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Fill the Nutrient Gap Zambia Social Protection Focus

Report

Republic of Zambia

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Foreword

The National Food and Nutrition Commission (NFNC) is pleased to present the Fill the Nutrient Gap Zambia, Social Protection Focus Report (2025), a continuation of Zambia's commitment to using evidence to drive nutrition action. This report builds on the foundational Fill the Nutrient Gap (FNG) analysis conducted in 2021, which provided critical insights into the cost and affordability of nutritious diets and the barriers that prevent vulnerable populations from accessing them.

The 2025 FNG analysis goes a step further by applying a social protection lens to assess how Zambia's evolving social safety net programmes can be optimized to improve nutrition outcomes. By focusing on key interventions such as the Social Cash Transfer (SCT) and the Home-Grown School Feeding (HGSF) programme, this report explores how existing and proposed investments in social protection can be leveraged to reduce the cost of nutritious diets, address micronutrient deficiencies, and improve the nutritional status of vulnerable households. This work comes at a critical time, as Zambia faces increased threats from climate shocks, persistent poverty, and growing inequality. The Revised National Social Protection Policy (2025) highlights the need for coordinated, life cycle, and nutrition-sensitive approaches. This analysis provides a strong evidence base for designing such strategies by quantifying both the affordability gap and the transformative potential of integrated nutrition and social protection interventions.

The findings clearly demonstrate that improving nutrition is not the responsibility of one sector alone. It requires collaboration across food systems, education, health, and social protection sectors. The use of the Enhance platform in this analysis allows for precise modelling of intervention packages, providing stakeholders with practical, actionable insights.

As NFNC, we are proud to lead this work in collaboration with the World Food Programme (WFP), the Zambia Statistics Agency (ZAMSTATS), and all contributing stakeholders. This report reflects our joint commitment to achieving Zero Hunger and ensuring that every Zambian, especially women, children, and those most at risk, have access to the nutrition needed to survive, grow, and thrive.

We invite all partners, government ministries, development partners, private sector actors, and civil society organizations to use this report as a guiding tool to enhance the effectiveness and impact of nutrition-sensitive programming. Together, we can close the nutrient gap and build a healthier, more resilient Zambia.

Dr. Muntanga K. Mapani
Executive Director
National Food and Nutrition Commission

Executive Summary

Context

Malnutrition remains a critical public health challenge in Zambia, contributing significantly to child mortality and developmental setbacks. Despite reductions in wasting, Zambia continues to face a triple burden of malnutrition: high rates of stunting among children aged under 5 years, rising levels of overweight and obesity particularly among women of reproductive age, and micronutrient deficiencies among both groups. The country ranks poorly in the 2024 Global Hunger Index, exacerbated by the worst drought in two decades affecting most districts, leading to severe food shortages and sharp increases in food inflation. Coupled with high poverty levels, these factors have severely limited access to nutritious food for vulnerable populations.

To address these challenges, the Government of the Republic of Zambia has reaffirmed its commitment through the launch of a revised National Social Protection Policy aimed at promoting a coordinated, life cycle-based approach to reducing poverty, strengthening resilience, and improving nutrition outcomes for vulnerable populations.

WFP is supporting the government to create an enabling policy environment and strengthen the capacity of systems and institutions to prevent and manage malnutrition in the country through several initiatives under its country strategic plan. Building on a 2021 Fill the Nutrient Gap (FNG) analysis, WFP supported an updated 2024 study focused on assessing the cost and affordability of nutritious diets and the effectiveness of existing social protection programmes, such as the Social Cash Transfer (SCT) and Home-Grown School Feeding (HGSF) programmes. The analysis identified impactful, nutrition-specific interventions that can be integrated into social assistance programmes, aiming to make nutritious diets more accessible and affordable for Zambia's most at-risk populations.

Social protection FNG process in Zambia

The FNG analysis was led by the National Food and Nutrition Commission (NFNC) with technical support from WFP Zambia Country Office and the Systems Analysis for Nutrition team at WFP's headquarters in Rome.

An initial virtual workshop was held in July 2023 to sensitize stakeholders from the NFNC, Ministry of Education, and Ministry of Community Development and Social Services to the FNG analysis and its methodology. The NFNC, with support from WFP maintained ongoing engagement with stakeholders to define the scope of the analysis, identify relevant interventions for modelling, and select appropriate data sources. Following completion of the analysis, stakeholders reviewed the findings through a series of virtual workshops, provided feedback, and jointly developed recommendations. The final results were disseminated in 2025.

Methodology

FNG is a multisectoral stakeholder engagement and analytical process which seeks to characterize the obstacles that households face to accessing and consuming nutritious diets, and then prioritizing actions to overcome them. The FNG analysis consists of a secondary literature review and linear programming diet optimization using the Enhance analytical platform to provide a detailed look at availability, cost, and affordability of nutritious diets. The FNG identified barriers to accessing nutritious

and healthy diets, platforms for reaching nutritionally vulnerable groups in the population, and opportunities for policy and programme interventions to improve access to nutritious foods within the social protection field in Zambia.

Main findings

1. Zambia faces a triple burden of malnutrition characterized by high rates of stunting among children aged under 5 years, rising levels of overweight and obesity particularly among women of reproductive age, and micronutrient deficiencies among both groups. Socioeconomic status is a significant driver across all three forms of malnutrition.

2. The cost of a nutritious diet increased significantly between 2021 and 2024 to nearly twice as much as an energy only diet, amounting to 61 Zambian Kwacha (ZMW) per day for a five-person household.

3. In Zambia, over half of households cannot afford the cost of a nutritious diet, with the highest non- affordability exceeding 70 percent in Eastern and Western provinces.

4. Gender inequality combined with elevated nutritional requirements put women and girls at higher risk of malnutrition. To address their greater needs, targeted nutrition interventions are needed in tandem with social assistance programmes.

5. Home-grown school meal programmes offer a sustainable model to improve access to nutritious diets for children from economically vulnerable and food insecure households, while simultaneously supporting local economies.

6. Monitoring the cost and affordability of nutritious diets and estimating the impact of shocks, is essential to inform timely and adequate shock- responsive social assistance tailored to address nutritional vulnerabilities across provinces.

7. Interventions are more effective in bringing nutritious diets within reach when implemented in coordination across sectors, which is in line with the government's existing commitment to a multisectoral approach to tackling malnutrition.

Stakeholder recommended priorities

EDUCATION SECTOR

- **Leverage school-based platforms to improve the nutrition, school retention, and well-being of adolescent girls through integrated health and education interventions.**

    - Scale up the provision of IFA supplementation in schools, while also exploring the introduction of MMT where feasible, to address the nutritional needs of adolescent girls more comprehensively.

    - To enhance programme effectiveness and school retention, reinforce the implementation of supportive policies such as the school re- entry policy for girls following pregnancy, and ensure access to adequate sanitation facilities and free sanitary towels. These measures serve not only as enablers for regular school attendance but also as crucial incentives for girls to remain engaged in the education system where they can benefit from ongoing health and nutrition support.

Relevant stakeholders: Ministry of Health, Ministry of Education (responsible); NFNC (supporting).

- **Improve the nutritional quality of school meals by integrating diverse, nutrient-dense foods, including fortified, biofortified, and animal- source foods.**
    - Revise the procurement strategy of the HGSF to prioritize the inclusion of nutrient-rich foods such as animal-source foods, fortified staples, and biofortified crops.
    - Strengthen standards and guidelines for school meal composition and build the capacity of local suppliers to meet nutritional and safety standards.

Relevant stakeholders: Ministry of Fisheries and Livestock, Ministry of Education (responsible); NFNC (supporting).

- **Strengthen local food systems to enhance the supply of nutritious foods for school meals.**
    - Provide targeted support to smallholder farmers producing animal-source foods and nutrient-rich or biofortified crops through providing grants, equipment, post-harvest support, and training.
    - Facilitate stronger institutional procurement linkages between smallholder farmers and HGSF and ensure school feeding programmes contribute to both child nutrition and local livelihoods.

Relevant stakeholders: Ministry of Agriculture, Ministry of Fisheries and Livestock, Ministry of Education (responsible); NFNC (supporting).

- **Integrate nutrition focused social and behaviour change interventions into school meal programme.**
    - Raise awareness to promote the consumption of diverse and nutritious foods such as fortified products, animal-source foods, and biofortified crops among students and within households.
    - Align social and behaviour change communication strategies and supply-side efforts with the school feeding programme to shift food preferences to healthier dietary habits.

Relevant stakeholders: Ministry of Agriculture, Ministry of Fisheries and Livestock (responsible); Ministry of Education, NFNC (supporting).

HEALTH SECTOR

- **Strengthen micronutrient supplementation systems through policy, planning, and product optimization.**
    - Advocate for national policy and allocate budget resources to support transition from IFA supplementation to MMT for adolescent girls and pregnant and breastfeeding women, based on global evidence and local nutritional needs.
    - Improve supply chain system of MMS and zinc supplementation including commodity forecasting and planning to ensure consistent availability of MMT. Zinc, among other essential nutrients, can be delivered more efficiently through MMT avoiding the complexity and cost of separate supplementation channels.

Relevant stakeholders: Ministry of Health, NFNC (responsible).

- **Accelerate the implementation of nutrition-sensitive food-based strategies to improve population-wide access to, and consumption of, diverse and nutritious diets.**
    - Finalize and implement the national food fortification strategy to expand access to micronutrients at scale. Fortification, combinedwith improved food systems and targeted education efforts, can help reduce micronutrient deficiencies and support long-term dietary improvement.
    - Promote diet quality and diversity through policy and behaviour change initiatives that increase availability, affordability, and desirability of healthy foods

Relevant stakeholders: Ministry of Agriculture, Ministry of Fisheries and Livestock, NFNC (responsible); Ministry of Health (supporting).

SOCIAL PROTECTION SECTOR

- **Enhance the nutrition sensitivity of social protection programmes by targeting the first 1,000 days and supporting improved access to nutritious and healthy diets.**
    - Roll out the revised SCT guidelines that prioritize targeting of pregnant and breastfeeding women and young children, advocating for flexible eligibility criteria to capture beneficiaries within this window of opportunity.
    - Increase transfer amounts guided by the cost of a nutritious diet.
    - Integrate social and behaviour change activities within the SCT programme to improve dietary diversity and drive positive nutrition practices among beneficiaries.

Relevant stakeholders: Ministry of Community Development and Social Services, NFNC (responsible).

- **Institutionalize cost of diet monitoring and integrate it into early warning and programme decision making systems for evidence-based planning and resource allocation.**
    - Leverage the existing food price data monitoring (as part of consumer price index) by the Zambia Statistics Agency to monitor the cost of a nutritious diet at subnational levels.
    - Incorporate this data into early warning systems and programme decision making. This would enable the government and partners to respond to shocks such as economic shocks, supply disruption, food price inflation or climate related disruptions in a timely manner by adjusting transfer values and accurate geographic targeting.

Relevant stakeholders: Disaster Management and Mitigation Unit (responsible), NFNC (supporting).

- **Strengthen delivery of nutrition-sensitive programme through nutritious in-kind support, referrals, and coordinated services.**
    - Promote the use of fortified and biofortified foods within in-kind food assistance schemes to improve the micronutrient quality of food baskets provided to vulnerable households.
    - Strengthen multisectoral referral systems such as through the Social Welfare Information system and social registries to ensure beneficiaries are linked to complementary services across health, nutrition, and livelihoods. Improving coordination and integration will help maximize the effectiveness of assistance and support more sustainable improvements in food security and nutrition outcomes.

Relevant stakeholders: NFNC, Ministry of Community Development and Social Services, Ministry of Agriculture (responsible).

MULTISECTORAL COORDINATION FOR NUTRITION

- **Strengthen nutrition governance and coordination structures across all administrative levels to improve leadership, accountability, and implementation capacity.**
    - Improve the functionality of nutrition coordination mechanisms at the provincial, district, and ward levels with regular engagement, clear roles and responsibilities, and active follow-through on agreed actions.
    - Institutionalize the role of District Food and Nutrition Officers within Council Secretary Offices to strengthen their convening power, strategic oversight, and accountability functions across sectors.
    - Allocate sufficient domestic and external funding to sustain coordination efforts at all levels.

Relevant stakeholders: NFNC (responsible); Office of the Vice President, Ministry of Education, Ministry of Fisheries and Livestock, Ministry of Agriculture, Ministry of Local Government and Housing (supporting).

- **Finalize and implement key national nutrition strategies with adequate resources and community engagement.**
    - Prioritize the finalization, rollout, and financing of the national stunting reduction strategy.
    - Integrate the strategy into sectoral plans and budgets.
    - Scale up social and behaviour change communication efforts and mobilize and increase community awareness aimed at improving nutrition-related practices, particularly around nutritious and healthy diets, infant and young child feeding, and adolescent nutrition.

Relevant stakeholders: NFNC (responsible); Ministry of Education, Ministry of Health, Ministry of Fisheries and Livestock, Ministry of Agriculture, Office of the Vice President (supporting).

Fill the Nutrient Gap Zambia

Introduction to Fill the Nutrient Gap (FNG) Zambia

Malnutrition remains a major global public health issue, contributing to nearly half of all child mortality worldwide and impairing physical and cognitive development (1). Despite progress made in reducing wasting from 6 percent in 1992 to 3 percent in 2024, Zambia continues to face a triple burden of malnutrition. As of 2024, stunting among children aged under 5 years remains above 30 percent (2); micronutrient deficiencies in iron, zinc and vitamin A are widespread among young children and women of reproductive age, and; overweight is rising among women of reproductive age (3). Zambia ranks 115 out of 126 countries in the 2024 Global Hunger Index with a score of 30.7, a level of hunger that is serious (4).

Zambia is prone to recurring climate shocks with droughts severely impacting agricultural productivity and food availability. In 2024, Zambia experienced its worst drought in at least two decades, affecting 84 of its 116 districts and leading to severe food shortages and water scarcity (5). This environmental challenge has been compounded by economic constraints, with 60 percent of Zambians living in poverty as of 2022 (6). Rising food prices, particularly of staple foods, have further limited access to nutritious foods. During the height of the 2024 drought, Zambia experienced sharply rising food inflation, climbing from 15–16 percent in April to over 18 percent by year end (7).

WFP is supporting the Zambian government to create an enabling policy environment and strengthen the capacity of systems and institutions to prevent and manage malnutrition through several initiatives under its country strategic plan (8). WFP takes a multisectoral approach to strengthen national systems such as social protection, integrating nutrition to improve diets and prevent malnutrition among vulnerable groups, especially pregnant and breastfeeding women, girls, and children aged under 5 years.

In 2021, WFP supported the National Food and Nutrition Commission (NFNC) to carry out the FNG analysis to understand the barriers and trends limiting access to adequate nutrition at household level, and to provide the evidence required to influence national policies and programmes so that limitations to household access to nutritious food could be effectively addressed. In 2024, because of the government's long- standing commitment to social protection, a consensus of WFP's global and regional nutrition and social protection advisors selected Zambia for an update of the FNG analysis with a focus on social protection. The government's financial contribution and commitment to strengthen and advance social protection initiatives enabled the successful undertaking of this analysis. It aimed to assess the change in cost and affordability of nutritious diets between the two study periods (2021 and 2024), and to assess the adequacy - in terms of being able to afford meeting nutrient needs - of existing and proposed social assistance transfers, including the flagship SCT and the national Home-Grown School Feeding (HGSF) programmes.

In addition, complementary nutrition-specific interventions that can be delivered through, or in tandem with, the social assistance and school feeding programmes, were identified and modelled to show the most impactful packages of multisectoral interventions that make nutritious diets affordable for vulnerable households.

Building consensus for improved nutrition

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 economic potential of the country through a resilient and productive workforce. 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. Improving the nutrition situation in a country requires coordinated actions across education, food, health and social protection systems. Such actions need to be grounded in a good understanding of the local context, its opportunities and bottlenecks, and a synthesis of global and local evidence.

The FNG is an analytical process comprised of a secondary literature review in combination with linear optimization to understand local drivers that affect the availability, cost and affordability of a nutritious diet. 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, using the Enhance platform. In this way, the context-specific potential for impact of proven interventions can be quantified. This FNG analysis applies a social protection lens to deepen the understanding of how social protection systems can help overcome these barriers and improve access to nutritious and healthy diets.

This summary report presents findings from the 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 analysis contributes towards building consensus around a vision and a path forward for improved nutrition in Zambia in a sustainable way that is integrated across the country's social protection 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 analysis examines gaps in dietary intake, particularly among vulnerable populations, to inform national programmes and policies across food, social protection, education, and health systems to improve nutrition. It assesses the availability, accessibility, and affordability of nutritious foods to identify barriers to adequate nutrient intake and examine the range of food choices available to vulnerable populations, and the factors influencing their decisions.

To identify the most effective combination of interventions to improve diets and nutrient intake, the FNG models the impacts of context-appropriate interventions across systems and identifies entry points to refine programmes and policies by providing targeted recommendations for decision makers.

The analysis is comprised of 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, how these characteristics are affected by seasonality, shocks, and climate change, and population behaviour related to food and diets.

2. An analysis of the extent to which economic barriers prevent adequate nutrient intake using Enhance, an open access, online analytical platform, to identify dietary patterns that are healthy, affordable, and environmentally sustainable. Enhance uses diet optimisation to calculate the minimum cost of healthy food baskets (diverse, balanced and meeting nutrient needs) for multiple regions, seasons and individuals.

Enhance enables the assessment of the extent to which a given amount of money can fulfil dietary needs in a specific context, considering the nutritional requirements of different target groups. The assessment includes modelling the economic impact of possible interventions to increase nutrient intake and fill nutrient gaps. In contexts where relevant, Enhance also allows for the estimation of the environmental impact (greenhouse gas emissions and water footprint) of the food baskets to generate the evidence necessary to inform decisions related to sustainable and equitable food systems transformation.

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

National stakeholders define the scope and focus of the assessment. They contribute data and sources of information to identify context-specific barriers and entry points and, together with the analytical team, develop a shared understanding of the issues and identify appropriate nutrition-specific and nutrition-sensitive interventions that can be implemented by different

sectors using existing delivery platforms, such as social safety nets, food processing and markets, antenatal care and school feeding programmes. For this social protection-focused FNG, nutrition-specific and nutrition-sensitive interventions that can be implemented specifically within and in-tandem social protection programmes were identified by engaging the relevant sectors.

WFP developed the FNG methodology 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 2025, FNG analyses were completed in 46 countries.

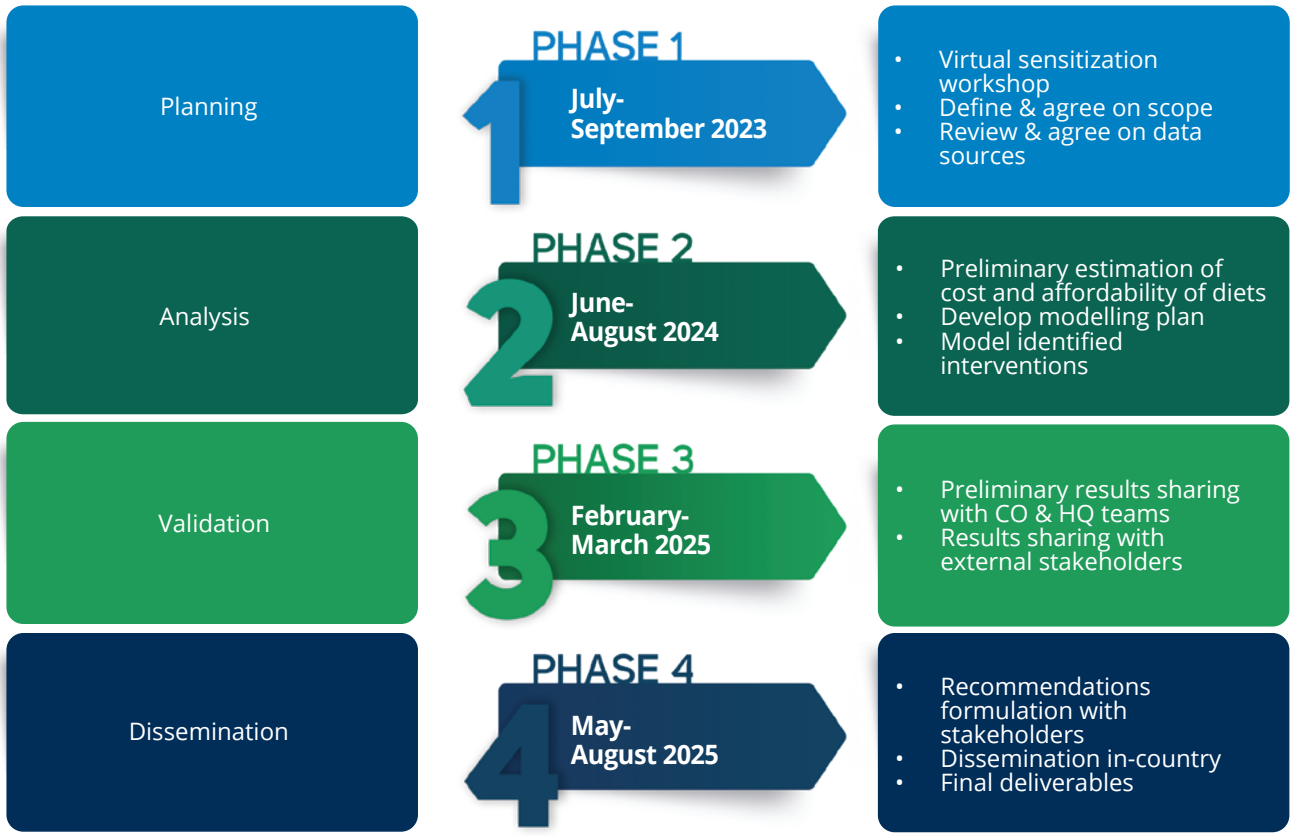
For more information on the concept and the method of the analysis, see: Bose I, Baldi G, Kiess L, de Pee S, The 'Fill the Nutrient Gap' Analysis: An approach to strengthen nutrition situation analysis and decision-making toward multisectoral policies and systems change. Maternal and Child Nutrition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

Process and scope of the analysis

Process of the FNG Analysis in Zambia

The FNG analysis was led by the NFNC with technical support from WFP Zambia Country Office and the Systems Analysis for Nutrition team at WFP's headquarters in Rome. A virtual workshop was conducted to sensitize stakeholders to the FNG methodology, define the scope of the analysis, agree on interventions to be modelled, and identify data sources. Stakeholders provided feedback on the results through a series of virtual workshops and collaboratively formulated recommendations. The results were disseminated at an in-person workshop in Lusaka in July 2025.

FIGURE 1: THE FILL THE NUTRIENT GAP (FNG) PROCESS FOLLOWED IN ZAMBIA



Scope and focus of the social protection specific FNG analysis

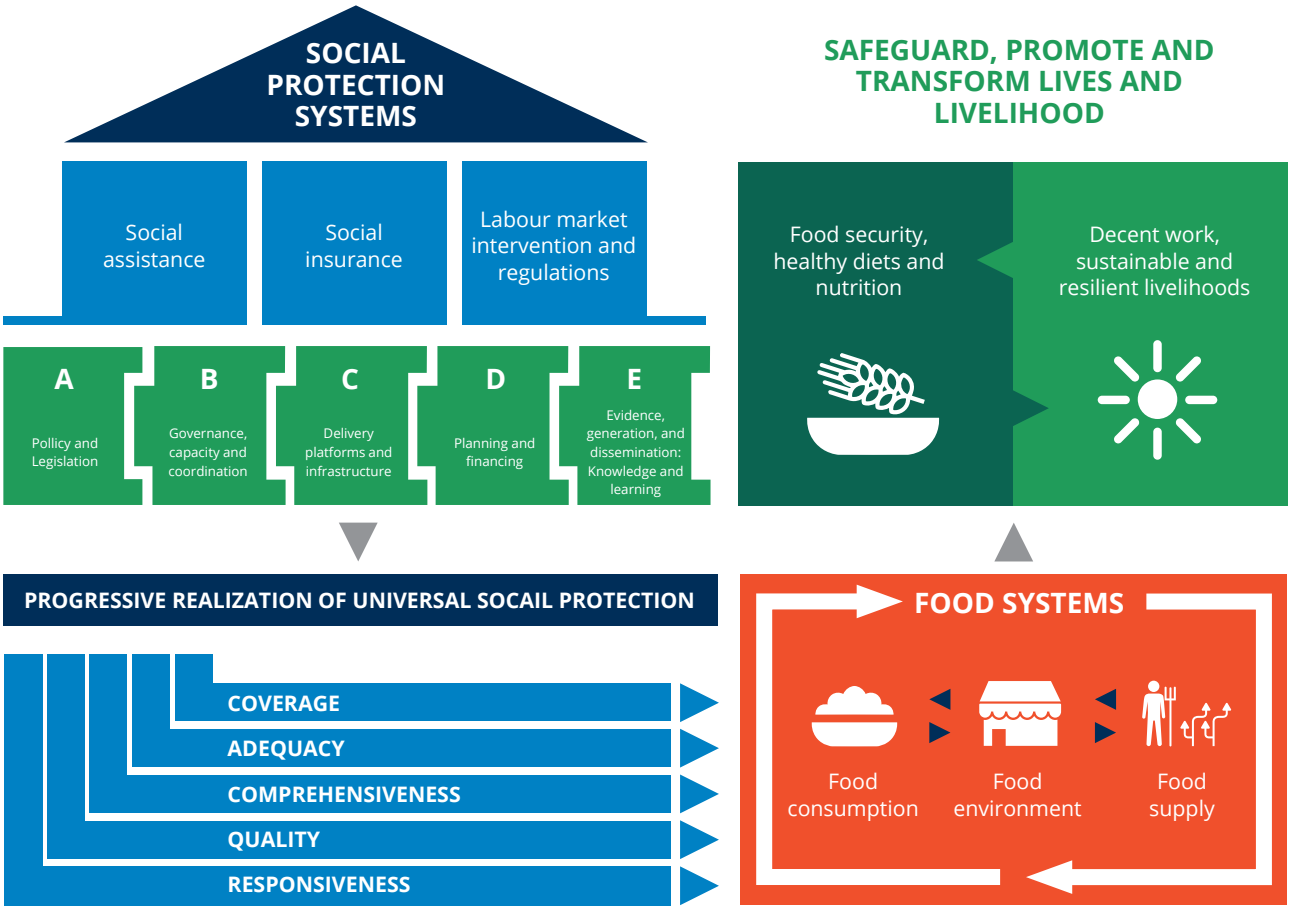
The FNG analysis provides a framework for strengthened situation analysis and multisectoral decision making by identifying context-specific barriers to adequate nutrient intake among targeted groups. This particular FNG analysis applies a social protection lens to deepen the understanding of how social protection systems can help overcome barriers and improve access to nutritious and healthy diets. Figure 2 presents the framework showing how social protection, through its three pillars — social assistance, social insurance, and labour market interventions — supported by system-building components such as policy and legislation, work together to improve food security, nutrition, and decent work outcomes. Social protection is seen not only as a safety net for vulnerable populations but also as a catalyst for sustainable livelihoods and

systemic change across food supply chains, food environments, and food consumption patterns. By addressing both economic and physical barriers to accessing nutritious foods and supporting stable livelihoods, social protection plays a direct role in improving diets and nutrition outcomes, and these outcomes help to achieve the goals of social protection.

Objectives of the social protection FNG analysis:

1. Understand how cost and non-affordability of various diets have changed since the last FNG analysis in 2021.
2. Model current and proposed interventions related to the Home-Grown School Feeding (HGSF) and Social Cash Transfer programmes and formulate implementable recommendations to improve nutrition outcomes.
3. Contribute to evidence generation to inform nutrition sensitivity and shock-responsiveness in social protection and emergency responses.
4. Develop recommendations to inform government, WFP and other humanitarian and development partners' strategic and programming directions related to social safety net programmes.

FIGURE 2: SOCIAL PROTECTION FOR FOOD SYSTEMS TRANSFORMATION FRAMEWORK

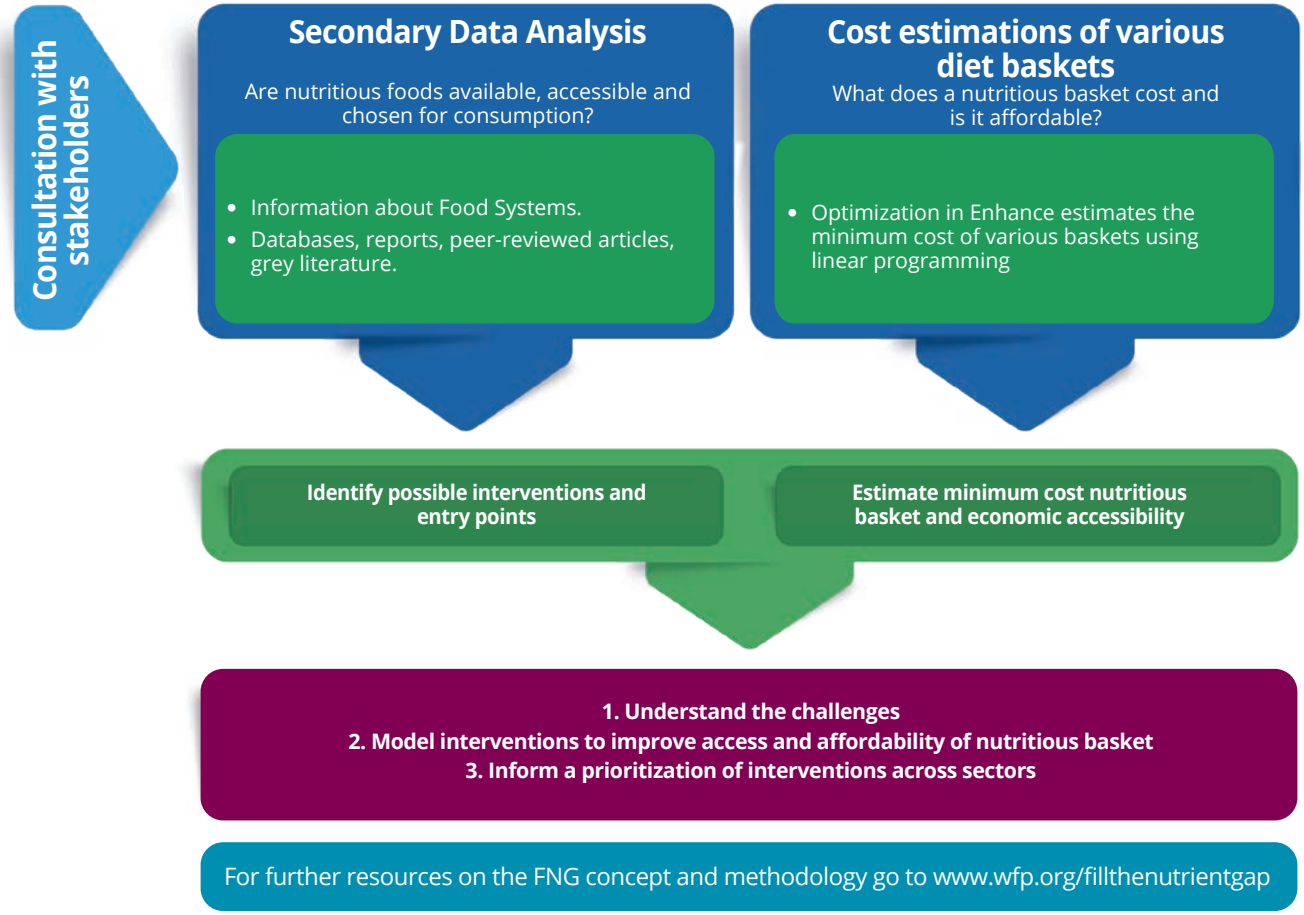


Adapted from UN Food Systems Summit 2021

Methodology

The FNG analysis has two components. The first is a literature review which identifies barriers to accessing nutritious and 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 health, social protection and education. The second component assesses the extent to which economic barriers impact adequate nutrient intake. It uses the Enhance linear programming platform to understand the cost, availability and affordability of various baskets (Figure 3).

FIGURE 3: FNG ANALYTICAL FRAMEWORK



COST OF DIETS ANALYSIS USING Enhance PLATFORM

Enhance platform 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 platform 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 . These baskets 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 Nutrient Adequate Basket" as the lowest cost nutritious diet that includes a typical staple food and excludes foods that are prohibited . 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 State of Food Insecurity (SOFI) report.

Household 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 share 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.

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

2 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. Foods that are prohibited could be for customary or public health reasons, e.g., raw meat during pregnancy in some parts of the world.

Data sources for cost of diets analysis

Cost of diets were calculated for the 10 provinces of Zambia, in addition to nationally weighted average cost using food price observations from Zambia Statistics Agency's (ZAMSTATS) monthly consumer price index (CPI) data. Diet costs were calculated for lean and non-lean seasons corresponding to February 2024 and August 2023 respectively. Baseline cost figures and modelling of interventions are based on February 2024 price data. There are 130 items in the food price data, of which 80-90 were included in the analysis, omitting spices, confectionary, alcohol and non-food items.

Non-affordability rates were calculated for the 10 provinces by comparing household food expenditure reporting from the Living Conditions Measurements Survey 2022 (LCMS) to the cost of diets. To align the time periods of food expenditure and price datasets, food expenditure reporting was adjusted for inflation using ZAMSTATS's CPI reporting for the month of February 2024, which is the period this analysis used for reporting main findings, including Intervention modelling.

Modelled household and main target groups for the analysis

The FNG models a household that includes the following individuals across the life cycle:

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

The 5 member household was selected to align with the average household size in Zambia which is 5.2 (6), and to capture the range of nutrient requirements across the life cycle, and was validated by stakeholders.

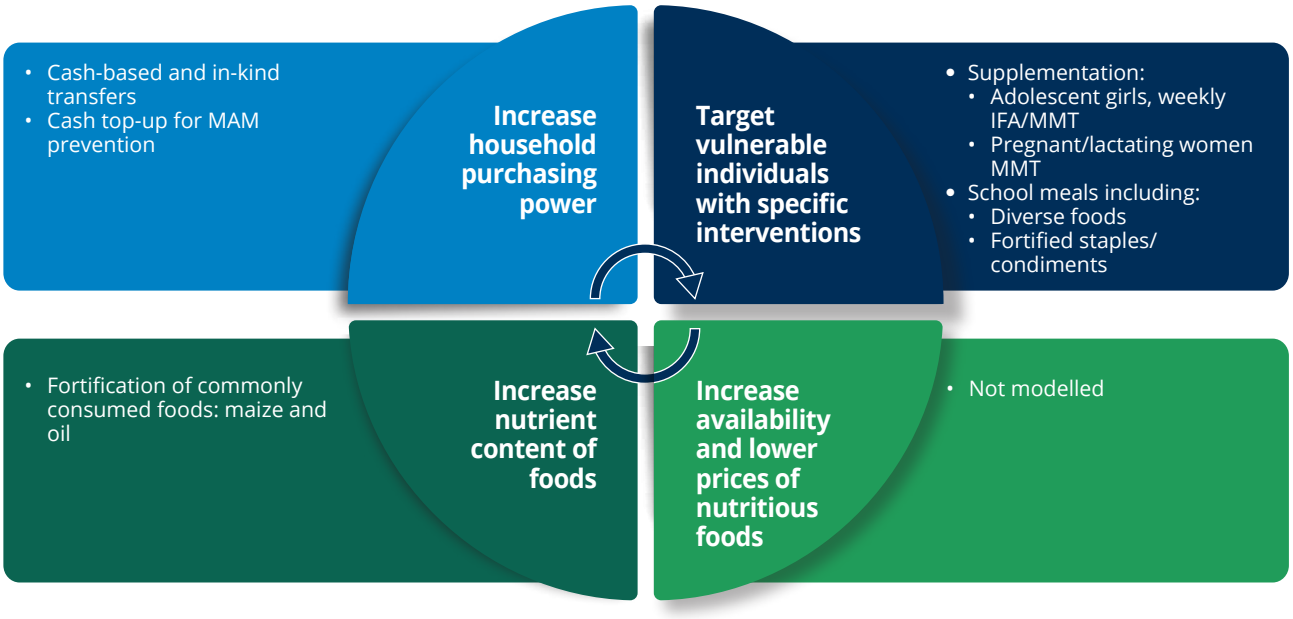
Three types of diets were calculated in the analysis: 1) energy adequate basket, referred to as the energy only diet, which meets the energy requirements of all individuals in the model household; 2) staple-adjusted nutrient adequate basket, referred to as the nutritious diet, which meets both macro- and micronutrient needs of all individuals in the model household, and; 3) healthy and nutrient adequate basket, which fulfils the same criteria as the nutritious diet in addition to incorporating dietary diversity.

The nutritious diet is adjusted to include the staple foods most commonly consumed in Zambia's 10 provinces – maize and cassava. Details of proportions used for each staple in each province can be found in the technical annex. The nutritious diet also serves as the basis for all intervention modelling.

Intervention modelling

The modelled interventions were selected through consultations with government stakeholders and the WFP Zambia Country Office during the initial sensitization workshop held in July 2023, and in consecutive workshops for continued refinement. The selection focused on programmes within the social protection sector, as well as nutrition-specific interventions from other sectors implemented alongside social assistance programmes. An overview of the conceptual modelling approach is presented in Figure 4.

FIGURE 4: ENTRY POINTS AND INTERVENTIONS MODELLED TO ESTIMATE REDUCTION IN COST OF A NUTRITIOUS DIET



Considerations for interpretation and data gaps

The FNG estimates the cost and affordability of diets that meet caloric and nutrient needs for the individuals in the model household, in addition to a healthy diet basket. These diet cost estimations are mathematically optimized and intended to be used as an economic benchmark below which it would be impossible to meet the macro- and micronutrient needs of the individuals in the modelled household. It is not a recommendation of what people should eat, nor is it a reflection of current dietary consumption patterns. It selects the cheapest combination of foods that meet nutrient needs, which may not necessarily make a palatable recipe.

The CPI data used for the analysis is representative at the provincial level but does not provide granularity within each province, nor does it provide urban and rural disaggregation. As a result, it may not reflect variations in availability and prices of foods within provinces and between urban and rural areas. The CPI data reported from ZAMSTATS combines Northern and Muchinga provinces as one, resulting in the same cost of diet being reported for both. The household food expenditure in the LCMS 2022 reports values separately for Northern and Muchinga provinces, resulting in the respective food expenditures being compared to the same cost of a nutritious diet for both provinces to determine non- affordability.

Findings

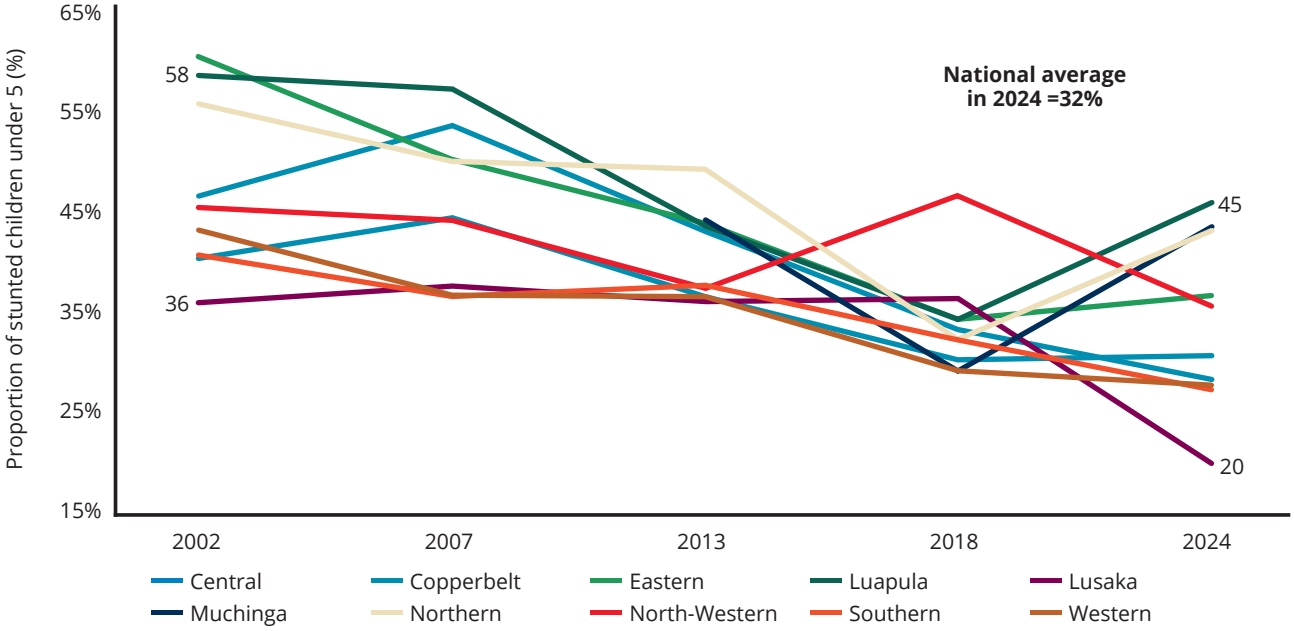
1.

ZAMBIA FACES A TRIPLE BURDEN OF MALNUTRITION CHARACTERIZED BY HIGH RATES OF STUNTING AMONG CHILDREN AGED UNDER 5 YEARS; RISING LEVELS OF OVERWEIGHT AND OBESITY, PARTICULARLY AMONG WOMEN OF REPRODUCTIVE AGE AND; MICRONUTRIENT DEFICIENCIES AMONG BOTH GROUPS. SOCIOECONOMIC STATUS IS A SIGNIFICANT DRIVER ACROSS ALL THREE FORMS OF MALNUTRITION.

- Stunting among children aged under 5 has declined marginally over the decades, while overweight is steadily increasing among women of reproductive age, and micronutrient deficiencies remain widespread across both vulnerable groups.
- Socioeconomic inequality is a significant driver of malnutrition, with stunting and wasting significantly higher among poorer households, resulting in uneven improvements across regions and wealth groups.

Zambia has made significant progress in reducing wasting among children aged under 5, from 6 percent in 1992 to 3 percent in 2024, which is considered acceptable according to the World Health Organization's (WHO) standards. While a reduction in stunting from 46 to 32 percent was also seen over the same period, it remains a significant public health concern, as Zambia still falls within the high severity category according to WHO standards. Substantial geographic disparities in stunting persist, with rates at 20 percent in Lusaka and reaching 43 percent in both Northern and Muchinga provinces, and 45 percent in Luapula as of 2024 (2), depicted in Figure 5. In addition to high stunting rates, undernutrition remains a concern more broadly, with 12 percent of children aged under 5 reported to be underweight as of 2024 (2).

FIGURE 5: PROPORTION OF STUNTED CHILDREN UNDER FIVE YEARS OF AGE ACROSS 10 PROVINCES IN ZAMBIA (%) (ZAMBIA DEMOGRAPHIC HEALTH SURVEY 2002 - 2024)



Concerning micronutrient deficiencies, the 2024 National Food Consumption and Micronutrient Status Survey (NFCMSS) showed that vitamin A deficiency remains a significant public health concern for children aged under 5 and adolescent girls aged 10-14 years, with deficiencies at 26 and 16 percent respectively. This is a high risk factor for weakened immunity among children, affecting overall growth and development. Folate deficiency stood at 23 percent in children aged under 5, 34 percent in adolescent girls, and a notably high 61 percent in women of reproductive age (15-49 years). This indicates significant public health implications as insufficient folate intake during pregnancy is associated with numerous adverse outcomes such as neural tube defects, growth retardation, low birth weight and preterm delivery. Nationally, anaemia affects 28 percent of children aged under 5, with the highest prevalence reported in Luapula at 45 percent, and it affects 21 percent of women of reproductive age. Iron deficiency anaemia is prevalent in 9 percent of children aged under 5, and in 6 percent women of reproductive age (9).

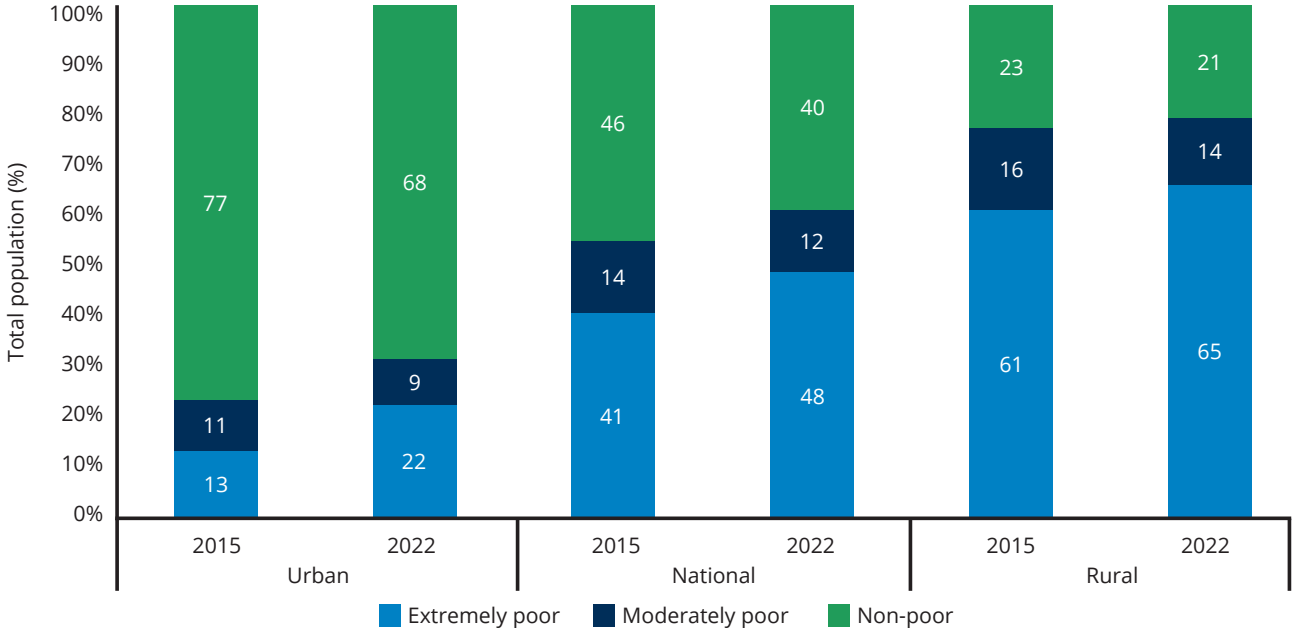
While overweight estimates for children aged under 5 remains low at 4 percent (2), the prevalence among women of reproductive age has seen a significant rise — from 12 percent in 2002 to 23 percent in 2014 (10). Current estimates, if available, may be even more alarming. Provinces in the north are facing the highest rates of chronic malnutrition and the highest rates of poverty. According to the Poverty and Equity Assessment report in 2025, rural areas near urban centres have experienced some economic gains, while more remote rural areas, particularly Northern, Luapula, and Muchinga provinces, have seen worsening poverty. Households in remote rural areas travel much farther to access essential services such as banks, food markets and agricultural input markets. Economic growth has been uneven, favouring wealthier households in urban areas while rural areas have experienced stagnant or declining incomes. Urban regions near Lusaka and Copperbelt have benefited from better economic opportunities, shedding light on the regional disparities in stunting reduction (11).

Low socioeconomic status is a common determinant across all forms of malnutrition in Zambia. A 2022 study analysing contextual factors and spatial trends of childhood malnutrition based on the 2018 Zambia Demographic and Health Survey (ZDHS), found that the prevalence of both stunting and wasting was significantly higher among children from poor households (12). According to the 2022 LCMS report, 60 percent of Zambian households are currently living in poverty, compared to 54 percent in 2015. This increase is mainly driven by a large share of households falling into extreme poverty (6) as illustrated in Figure 6. An analysis of stunting trends across wealth quintiles, based on the 2007 and 2013/14 ZDHS reports, revealed the reductions in stunting (from 53 – 40 percent between 2007 and 2014) were unevenly distributed, with wealthier households benefiting more in the reduction of stunting than the poorest households. The disparities were also driven by maternal education and access to healthcare services, which shows that poverty-related structural barriers continue to limit progress in reducing chronic malnutrition (13).

Compounding the effects of high levels of poverty on malnutrition are the recurrent climate shocks in Zambia, impacting agricultural productivity and food availability. In 2024, Zambia experienced its worst drought in at least two decades, affecting 84 of its 116 districts and leading to severe food shortages and water scarcity (5).

Zambia is moving towards a better integrated social protection system with several shock-responsive approaches. However, stakeholders highlight the acute need for horizontal and vertical expansion of social assistance; better use of existing meteorological and social data to design context-specific interventions; strengthening domestic financing mechanisms and legislation to enhance sustainability of social protection provision; and, more generally, moving towards a better coordinated, synergistic and anticipatory model of policy-making and social protection delivery that effectively responds to humanitarian emergencies (14).

FIGURE 6: PROPORTION OF ZAMBIAN HOUSEHOLDS GROUPED INTO THREE LEVELS OF POVERTY (%) (ZAMBIA LIVING CONDITIONS MEASUREMENTS SURVEY (LCMS) 2015 & 2022)



2.

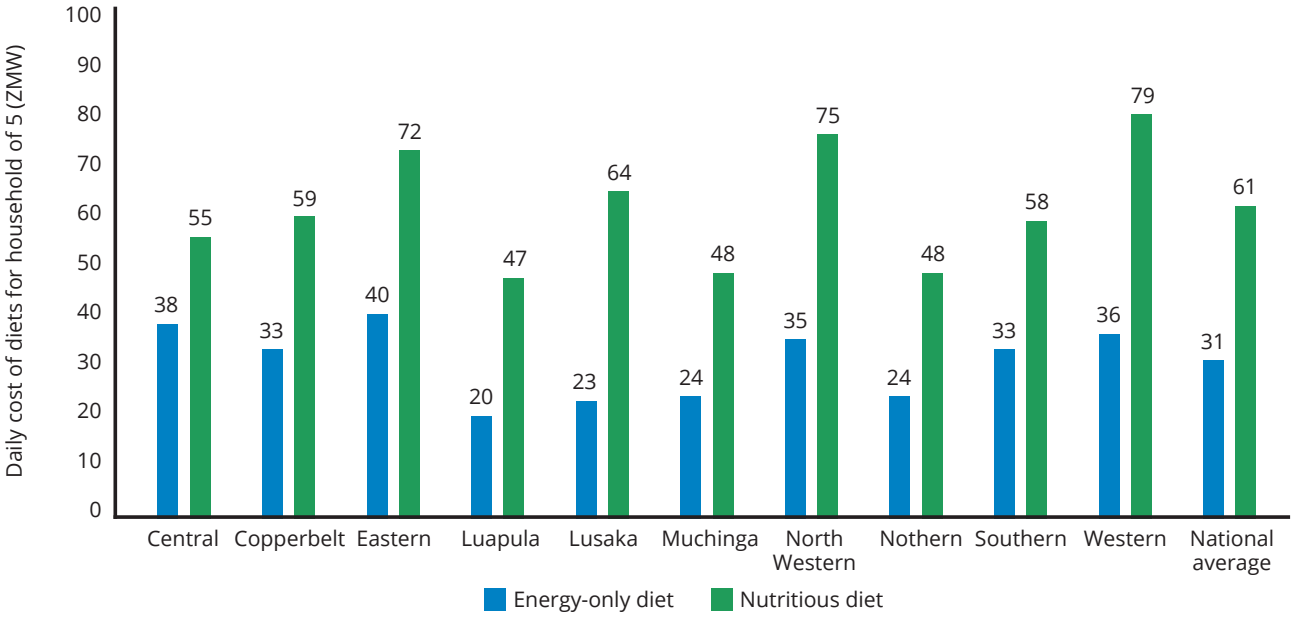
THE COST OF A NUTRITIOUS DIET INCREASED SIGNIFICANTLY BETWEEN 2021 AND 2024 TO NEARLY TWICE AS MUCH AS AN ENERGY ONLY DIET, AMOUNTING TO 61 ZAMBIAN KWACHA (ZMW) PER DAY FOR A FIVE PERSON HOUSEHOLD.

- The national average cost of a nutritious diet in Zambia was ZMW61 per day for a household of five, nearly double the cost of an energy only diet (ZMW31).
- Between 2021 and 2024, the cost of a nutritious diet rose by 85 percent, while the energy only diet increased by 185 percent, due mainly to sharp price hikes in maize and cassava.

The FNG estimates the cost of two types of diets for each province using prices of locally available foods: the energy only diet, which meets energy requirements, and the nutritious diet, which meets both macro- and micronutrient needs for all household members. The national average cost of a nutritious diet was ZMW61 per day per household of five members in February 2024, which is nearly twice the cost of the energy only diet at ZMW31 per day per household. The difference in cost between energy only and nutritious diets varies significantly by province (Figure 7), with Luapula, Lusaka, North-Western and Western provinces showing larger differences, ranging from 114 percent in North-Western to 178 percent in Lusaka, and the least difference of 45 percent observed in Central province.

The cost of the nutritious diet is driven by the price and availability of nutrient-dense foods such as organ meats (chicken liver) and green leafy vegetables (cassava leaves) that provide key nutrients, particularly calcium, iron and zinc. These nutrients have been identified as cost drivers, or expensive to meet across most provinces.

FIGURE 7: DAILY COST OF ENERGY-ONLY AND NUTRITIOUS DIETS FOR A HOUSEHOLD OF 5 (ZMW)



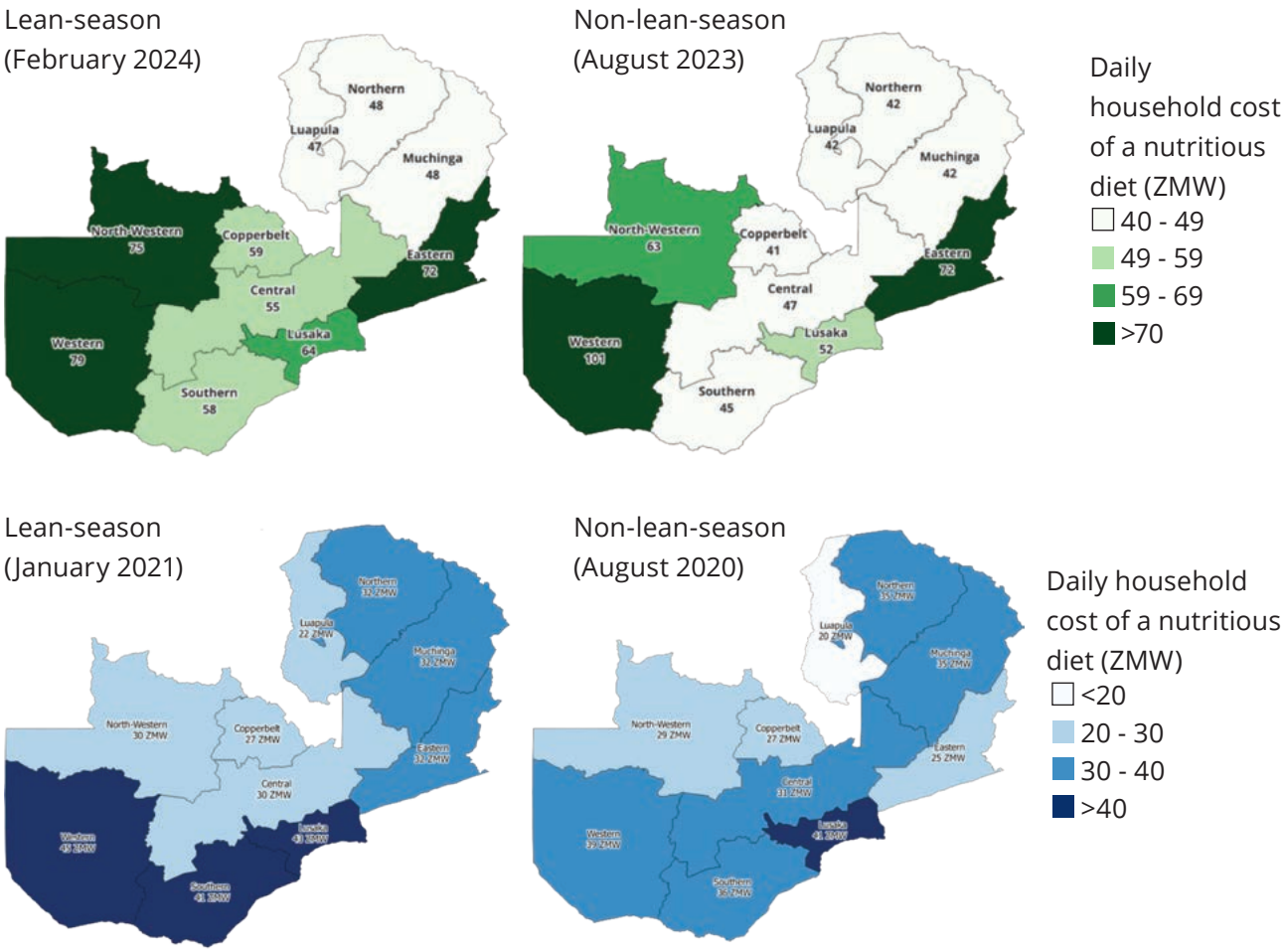
The analysis compared these diet cost results to costs calculated in the 2021 FNG analysis and, although there has been significant food inflation of about 40 percent between early 2021 and 2024, the cost of a nutritious diet has increased even further by 85 percent nationally. The cost of an energy only diet rose sharply by 185 percent, primarily driven by significant price increases in the two main staple foods included in the diet in large proportions: maize and cassava. Between February 2021 and February 2024, the price of cassava tubers increased by 69 percent on average across three[1] provinces (Luapula, Northern, and North-Western) where it is a major staple, and the price of maize flour has risen by an average of 115 percent in the same period across all 10 provinces. This increase in price also explains the larger differences observed between the cost of energy only and nutritious diets as the latter is adjusted to include maize and cassava to account for local dietary patterns.

Seasonal differences in cost of a nutritious diet have also become more pronounced over the last three years as depicted in Figure 8, with a 14 percent increase between the non-lean and lean seasons in 2024 compared to a negligible two percent increase between non-lean and lean seasons in 2021.

The FNG also estimated the cost of a healthy diet, which fulfils the macro- and micronutrient requirements of all individuals in the model household in addition to incorporating dietary diversity. Nationally, the cost of a healthy diet was ZMW87 per day per household of five members in February 2024. It is 44 percent higher when compared to the cost of a nutritious diet. The cost ranges from ZMW57 in Northern and Muchinga provinces and ZMW105 in Lusaka. The healthy diet costs more than the nutritious diet as it has an additional criteria of meeting dietary diversity for all individuals in the household.

1 Cassava tuber is also a staple in Western province, however it was not available there in February 2021

FIGURE 8: SEASONAL VARIATION IN COST OF A NUTRITIOUS DIET IN 2024 VERSUS 2021 (ZMW)



3.

IN ZAMBIA, OVER HALF OF HOUSEHOLDS CANNOT AFFORD THE COST OF A NUTRITIOUS DIET, WITH THE HIGHEST NON-AFFORDABILITY EXCEEDING 70 PERCENT IN EASTERN AND WESTERN PROVINCES.

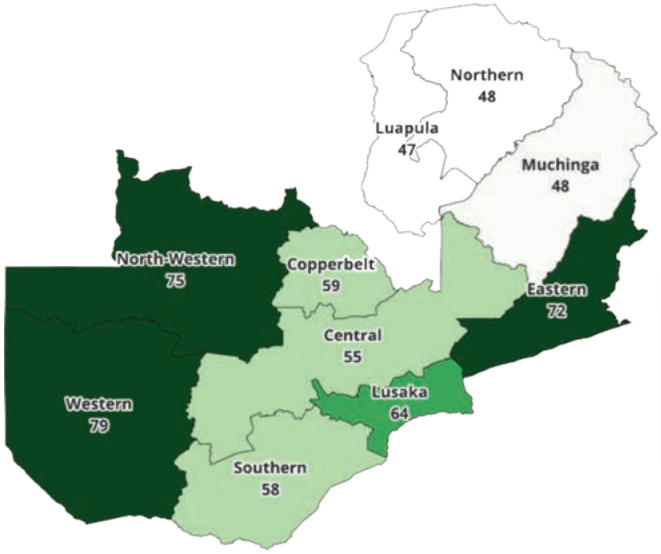
- 56 percent of Zambian households cannot afford a nutritious diet, while 32 percent cannot meet even their basic energy needs.
- Rural households are disproportionately affected, with 68 percent unable to afford a nutritious diet compared to 38 percent in urban areas.

The FNG compared the costs of both energy only and nutritious diets against household food expenditure percentiles as reported in the LCMS 2022, to determine the proportion of households that cannot afford these diets. Nationally, at least 56 percent of Zambians are not able to afford the cost of meeting their nutrient needs while 32 percent cannot afford to meet their basic energy needs. The non-affordability of nutritious diets varies across provinces from 35 percent in Copperbelt to 75 percent in Western.

Non-affordability is driven by both cost and household economic capacity as depicted in Figure 9, where the cost of the nutritious diet in Luapula, Northern and Muchinga provinces are relatively low (ZMW47-48), yet non- affordability rates are high, ranging between 60 and 69 percent, reflecting limited household purchasing power. By contrast, in provinces like Copperbelt and Lusaka, the cost of a nutritious diet is relatively high at ZMW 59 and 64 respectively, but show significantly lower rates of non- affordability at 35 and 36 percent respectively, which indicates higher household purchasing power.

FIGURE 9: DISTRIBUTION OF HOUSEHOLD COST (ZMW) AND NON-AFFORDABILITY (%) OF A NUTRITIOUS DIET ACROSS 10 PROVINCES

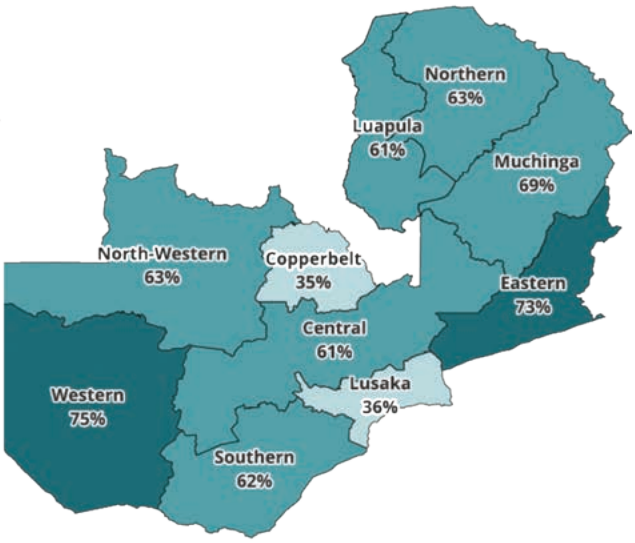
National average cost of a nutritious diet ZMW 61



Daily household cost of a nutritious diet (ZMW)

- 40 - 49
- 49 - 59
- 59 - 69
- >70

Non-affordability of nutritious diet at national level - 56%



Non-affordability of nutritious diet

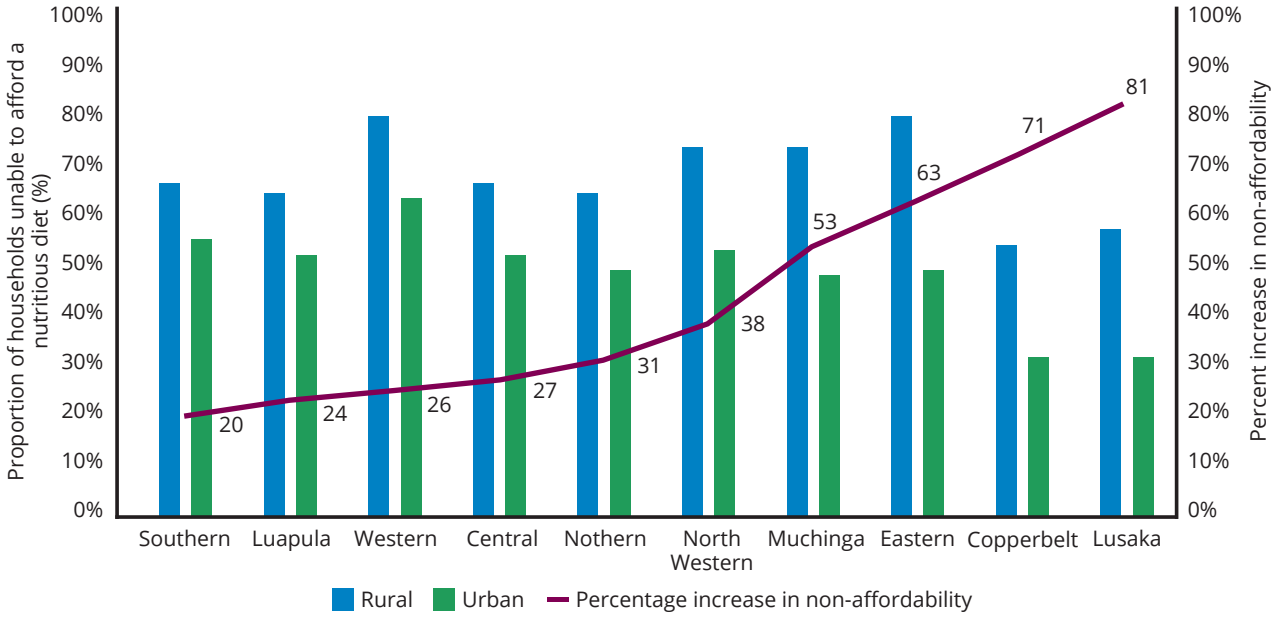
- 30 - 50%
- 50 - 70%
- >70

According to the LCMS 2022 report, Western province had the second highest proportion of the population living in poverty at 79 percent. This, combined with the highest cost of a nutritious diet, resulted in the highest non-affordability.

Comparing non-affordability results between the two FNG study periods (2021 and 2024), nutritious diets remained non-affordable for over 50 percent of households. However, non-affordability of the energy only diet increased by 145 percent, from 13 percent of households unable to afford it in 2021 to 32 percent unable to afford it in 2024. This increase is mainly driven by the surging prices of the staple foods, cassava and maize.

Rural households consistently show higher non- affordability rates than urban households, with Lusaka, Copperbelt, Eastern, and Muchinga showing gaps between 14 and 30 percent, Figure 10. The analysis compared the cost of a nutritious diet in each province to the respective food expenditure of rural versus urban households and found that rural households are more at risk of being unable to afford a nutritious diet compared to urban households. The magnitude of the gap varies across provinces with the lowest at 20 percent in Southern province and the highest in Lusaka and Copperbelt at 81 and 71 percent respectively. The price data from the CPI dataset does not disaggregate between urban and rural markets and most CPI data collection covers urban markets.

FIGURE 10: PROPORTION OF RURAL AND URBAN HOUSEHOLDS UNABLE TO AFFORD A NUTRITIOUS DIET (%)



4.

GENDER INEQUALITY COMBINED WITH ELEVATED NUTRITIONAL REQUIREMENTS PUT WOMEN AND GIRLS AT HIGHER RISK OF MALNUTRITION. TO ADDRESS THEIR GREATER NEEDS, TARGETED NUTRITION INTERVENTIONS ARE NEEDED IN TANDEM WITH SOCIAL ASSISTANCE PROGRAMMES.

- Gender inequality continues to shape nutrition and health outcomes in Zambia, with women of reproductive age disproportionately affected by poverty, lower educational attainment, and limited decision making power.
- Leveraging school feeding and cash assistance programmes for the integration of complementary nutrition interventions, such as micronutrient supplementation and nutrition cash top-ups, are effective strategies to meet the nutrient needs of adolescent girls and breastfeeding women.

Despite notable efforts to advance the rights of women and girls, greater action is still needed to achieve meaningful gender equality in Zambia. The country's Gender Inequality Index (GII) score decreased from 0.694 in 1990 to 0.526 in 2022. However, the improvements have stagnated with a slight increase being seen from 0.517 in 2017 to 0.526 in 2022, indicating a rise in gender disparities. Women remain under-represented in traditionally male dominated industries, comprising only 20 percent of the workforce, and their involvement in decision making roles across all levels of governance, both in the civil service and private sector, remains limited (15).

According to the LCMS 2022 report, the higher education attendance rate for women is 22 percent compared to 30 percent for their male counterparts. The proportion of households headed by women living in extreme poverty is higher at 50 percent compared to 45 percent of households headed by men. Households headed by women have a monthly average income that is 2.4 times less than that of households headed by men. Inevitably, only 32 percent of households headed by women consume 3 meals per day compared to 41 percent of households headed by men. These socioeconomic disparities are further exacerbated by the high nutritional needs of women of reproductive age, compounding their vulnerability to poor health and diet-related outcomes.

The prevalence of overweight and obesity among women of reproductive age (15-49 years) has seen a significant rise, from 12 percent in 2002 to 23 percent in 2014 (10). A study that examined obesity trends in this population group found that despite the presence of many nutrition policies and strategies, the increase in overweight and obesity occurred in recent decades when urbanization, sedentary work, a proliferation of fast food restaurants and advertisements affected changes in nutrition outcomes (16). The NFCMSS revealed that 18 and 11 percent of energy sources in the diet of this population group come from refined grains, and baked goods and liquid oils respectively (9). In contrast, the WHO recommends that the majority of daily energy intake should come from whole grains, vegetables, fruit, and legumes, while refined grains and highly processed baked goods are discouraged due to their low fibre and nutrient content, their association with increased risks of overweight and obesity, and associated diseases such as type 2 diabetes and cardiovascular diseases (17).

Women of reproductive age have higher needs in terms of certain micronutrients such as iron and folate, which puts them at higher risk of deficiencies if their needs are not met. For example, women of reproductive age require twice as much iron per kilocalorie as adult men, and iron-rich foods tend to be more expensive. As of 2024, the anaemia prevalence among this group was 21 percent, while a staggering 61 percent of women were deficient in folate. Anaemia and folate deficiencies are often exacerbated during pregnancy because of the additional nutrient demands associated with foetal growth and can lead to adverse birth outcomes if not addressed (18).

Despite the 2024 Zambia Demographic and Health Survey (ZDHS) reporting high rates of iron-folic acid (IFA) supplementation at 94 percent, anaemia remains prevalent among women of reproductive age due to suboptimal adherence and delayed initiation of IFA supplementation. A study in 7 districts of Zambia showed only 27 percent of women began IFA in the first trimester of pregnancy, with the majority starting too late to gain full benefit, particularly from folic acid. The same study identified several barriers to adherence, including long distances to health facilities, transport costs, inconsistent health messaging, and misinformation, such as myths that supplements cause large babies (19). Another multi-country analysis across 25 sub-Saharan African countries, including Zambia, showed that lower adherence was associated with low socioeconomic status (20).

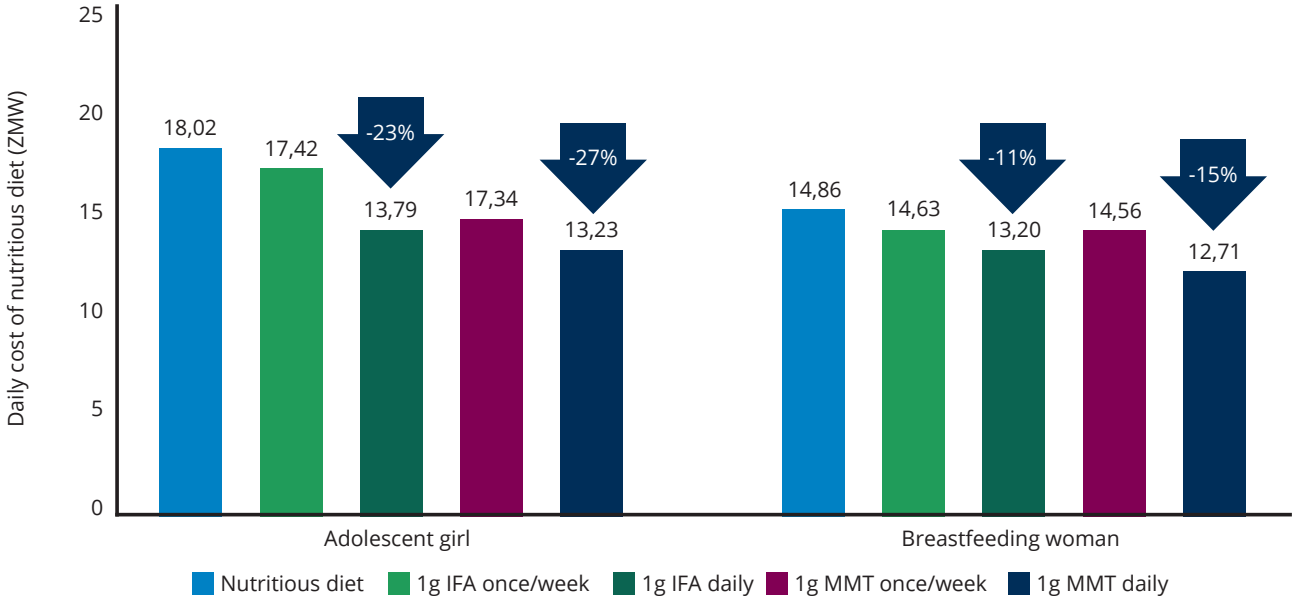
The FNG analysis found that the cost of a nutritious diet for the adolescent girl and breastfeeding mother account for 30 and 24 percent (ZMW 18 and 15 per day) of the total household cost respectively, if nutrient needs were to be fully met. The FNG demonstrates that supplementation with IFA or Multiple Micronutrient Tablets (MMT) is an effective way to meet the needs of women of reproductive age for micronutrients such as iron, folate and calcium, which are otherwise expensive and hard to meet through local foods. These interventions could be implemented alone or as part of a broader package with existing social assistance programmes. Given the increase in school attendance rates in recent years among young girls, from 19 percent in 2018 to 53 percent in 2024, one significant entry point to reach adolescent girls could be leveraging the school feeding programme as a platform for complementary interventions such as micronutrient supplementation (21). For the breastfeeding woman, leveraging national social assistance programmes rather than relying solely on antenatal care visits, can substantially broaden coverage and create more frequent points of contact, enhancing opportunities for social behaviour change communication and support to improve adherence to micronutrient supplementation.

The FNG analysis found that an IFA supplement reduces the cost of a nutritious diet for the adolescent girl by 3 percent at national level if taken weekly and 23 percent if taken daily. For the

breastfeeding woman, the weekly IFA reduces the cost by two percent while a daily dose decreases the cost by 11 percent.

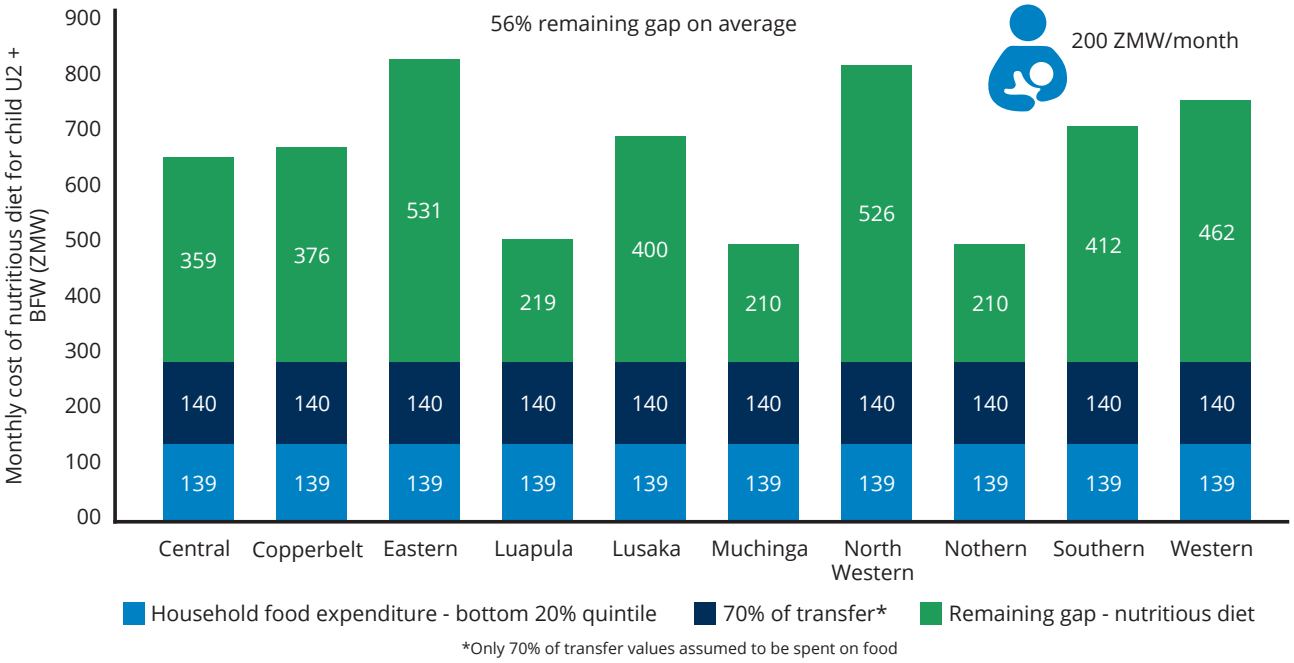
In recent years there has been a global consensus on moving from IFA to MMT where appropriate (22). When MMT is taken daily instead of IFA, there is a further four percent reduction in the nutritious diet cost (Figure 11), giving a total reduction of 27 and 15 percent for the adolescent girl and breastfeeding woman respectively. This reflects the additional micronutrients covered by the MMT including vitamin A, B vitamins, calcium and zinc.

FIGURE 11: DAILY COST OF A NUTRITIOUS DIET WITH IFA AND MMT SUPPLEMENTATION (ZMW)



The FNG also modelled the impact of a nutrition cash top-up, targeting a breastfeeding mother and her child aged under 2. This intervention, implemented by a consortium of partners in Zambia including the Ministry of Community Development and Social Services, is intended for the prevention of Moderate Acute Malnutrition (MAM). It provides a cash top-up of ZMW200 per month to households with a dependency ratio of three or more. Eligible beneficiaries include breastfeeding or pregnant mothers paired with children aged 0–23 months, residing in selected districts. The programme aims to prevent MAM by supporting nutritional needs during the critical first 1,000 days of a child's life. The FNG modelled the impact to the household of this cash transfer on reducing the cost of a nutritious diet, considering food expenditure of two individuals within the bottom quintile distribution. The model assumes the food expenditure is equally distributed across all individuals in the household. In addition, it is assumed that only 70 percent of the cash transfer is spent on food, equalling the value in the model to ZMW70. As shown in Figure 12, the cash top-up covers up to an average of 22 percent across the 10 provinces, leaving an average gap of ZMW370. (If a lower portion than 70 percent of the transfer is spent on food, the coverage of the nutritious diet will also be lower.) Such interventions have the potential to improve access to nutritious diets by increasing household purchasing power, especially if made nutrition- and shock-responsive. Regular monitoring of the cost of nutritious diets could assist in highlighting nutrient gaps and ensuring timely and appropriate responses during emergencies.

FIGURE 12: PORTION OF A NUTRITIOUS DIET COST THAT CAN BE COVERED BY THE NUTRITION CASH TOP-UP FOR THE BREASTFEEDING MOTHER AND CHILD UNDER 2 AND REMAINING GAP (ZMW)



5.

HOME-GROWN SCHOOL MEAL PROGRAMMES OFFER A SUSTAINABLE MODEL TO IMPROVE ACCESS TO NUTRITIOUS DIETS FOR CHILDREN FROM ECONOMICALLY VULNERABLE AND FOOD INSECURE HOUSEHOLDS, WHILE SIMULTANEOUSLY SUPPORTING LOCAL ECONOMIES.

- Zambia's HGSF programme links school meals with local agriculture to improve education, nutrition and livelihoods.
- FNG modelling shows that age-appropriate portion sized school meals using local, nutrient-dense foods such as animal source foods, fortified foods and green leafy vegetables, can reduce the cost of a nutritious diet by up to 69 percent.

In Zambia, school feeding started in the post-independence era but was phased out in the 1980s due to economic decline. The 2001/2 drought prompted its revival in three severely affected districts. In 2003, the government and WFP relaunched the programme. By 2011, driven by African Union commitments and growing global evidence, it was transformed into the HGSF to support national food and nutrition security goals (23). HGSF provides food produced and purchased within a country. WFP's definition of HGSF is more focused in that the food for a school feeding programme is produced and purchased locally, with an objective to link a food-based programme, such as school feeding, with local agricultural production. In addition to giving access to education, increasing school enrolment, and improving dietary diversity and eating habits, there are a multitude of benefits of HGSF programmes. For households and communities, they create employment opportunities and improve livelihoods. For participating farmers, processors and traders, they provide access to stable markets, increasing income opportunities and contributing to improved agricultural practices and crop diversifications which leads to stronger local food systems. At government/national level, better education outcomes are achieved and agricultural productivity is increased, leading to increased economic activity and improved nutritional statuses (24).

A systematic review of HGSF programmes across many countries showed that they strengthen local economies, improve nutrition, reduce environmental impact and enhance food security (25).

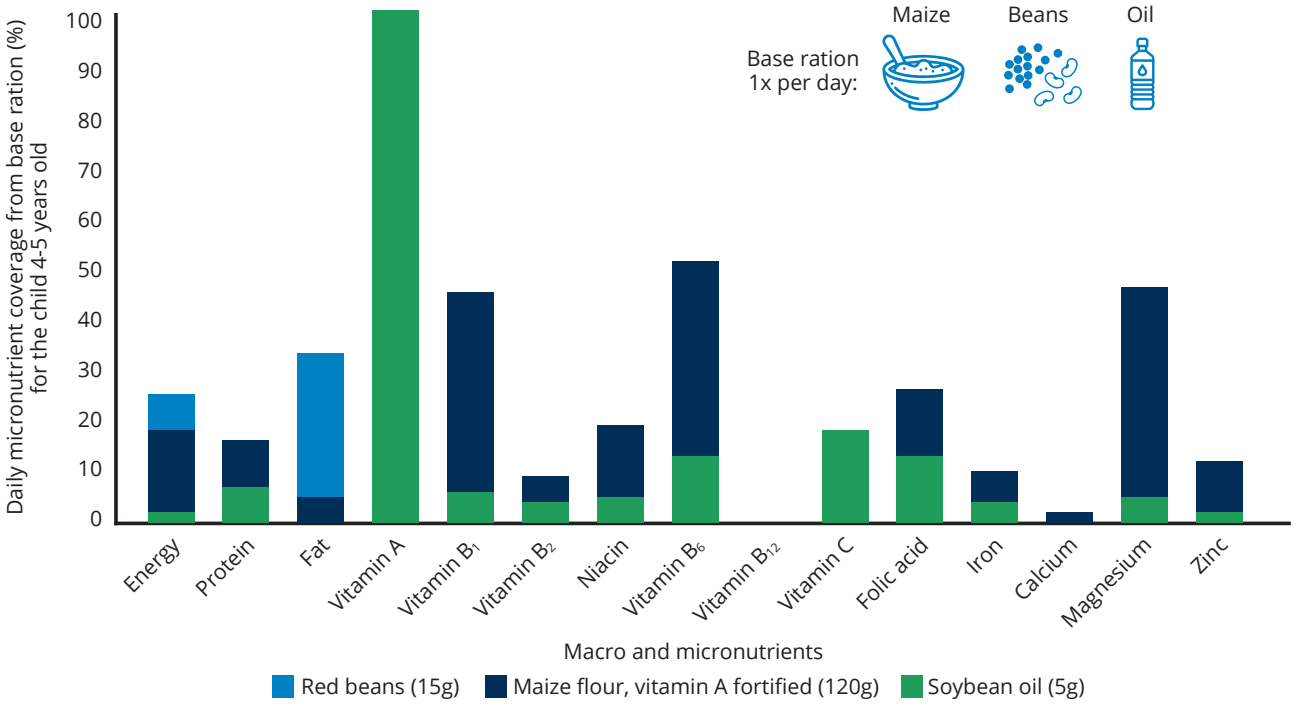
The HGSF programme in Zambia is an essential government social protection initiative with the objectives of increasing school attendance, improving nutrition, and strengthening local agriculture by sourcing foods from local smallholder farmers. In 2022, the programme reached 2.1 million learners across 2,800 schools covering 39 districts and all 10 provinces. It purchased beans and peas from hundreds of farmers in co-ops from 23 districts (23). A 2017 WFP cost-benefit analysis of the Zambia HGSF programme showed that for every USD1 invested, USD8.25 is created in their GDP (26). The programme targets children aged 3 to 5 years in early childhood development, and primary school children aged 5 to 12 years. There is also an interest in targeting secondary school children aged 14 to 18 years.

Despite the broad reach and positive economic impact, the programme faces challenges as highlighted in the National Strategy on Home-Grown School Meals.For example, lack of strategy with coordinated objectives across sectors renders it difficult to identify the roles and responsibilities of different actors; lack of guidelines on training of cooks and food handlers on food safety leads to high turnover of cooks, and; centralized purchasing of food crowds out smallholder farmers and increases transportation costs. As for nutrition-sensitivity, the programme lacks dietary diversity and fails to incorporate regional taste preferences in the school meal menus, which the FNG school feeding modelling component addresses.

The FNG models various school meal menus based on local nutritious foods for children of various age groups to assess their nutrient contribution and impact on reducing the cost of the nutritious diet at the individual level. The modelling uses three individuals, each representative of the three programme target groups. It assesses the base ration comprising of a staple food, a pulse, oil and salt, and compares its performance against a variety of menus with incremental changes which either replace foods in the base ration or add nutrient-dense foods to understand the impact in cost reduction and nutrient contribution. The menu composition follows the recommended food basket cited in the National Strategy on HGSF. The specific food items were selected in consultation with WFP Zambia Country Office based on what is logistically feasible, taking into account availability and nutrient density.

The FNG modelling found that the cost of a nutritious diet decreases by 19 percent for a child aged 4–5 and an adolescent girl, and by 14 percent for a child aged 10–11, when a base ration with vitamin A fortified maize, beans, oil and salt is served. The portion sizes of the base ration for the younger children are smaller compared to the adolescent girls. Specific portion sizes can be found in the technical annex. Nutritionally, the base ration contributes to some key nutrients such as vitamins A and B6 and magnesium but is limited in nutrients like vitamin B12 and calcium, as depicted in Figure 13.

FIGURE 13: PERCENTAGE NUTRIENT REQUIREMENT COVERED BY THE BASE RATION FOR THE CHILD AGED 4-5 YEARS (%)



The modelling further assessed menus with various foods including vitamin A fortified sugar, depicted in Figure 14 as menu 2. The vitamin A fortified sugar does not get picked up in the optimization due to its high energy density. Large quantities would have to be consumed to maximize on its impact, leading to overconsumption of kilocalories. In addition, there is not enough protein in the diet (orange flesh sweet potatoes, iron-rich beans, vitamin A-fortified sugar, oil and salt) and the diet optimization selects other foods such as fish, which drives up the cost of the nutritious diet by 8 percent. Using sugar as a fortification vehicle raises concerns in the broader context of the triple burden of malnutrition, especially rising rates of overweight, obesity, and related chronic diseases such as diabetes and hypertension (27), highlighting the need to re- examine the suitability of sugar as a fortification vehicle in the Zambian context (9).

Menu 4 was found to have the greatest impact on both nutrient coverage and cost reduction. This menu included a nutrient-dense staple such as sorghum meal, orange flesh sweet potato, and an animal source food (dried Kapenta, a freshwater fish) which provides substantial amounts of vitamin B12, calcium, and zinc. These nutrients are among the main cost drivers of a nutritious diet across most provinces. As a result of this combination, the daily cost of a nutritious diet for the child decreased by 58 percent, with the majority of essential nutrient requirements being met, as illustrated in Figure 15.

Similarly, a menu which included an animal source food such as dried Kapenta, a nutritious staple such as sorghum meal, and a green leafy vegetable such as pumpkin leaves, had the most impact on decreasing the cost of the nutritious diet at 48 and 55 percent for the adolescent girl and child aged 10-11 years respectively. Such findings highlight the importance of informing menu designs with analyses that use locally available foods and daily recommended nutrient intakes for different age groups, considering age-appropriate portion sizes.

FIGURE 14: MONTHLY COST OF NUTRITIOUS DIET, CHILD AGED 4-5 YEARS, WITH VARIOUS MENUS (ZMW)

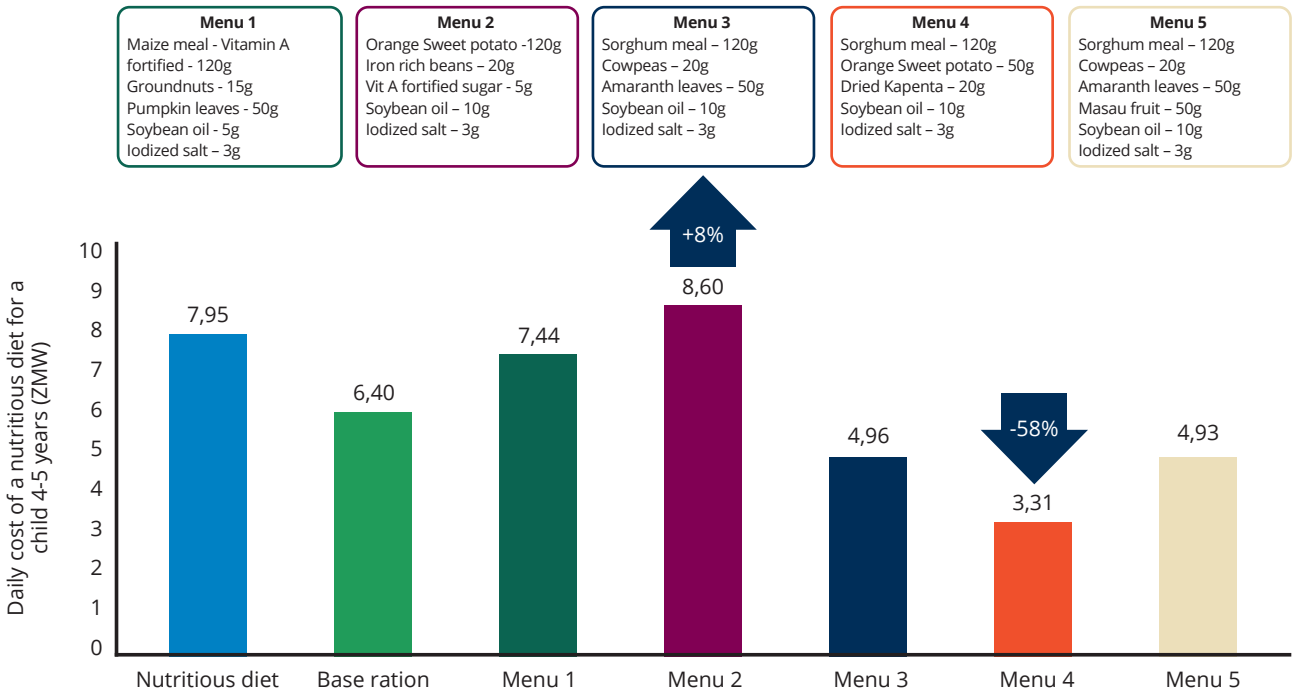
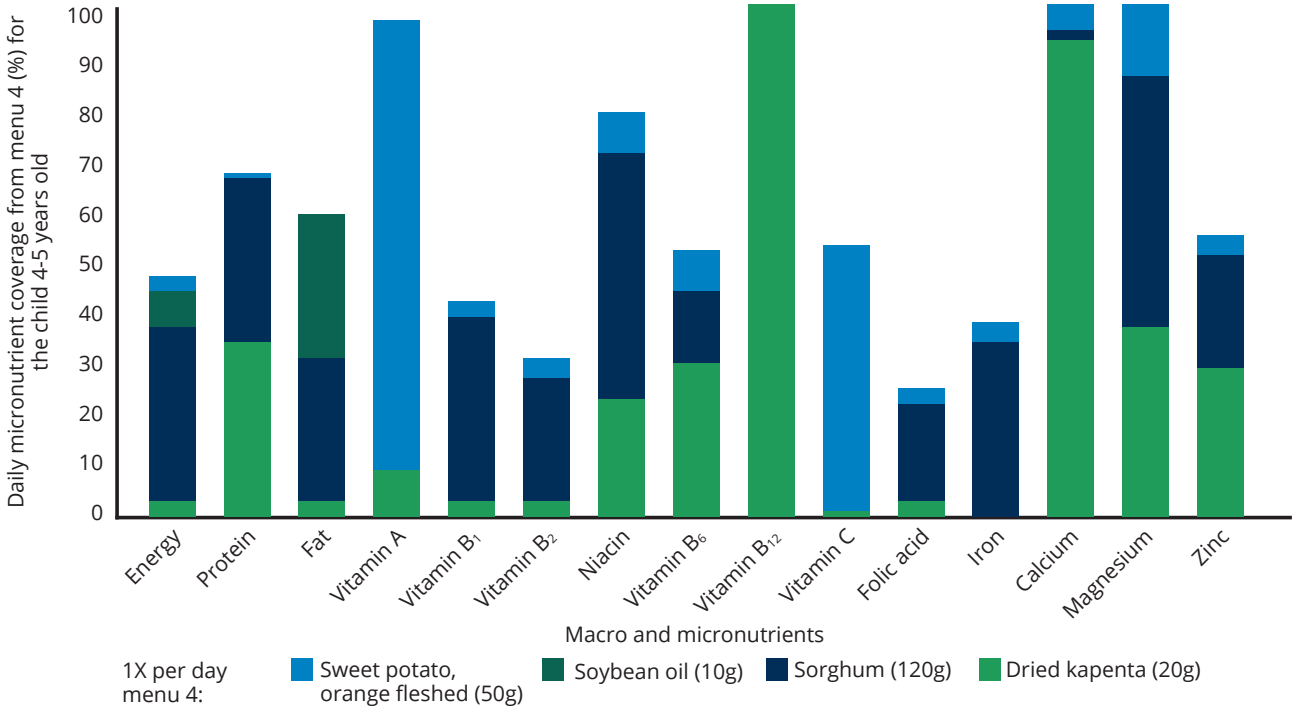


FIGURE 15: PERCENTAGE NUTRIENT REQUIREMENT COVERED BY A MENU CONTAINING ANIMAL SOURCE FOOD (DRIED KAPENTA) FOR THE CHILD AGED 4-5 YEARS (%)



6.

MONITORING THE COST AND AFFORDABILITY OF NUTRITIOUS DIETS AND ESTIMATING THE IMPACT OF SHOCKS INFORMS TIMELY AND ADEQUATE SHOCK-RESPONSIVE SOCIAL ASSISTANCE, TAILORED TO ADDRESS NUTRITIONAL VULNERABILITIES ACROSS PROVINCES.

- Climate change is intensifying Zambia's vulnerability to extreme weather events like droughts and floods, exacerbating food and nutrition insecurity, particularly for the 60 percent of the population living in poverty.
- Zambia's SCT and Emergency Cash Transfer (ECT) programmes help mitigate household vulnerability, but current transfer values fall short of meeting nutritional needs, which highlights the need for increased, nutrition-sensitive programme designs.
- FNG modelling shows that in-kind support, especially when fortified foods are included, can substantially reduce the cost of a nutritious diet. However, transfers must be shock-responsive, adequately sized, and regularly adjusted based on monitoring of cost and affordability of nutritious diets.

Climate change is projected to cause an increasein average temperatures in Zambia and a decline in rainfall, particularly in the southern and western regions. The country experiences high rainfall variability, which climate change is expected to exacerbate, resulting in likely higher frequency and intensity of already recurring extreme weather events such as droughts and floods. The combined effect of the temperature and precipitation projections is anticipated to cause a national decrease in water availability. Some of the most notable droughts were in 1991-1992, 2015-2016 and 2019-2020, collectively affecting nearly 9 million people (28). A situation analysis conducted in 2016 to inform the National Policy on Climate Change, demonstrated an increase in floods and droughts, with shorter and more intense rainy seasons and increases in temperature in cooler and warmer seasons.

In 2024, Zambia experienced its worst drought in at least two decades, affecting 84 of its 116 districts and leading to severe food shortages and water scarcity (5). This environmental challenge has been compounded by economic constraints, with 60 percent of Zambians living in poverty as of 2022 (6). Rising food prices, driven by increases in the cost of staple foods like maize and cassava, have further limited access to nutritious foods.

The government has been implementing various social protection programmes to reduce poverty, vulnerabilities and inequalities through the National Social Protection Policy of 2014 (NSPP), which focused on four specific pillars: 1) social assistance, 2) social security/social insurance, 3) livelihoods and empowerment, and 4) protection (29). However, the increasing frequency of shocks and risks in recent years has heightened population vulnerabilities, prompting the adoption of a life cycle approach in the revised NSPP 2025. This approach broadens the scope of social protection, moving beyond poverty reduction to also focus on building human capital, strengthening resilience, and addressing systemic challenges such as insufficient funding allocations for social protection programmes (30). Between 2016 and 2023, government spending on social protection as a percentage of GDP averaged 1 percent, which is lower than the 1.5 percent average spending on social safety nets in sub-Saharan Africa (31).

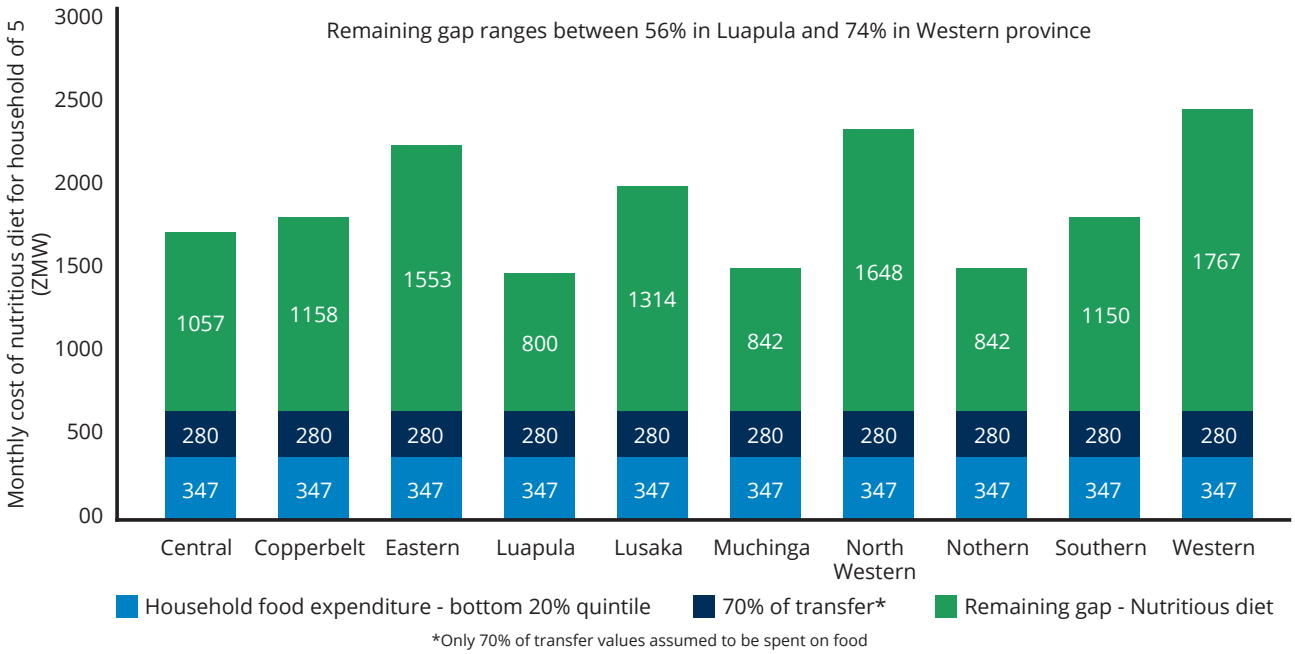
One of the ways the government addresses household vulnerability is through its flagship SCT programme, one of the country's longest-standing social assistance initiatives. Launched in 2003, the programme provides regular and continuous cash and in-kind support to the most destitute and incapacitated households, helping them meet basic needs such as food, health care, education, and shelter. Administered by the Ministry of Community Development and Social Services through the Department of Social Welfare, the SCT programme uses a

set of vulnerability-based eligibility criteria. These include households that have resided in one locality for over six months, are headed by women with three or more children, are headed by children under the age of 18, or include members with chronic illness, disabilities, or those aged 65 and above. While the programme initially had limited coverage it has steadily expanded over time, from reaching 632,000 households in 2019 to 1.3 million households nationally by 2024. The regular assistance provides ZMW200 per month per household while the ECT provides ZMW400 per month per household (32).

Cash transfers have been shown to be effective for improving household food security and nutrient intake. An assessment of the initial phase of the SCT in Kalomo district in 2014 showed significant improvement of the diets and nutritional status of beneficiaries: consumption of fats, proteins and vitamins increased, and the percentage of households living on one meal a day fell from 19 to 13 percent (33). In other similar context countries such as Ghana, the Livelihood Empowerment Against Poverty programme showed that 36 percent more households had increased dietary diversity and food insecurity decreased by 59 percent (34), and in Malawi the Unconditional Cash Transfer Programme showed that the number of households consuming 2 meals daily increased from 38 to 42 percent and the household dietary diversity score increased from 5 to 7 (35).

The FNG assessed the adequacy of both the regular and emergency transfers, considering national average food expenditure of the bottom quintile equivalent to ZMW347 per month per household of 5 members and comparing it to the household cost of a nutritious diet. The regular transfer covers up to an average of 8 percent of the cost of a nutritious diet, assuming households only use 70 percent of the transfer for food, leaving an average gap of 73 percent across provinces. As shown in Figure 16, the ECT covers 15 percent and leaves an average gap of 65 percent in covering the cost of a nutritious diet across provinces. Looking at the impact of non-affordability, the ECT reduces the rate of households unable to afford the cost of a nutritious diet from 56 to 50 percent at national level, bringing more households within reach of being able to access a nutritious diet.

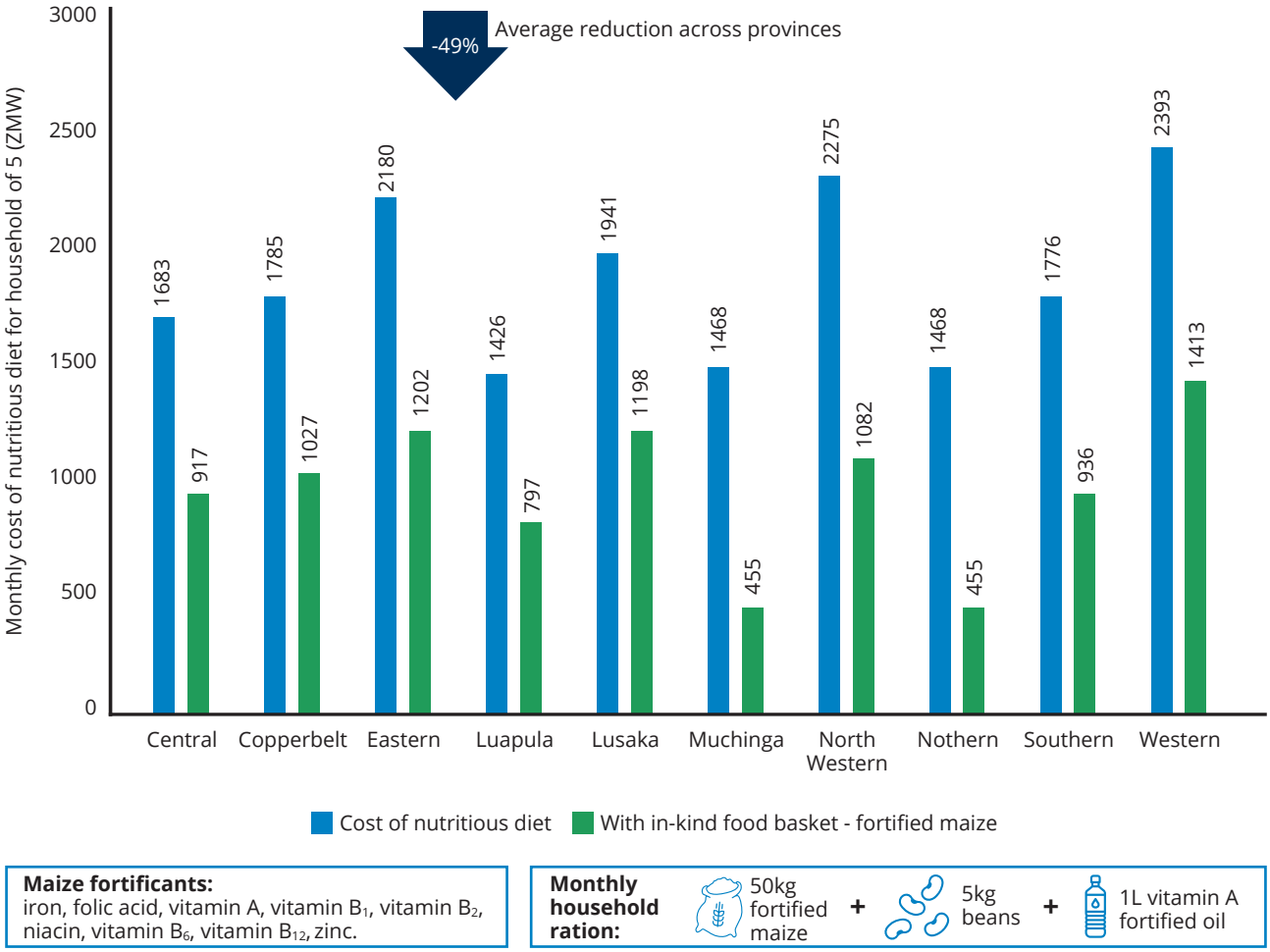
FIGURE 16: PORTION OF COST OF NUTRITIOUS DIET COVERED BY THE EMERGENCY CASH TRANSFER AND REMAINING GAP (ZMW)



Depending on whether households have been identified as destitute/incapacitated and are not already receiving cash, the assistance could be in the form of in-kind support which offers 50 kilograms of maize, 5 kilograms of beans and 1 litre of vitamin A fortified oil. The FNG assessed the impact of this basket in addition to a basket that comprises multinutrient fortified maize instead of regular maize. The impact of the fortified maize basket shown in Figure 17 reduces the cost of the nutritious diet by 49 percent on average, with the largest reduction in Muchinga and Northern provinces at 69 percent, and the lowest in Lusaka at 38 percent.

Social protection programmes have the potential to improve access to nutritious diets by increasing household purchasing power. However, they need to be made nutrition- and shock-responsive with regular monitoring of the cost of nutritious diets that provides evidence on nutrient gaps and economic barriers of varying degrees in different provinces to ensure timely and appropriate responses during shocks. Cash assistance programmes need to consider size and duration of transfers to generate impact, especially for households living on the edge of survival, to ensure they are able to withstand the impact of shocks and stressors.

FIGURE 17: PROVINCIAL COST OF NUTRITIOUS DIET COMPARED TO COST WITH IN-KIND BASKET INCLUDED (ZMW)



Maize fortificants:
iron, folic acid, vitamin A, vitamin B_1, vitamin B_2, niacin, vitamin B_6, vitamin B_{12}, zinc.

Monthly household ration: 50kg fortified maize + 5kg beans + 1L vitamin A fortified oil

7.

INTERVENTIONS ARE MORE EFFECTIVE IN BRINGING NUTRITIOUS DIETS WITHIN REACH WHEN IMPLEMENTED IN COORDINATION ACROSS SECTORS, WHICH IS IN LINE WITH THE GOVERNMENT'S EXISTING COMMITMENT TO A MULTI-SECTORAL APPROACH TO TACKLING MALNUTRITION.

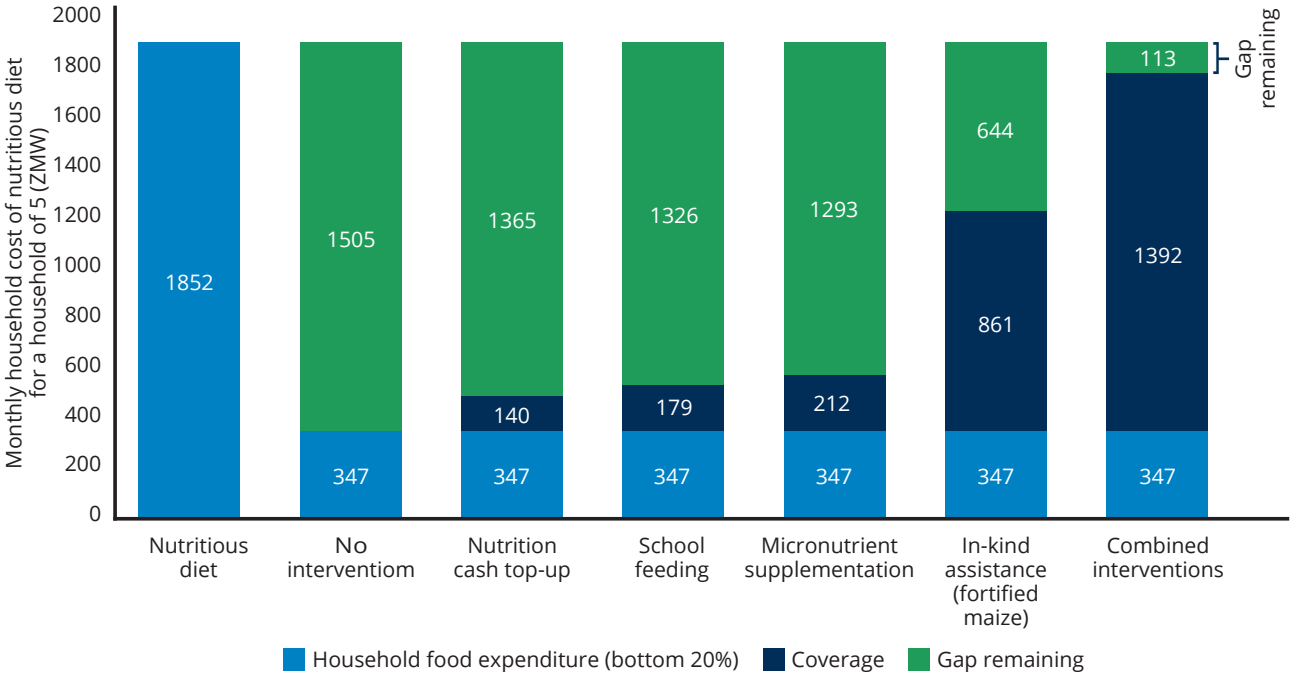
- The Revised National Social Protection Policy adopts a life cycle, multisectoral approach to strengthen human capital, build resilience, and address the root causes of malnutrition—particularly through the introduction of Nutrition-Sensitive Social Protection Guidelines.
- FNG modelling demonstrates how layering of interventions, including a targeted cash top-up, school feeding, micronutrient supplementation, and fortified food baskets, can reduce the cost of a nutritious diet by up to 93 percent and reduce non- affordability to 2 percent nationally, highlighting the transformative potential of an integrated approach to improve access to nutritious diets for vulnerable households.

The Revised National Social Protection Policy adopts a life cycle approach, expanding social protection beyond poverty reduction to include access to essential services, risk protection, and the promotion of human potential. This shift emphasizes building human capital and resilience through a multisectoral framework. The policy also introduces Nutrition-Sensitive Social Protection Guidelines, fostering integration between nutrition and social protection to ensure more coordinated, impactful, and resource-efficient interventions. By aligning strategies across sectors such as health, social protection, and education, the policy aims to tackle the root causes of malnutrition and improve the long-term well-being of vulnerable populations (30).

The FNG analysis has demonstrated that actions taken within individual sectors, such as education, health, and social protection, can substantially reduce the cost of a nutritious diet, making it more accessible to households in Zambia. For instance, school feeding programmes can ensure that children receive at least one nutrient- rich meal per day, while the health sector can help address micronutrient deficiencies through targeted supplementation for women and adolescent girls. Social protection programmes, particularly those offering cash-based transfers, boost the purchasing power of vulnerable households, enabling them to afford more nutritious foods. Although each of these interventions delivers benefits on its own, their impact is considerably amplified when implemented as a coordinated, integrated package.

The FNG assessed the combined effect of interventions delivered through these sectors, showing how they can collectively reduce the cost of a nutritious diet. This package includes both household level and individual-specific interventions. Figure 18 illustrates the cumulative effect: beginning with a baseline cost of ZMW1,852 per month per household for a nutritious diet, there remains a gap of ZMW1,505 after accounting for the average household own food expenditure of the bottom quintile.

FIGURE 18: CHANGE IN MONTHLY HOUSEHOLD COST OF A NUTRITIOUS DIET DIET FROM A COMBINED INTERVENTION PACKAGE (ZMW) (NATIONAL WEIGHTED AVERAGES)



The introduction of a cash top-up intervention targeted specifically at women and children under 2 could further strengthen the impact of existing programmes. These groups often face the greatest nutritional vulnerability due to biological, economic, and social factors. A targeted cash top-up, delivered in conjunction with other sectoral interventions, would enable caregivers, particularly mothers, to purchase nutrient-dense foods for themselves and their children during critical life stages such as pregnancy, breastfeeding, and early childhood. Such a mechanism would help bridge nutrient gaps while also empowering women and supporting nutrition-sensitive purchasing decisions.

The current cash top-up of ZMW200 per month (ZMW140 assuming only 70 percent spent on food) reduces the cost of a nutritious diet to ZMW1,365, which on its own is insufficient to bridge the gap. However, the FNG modelling demonstrates how the impact incrementally increased when adding interventions such as a nutritious school meal targeted at the school age child of 6–7 years, MMT supplementation for the adolescent girl and breastfeeding mother, and an in- kind food basket with a multi-nutrient fortified maize flour for the household. When all four interventions are combined, the cost faced by a household drops to just ZMW113, a 93 percent reduction from the baseline. This modelling demonstrates the powerful cumulative and transformative effect of combined strategies across sectors to bring nutritious diets within reach of vulnerable households.

Stakeholder recommended priorities

EDUCATION SECTOR

- **Leverage school-based platforms to improve the nutrition, school retention, and well-being of adolescent girls through integrated health and education interventions.**
    - Scale up the provision of IFA supplementation in schools, while also exploring the introduction of MMT where feasible, to address the nutritional needs of adolescent girls more comprehensively.
    - To enhance programme effectiveness and school retention, reinforce the implementation of supportive policies such as the school re- entry policy for girls following pregnancy, and ensure access to adequate sanitation facilities and free sanitary towels. These measures serve not only as enablers for regular school attendance but also as crucial incentives for girls to remain engaged in the education system where they can benefit from ongoing health and nutrition support.

Relevant stakeholders: Ministry of Health, Ministry of Education (responsible); NFNC (supporting).

- **Improve the nutritional quality of school meals by integrating diverse, nutrient-dense foods, including fortified, biofortified, and animal- source foods.**
    - Revise the procurement strategy of the HGSF to prioritize the inclusion of nutrient-rich foods such as animal-source foods, fortified staples, and biofortified crops.
    - Strengthen standards and guidelines for school meal composition and build the capacity of local suppliers to meet nutritional and safety standards.

Relevant stakeholders: Ministry of Fisheries and Livestock, Ministry of Education (responsible); NFNC (supporting).

- **Strengthen local food systems to enhance the supply of nutritious foods for school meals.**
    - Provide targeted support to smallholder farmers producing animal-source foods and nutrient-rich or biofortified crops through providing grants, equipment, post-harvest support, and training.
    - Facilitate stronger institutional procurement linkages between smallholder farmers and HGSF and ensure school feeding programmes contribute to both child nutrition and local livelihoods.

Relevant stakeholders: Ministry of Agriculture, Ministry of Fisheries and Livestock, Ministry of Education (responsible); NFNC (supporting).

- **Integrate nutrition focused social and behaviour change interventions into school meal programme.**
    - Raise awareness to promote the consumption of diverse and nutritious foods such as fortified products, animal-source foods, and biofortified crops among students and within households.
    - Align social and behaviour change communication strategies and supply-side efforts with the school feeding programme to shift food preferences to healthier dietary habits.

Relevant stakeholders: Ministry of Agriculture, Ministry of Fisheries and Livestock (responsible); Ministry of Education, NFNC (supporting).

HEALTH SECTOR

- **Strengthen micronutrient supplementation systems through policy, planning, and product optimization.**
    - Advocate for national policy and allocate budget resources to support transition from IFA supplementation to MMT for adolescent girls and pregnant and breastfeeding women, based on global evidence and local nutritional needs.
    - Improve supply chain system of MMS and zinc supplementation including commodity forecasting and planning to ensure consistent availability of MMT. Zinc, among other essential nutrients, can be delivered more efficiently through MMT avoiding the complexity and cost of separate supplementation channels.

Relevant stakeholders: Ministry of Health, NFNC (responsible).

- **Accelerate the implementation of nutrition-sensitive food-based strategies to improve population-wide access to, and consumption of, diverse and nutritious diets.**
    - Finalize and implement the national food fortification strategy to expand access to micronutrients at scale. Fortification, combinedwith improved food systems and targeted education efforts, can help reduce micronutrient deficiencies and support long-term dietary improvement.
    - Promote diet quality and diversity through policy and behaviour change initiatives that increase availability, affordability, and desirability of healthy foods.

Relevant stakeholders: Ministry of Agriculture, Ministry of Fisheries and Livestock, NFNC (responsible); Ministry of Health (supporting).

SOCIAL PROTECTION SECTOR

- **Enhance the nutrition sensitivity of social protection programmes by targeting the first 1,000 days and supporting improved access to nutritious and healthy diets.**
    - Roll out the revised SCT guidelines that prioritize targeting of pregnant and breastfeeding women and young children, advocating for flexible eligibility criteria to capture beneficiaries within this window of opportunity.
    - Increase transfer amounts guided by the cost of a nutritious diet.
    - Integrate social and behaviour change activities within the SCT programme to improve dietary diversity and drive positive nutrition practices among beneficiaries.

Relevant stakeholders: Ministry of Community Development and Social Services, NFNC (responsible).

- **Institutionalize cost of diet monitoring and integrate it into early warning and programme decision making systems for evidence-based planning and resource allocation.**
    - Leverage the existing food price data monitoring (as part of consumer price index) by the Zambia Statistics Agency to monitor the cost of a nutritious diet at subnational levels.
    - Incorporate this data into early warning systems and programme decision making. This would enable the government and partners to respond to shocks such as economic shocks, supply disruption, food price inflation or climate related disruptions in a timely manner by adjusting transfer values and accurate geographic targeting.

Relevant stakeholders: Disaster Management and Mitigation Unit (responsible), NFNC (supporting).

- **Strengthen delivery of nutrition-sensitive programme through nutritious in-kind support, referrals, and coordinated services.**
    - Promote the use of fortified and biofortified foods within in-kind food assistance schemes to improve the micronutrient quality of food baskets provided to vulnerable households.
    - Strengthen multisectoral referral systems such as through the Social Welfare Information system and social registries to ensure beneficiaries are linked to complementary services across health, nutrition, and livelihoods. Improving coordination and integration will help maximize the effectiveness of assistance and support more sustainable improvements in food security and nutrition outcomes.

Relevant stakeholders: NFNC, Ministry of Community Development and Social Services, Ministry of Agriculture (responsible).

MULTISECTORAL COORDINATION FOR NUTRITION

- **Strengthen nutrition governance and coordination structures across all administrative levels to improve leadership, accountability, and implementation capacity.**
    - Improve the functionality of nutrition coordination mechanisms at the provincial, district, and ward levels with regular engagement, clear roles and responsibilities, and active follow-through on agreed actions.
    - Institutionalize the role of District Food and Nutrition Officers within Council Secretary Offices to strengthen their convening power, strategic oversight, and accountability functions across sectors.
    - Allocate sufficient domestic and external funding to sustain coordination efforts at all levels.

Relevant stakeholders: NFNC (responsible); Office of the Vice President, Ministry of Education, Ministry of Fisheries and Livestock, Ministry of Agriculture, Ministry of Local Government and Housing (supporting).

- **Finalize and implement key national nutrition strategies with adequate resources and community engagement.**
    - Prioritize the finalization, rollout, and financing of the national stunting reduction strategy.
    - Integrate the strategy into sectoral plans and budgets.
    - Scale up social and behaviour change communication efforts and mobilize and increase community awareness aimed at improving nutrition-related practices, particularly around nutritious and healthy diets, infant and young child feeding, and adolescent nutrition.

Relevant stakeholders: NFNC (responsible); Ministry of Education, Ministry of Health, Ministry of Fisheries and Livestock, Ministry of Agriculture, Office of the Vice President (supporting).

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Acronyms

CPI	Consumer Price Index
ECD	Early Childhood Development
ECT	Emergency cash transfer
FNG	Fill the Nutrient Gap
GII	Gender Inequality Index
HGSF	Home-Grown School Feeding
IFA	Iron-Folic Acid
LCMS	Living Conditions Measurements Survey
MAM	Moderate Acute Malnutrition
MMT	Multiple Micronutrient Tablet
NFCMSS	National Food Consumption and Micronutrient Status Survey
NFNC	National Food and Nutrition Commission
NSPP	National Social Protection Policy
SCT	Social Cash Transfer
WFP	World Food Programme
WHO	World Health Organization
ZDHS	Zambia Demographic and Health Survey

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