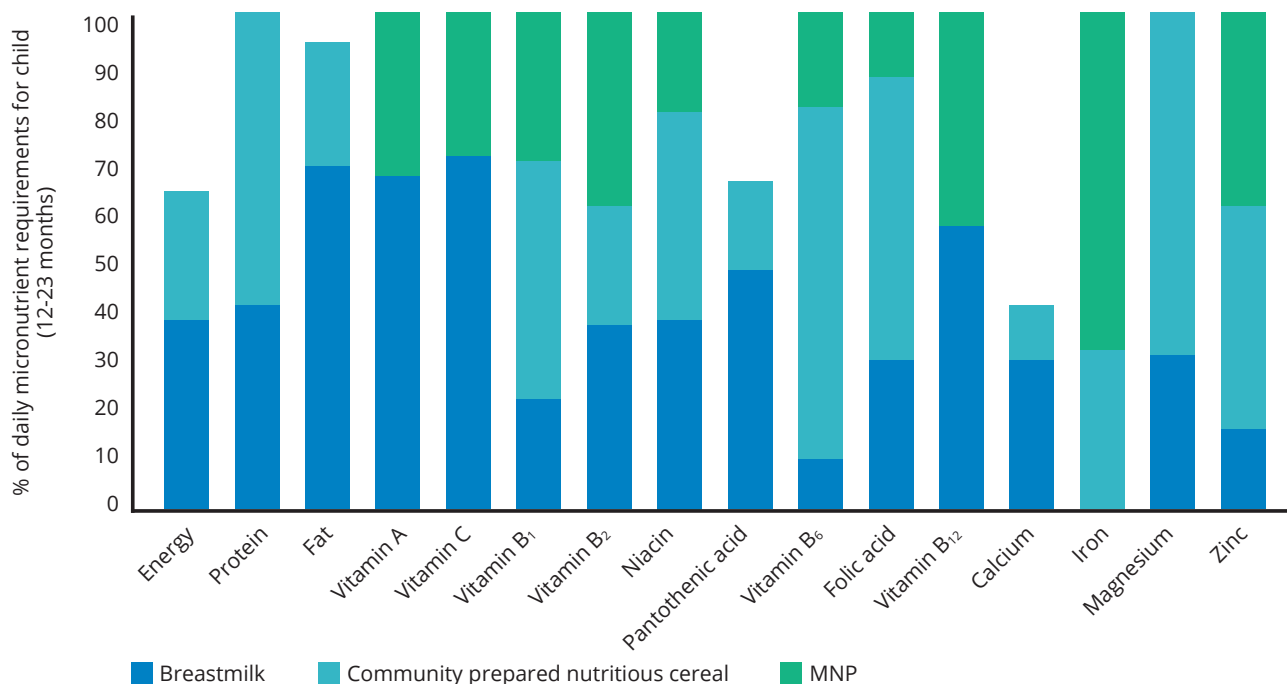
**Figure 17:** Daily cost of the nutritious diet for a child aged 12-23 months receiving different complementary foods (modelled emergency areas average)



The reduction in cost of the nutritious diet for the child is 39 percent when the community nutritious cereal is provided. It is made up of 6 parts of cereals such as millet, sorghum and/or maize, 3 parts of soybeans and 1 part of groundnuts. However, given that the product is not fortified, it is low in micronutrients such as vitamin A and iron (see Figure 18).

To overcome this, an MNP can be added to the porridge at the end of its preparation to increase consumption of these micronutrients and further reduce the cost of the child's nutritious diet. When a community prepared cereal is provided, it needs to meet food safety and quality standards and be prepared under hygienic conditions.

**Figure 18:** Contribution of breastmilk, community prepared nutritious cereal and micronutrient powder to daily micronutrient requirements of child aged 12-23 months, Adamawa Rural



## 8. Large-scale food fortification can provide additional micronutrients for vulnerable households and individuals who cannot access nutrient-dense foods. Biofortification leverages the agriculture sector to improve intake of essential micronutrients.

Large-scale food fortification can provide additional micronutrients for vulnerable households for whom accessing nutrient-dense foods is a challenge. Fortification of edible oil, wheat flour and maize flour has been mandatory in Nigeria for over a decade but there are gaps in compliance. At the time of writing this report, data available shows that only one fifth of fortifiable maize flour and one-third of edible oil (24) was being fortified<sup>9,10</sup>. Compliance of wheat flour fortification was estimated at 31 percent for 2021, declining substantially from a high of 92 percent in December 2020, because of supply chain problems

arising during the COVID-19 pandemic<sup>11</sup>. Compliance tends to be higher for products that are imported by a limited number of companies as it makes monitoring easier. This applies to almost all of Nigeria's wheat flour and some of its edible oil. However, commodities that are domestically produced by hundreds of small-scale producers, such as edible oil and most maize flour, make the industry fragmented which makes monitoring more challenging.

Table 1 provides estimates of the proportion of households that consume centrally processed maize flour, wheat flour and products, and rice (i.e. those commodities which can be fortified), and the average quantities consumed<sup>12</sup>. Wheat flour is consumed by a good majority of households but in smaller quantities. Coverage of maize flour is low as, unlike rice and wheat, it is generally consumed in specific areas of Nigeria. Rice is the food commodity widely consumed across states and expenditure quintiles and in the largest quantity<sup>13</sup>, making it a good candidate to consider for fortification.

<sup>9</sup> The dashboard uses data qualitative information based on stakeholder interviews; the basis of these data, and whether they are based on a quantitative analysis of samples is unclear.

<sup>10</sup> Rice fortification in Nigeria: landscape analysis report (forthcoming).

<sup>11</sup> Rice fortification in Nigeria: landscape analysis report (forthcoming).

<sup>12</sup> Unpublished analysis, provided by Kevin Tang from the MAPS project.

<sup>13</sup> More detailed data can be found in the FNG Full Report.

**Table 1:** National coverage and consumption of large-scale food fortification vehicles, (Micronutrient Action Policy Support (MAPS) 2022 based on NLSS 2018-19)

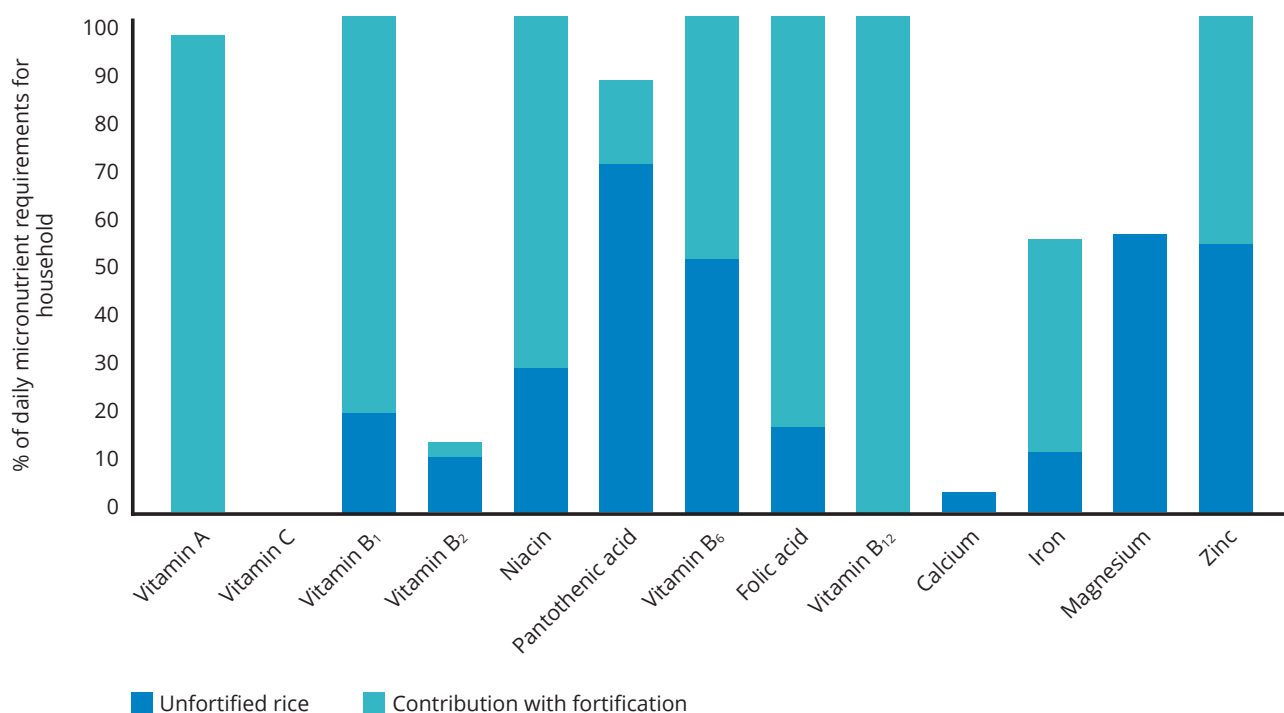
	Maize flour	Wheat flour and products	Rice
Coverage (percentage of households)	27	77	88
Consumption quantity (median g/day/adult female equivalent <sup>1</sup> )	67	46	77

<sup>1</sup> Adult female equivalence is a reference value which distributes food according to household members' proportional energy requirements relative to an adult female

Rice fortification is not yet mandatory in Nigeria. Using WFP standards for fortified rice, the FNG analysis modelled the impact on the cost of the nutritious diet when unfortified rice is replaced by fortified rice in a diet. Different scenarios were considered. In the first scenario, fortified rice has the same price as unfortified rice and the cost increase is being absorbed by producers or being subsidized by the government or other partners through fiscal incentives. In the second scenario the cost of fortification is passed on to the consumer and the price of rice increases by 5 percent<sup>14</sup>.

If the price of the fortified rice remains the same, the cost of the nutritious diet for a household in Borno would decrease by 9 percent and if the price increases by 5 percent, the cost would decrease by 7 percent. The impact on nutrient intake of the increased nutrient content of the rice offsets the price increase. Figure 19 shows the additional contribution of fortified rice to micronutrient requirements. Limiting nutrients such as vitamin A and vitamin B<sub>12</sub> would be completely covered by the fortified rice.

**Figure 19:** Contribution of unfortified rice and added benefit of fortified rice to household micronutrient requirements



<sup>14</sup> Preliminary results from a cost-benefit analysis of rice fortification, in process at the time of writing this report, estimates the price increase to be around 2.5 percent. The 5 percent increase modelled here represents a worst case scenario.



Households that produce a greater share of their own food tend to have lower dietary diversity by 1.37 food groups compared to those that purchase all their food. (25) Studies find that while dietary diversity increased with an increase in production diversity (i.e. choosing to grow a diverse set of crops), the share of calories from staple foods has increased among farm households resulting from increased production of staples.(26)

Biofortified crops are one way to increase intake of specific nutrients among households that depend on their own production for staples rather than purchasing them from the market. Using specifications provided by HarvestPlus, the FNG analysis found that including vitamin A fortified maize in diets contributes to 42 percent of vitamin A requirements of adolescent girls. Biofortified crops are also available on the market, including processed foods such as vitamin A fortified gari (cassava flour) made from biofortified cassava. These similarly increase vitamin A in diets when replacing unfortified gari.

## 9. Continued high levels of inflation and economic slowdown due to COVID-19 pushed nutritious diets further out of reach. Social assistance programmes can improve access to nutritious diets for the most vulnerable if designed to adequately close the affordability gap.

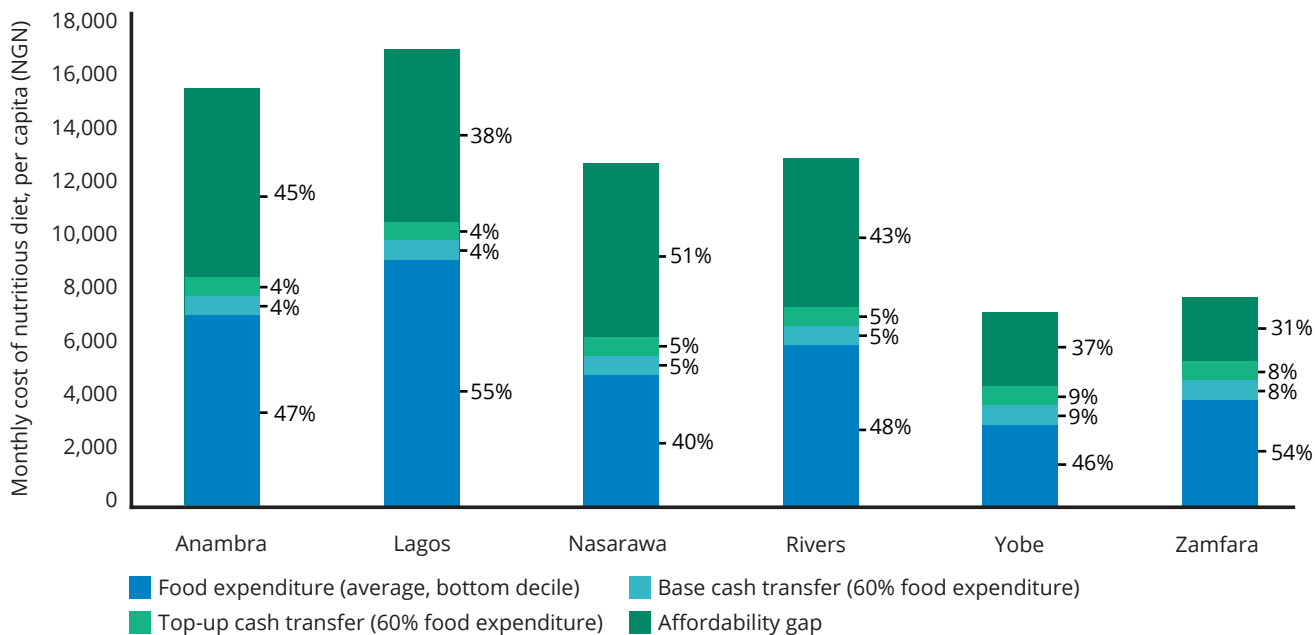
Nigeria has been facing very high rates of inflation, particularly for food. The national average food CPI increased by 48 percent between June 2018 and June 2021, with year-on-year inflation reaching as high as 23 percent in March 2021.(8) Nigeria also experienced a recession in 2020 with a reduction of 1.8 percent in Gross Domestic Product (GDP). The World Bank predicts that due to the economic downturn in 2020, an additional 5 million people could have been pushed into poverty.(27) This has strong implications for food security and nutrition, and over half of households surveyed during the COVID-19 pandemic reported reducing food consumption as they were running out of food.

The Nigeria National Social Protection Policy was revised in 2021.(28) One of its objectives is to 'provide social welfare and improve food security and nutrition'. Social assistance in Nigeria includes several policy measures that can impact access to nutrients such as the provision of school meals; healthcare services provided to specific vulnerable groups such as PLWs, children under 5, the elderly and disabled; cash and food transfers during emergencies, and; non-contributory pensions and cash and food grants to the poorest families.

Nigeria spent 0.7 percent of its GDP in 2019 on social protection, which is lower than peer countries.(29) It is likely that this figure may have increased since then as additional resources were allocated to social protection during the pandemic with the budget increasing by 58 percent between 2019 and 2020. However, low budgetary allocations are a weakness, making it difficult for institutional social protection systems to develop. Coverage of social assistance programmes is low with fewer than 2 percent of the population living in households enrolled in the National Social Safety Net project in 2018/19. A similar proportion of households received assistance from other programmes.(27) The coverage of social protection programmes remained low during the COVID-19 scale-up as well. Between March 2020 and 2021, around 4 percent of households reported receiving cash transfers from the government and nearly 15 percent reported receiving food transfers.(27)

The FNG analysis examined the adequacy of the National Cash Transfer Programme to understand the extent to which it enables a household to afford a nutritious diet. Figure 20 shows the cost of the nutritious diet for one state in each geopolitical zone and highlights the proportion of the cost that is covered by the average food expenditure of the poorest households (i.e. those in the bottom 10 percentile of food expenditure). Assuming that a household receives NGN 10,000 in cash, (NGN 5,000 from the federal level unconditional cash transfer and an additional NGN 5,000 from the co-responsibility top-up from the state) and spends 60 percent of it on food, it would cover only 8-16 percent of the nutritious diet cost. Beneficiary households would still be left with an affordability gap as high as 50 percent in Nasarawa state, for example.

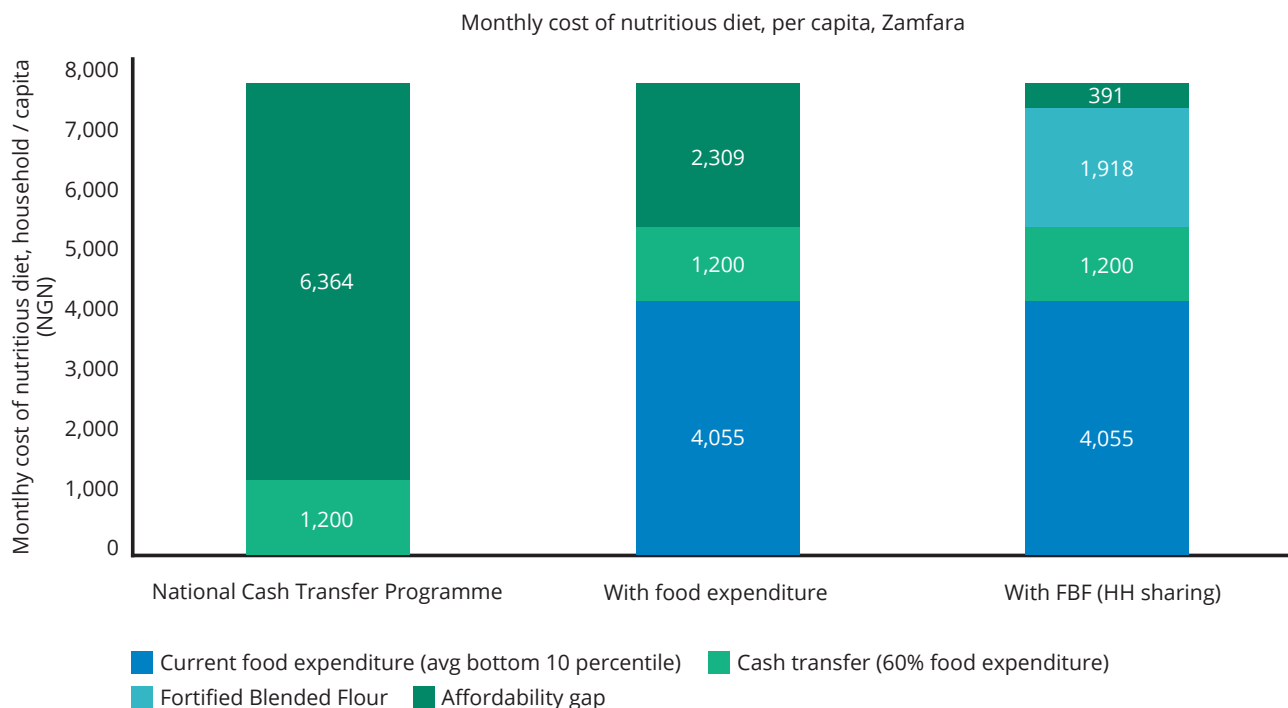
**Figure 20:** Contribution of cash transfer to the household cost of the nutritious diet for the bottom decile in selected states



To improve its adequacy, the National Cash Transfer Programme can be made nutrition-sensitive by linking with nutrition interventions targeted to the most nutritionally vulnerable individuals such as PLWs. For example, if a fortified blended flour is provided to PLWs when accessing nutrition services to fulfil their

co-responsibility top up, the affordability gap would further reduce. As shown in Figure 21, in Zamfara state the affordability gap would reduce from NGN 6,364 per capita per month to only NGN 391/capita/month, indicating strong potential to reduce the nutrient-intake gap among several members of the household.

**Figure 21:** Contribution of the food expenditure, cash-based transfers, and fortified blended flour to cover the cost of the nutritious diet of the bottom decile in the North West, monthly cost of the nutritious diet per capita



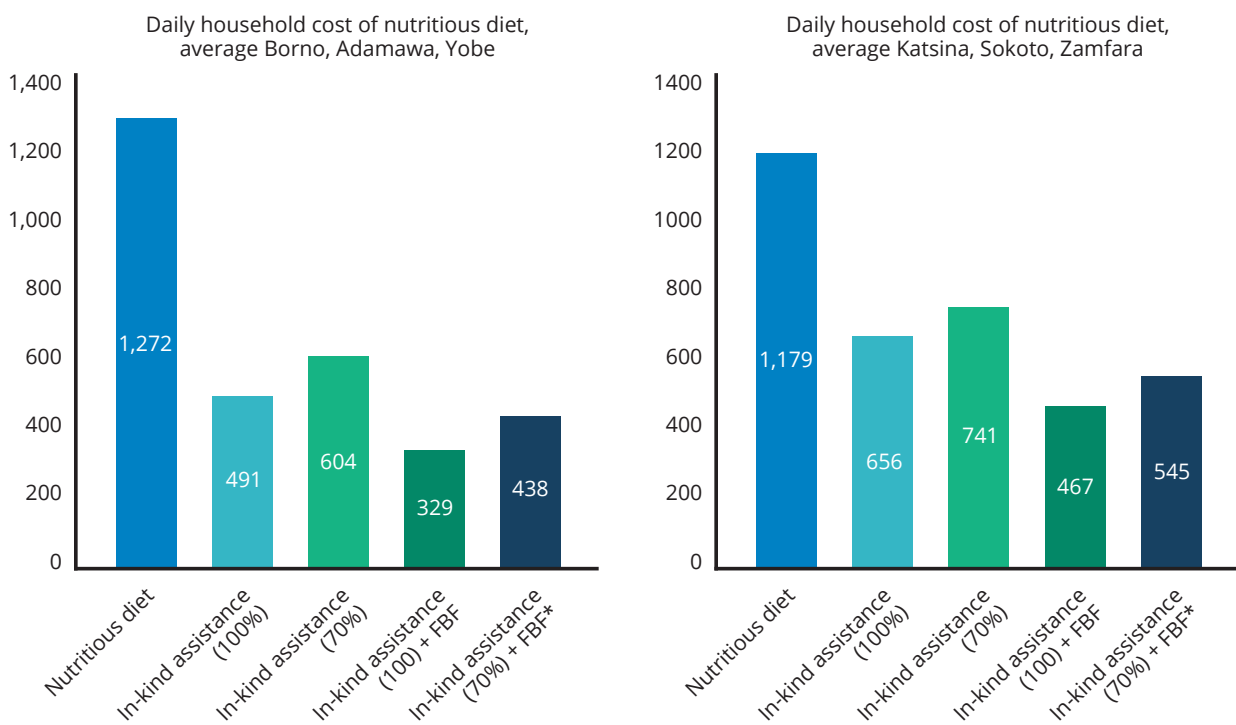
## 10. A high number of people in the Northeast continue to be in need of humanitarian assistance. Food assistance can support a household to cover its nutritious diet cost if adequate in size and nutrient composition.

The conflict in North East Nigeria resulting from insurgency of armed groups has been continuous in recent years. This has resulted in millions of people being internally displaced and has damaged agricultural production and other livelihoods. According to the Cadre Harmonisé October 2021, in 2022 about 8.4 million people in the North East states of Borno, Adamawa and Yobe are projected to be in need of assistance (including over 4.1 million people projected to face alarming levels of food insecurity (IPC Phase 3 or above).<sup>(30)</sup> Around 43 percent of the population needing emergency assistance is located in communities inaccessible by humanitarian aid work due to the conflict. While the needs are significant, there has been a sharp reduction in funding for the crisis that has forced humanitarian partners to reduce the number of beneficiaries assisted or cut down the amount of the ration or cash transfer distributed.

In addition to the conflict in the North East, insecurity has also been rising in the North West. This part of Nigeria has some of the worst socioeconomic and nutrition indicators in the country with poverty rates as high as 88 percent in Sokoto state and stunting prevalence as high as 66 percent in Kebbi state.<sup>(1,27)</sup>

Government and humanitarian partners assist households in need using two main modalities – cash-based transfer or in-kind ration consisting of cereals, legumes, fortified oil and salt. The choice of modality depends on the market functionality and the context in the area of operation. The FNG analysis modelled the impact these transfers could have on the household's nutritious diet cost. As shown in Figure 22, the food assistance reduced the nutritious diet cost by 44-61 percent as a result of these foods being provided for free to the household, but a gap remains because of the limited nutrient content of the ration which consists largely of starchy staples. The analysis showed that even if this ration were cut down to 70 percent, it would still cover 37-53 percent of the cost of the diet. In other words, the additional 30 percent to make it a full ration does not lead to a proportional reduction. Adding a fortified blended flour to the ration would further decrease the nutritious diet cost. For example, in the North East states, if the fortified blended flour is added to a 100 percent ration, the total reduction in the nutritious diet cost would increase to 74 percent.

**Figure 22:** Household cost of the nutritious diet with in-kind assistance (average of modelled areas in North East and North West states)



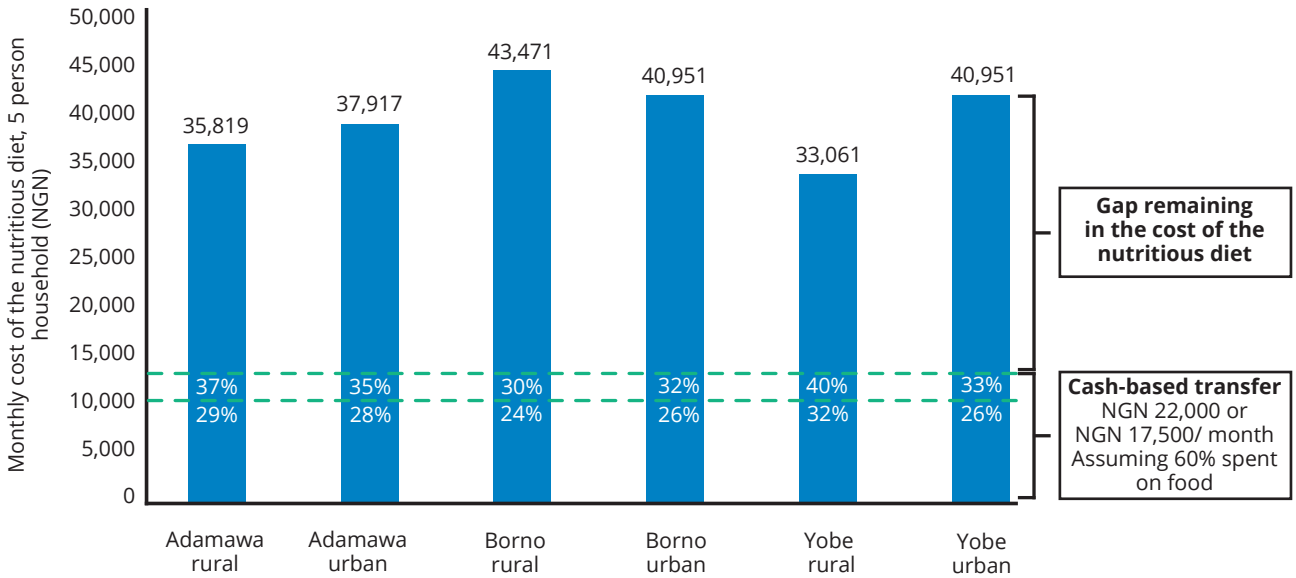
\*Corn soya blend, for the PLW 50% shared with the household (250g)



In areas where household have access to markets, they are provided with a cash-based transfer of NGN 17,500-22,000 per month. Given the cost of the nutritious diet and assuming 60 percent of the transfer being spent on

food, the cash would cover between 24-40 percent of the cost, depending on location and size of the transfer (Figure 23).

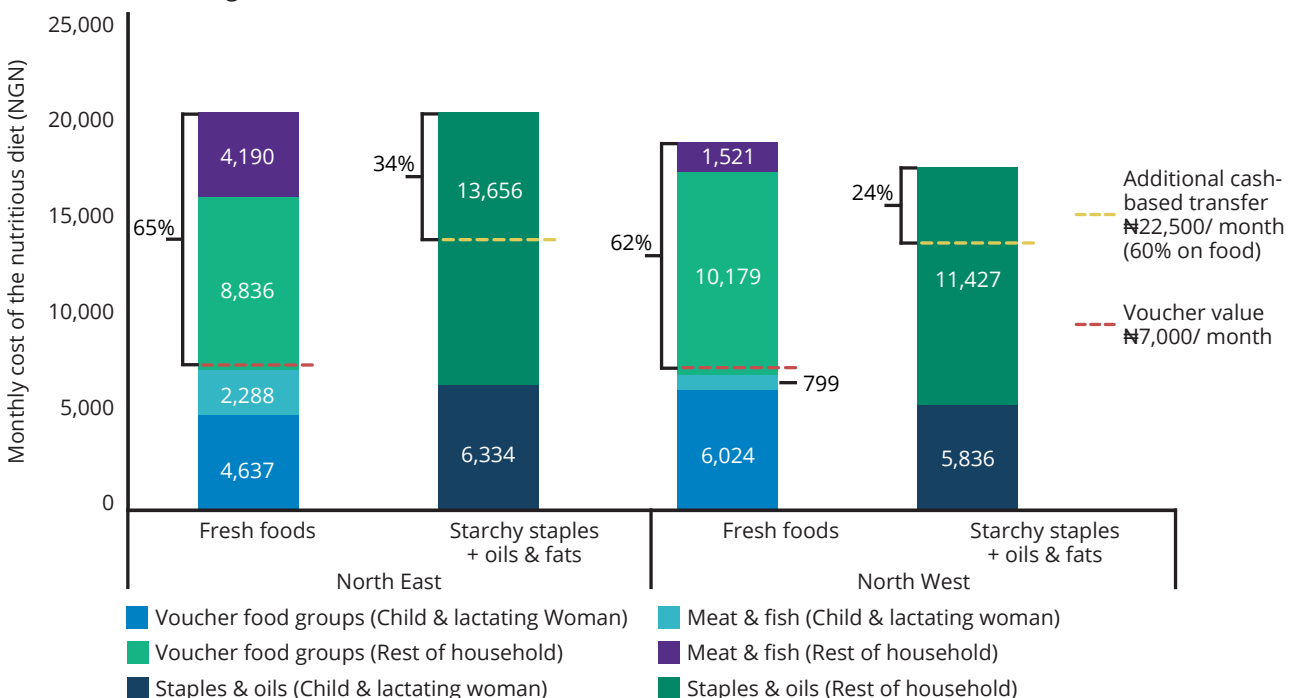
**Figure 23:** Contribution of cash-based transfer to the household cost of the nutritious diet in Borno, Adamawa and Yobe



The model assumes that the household receiving the cash transfer would spend it optimally on nutritious foods. However, in practice this may not always be the case. Figure 24 shows the cost of the nutritious diet disaggregated into two groups: starchy staples and oils, and fresh foods. Fresh foods include food groups covered by the voucher – namely pulses and seeds, fruits and vegetables – and meat and fish.

The cost is shown separately for the lactating woman and child under 2, and other members of the household. Assuming the household chooses to spend all the cash allocated for food expenditure on energy-dense foods such as starchy staples and oils, the transfer would not cover the optimised cost of fresh foods and 24-34 percent of the optimised cost of staples and oils and fats would not be met.

**Figure 24:** Cost of the nutritious diet covered by fresh food voucher and cash-based transfer, for the lactating woman and child aged 12-23 months and the rest of the household (average of the modelled areas)



A fresh food voucher is currently being piloted in Yobe state, with a transfer value of NGN 7,000 per month and restricted to purchases of selected nutritious food items such as pulses and seeds, fruit and vegetables. The voucher is targeted to PLW and children under 2 living in households receiving cash-based assistance to ensure the most nutritionally vulnerable individuals have access to nutritious foods. As shown in Figure 24, the voucher, when valued at NGN 7,000, could cover the fresh food needs of the PLW and child under 2 assuming that there is no household sharing. The fresh food needs of the other members of the household would remain unmet. It should be noted that the costs in this model represent the least cost of meeting nutrient needs but, in practice, when households purchase food convenience and food preferences would factor into their decisions, increasing the actual cost.

## 11. Home grown school feeding programmes encourage the inclusion of nutritious foods in school meals which can contribute towards the nutrient intake of school-going children.

The National Homegrown School Feeding Programme (NHGSFP) provides a fresh school meal to children in grades 1 to 3. The programme started in 2016 and has since surpassed its targets, reaching almost 10 million schoolchildren across the country, doubling the

original target and covering all states but Bayelsa.(31) Programme assessments show that it has helped stimulate and strengthen local economies by empowering over 100,000 cooks and 200,000 smallholder farmers to supply locally produced nutritious foods. Studies have shown that the NHGSFP has reduced malnourishment and increased access to education and school enrolment.(32,33)

However, the programme has had some challenges. While it covers nearly all states of the country, it only reaches around 20 percent of children aged 5 to 13 years.(34) While it is designed to provide an adequate and balanced meal comprising animal-source foods, pulses, vegetables, fruit and staples, in practice the menu often does not follow the intended guidance. The more expensive animal-source foods are often excluded and fruit and vegetables are only included in specific seasons. Some reasons include insufficient monetary value (NGN 70 per meal) which has not been adjusted for inflation and is therefore not sufficient to purchase all the required ingredients, and does not account for the labour costs of vendors.

When provided as designed, a nutritious school meal can contribute towards a child's nutrient needs and reduce their risk of micronutrient deficiencies. The cost of the nutritious diet would reduce by 22 percent for a 6-7 year old child and by 14 percent for a child aged 10-11 years (see Figure 25). If the programme were to extend to adolescents, consideration would need to be made for their higher energy and nutrient needs.

**Figure 25:** Weekly cost of the nutritious diet of children aged 6-7 and 10-11 years receiving school meals, rural FCT

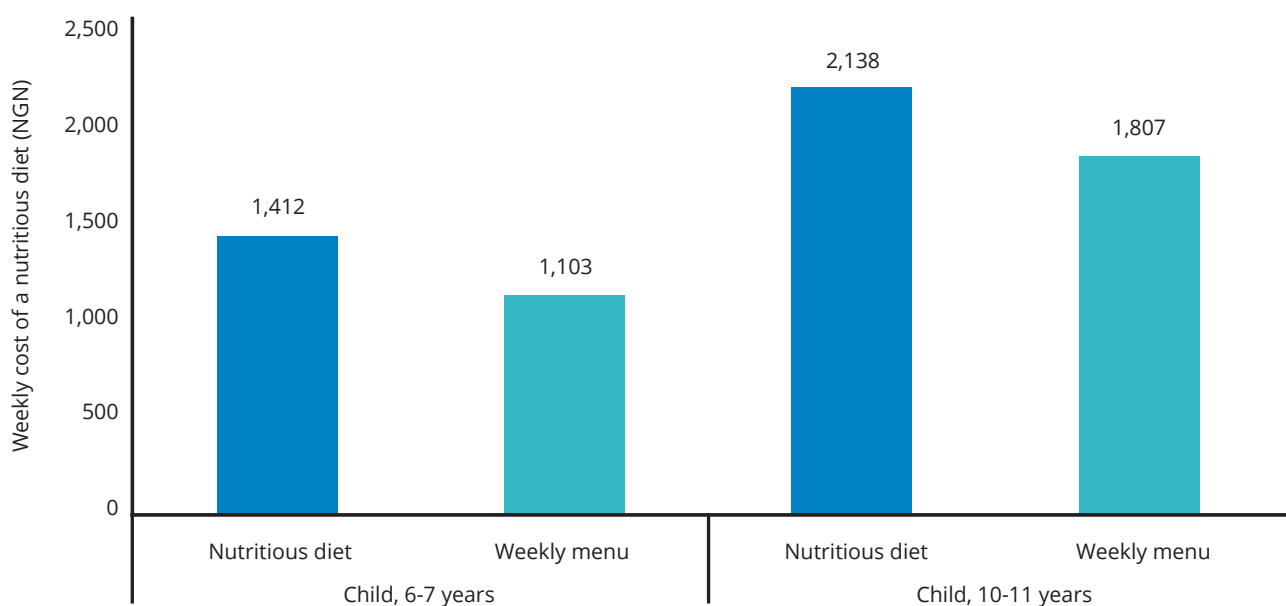
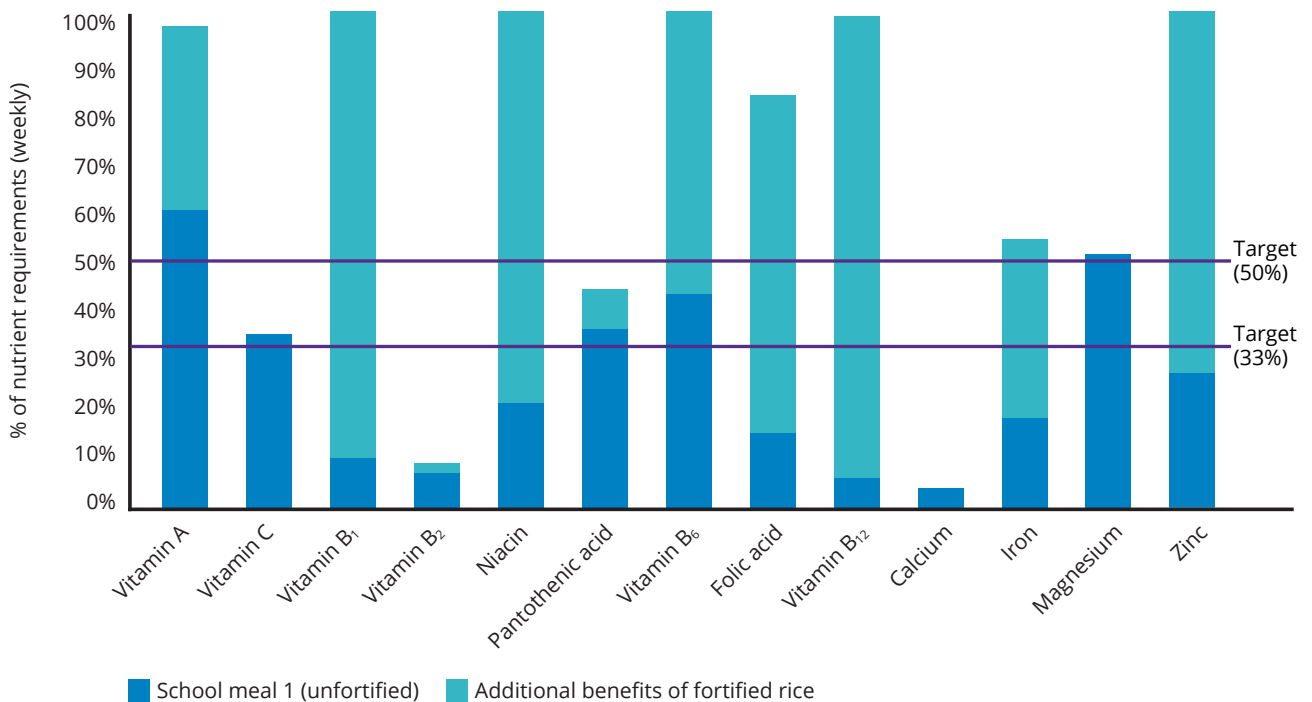


Figure 26 shows the extent to which micronutrient needs of the current target child (aged 6-7 years) are met by the school meal. While there is no set target for meeting nutrient needs, globally school meals aim to reach either 33 or 50 percent of nutrient needs. However, the current school menu does not reach these targets for most micronutrients modelled in this analysis. There are different entry points to make

the NHGSFP more nutrition-sensitive. For example, portion sizes of nutritious foods could be increased, particularly those rich in nutrients that are currently inadequate in the meal (e.g., calcium), or fortified foods could be added. Fortified rice could help meet target requirements for key nutrients such as iron and vitamin B<sub>12</sub>.

**Figure 26:** Contribution of the NHGSFP (as per design) to the required nutrient intake of a child aged 6-7 years with and without the addition of fortified rice





## 12. Agriculture policy prioritizes staple production which creates a lack of diversification of production that leads to underdeveloped value chains of nutritious foods. Nutrition-sensitive agricultural transformation could lead to affordable nutritious diets.

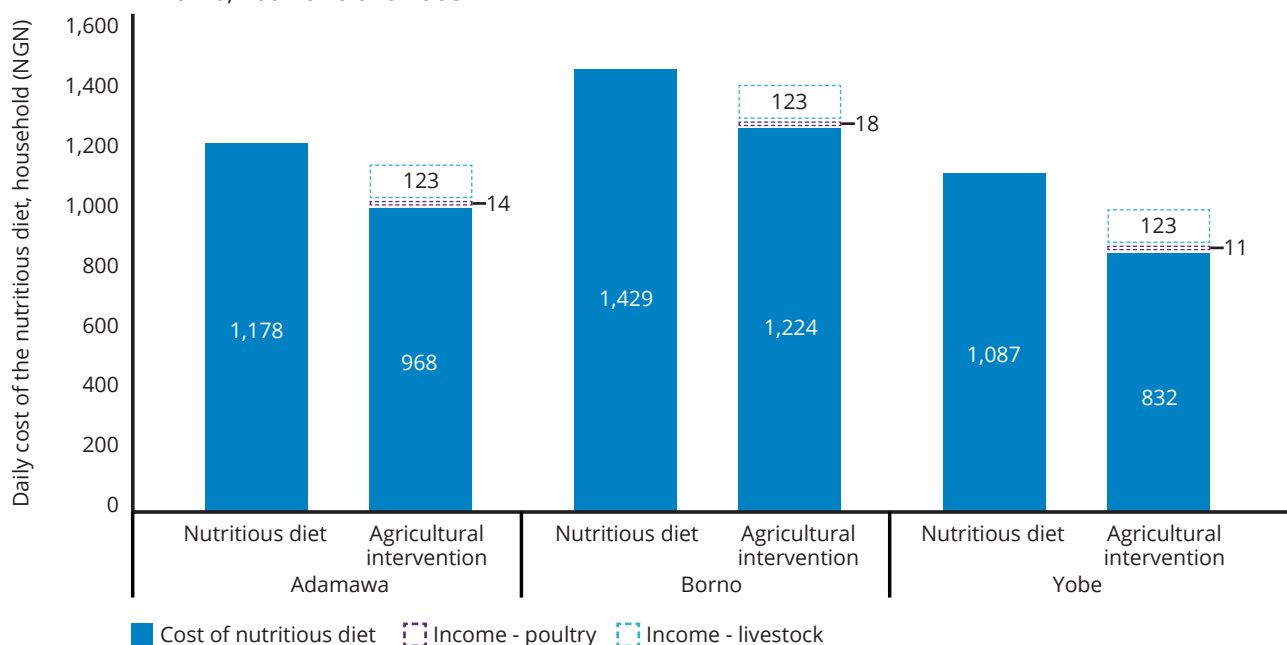
Agriculture employs a third of the Nigerian population but contributes to less than a quarter of the national GDP (22 percent in the first quarter of 2021). The sector relies heavily on smallholder farmers (more than 4 out of 5 farmers) who are responsible for nearly 90 percent of agricultural production.(35) The agriculture sector has many challenges including resource shortages (such as inputs, seeds, fertilizers), outdated systems, poor value addition and weak supply chain linkages, leading to insufficient supply to meet the current food demand.(35) Moreover, only half of the 69 million hectares of arable land is currently used for agricultural purposes.(36)

Post-harvest loss is a major concern in Nigeria. Between 10 and 18 percent of cereals are spoiled after harvesting because of inadequate farm-level practices and the inability of farmers to access markets. In the case of maize, most of the loss occurs at the farm (11 percent), followed by 2.5 percent during transport and 5 percent at the household level due to poor storage facilities.(37) Post-harvest loss is greater for vegetables and fruit (40 percent and 25 percent respectively) because farmers are unable to readily access markets due to poor road infrastructure.(15) An improved supply chain infrastructure could reduce losses of these nutritious foods and ensure adequate supply in the market.

In addition to the supply chain challenges, import substitution trade policies lead to distorted prices within the food system. The government has imposed tariffs on key staple commodities such as rice and maize, as well as on fresh nutritious foods such as eggs and meat.(27) In 2011, Nigeria was officially importing 40 percent of its rice; according to FAOSTAT data this has reduced to only 1 percent in 2019, likely due to the restrictions placed on imports.(27,36) These policies have also impacted the prices of agricultural inputs. For example, reliance on domestic maize has led to shortages and a significant increase in the prices of animal feed.(38) Despite these policies, Nigeria remains a net food importer. The agricultural trade deficit has even increased (implying that imports surpass exports) in recent years from NGN 549 billion in 2018 to NGN 690 billion in 2019.(35)

Improvements in agricultural production can benefit households' access to nutritious diets through additional income generation and diet diversification if nutritious foods are produced. The FNG analysis modelled a livestock resilience programme being implemented in the North East where households are provided with three goats and nine egg-producing hens, plus agricultural training. The model assumes that the goat would yield three additional goats per year for sale (NGN 25,000 per goat), and the hens would produce 35 eggs per week of which 90 percent would be consumed by the household and the remainder sold. Assuming that the household spends 60 percent of its income on food, the intervention would reduce the household cost of the nutritious diet by 14-23 percent depending on location (see Figure 27). This reduction comes through a reduction in the cost of the diet and additional income (as shown by the dotted lines).

**Figure 27:** Contribution of poultry and livestock production to the household nutritious diet in rural areas of Borno, Adamawa and Yobe



### 13. Multisectoral interventions have the potential to make nutritious diets more accessible and affordable and to improve micronutrient intake leading to better nutrition outcomes. Existing momentum on the multisectoral approach to nutrition and food systems transformation should be leveraged and coordinating mechanisms strengthened at national and subnational levels.

Global evidence shows that better nutrition outcomes can lead to increased economic productivity and human capital development through improved health and better cognitive development.(39) High rates of malnutrition in Nigeria should be a concern for policymakers as it is holding back development potential. Nigeria recognises the importance of taking a multisectoral approach to nutrition and accelerating

the scale-up of high impact nutrition-specific and -sensitive interventions as outlined in the National Multi-sectoral Plan of Action for Food and Nutrition (NMPFAN) (2021-2025).(4) The need to improve food systems to achieve progress in reducing food insecurity and malnutrition is highlighted in the Pathways to Food Systems Transformation: Call to Action.(3)

Increasing availability of, and economic access to, better quality diets should be a key component of Nigeria's efforts toward reducing malnutrition. Addressing the drivers of malnutrition requires coordinated efforts across sectors for a greater impact and to ensure efficient and targeted use of limited fiscal resources. To demonstrate this, the FNG analysis modelled a combination of interventions from different sectors that can be provided as integrated packages adapted to different contexts (Table 2). These packages include interventions targeted to the household as well as to specific individuals in the household.

**Table 2:** Details of modelled intervention packages

Individual	Nutrition-integrated development package	Nutrition-integrated emergency package
Child (12-23 months)	Micronutrient powder (3 times/week)	LNS-MQ (50g, daily)
School age child	NHGSF programme (5 meals a week)	
Adolescent girl	IFA supplement (1g, 3 times/week)	IFA supplement (1g, 3 times/week)
Breastfeeding woman	MMT (1g, daily)	Fortified blended flour (250g, daily)
Household	National cash transfer programme (NGN 5,000/month/household) Fortified rice available on the market	Cash-based transfer, emergency (NGN 17,500/month/household) Resilience programme: poultry & livestock support

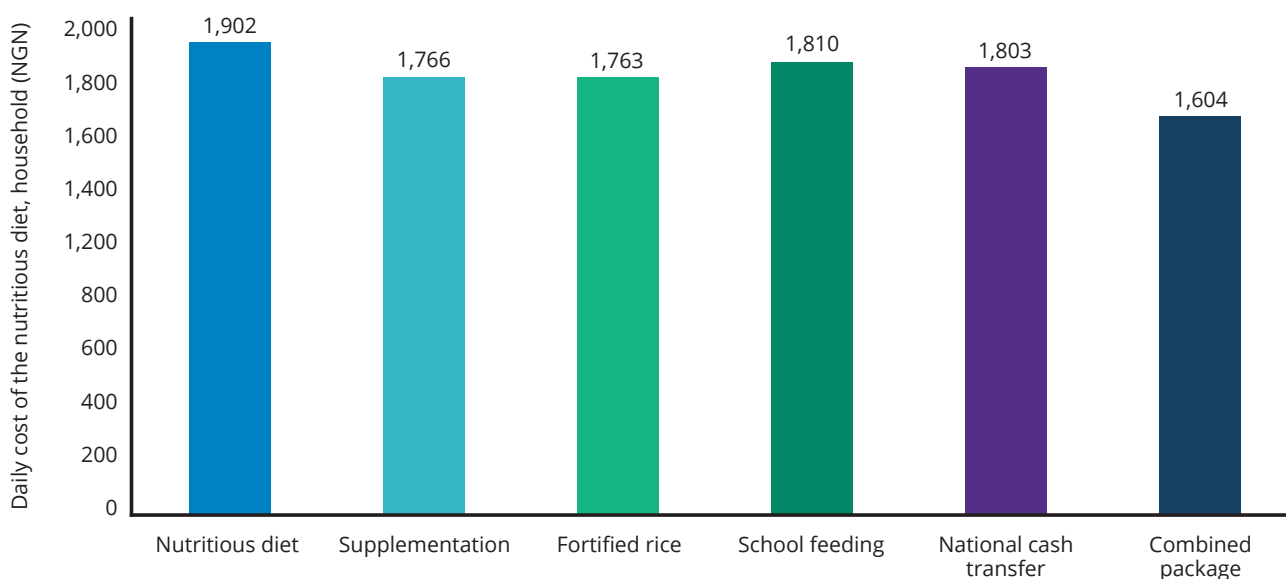
#### Package 1

The first package of interventions is for areas with government social assistance programmes such as the National Cash Transfer and the National Homegrown School Feeding Programme. This package assumes well-functioning markets where fortified rice is available

and where the health system can be used to provide micronutrient supplementation to children, adolescent girls and women. Figure 28 shows the modelled impact of each intervention with the combined impact for Nasarawa state. If all the interventions are provided to the household, the cost of the nutritious diet would reduce by 16 percent.



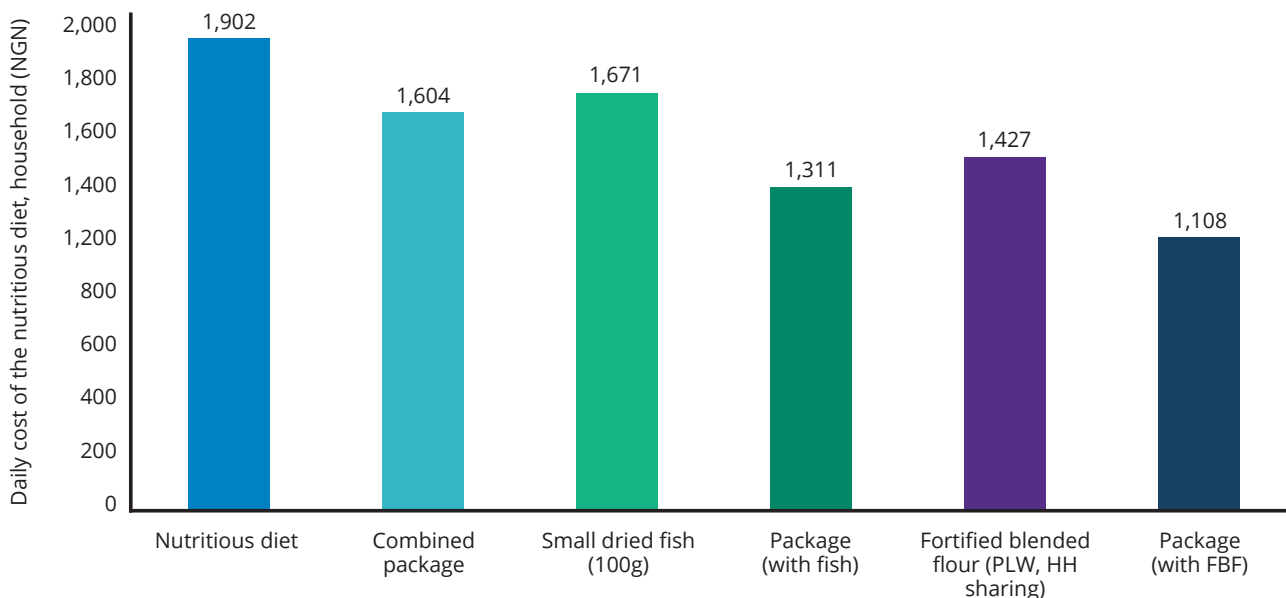
**Figure 28:** Change in the average daily cost of the nutritious diet from a nutrition-integrated development package, Nasarawa



This cost reduction is low, and one of the reasons may be that these interventions are unable to contribute adequately to specific nutrients such as calcium. Food-based interventions that can increase calcium in diets include providing a portion of small dried fish with bones (a good source of calcium and iron) through a fresh food voucher, or giving fortified blended flour (which is fortified with calcium) to pregnant or breastfeeding women (40). As shown in Figure 29,

these interventions would make a significant contribution when added to the package as the reduction in the cost of a nutritious diet would increase to 31 percent and 42 percent respectively. Calcium is important for bone health and inadequate intake can increase the risk of preeclampsia and maternal morbidity among pregnant women, and has been linked to other health issues such as cancers and cardiovascular disease.(41)

**Figure 29:** Change in the average daily cost of the nutritious diet for a household when small dried fish or fortified flour are added to the intervention package, Nasarawa



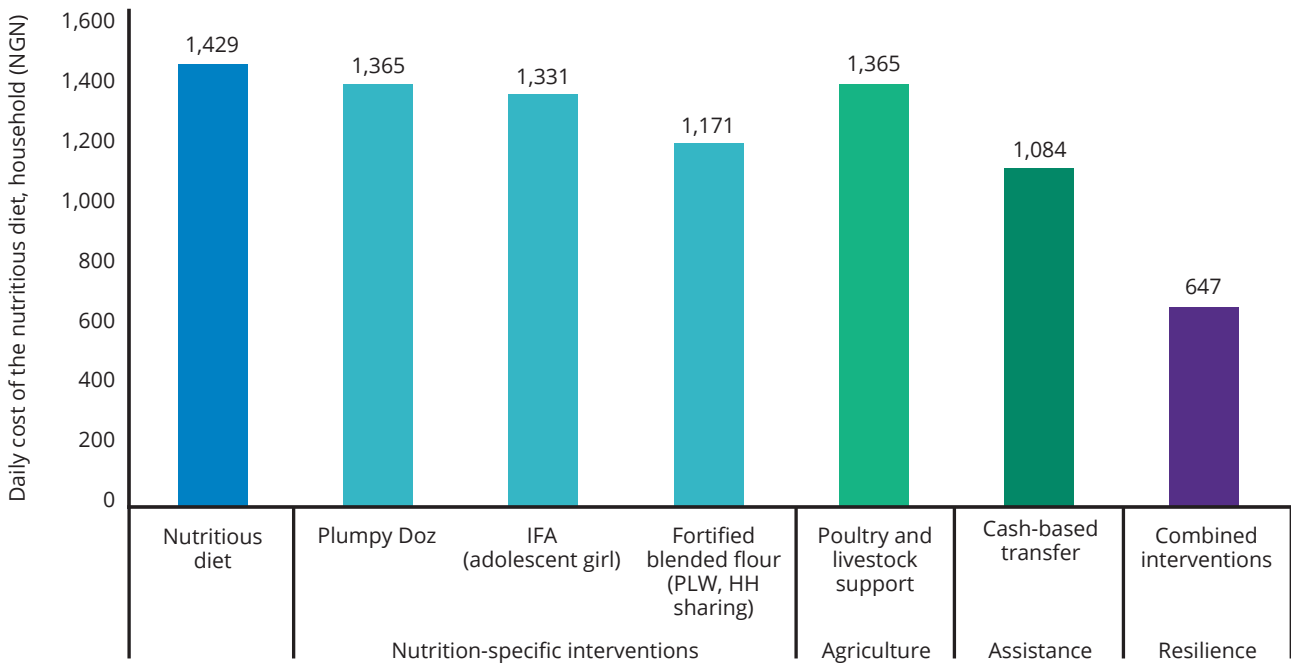


## Package 2

The second package is targeted at households in need in emergency areas, and can be delivered as part of the

humanitarian response. As shown in Figure 30, the cost of the nutritious diet would reduce by 55 percent for a household in Borno rural when it is provided with a package of interventions.

**Figure 30:** Change in the daily cost of the nutritious diet from an emergency intervention package, Borno Rural



## Stakeholder recommendations

Results from the FNG analysis were presented to stakeholders in a validation workshop held in Abuja in May 2022. Following the presentation, a moderated

discussion was held where workshop participants identified sector-specific recommendations based on the findings. These recommendations are summarised in Table 3. For a detailed list of recommendations, please refer to the FNG Nigeria Full Report.

**Table 3:** Stakeholder recommendations

<b>Cross-cutting recommendations</b>	<ul style="list-style-type: none"> <li>• <b>Develop tagging system for nutrition in federal and state budgets:</b> Ensure that a tagging system for nutrition and food system interventions is developed and use to enable appropriate allocation, monitoring, release and utilization of funds.</li> <li>• <b>Ensure evidence-based decision-making:</b> Ensure evidence-based decisions are made for programme planning and implementation, and for strengthened monitoring and information systems throughout programme cycles, and ensure stakeholders at all levels have access to relevant information.</li> <li>• <b>Strengthen multisectoral coordination and collaboration:</b> Leverage the National Council of Food and Nutrition to strengthen multisectoral coordination in nutrition, bridging information and communication gaps at national and subnational levels.</li> <li>• <b>Build subnational capacity on multisectoral nutrition:</b> Build institutional capacity for multisectoral planning, coordination and implementation at state level to ensure prioritization for nutrition activities within line ministries. Where needed, provide technical support to states to domesticate federal level policies into plans fit for their needs and context.</li> </ul>
<b>Social assistance</b>	<ul style="list-style-type: none"> <li>• <b>Advocate for expansion of nutrition-sensitive social protection, including financing:</b> Use FNG findings to develop an advocacy package to sensitize decision-makers at national and subnational levels on investing in nutrition-sensitive social protection.</li> <li>• <b>Encourage inclusive targeting to make the National Cash Transfer Programme (NCTP) nutrition-sensitive:</b> Regularly update the National Social Register to capture nutritionally vulnerable individuals such as households with PLW, children 6-23 months, youth especially adolescent girls and other vulnerable groups such as people living with HIV and disabilities, and elderly populations. Ensure nutritional vulnerability is included as a criteria for determining eligibility.</li> <li>• <b>Review adequacy of transfer size:</b> Transfer size should be regularly reviewed taking local food availability and prices and the affordability gap into consideration. The feasibility and impact of providing nutrition-specific and resilience-building interventions to NCTP households should be explored.</li> </ul>
<b>National Home Grown School Feeding Programme (NHGSFP)</b>	<ul style="list-style-type: none"> <li>• <b>Improve availability and use of programme guidelines and manuals and strengthening monitoring:</b> Provide regular training to school and community stakeholders to ensure they are aware of, and follow, programme guidelines. Strengthen evidence-based monitoring throughout the programme cycle and make results publicly available to encourage transparency and compliance.</li> <li>• <b>Make school meals more nutritious:</b> Advocate to programme implementors and Ministry of Finance for adequate budgetary allocation for school meals and inclusion of nutrient-dense foods in the menus, including fortified foods, to improve nutrient-content of meals and encourage supply by creating institutional demand for these nutritious foods.</li> <li>• <b>Strengthen capacity of community and farmers:</b> Strengthen the health and nutrition component of the school curriculum and design and implement communication campaigns around hygiene and nutrition. Scale up the school garden initiative to ensure an adequate supply of nutritious foods in school canteens.</li> <li>• <b>Provide complementary activities alongside the NHGSFP:</b> Implement complementary nutrition interventions (e.g. micronutrient supplementation, deworming) and use schools as a platform to provide IFA supplementation to adolescent girls.</li> <li>• <b>Increase coverage of the NHGSFP:</b> Using FNG evidence, advocate for increasing the coverage of the NHGSFP to include nursery schools and grades 4 to 6 in primary schools.</li> </ul>

Emergency assistance	<ul style="list-style-type: none"> <li>• <b>Inform nutritional adequacy of food assistance:</b> Use the nutritious diet cost findings to inform the value of cash-based transfers to enable households to purchase nutritious foods, taking inflation into consideration. Ensure nutritional adequacy of in-kind assistance by including fortified staples, nutrient-dense foods and specialized nutritious products targeted to nutritionally vulnerable groups.</li> <li>• <b>Support community infrastructure:</b> Design a Food for Asset programme targeted towards small-scale farmers for supporting the development of community infrastructure.</li> <li>• <b>Promote fresh food vouchers and nutrition-sensitive agriculture:</b> Use FNG findings to inform the fresh food voucher programme design, in particular the transfer size and the list of foods included in the voucher.</li> <li>• <b>Undertake social and behaviour change activities:</b> Increase awareness on the importance of distribution of nutritious foods within the household in favour of those with higher nutrient needs (e.g. PLW, adolescent girls, children under 5).</li> </ul>
Agrifood systems	<ul style="list-style-type: none"> <li>• <b>Promote the cultivation of nutritious crops and increasing production of nutritious foods:</b> Encourage the cultivation of biofortified crops to improve nutrient intake, especially of smallholder farmer households. Scale up capacity building initiatives to ensure that smallholder farmers can utilize available inputs, ensuring the inclusion of women farmers in training.</li> <li>• <b>Reduce post-harvest losses:</b> Improve post-harvest storage facilities at farm level and invest in infrastructure at market level to reduce spoilage of food. Set up post-harvest management training centres for farmers and build capacity of food processors to preserve excess production and to ensure it can be consumed locally.</li> <li>• <b>Promote inclusive markets:</b> Strengthen linkages between farmers and markets to overcome the issue of farmers selling produce at lower than market prices.</li> <li>• <b>Promote consumption of nutritious foods:</b> Raise awareness at community level to discourage selling all the nutritious foods being produced and ensure a portion is kept for consumption.</li> </ul>
Health system	<ul style="list-style-type: none"> <li>• <b>Address gaps in knowledge and capacity on nutrition:</b> Strengthen capacity on nutrition among health staff involved in the design, planning and implementation of nutrition activities.</li> <li>• <b>Integrate monitoring and information systems in health system monitoring platforms:</b> For on-the-spot assessment of nutrition activities, ensure integration and prioritization of nutrition activities and monitoring with other existing activities of the health sector.</li> <li>• <b>Scale up the provision of micronutrient supplementation:</b> Pilot provision of MMT to PLW followed by advocacy for scaling up.</li> </ul>
Fortification and private sector	<ul style="list-style-type: none"> <li>• <b>Improve fortification compliance and enforcement:</b> Strengthen the capacity of public sector entities to monitor and enforce fortification standards at different levels (production, retail). Provide incentives such as tax breaks or subsidies to the private sector to encourage fortification and to follow standards.</li> <li>• <b>Create demand for fortified foods:</b> Link national programmes such as school feeding and social assistance as additional distribution points of fortified foods.</li> <li>• <b>Increase production of locally produced specialized nutritious foods:</b> Build private sector capacity to produce specialized nutritious foods as well as fortified complementary cereals, and advocate for incentives to the private sector to encourage investment and production.</li> </ul>



# References

1. National Population Commission, ICF. Nigeria Demographic and Health Survey 2018. Abuja, Nigeria and Rockville, Maryland; 2019.
2. Bose I, Baldi G, Kiess L, de Pee S. The “Fill the Nutrient Gap” analysis: An approach to strengthen nutrition situation analysis and decision making towards multisectoral policies and systems change. *Maternal and Child Nutrition*. 2019;15(3):1–11.
3. Ministry of Finance Budget and National Planning. Pathways to food systems transformation: a call to action. Abuja.
4. Ministry of Finance Budget and National Planning. National Multi-sectoral Plan of Action for Food and Nutrition (NMPFAN) 2021-2025. Abuja; 2020.
5. FAO, IFAD, UNICEF, WFP, WHO. The State of Food Security and Nutrition in the World 2021. The State of Food Security and Nutrition in the World 2021. Rome; 2021.
6. FAO, IFAD, UNICEF, WFP, WHO. The State of Food Security and Nutrition in the World 2020. The State of Food Security and Nutrition in the World 2020. Rome: FAO, IFAD, UNICEF, WFP and WHO; 2020.
7. Nigeria National Bureau of Statistics. Nigeria Living Standards Survey 2018/19. Abuja; p. NGA\_2018\_LSS\_v01\_M.
8. Nigeria National Bureau of Statistics. CPI and Inflation Report March 2022. Abuja; 2022.
9. Herforth A, Yan B, Venkat A, Mahrt K, Ebel A, Masters WA. Cost and affordability of healthy diets across and within countries: background paper for The State of Food Security and Nutrition in the World 2020, FAO Agricultural Development Economics Technical Study 309369. FAO Agricultural Development Economics Technical Study 309369. Rome; 2020. (Agricultural Development Economics Technical Study). Report No.: 9.
10. Food Prices for Nutrition. Cost of a Healthy Diet - Calculation using the Healthy Diet Basket method. 2022.
11. National Population Commission, ICF Macro. Nigeria Demographic and Health Survey 2008. Abuja; 2009.
12. Adeyemi O, Toure M, Namukolo Covic , Van Den Bold M, Nisbett N, Headey D. Understanding drivers of stunting reduction in Nigeria from 2003 to 2018: a regression analysis. *Food Security* 2022. 2022 Mar 26;1–17.
13. Bello-Schünemann J, Porter A. Building the Future: Infrastructure in Nigeria until 2040. 2017. (West Africa Report). Report No.: 21.
14. WFP GeoNode. Nigeria Road Network (main roads) [Internet]. [cited 2022 Jun 15]. Available from: [https://geonode.wfp.org/layers/ogcserver.gis.wfp.org%3Ageonode%3Anga\\_trs\\_roads\\_osm](https://geonode.wfp.org/layers/ogcserver.gis.wfp.org%3Ageonode%3Anga_trs_roads_osm)
15. Maziya-Dixon B, Achterbosch T, Adelekan D, Adeyemi O, Ajieroh V, Akerele D, et al. Food systems for healthier diets in Nigeria: A research agenda. IFPRI Discussion Paper. 2021. (IFPRI Discussion Paper). Report No.: 02018.
16. World Food Programme. Market Functionality Index (MFI) - Key findings for BAY States, December 2021 - January 2022. Abuja; 2022.
17. Van den Hoek J. Agricultural Market Activity and Boko Haram Attacks in Northeastern Nigeria. *West African Papers*. Paris; 2017. (West African Papers). Report No.: No. 09.
18. World Health Organization. Essential nutrition actions: mainstreaming nutrition through the life-course. Geneva; 2019.
19. World Health Organization. WHO antenatal care recommendations for a positive pregnancy experience - nutritional interventions update: multiple micronutrient supplements during pregnancy. Geneva; 2020.
20. Donli P, Angebeh P. Gender and sustainable agriculture in Borno state: exploring evidence for inclusive programmes and policies for food security. Abuja; 2018.
21. Udemezue J, Odia F. Gender Disparities and Roles of Women in Agriculture in the South Eastern Nigeria. *Biomedical Journal of Scientific & Technical Research*. 2021 Jun 22;36(4).
22. Food and Agriculture Organization. The State of Food and Agriculture 2010-11: Women in Agriculture - Closing the gender gap for development. Rome; 2011.
23. Akseer N, Heidkamp RA, Thorne-Lyman A. Using National Survey Data From Nigeria to Assess Maternal-Child Dietary Concordance and Inform Nutrition Program Strategy. *Current Developments in Nutrition*. 2021 Jun 7;5(Supplement\_2):389–389.
24. Global Fortification Data Exchange. Nigeria Fortification Dashboard [Internet]. [cited 2022 Jun 8]. Available from: [https://fortificationdata.org/country-fortification-dashboard/?alpha3\\_code=NGA&lang=en](https://fortificationdata.org/country-fortification-dashboard/?alpha3_code=NGA&lang=en)
25. Obekpa HO, Olabisi M. Nutrition and growing your own food: Dietary Diversity Evidence from North Central Nigeria. 2019.

26. Olivier E, Tracy B, Kwaw S. Andam. Transforming Nigeria's Agrifood System Wealthier, but Also Healthier. 2021;(November):1–6.
27. World Bank Group. Nigeria Poverty Assessment 2022: A better future for all Nigerians. A Better Future for All Nigerians. Washington DC; 2022.
28. Federal Ministry of Finance Budget and National Planning. Revised Draft National Social Protection Policy. Abuja; 2021.
29. Okeowo G. Review of the Nigerian government budget allocation and expenditure to Social Protection with regional and global comparisons: (2010-2020). Abuja; 2021.
30. OCHA. Humanitarian Needs Overview - Nigeria. 2022.
31. National Home Grown School Feeding Programme. National Home Grown School Feeding Programme [Internet]. [cited 2022 May 15]. Available from: <https://www.nhgsfp.gov.ng/>
32. Edeh H. Federal Government Says School Feeding raised enrolment by 20 percent in 31 states. 2019.
33. Oladele B, Yahaya F, Nwokolo E, Adamu S. Cheers, cries over school feeding programme.
34. Onah RC. Implementation of the National Home-Grown School Feeding Programme ( NHGSFP ) in Nigeria : Examining the Issues , Impediments , and the Way Forward. Journal of Public Administration and Governance. 2021;100(17):11.
35. Taiwo Oyaniran. Current State of Nigeria Agriculture and Agribusiness Sector. In: Oyaniran T, editor. PWC; 2020.
36. Food and Agriculture Organization. FAOSTAT [Internet]. [cited 2022 May 6]. Available from: <https://www.fao.org/faostat/en/#data>
37. African Postharvest Losses Information System (APHLIS). Value Chain: Nigeria - All crops - 2021 [Internet]. [cited 2022 May 30]. Available from: <https://www.aphlis.net/en/data/tables/value-chain/NG/all-crops/2021?metric=prc>
38. Feed the Future. Global Food Security Strategy (GFSS) Nigeria Plan. 2018.
39. McGovern ME, Krishna A, Aguayo VM, Subramanian S V. A review of the evidence linking child stunting to economic outcomes. International Journal of Epidemiology. 2017 Aug;46(4):1171–91.
40. Bourassa MW, Abrams SA, Belizán JM, Boy E, Cormick G, Quijano CD, et al. Interventions to improve calcium intake through foods in populations with low intake. Ann N Y Acad Sci. 2022 May;1511(1):40–58.
41. Shlisky J, Mandlik R, Askari S, Abrams S, Belizan JM, Bourassa MW, et al. Calcium deficiency worldwide: prevalence of inadequate intakes and associated health outcomes. Ann N Y Acad Sci. 2022 Jun 5.

# Acronyms

BMI	Body mass index
CotD	Cost of the Diet
CPI	Consumer Price Index
DHS	Demographic Health Survey
FBDG	Food-based dietary guidelines
FBF	Fortified blended flour
FCT	Federal Capital Territory
FFA	Food Assistance for Assets
FNG	Fill the Nutrient Gap
GDP	Gross Domestic Product
IFA	Iron/folic acid
LNS-MQ	Lipid-based Nutrient Supplement - Medium Quantity
MFI	Market Functionality Index
MMT	Multiple micronutrient tablet
MNP	Micronutrient powder
NGN	Nigerian Naira
NCTP	National Cash Transfer Programme
NHGSFP	National Home Grown School Feeding Programme
NLSS	Nigeria Living Standards Survey
NMPFAN	National Multi-sectoral Plan of Action for Food and Nutrition
PLW	Pregnant or lactating women
SOFI	State of Food Insecurity
USD	United States dollar
WHO	World Health Organization

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