World Food Programme

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Fill the Nutrient Gap Namibia

Report

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September 2021

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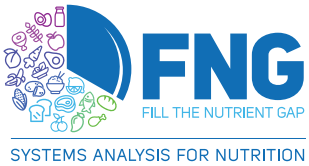

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Foreword

Hon. Obeth M Kandjoze
Director General of National Planning Commission

Namibia Vision 2030 is about people. At the center of visioning exercise is a concern for population in relation to their social (particularly health), economic and overall well-being. One of the sub-visions under the Population and Health thematic area states "A healthy and food secured nation in which all preventable, infectious and parasitic diseases are under secure control; people enjoy a high standard of living, good quality of life and have access to quality education health and other vital services. All of these translates into long life expectancy and sustainable population growth". Hence, the objective is to ensure that Namibians enjoy a healthy, productive, and long life.

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

The Namibian government has over the years continued to work towards improving the nutritional status of women and children but despite this, maternal and child undernutrition continues to be a public health problem. The first 1000 days of a child's life that is between a child's conception and their second birthday undoubtably remains as a pivotal window of opportunity to prevent child stunting, promote child nutrition and growth, and lifelong effects over a child's entire life.

Maternal and child malnutrition is a cross-cutting issue in Namibia with serious consequences for survival, growth, healthy development and economic productivity for individuals and society. In Namibia, 24 percent of children under 5 are stunted, 6 percent are wasted and half of all children under 5 are anemic. These numbers vary regionally, with stunting reaching 37 percent (Ohangwena) and wasting reaching 10 percent (Omaheke) in some regions. Subsistence farmers and agricultural workers, forming the majority in labor force and backbone of Namibian economy, are particularly affected by malnutrition.

Fill the nutrient Gap (FNG) analysis has shown that through combining our efforts and putting our resources together as Government, Non-Governmental Organizations (NGOs), Private sector, Academia, Faith Based Organizations (FBOs) we can produce a food environment that enables communities to have adequate access to diverse, safe, and nutritious foods.

The FNG report further illustrates that despite tremendous progress in improving public health and reducing deaths from diseases such as HIV/AIDS, tuberculosis or diarrheal diseases, more people are dying from Non-Communicable Diseases (NCDs) such as stroke, hypertension, ischemic heart disease and diabetes which are related to dietary intake and are emerging as serious concerns. This rising double burden of malnutrition deters the country's capability to develop socially and economically. There is need to strengthen all efforts that will address issues that will promote the use of Namibia's diverse locally available foods that are rich in a variety of nutrients. Therefore, by advocating for healthy diets and promoting healthy practices, we can reduce undernutrition and curb the growing threat of the non-communicable diseases (hypertension, stroke, diabetes).

The FNG findings have shown us that our food systems require to be supported and redesigned to make it nutrition sensitive across the various sectors by increasing access, production, diversity, and affordability of safe nutritious foods. Also, the findings have shown us how specific vulnerable groups namely adolescent girls, women and HIV positive families require additional nutrients to meet their nutritional needs, and this has an increased impact on their increased food costs.

Lastly but not least, the recommendations for action in this report were drawn up by various stakeholders based on carefully considered findings. These recommendations come at an opportune time when Government is formulating the National Development Plan 6 (NDP) for the country. Additionally, this document is an actionable one and I therefore look forward to its continued progress and, most importantly I urge all stakeholders to join hands to address nutrition and food security so that we can all work towards the attainment of the Sustainable Development Goals (SDGs) and Vision 2030 for the successful scaling up of nutrition and food security actions in Namibia.

Hon. Obeth M Kandjoze
September 2021

Executive Summary

Introduction

Nutrition is a crucial pillar in the development of a healthy, productive nation. Improving diets, especially of children and women, brings immediate and long-term health, education and economic benefits, as highlighted in the recent Cost of Hunger Study conducted in Namibia in 2021.

Maternal and child malnutrition is a cross-cutting issue in Namibia with serious consequences for survival, growth, health, development and economic productivity for individuals and society. In Namibia, 24 percent of children under 5 are stunted, 6 percent are wasted and half of all children under 5 are anaemic (1). Improving the nutrition situation in a country requires coordinated actions across the food, social protection, health, and education systems. These 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.

In response to the Government of Namibia's goal of improving nutrition outcomes, the National Planning Commission under the Office of the President, together with the World Food Programme (WFP), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and the International Fund for Agricultural Development (IFAD) conducted a Fill the Nutrient Gap (FNG) analysis in 2020/21. The analytical process sought to understand local drivers that affect the availability, cost and affordability of nutritious diets.

Process

The FNG process began at the end of 2020 with virtual multistakeholder inception meetings followed in January 2021 by a series of in-person engagements in Namibia among the key partners involved. After primary data was collected and Consumer Price Index (CPI) food price data was prepared by the technical team, the analysis and subsequent modelling of interventions was conducted between February and June. Virtual exchanges and technical validations were conducted to ensure the relevance of inputs and validity of results. In July 2021, two virtual multistakeholder thematic workshops were conducted to present the main findings and develop recommendations with participants who represented a variety of sectors and institutions. The list of recommendations was circulated among all stakeholders for additional inputs and to ensure that recommendations were sound.

Methodology

The two-pronged FNG approach consists of a review of existing secondary literature and a Cost of the Diet analysis (CotD) which uses linear programming for lowest cost diet optimization. The minimum cost of energy-sufficient and nutritious diets was estimated from CPI food prices (January 2021) and primary price data collected from 25 remote locations across the country. Expenditure data from the Namibia Households Income and Expenditure Survey of 2015–2016 was used to assess the extent to which Namibian households are able to access these diets.

Main findings

1. Progress has been made in improving public health, but mortality related to dietary causes (including hypertension, stroke and diabetes) is on the rise. Malnutrition is an issue that affects all wealth groups.
2. The nutritious diet could cost on average 99 Namibian Dollars (NAD) for a five person household per day. Meeting nutrient needs could cost up to three times more than meeting only energy needs.
3. At least one in three households would not be able to afford a nutritious diet. Rural households are most at risk of being unable to afford the diet, with non-affordability more than 70 percent in certain regions.
4. Fresh, nutritious foods are best at meeting micronutrient needs and their prices drive the cost of the nutritious diet. Current food expenditure patterns indicate that households are not consuming sufficient quantities of fruit and vegetables.
5. Although most households live at least partly off agriculture, the agricultural sector contributes only a small fraction to GDP. Nutrient-dense foods are not widely produced and the main domestic supply is staple foods.
6. Breastfeeding practices are suboptimal and exclusive breastfeeding rates are below global targets. Dietary diversity of children under 2 is low and associated with the level of household budget spent on food.
7. Adolescent girls and breastfeeding women have the highest cost of a nutritious diet and face a higher risk of not meeting their micronutrient needs. Targeted nutrition-specific interventions could help meet their higher nutrient needs.
8. Living with HIV/AIDS significantly increases the cost of meeting nutritional needs. People living with HIV/AIDS in remote rural areas are therefore very likely to be unable to consume healthy, nutritious diets.

9. Poverty is the main cause of insufficient, unbalanced and unhealthy diets. Safety nets could improve access to nutritious diets for vulnerable groups if they were targeted better.
10. School enrolment rates drop around the upper secondary grades, which is a critical stage during adolescence. Nutritious and diverse school meals could incentivize attendance and contribute to improved dietary intake.
11. Combining interventions from multiple sectors could significantly reduce the cost of the nutritious diet for households. Improved targeting of interventions and greater employment opportunities could make nutritious diets more accessible.

Cross-cutting priorities and actions identified by stakeholders

Agriculture

- Connect farmers to markets and financial infrastructures.
- Enable food fortification and improve access to fortified foods for vulnerable groups.
- Engage the private sector in nutrition discussions by setting up SUN Business Network.
- Collaborate with the private food processing sector to fortify grains such as maize on a larger scale.
- Identify the potential of indigenous foods and research their nutritional benefits.
- Introduce organic community-based agriculture. Conventional interventions often depend more on agricultural inputs than organic interventions do.
- Ensure information reaches those at the grass roots level to improve production.
- Encourage the private sector to contribute to improvements and support of producers/farmers, and encourage efficiency and effectiveness of new production schemes.
- Strengthen the development of water infrastructures.
- Implement new technologies that enable the digitization of agriculture.
- Source funding to implement the Harambee Comprehensively Coordinated and Integrated Agricultural Development Programme (HACCIADEP) value chains including poultry, horticulture, dairy, small stock and cereal.
- Strengthen regional trade to increase diversity of products across regions.

Social protection

- Target social protection and grants appropriately and make them nutrition-sensitive (particularly for gender-sensitive and HIV-focused programmes).
- Replace current in-kind support (food banks) with conditional basic income grant support for the most vulnerable and marginalized. Give general food rations/food vouchers to vulnerable People Living with HIV (PLHIV), coordinated with interventions of the Ministry of Health and Social Services.
- Integrate behaviour change strategies to improve nutrient intake for children.
- Allocate more funding for social protection and ensure that all targeted programming has a nutrition-specific component.
- Ensure that food items in food assistance parcels are fortified.

Education

- Improve the nutritional quality and diversity of school meals, including through the home-grown school feeding programme and including fortified foods in school meals.
- Strengthen linkages and support to smallholder farmers, especially women, with education, training and agricultural inputs, to enable them to supply fresh, nutritious foods to schools. Build operational capacity for handling fresh food supply at schools.
- Take a behaviour-focused view on curricula and teach practical nutrition skills and knowledge by including children in the growing, preparation and safety of food.
- Extend the school feeding programme to secondary school and include breakfast and lunch.
- Develop guidelines for the food that should be provided in school meals and the produce that should be selected for school gardens.

Health

- Introduce the role of Community Dietitians and improve nutrition training for community health workers and nurses.
- Develop capacity of health workers on nutrition management for those with HIV.
- Establish responsibilities and capacity for coordination and information sharing on nutrition across actors.
- Discuss fortification and fortification standards at government level, including implementation through government mechanisms.
- Provide nutrition education for the community.
- Sensitize health workers to complementary feeding, provide training and implement the Baby Friendly Hospital Initiative (BFHI).
- Strengthen iron and folic acid supplementation for pregnant and lactating women (PLW) and introduce micronutrient or iron and folic acid supplementation for adolescent girls to improve pre-pregnancy nutritional status.

Multisectoral coordination

- Provide reliable mechanisms to ensure alignment and coordination across sectors and types of actors.

- Discuss fortification and fortification standards at government level and implement legislation on fortification standards
- Integrate and align FNG findings with the 6th National Development Plan and Food and Nutrition Policy implementation action plan (currently pending cabinet approval).
- Inform drafting of SUN roadmap for Namibia based on the Cost of Hunger in Africa (COHA) and FNG findings.
- Establish community advocates for nutrition and empower community members to take action and ownership of community garden activities through communication and advocacy.
- Set up committees to improve the coordination and maintenance of school gardens through improved community engagement and greater ownership.
- Establish Nutrition Champions platforms.

Introduction to Fill the Nutrient Gap (FNG) Namibia

Improving nutrition for a healthy, productive Namibia

Maternal and child malnutrition is a cross-cutting issue in Namibia with serious consequences for survival, growth, health, development and economic productivity for individuals and society. In Namibia, 24 percent of children under 5 are stunted, 6 percent are wasted and half of all children under 5 are anaemic (1). These numbers vary regionally, with stunting reaching 37 percent in Ohangwena and wasting reaching 10 percent in Omaheke. Subsistence farmers and agricultural workers, who are the majority of the labor force and the backbone of the Namibian economy, are particularly affected by malnutrition. Although progress has been made on all these indicators in recent years, the ongoing COVID-19 crisis shows a heightened risk of falling back and losing the advances made toward a healthy, well-nourished population.

Nutrition is a crucial pillar in the development of a healthy, productive nation. Good nutrition enhances physical and cognitive development, prevents disease, and enhances human capital and productivity. Improving diets, especially of children and women, brings immediate and long-term health, education and economic benefits. The two Lancet series on maternal and child undernutrition (2013 and 2021) identified nutrition-specific and nutrition-sensitive interventions that have proven effective. Improving a country's nutrition situation requires coordinated actions across the food, social protection, health and education systems. These need to be grounded in a good understanding of the local context, its opportunities and bottlenecks, and a synthesis of global and local evidence.

Building consensus for improved nutrition

Fill the Nutrient Gap (FNG) is a collaborative analytical process comprised of a secondary literature review in combination with Cost of the Diet (CotD) linear optimization to understand local drivers that affect the availability, cost and affordability of a nutritious diet. Using the CotD software, solutions for improving the availability of nutritious foods, lowering their cost and/or increasing income, are assessed for their potential to improve affordability. In this way, the context-specific potential for impact of proven interventions can be quantified.

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 a sustainable way that is integrated across the country's food systems.

FILL THE NUTRIENT GAP: SITUATION ASSESSMENT FOR MULTI-SECTORAL DECISION-MAKING ON THE PREVENTION OF MALNUTRITION

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

The assessment comprises two components:

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

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

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

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

Between 2016 and early 2021, FNG analyses were completed in 32 countries and, at the time of writing in August 2021, were ongoing in 12 countries with more in the pipeline.

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

Process and Scope of the Analysis

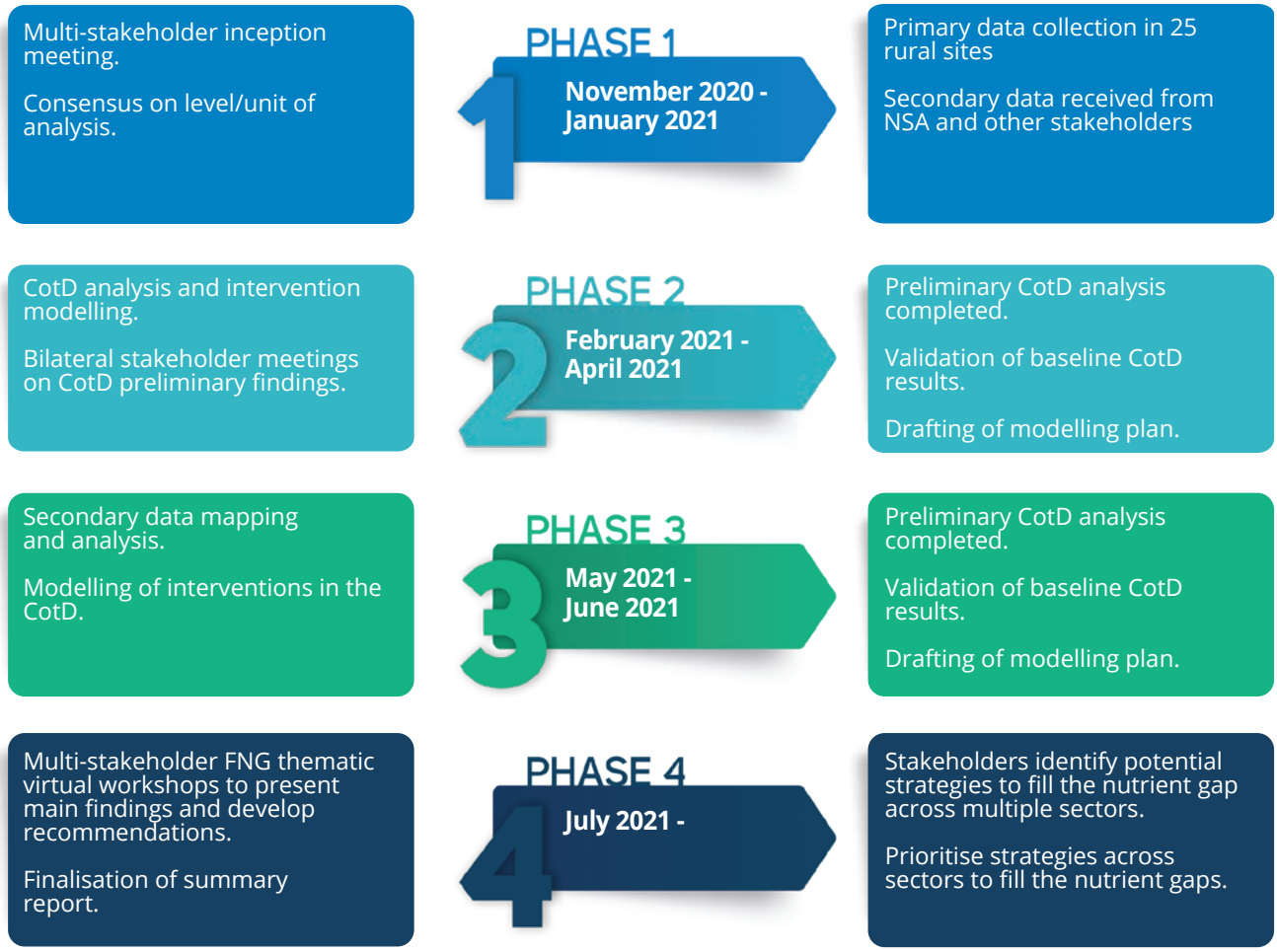
In response to the Government of Namibia's goal of improving nutrition outcomes, the National Planning Commission under the Office of the President, together with the World Food Programme (WFP), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and the International Fund for Agricultural Development (IFAD) conducted an FNG analysis in 2020-2021. The FNG process brought together stakeholders from a variety of sectors including health, agriculture, social protection, education and the private sector. It identified overlap and potential alignment across sectors for a strengthened nutrition response.

The FNG process was led by the National Planning Commission with the Ministry of Agriculture, Water and Land Reform and the Ministry of Health and Social Services involved as the main government stakeholders. With financial and technical support from GIZ and IFAD, the WFP FNG team served as the focal point for technical assistance on the analysis during the modelling of interventions, additional secondary data analysis and the consultative process of developing recommendations.

Process of the FNG Analysis in Namibia

The FNG process started in November 2020 with meetings between WFP, the Namibian government, non-government organizations (NGOs), United Nations (UN) agencies and other development partners. To define the focus, stakeholders established consensus on the analysis and identified ongoing and potential interventions for modelling. To complement existing food price data, primary market data was collected by GIZ and WFP in January 2021. The FNG team then conducted preliminary analysis and validated findings with stakeholders between February and April. Final technical revisions were completed in May and results were validated with key stakeholders in June. In July 2021 the final results were presented to a wider stakeholder audience, followed by development of recommendations which outline how to use the findings from the FNG in terms of strategies, programmes and policies (Figure 1).

Figure 1: The Fill the Nutrient Gap (FNG) process followed in Namibia

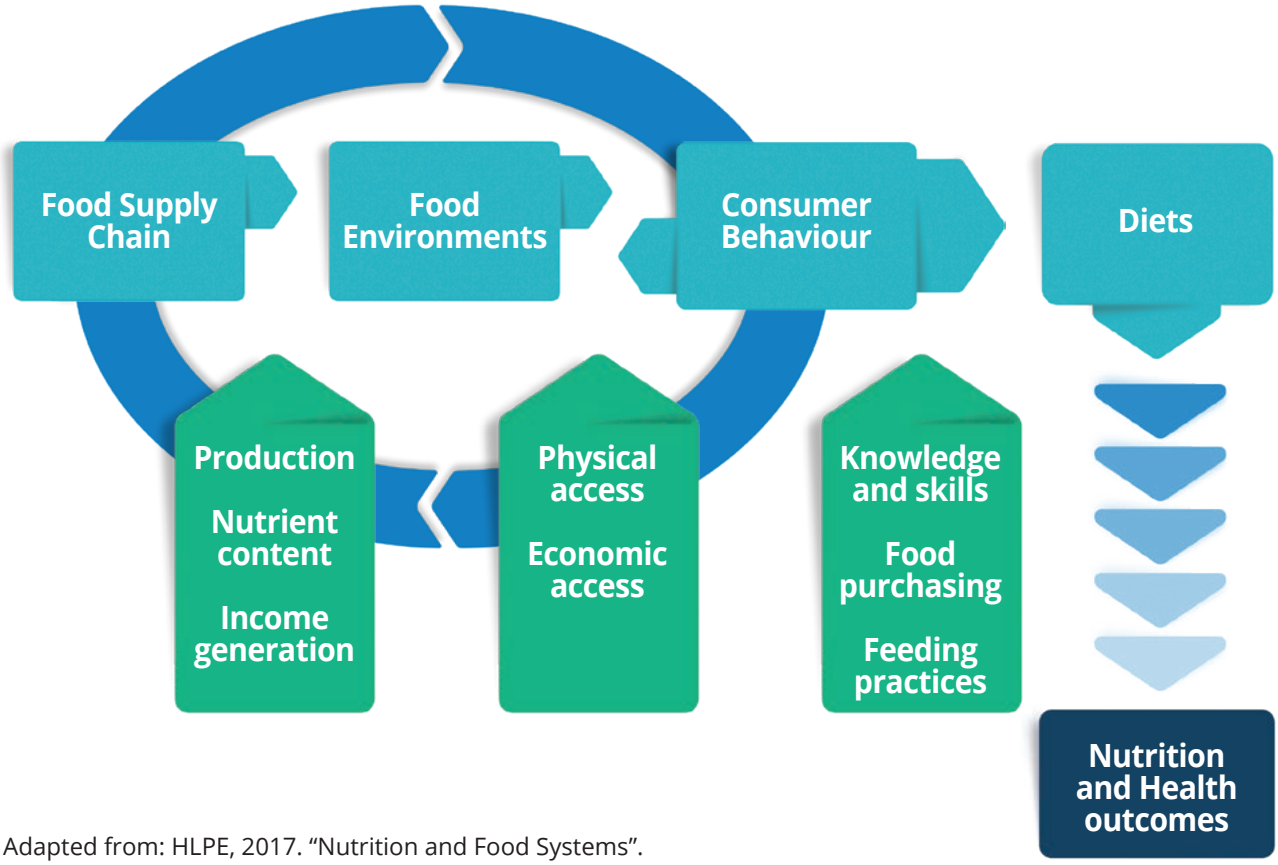


Scope and Focus of the FNG Analysis

In addition to informing ongoing policy and strategic processes such as the development of the 6th National Development Plan (2) , emphasis was put on improved understanding of entry points for nutrition-sensitive agriculture, value chains and interventions targeting smallholder farmers (Main Message 5). The nutritional vulnerability of people living with HIV was considered an important issue in improving the lives of the Namibian population (Main Message 8), as was food access and availability for marginalized groups (Main Message 4) and vulnerabilities across the life cycle (Main Messages 6 and 7).

Long-term solutions to malnutrition require transformation of the food system along food supply chains, food environments and consumer behaviour (Figure 2). Multisectoral modelling, reflecting the direction outlined by the Harambee Prosperity Plan II, included entry points from sectors such as health, social protection, agriculture and education (Main Message 11). The aim of this modelling is to show the incremental benefit that each sector contributes to transforming the local food system into one which is more nutrition-sensitive, equitable and supportive of healthy, nutritious diets, ultimately leading to improved nutrition and health outcomes.

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



Adapted from: HLPE, 2017. “Nutrition and Food Systems”.

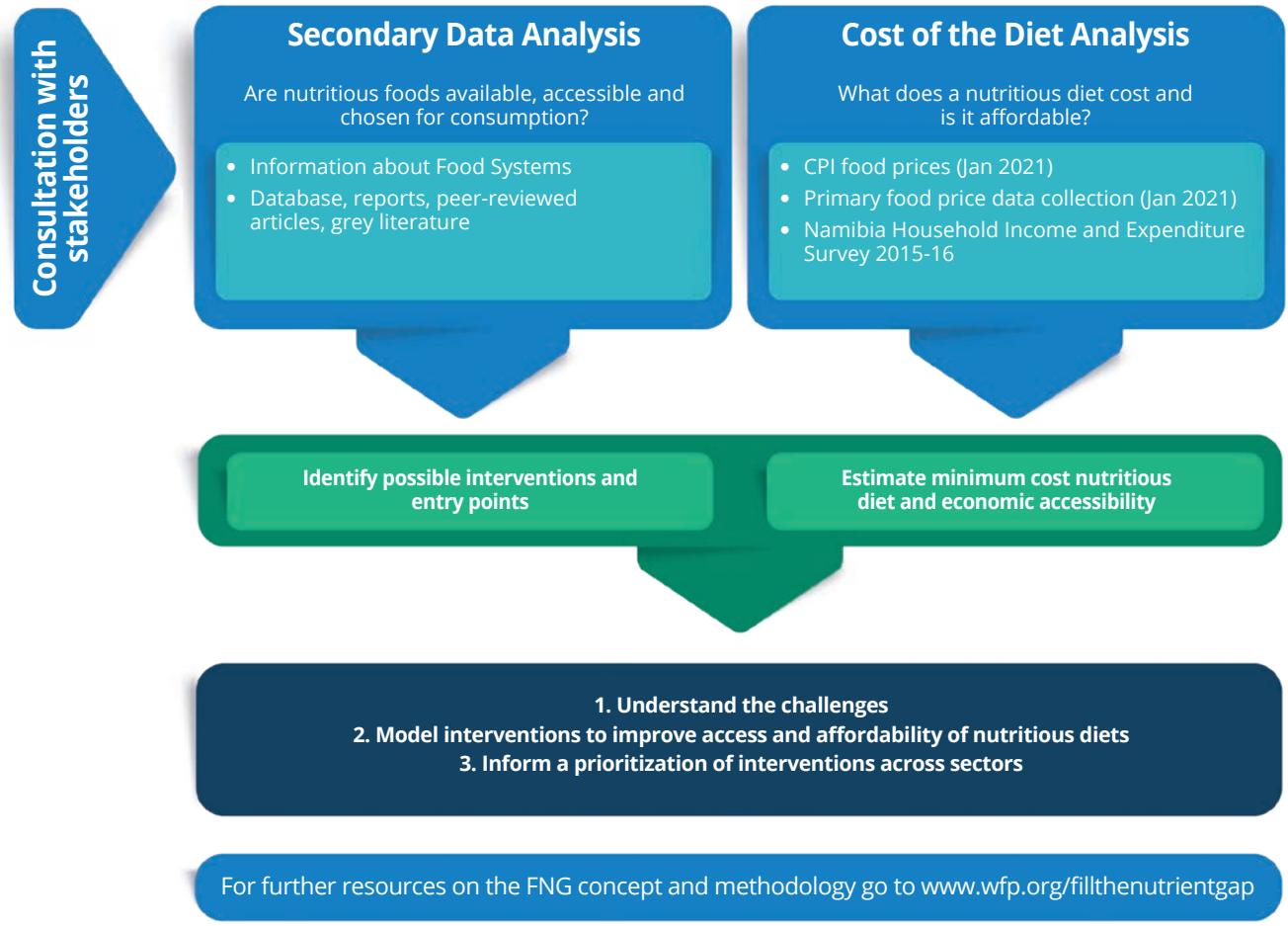
Methodology

The FNG analysis is composed of a secondary literature review of the food system and the social protection and health sectors, focusing on entry points for current and potential nutrition interventions, and a Cost of the Diet (CotD) analysis. The analysis uses linear optimization to provide a detailed view of availability, cost and affordability of nutritious diets (Figure 3) (3).

Secondary Data Analysis

The FNG secondary data analysis identifies barriers to accessing healthy diets, platforms for reaching nutritionally vulnerable groups, and opportunities for policy and programme interventions to improve access to nutritious foods through multiple sectors, including agriculture, health, social protection and education.

Figure 3: FNG analytical framework



Cost of the Diet (CotD)

COST OF THE DIET (CotD) ANALYSIS

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

The FNG approach defines the 'Staple Adjusted Nutritious Diet' as the lowest cost nutritious diet that includes a typical staple food and excludes foods that are prohibited[2]. This diet is referred to as the 'nutritious diet' throughout this summary. It meets requirements for nutrients, including protein, nine vitamins and four minerals, and does not exceed energy and fat requirements. The nutritious diet is conceptually similar to the 'nutrient-adequate' diet estimated as the second level of diet quality in the 2020 State of Food Insecurity (SOFI) report[3].

Population 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.
[3] FAO, IFAD, UNICEF, WFP, WHO. The State of Food Security and Nutrition in the World 2020 [Internet]. 2020. Available from: http://www.fao.org/3/ca9692en/online/ca9692en.html

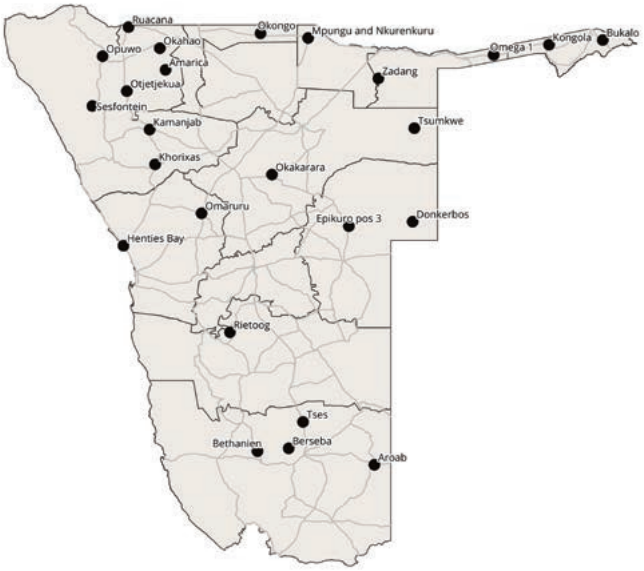
Data sources for CotD analysis

Food price data from January 2021, collected monthly by the Namibia Statistics Agency (NSA) to calculate the CPI, were used as a basis for the CotD calculations in this analysis. A cost of the diet was estimated for each of the eight cities where CPI price data is currently collected and the average cost of the diet was calculated for the three CPI zones. In addition to these data, primary food price data were collected in January 2021 from 25 sites across Namibia (see Figure 4) to provide greater geographical coverage and greater insight into availability and prices of foods in more remote locations. The surveyed sites were identified through multistakeholder consultations (NSA, NPC, GIZ, IFAD and WFP) and guided by recent poverty assessments (Namibia Vulnerability Assessment Committee - NamVAC 2020)(4) and livelihood zone profiling information (Office of the Prime Minister Directorate Disaster Risk Management - OPM-DRM 2010)(5), thus selection was based on purposive sampling. The field survey was led by GIZ staff supported by WFP staff and NSA enumerators. The month of January 2021 was chosen to better understand access to markets and food during the lean season.

Primary data were used to calculate cost of the diet estimates for each of the 25 sites. The data points were then grouped according to livelihood zones based on the 2010 baseline profile conducted by OPM-DRM(5).

Non-affordability was estimated using weighted percentiles of regional total monthly food expenditure extracted from the Namibia Household Income and Expenditure Survey 2015/16 (6), adjusted for inflation to January 2021(7). Food expenditure was compared against the costs of two diets: the energy-only diet and the nutritious diet.

Figure 4: Map showing market locations from which primary food price data were collected



Modelled household and main target groups for the analysis

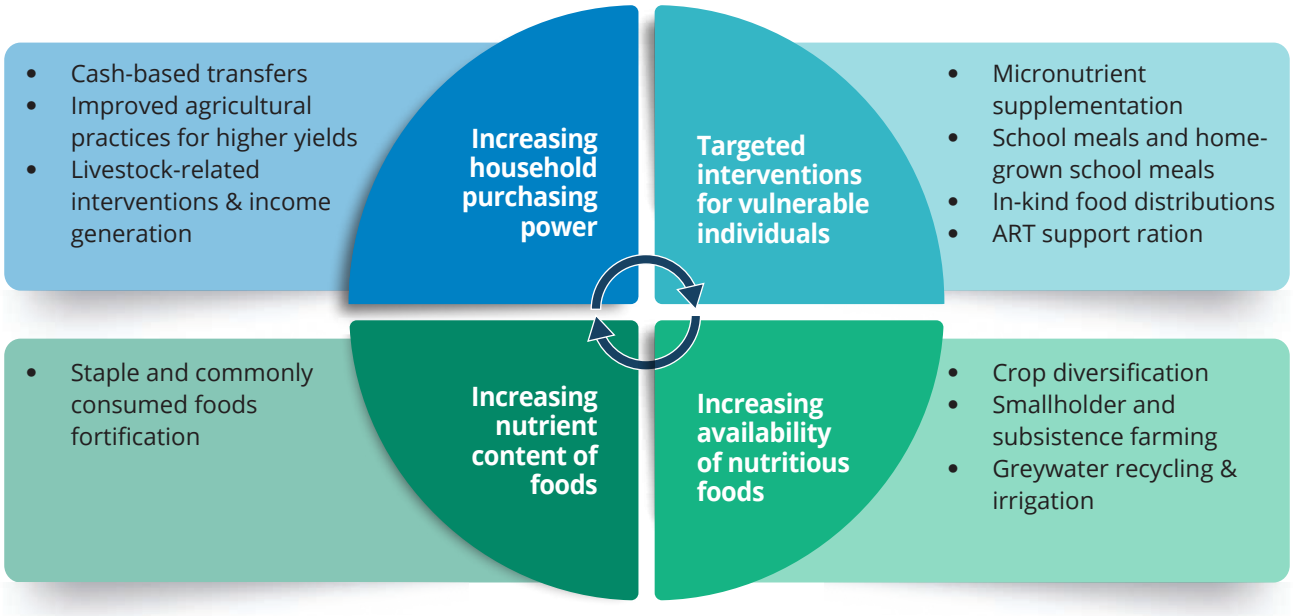
Diet costs were estimated for an FNG standard household of five members, selected to represent nutritionally vulnerable target groups in the population. Per capita costs can be derived by dividing the household cost by 5. As per the 2016 Demographic Health Survey, the average household size was 4.2 nationally (4.7 and 3.8 for rural and urban households, respectively). The household composition used for the analysis reflects different stages of life and nutrition needs and has been found to provide a good per capita average for the population as a whole. The household includes:

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

Intervention modelling

Based on discussions with stakeholders, all interventions modelled in the FNG analysis were defined and approved by them. The focus of the modelling was initially defined at the inception of the FNG process, based on government priorities, and further defined during the analytical process. The interventions modelled in this analysis were based on initiatives currently being implemented or planned by the Government of Namibia, WFP, GIZ, IFAD, NGOs, civil society, line ministries, and UN partners. Modelling of interventions was conducted based on data provided by stakeholders. The potential impact of interventions was assessed on the CPI-based estimates or the primary data-based estimates, depending on the intervention and relevance to the locality. To identify concrete recommendations based on the analysis, the FNG process concentrated on modelling the interventions outlined in Figure 5.

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



Considerations for interpretation and data gaps

Expenditure data from 2016 (NHIES 2015–16), adjusted to January 2021 using the food inflation rates (NSA)[1], were used to inform the affordability analysis, as more recent nationally representative expenditure data are not currently available. Similarly, health indicators reported in this analysis are from the Namibia Demographic Health Survey (DHS) of 2013 as no other nationally representative demographic health survey has been conducted since then.

Primary food price data collected in January 2021 and used in this analysis are not representative of rural areas across Namibia as this would have required a larger sample of markets beyond the scope of this study. The estimates of cost and non-affordability for the individual primary sites should be interpreted as point estimates reflective of access to nutritious food at the surveyed location and potentially indicative of access for similar or nearby sites.

The estimates of the costs of the energy-only and nutritious diets reported here should be interpreted as a cost reflective of minimally viable diets, or as an economic benchmark based on what is available in markets during January, a period of restricted availability and access. The diets should not be interpreted as desirable or reflective of actual or current consumption patterns. The cost reducing effect of the interventions modelled reflects the extent to which macronutrient and micronutrient specifications for individuals can be met at a lower cost, or of the extent to which they become more affordable (when food expenditure increases), thus bringing nutritious diets closer to households' economic reach. Interventions modelled for the purpose of this analysis are a result of stakeholder consultations; however, the full extent of interventions being implemented in Namibia may not be captured in this analysis.

MALNUTRITION OVERVIEW

Namibia suffers a high burden of child undernutrition. The prevalence of stunting (low height-for-age) as estimated by Demographic Health Survey (DHS) decreased from 29 percent in 2006/07 to 24 percent in 2013 for children under 5, classified as high by the World Health Organization (WHO) (1). Recently analysed anthropometric data from the 2015/16 Namibia Household Income and Expenditure Survey (NHIES) indicate that stunting may have increased between 2013 and 2015/16. Stunting prevalence varied between 37 and 13 percent (Ohangwena and Khomas respectively) and was higher in rural (28 percent) than in urban settings (17 percent).

The prevalence of wasting (low weight-for-height) is 6 percent, classified as medium by WHO (1). Wasting prevalence was 8 percent in 2006/07 suggesting a decline, but prevalence varies substantially throughout the year. Among women of reproductive age (WRA, 15–49 years old), around one in five (21 percent) had anaemia and 32 percent were overweight or obese (BMI >25). Overweight and obesity were higher in urban (40 percent) than in rural areas (22 percent) and strongly associated with wealth: 44 percent of WRA were overweight/obese in the highest wealth quintile, whereas 13 percent were in the lowest wealth quintile. Anaemia in pregnant women was around 26 percent (1). Malnutrition is passed on from mothers to children. Improving maternal nutrition across these indicators is essential to break the cycle of poverty and enable sustainable development.

All forms of malnutrition – undernutrition, micronutrient deficiencies and overweight/obesity – are the result of poor diets, inadequate knowledge and resources and unhealthy food environments. In response to the situation in Namibia, this summary report highlights gaps in adequate nutrient intake, shares an understanding of the barriers to accessing nutritious foods, and identifies interventions that can improve access to nutritious diets, enabling better nutritional outcomes for the most vulnerable.

[1] Food CPI for June 2015 to March 2016 and January 2021 were used to adjust food expenditure data from the NHIES.

Findings

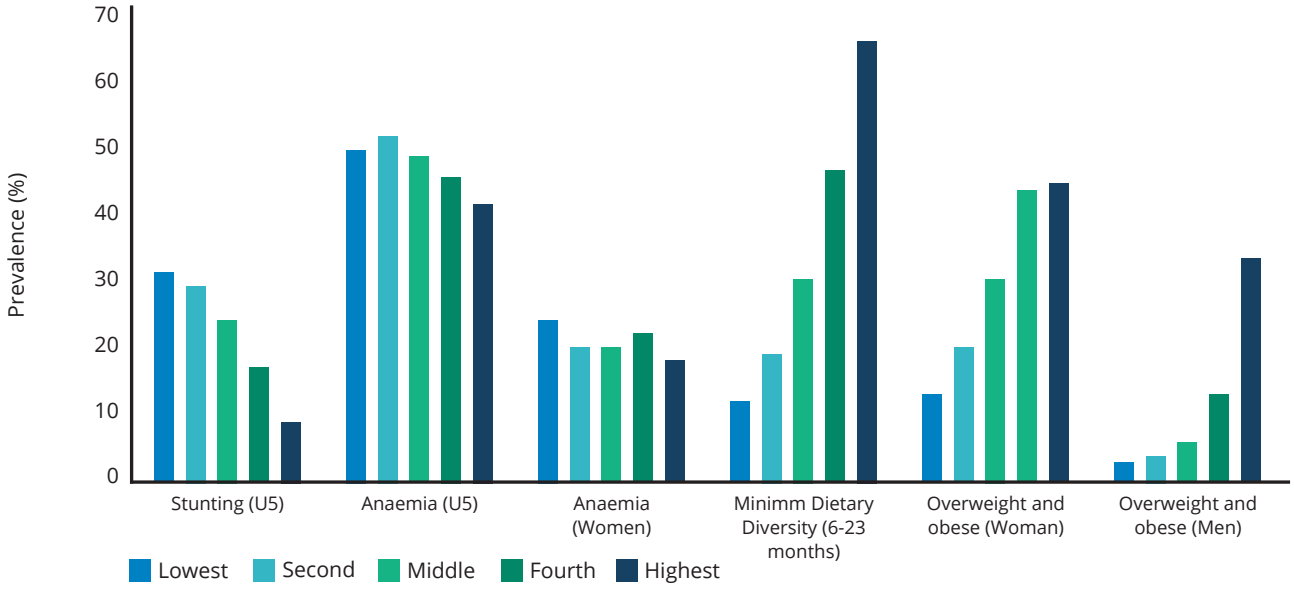
1.
Progress has been made in improving public health but mortality related to dietary causes (including hypertension, stroke, diabetes) is on the rise. Malnutrition is an issue that affects all wealth groups.

Despite tremendous progress in improving public health and reducing deaths from diseases such as HIV/AIDS, tuberculosis and diarrhoeal diseases, more people are dying from non-communicable diseases such as stroke, ischemic heart disease and diabetes. These are related to dietary intake and have increased in relative importance (i.e. they are ranking higher than they used to) and absolute importance (i.e. they are causing more deaths than they used to).

There has been limited progress in reducing stunting and wasting since 2007 and overweight and obesity are on the rise. The cost of ignoring these trends is high. According to the 2021 COHA study, the annual loss in gross domestic product (GDP) associated with undernutrition is estimated to be as high as 6 percent, costing the country almost USD 1 billion each year in earning potential (and this excludes the economic impact of overweight and obesity).

Malnutrition affects all wealth groups (Figure 6) and is not limited to poorer parts of the population. Stunting is highest in the poorest wealth quintile where adequate dietary diversity for children aged 6–23 months is lowest (12 percent). However, despite better dietary diversity for children under 2 in the wealthiest group (65 percent), anaemia in children under 5 and women is almost as high among the wealthiest as among the poorest (41 percent compared to 49 percent for children under 5, and 18 percent compared to 24 for WRA). People in wealthier quintiles are more likely to be overweight and obese. Almost two in five women and one in three men in the wealthiest group are overweight and obese (1). These findings indicate that, independent of wealth, few households in Namibia actually consume a healthy, nutritious diet and the current food system is largely providing for diets that are unhealthy and not adequately nutritious.

Figure 6: Nutrition indicators by wealth group (DHS 2013)



2.
The nutritious diet could cost on average nad 99 for a five person household per day. Meeting nutrient needs could cost up to three times more than meeting only energy needs.

A nutritious diet meeting the nutrient needs of a five person household is estimated to cost at a minimum NAD 99 per household per day, whereas meeting energy needs would cost NAD 31. Meeting nutrient needs is therefore up to three times as expensive as meeting energy needs. This is largely due to the different composition of the diet. Whereas the energy-only diet consists of basic staples, oil and sugar, a nutritious diet includes a number of fresh, nutritious foods to meet household needs: green leafy vegetables, fresh dairy products, meat, eggs and other animal source foods, pulses and other vegetables and fruit. Foods that provide essential micronutrients are more expensive and increase the cost of the nutritious diet.

In the rural south and remote areas in the northeast and north west, fresh, nutritious foods are not often available and markets are dominated by staples and dried foods. Comparing the diet cost estimates derived from the CPI data collected in urban areas with those from the primary market collection shows that costs in rural areas range more widely and can be more than twice as expensive as those in urban areas (Figure 7). Across rural sites, the lowest cost for a nutritious diet varies from NAD 62 to NAD 246 per household per day. In some cases (Donkerbos and Zadang) it was not possible to calculate the cost of a nutritious diet due to the lack of nutritious foods at the market.[2]

Figure 7a: Daily household cost for energy-only and nutritious diets in NAD by primary markets assessed (circles) and CPI market (triangle)

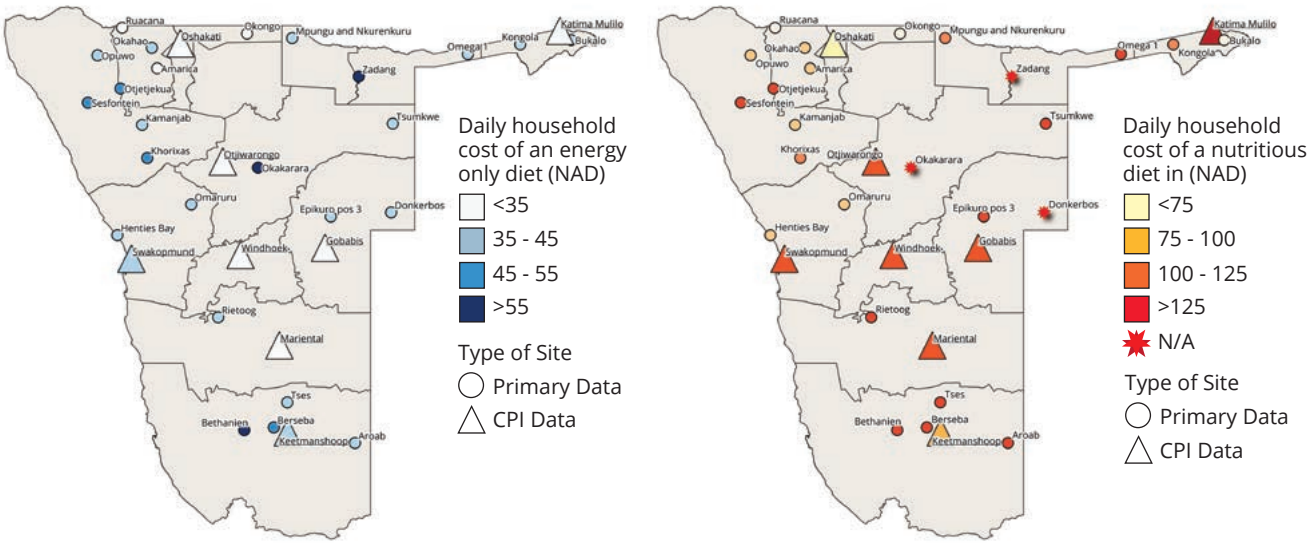
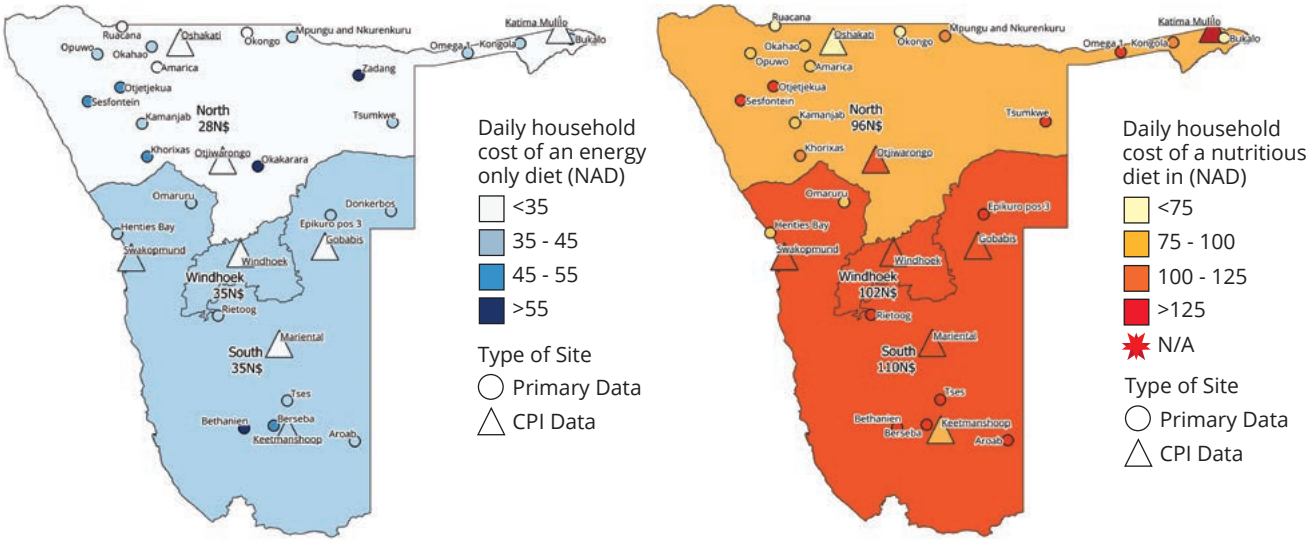


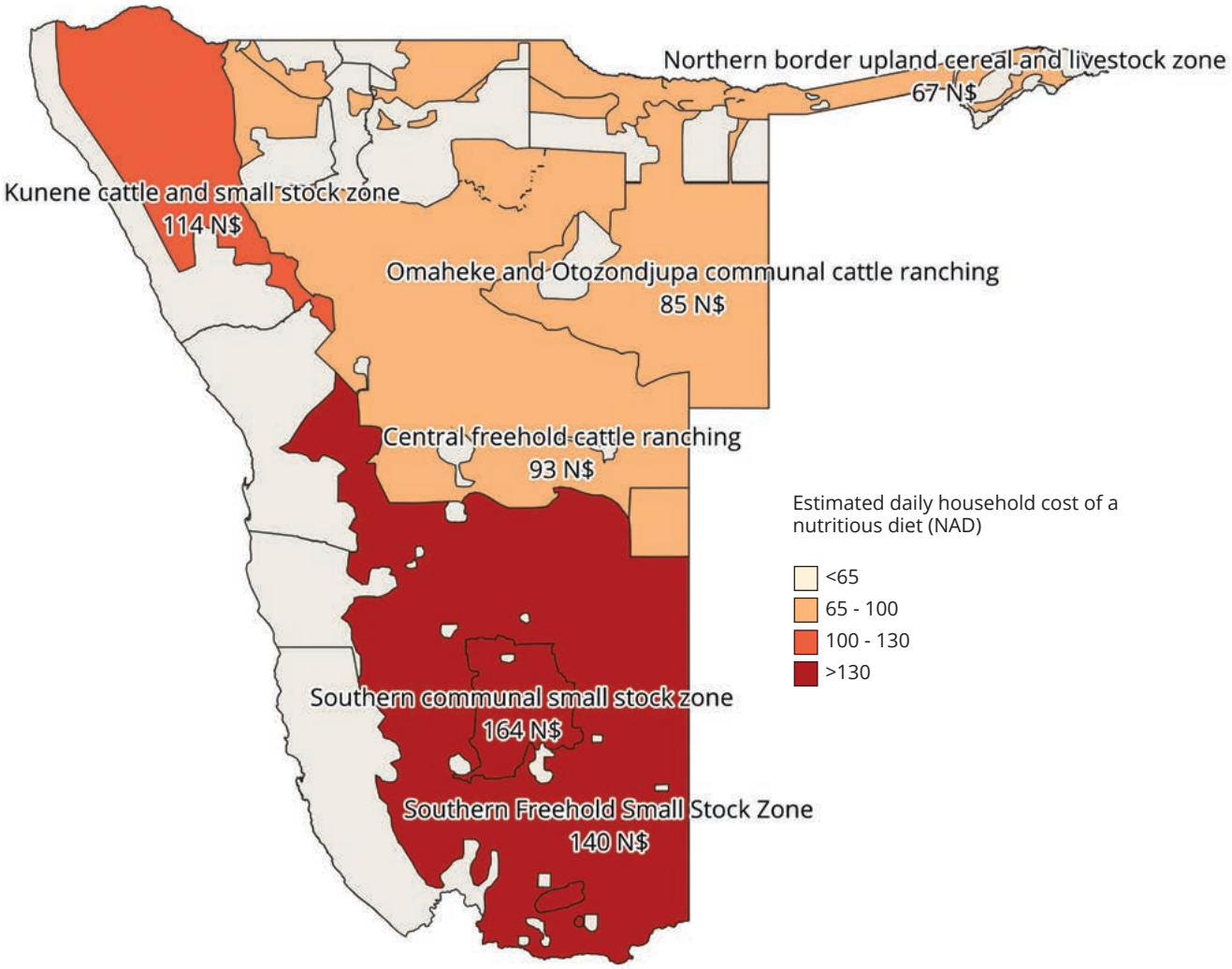
Figure 7b: Daily household cost for energy-only and nutritious diets in NAD by primary markets assessed (circles), CPI markets (triangles), and CPI areas (background colour)



Figures 7a and b show that urban towns (triangles) have lower estimated costs for energy-only and nutritious diets compared to the more remote rural sites (circles). Using cost estimates to derive average cost by livelihood zones, it is clear that meeting nutrient needs is most expensive in southern communal small stock, Kunene cattle and small stock (Figure 8). As primary data was collected only in January 2021, seasonal fluctuations are not captured; nevertheless, findings are in line with existing evidence, confirming the vulnerability of communal livestock livelihoods and smallholder farmers.

[2] A third site, Okakarara, also had an insufficient number of foods to calculate a nutritious diet, most likely due to challenges encountered during data collection.

Figure 8: Daily cost of a nutritious diet by livelihood



3.

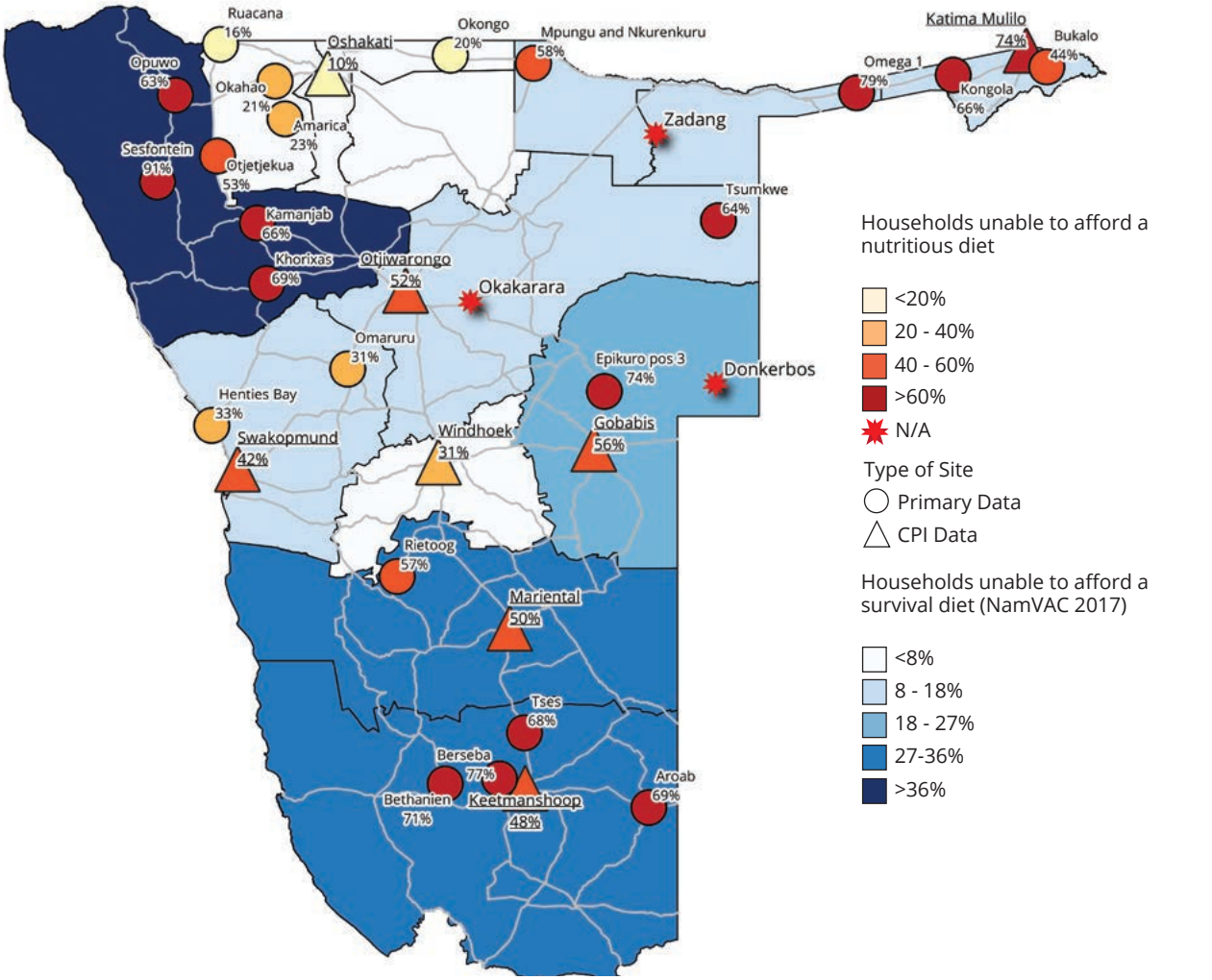
At least one in three households would not be able to afford a nutritious diet. Rural households are most at risk of being unable to afford the diet, with non-affordability more than 70 percent of households in certain regions.

On a national level (using only nationally representative CPI and food expenditure data) almost one in ten households (9 percent) could not afford to meet their energy needs and more than one in three households (39 percent) unable to meet their nutrient needs. These rates of non-affordability indicate that a large proportion of the population faces economic barriers to accessing a nutritious diet. Areas with lower average food expenditure and higher unemployment have higher levels of non-affordability, such as in the Kavango East, Zambezi and Omaheke regions. Where resources are scarce most households would not be able to access a healthy, nutritious diet.

The poorest 30 percent of households are missing at least NAD 454 per month (or 26 percent of total cost) to meet their nutrient needs, whereas the poorest quintile (bottom 20 percent) face a much larger gap and are NAD 1,761 (or 56 percent of total cost) short of being able to afford the lowest cost nutritious diet. Note that in some towns, such as Gobabis or Katima Mulilo, the poorest 30 percent are missing more than half of the total amount needed.

As with cost, non-affordability is distributed unevenly. Namibia's rural areas are far worse off, with non-affordability reaching higher than 70 percent in some areas (Sesfontein, Omega 1, Epikuro, Bethanien, and Berseba). The location and severity of non-affordability is in line with recent vulnerability assessments: areas with higher non-affordability also show higher rates of vulnerability estimated in 2017 (Figure 9). Particularly the areas in the north west (Kunene), east (Zambezi and East Kavango) and south (Hardap and Karas) show high economic barriers to nutritious diets in the lean season.

Figure 9: Comparison of non-affordability of a nutritious diet by market (CotD 2021) and non-affordability of a survival diet (NamVAC 2017)



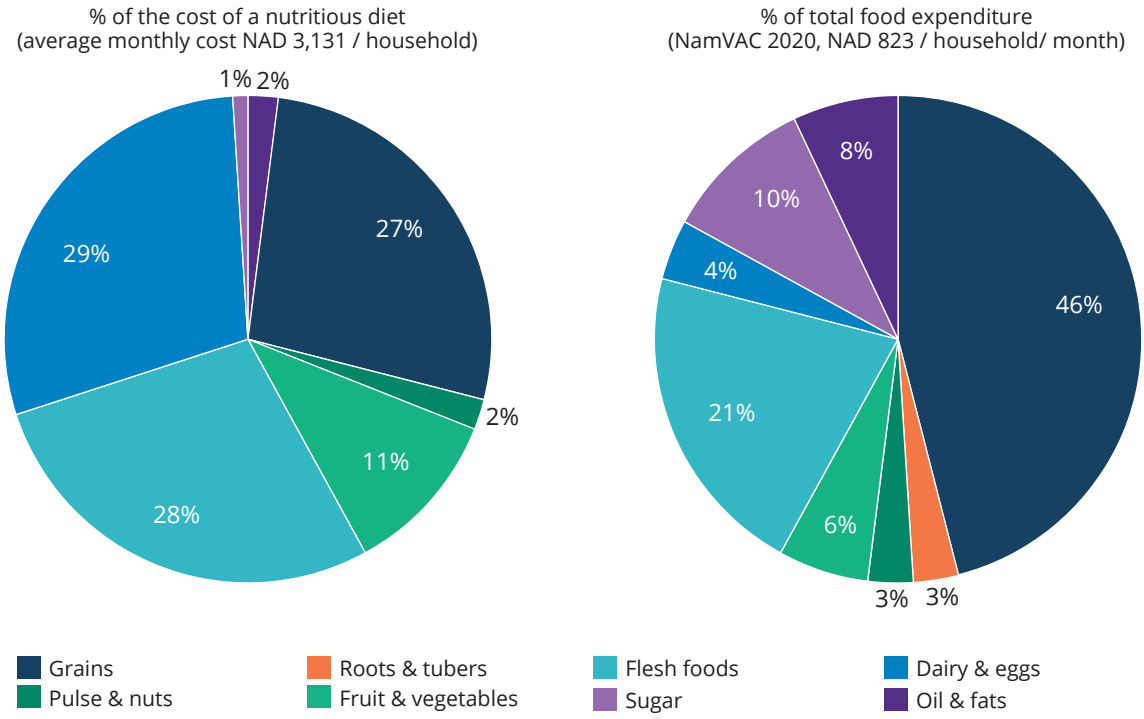
4.

Fresh, nutritious foods contribute the most towards covering micronutrient needs and their prices drive the cost of the nutritious diet. Current food expenditure patterns indicate that households are not consuming sufficient quantities of fruit and vegetables.

Fresh, nutritious foods, such as fish, meat, dairy, fruit and vegetables, contribute the most to the total cost of the optimized nutritious diets calculated. Animal source foods contribute the largest share of the total cost of the nutritious diet (57 percent) and vegetables and fruit contribute a smaller share of the total (11 percent). Grains, such as maize and wheat, make up just over a quarter of total cost (27 percent), although they contribute the most to overall dietary energy (70 percent) and over half (59 percent) of the total quantity of food. Nevertheless, animal source foods contribute the most to meeting micronutrient needs; meat, eggs and fish contribute almost half (49 percent) of the total iron content.

Current food expenditure patterns indicate that households are not consuming sufficient quantities of fruit and vegetable (Figure 10). Based on the Vulnerability Assessment (2020) in Namibia (4), an average of NAD 1,242 is spent on food each month which is 2.5 times less than the lowest cost of a nutritious diet (NAD 3,131). This indicates that average food expenditure is far too low to afford even the lowest cost nutritious diet. Forty six percent of household food expenditure goes on grains and cereals, though this varies across regions (from 32 percent in Hardap and Otjozondjupa to 69 percent in Kavango East). One fifth of the budget (21 percent versus 28 percent in the nutritious diet) is allocated to flesh foods (meat and fish), yet only 4 percent is spent on dairy and eggs. A considerable proportion of the budget is spent on sugar: 10 percent compared with 1 percent in the optimized nutritious diet. These findings (Figure 9) show that households spend less money on food in total and a lower proportion on fresh foods relative to staple foods.

Figure 10: Percentage contribution of food groups to the total cost of the optimized nutritious diet (left) and the average food expenditure (NamVAC 2020) in Namibia (right)



In Namibia, intake of micronutrient-dense and protein-rich foods are generally below the World Health Organization (WHO) recommended levels: instead of 400 grams of fruit and vegetables daily per person, only 100 grams are consumed (8). National availability of fruit and vegetables is insufficient to meet recommended levels of intake, as only 158 grams of fruit and vegetables per capita per day are available (9,10). A greater variety of foods that could contribute to a nutritious diet, including fruit and vegetables, is available in urban centres but not in rural sites. Across the CPI locations 28 different meat products are available compared with four found in rural sites surveyed. Similarly, 14 types of vegetables (or vegetable products) and 19 types of fruit (or fruit products) were available across CPI locations compared with two and three, respectively, at more remote areas covered during data collection.

Most households in Namibia rely on market purchases (between 95 and 67 of consuming households, depending on the food group), as opposed to home production or in-kind donations. Nevertheless, there is a high degree of variation depending on locality. For example, the proportion of meat consumed coming from in-kind donations or home production varies between 44 percent in Omusati (and similarly high in Kinene, Oshikoto, Ohangwena and Omaheke) to only 5 percent in Erongo. In Oshikoto up to 82 percent of vegetables consumed are either produced at home or foraged, followed by 52 percent in Ohangwena, 44 percent in Kavango West, 39 percent in Zambezi and 34 percent in Omusati. In regions such as Hardap, Khomas and Erongo, the amount of vegetables consumed from own production is negligible, likely due to different livelihoods (livestock and urban service sector) dominating these areas, and limited rainfall.

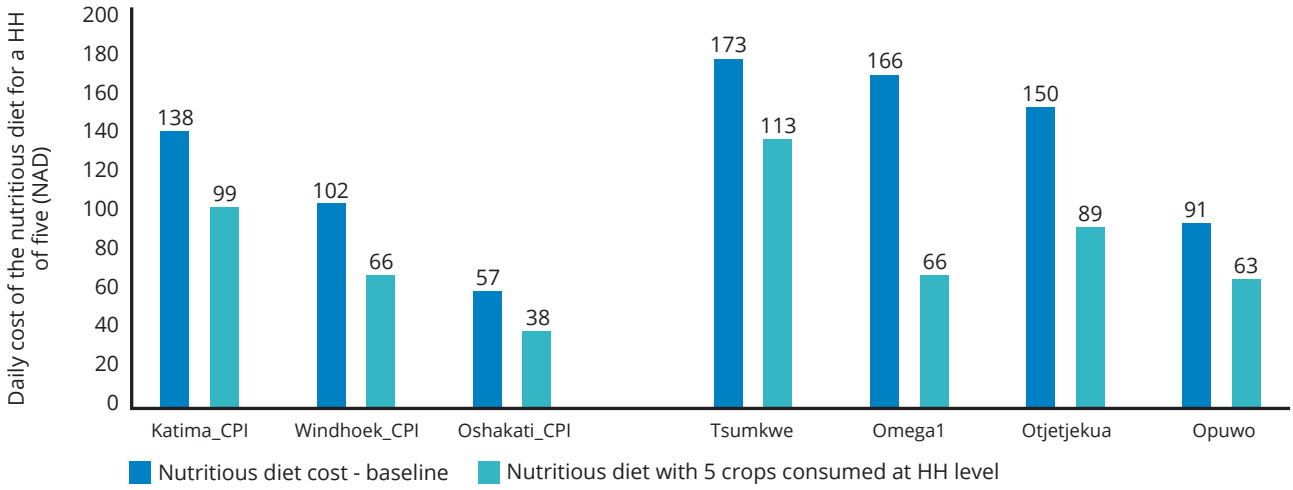
5.
Although most households live at least partly on agriculture, the agricultural sector contributes to only a small fraction of GDP. Nutrient-dense foods are not widely produced and the main domestic supply is staples.

Almost one in four Namibians (23 percent) is formally employed in the agriculture, forestry, and fishing sector, which accounts for 7.1 percent of the country's GDP (11). The agriculture sector has a direct and indirect impact on the livelihoods of 70 percent of Namibians, including 48 percent of rural households that depend on subsistence agriculture (12), yet, agriculture's contribution to GDP has marginally decreased over the last decade, from 8.6 percent in 2010 to 7.1 percent in 2019 (13).

Up to one third of total availability of vegetables, fruit and meat is exported, and although the availability of fresh vegetables and fruit has marginally increased from 2000 to 2018, it has decreased more recently (14). Severe drought conditions experienced across the country in 2019 have further inhibited agricultural productivity.

Innovation in water management systems is central to Namibia's Climate Change Strategy, especially considering that only 2 percent of land in Namibia receives sufficient rainfall for crop production. Initiatives such as the Green Scheme, which aim to increase productivity through investment in irrigation systems, have great potential to increase the supply of fresh produce. CotD modelling was used to estimate the impact of increased horticultural production through greywater use and irrigation, and a potential increase in home consumption of these products. Figure 11 shows the cost reduction for a household of five consuming production surplus. This reduction was greater in more rural areas where availability of diverse food products is lower than urban centres. Although this type of intervention shows great potential for increasing productivity and, potentially, consumption of fresh produce, 9.1 percent of vegetable production, 4.7 percent of fruit and 4.2 percent of pulses is lost during the post-harvesting phase. Solving this issue would be crucial in ensuring further impact of these interventions. Details of the parameters used in the modelling and average impact of agricultural and livestock related interventions are shown in Table 1.

Figure 11: Consumption of home-grown crops and the potential effect in reducing the cost of the diet



The potential impact of an indigenous chicken project which aimed to increase production and availability of chicken eggs and meat, was also modelled. Although the reduction in cost is relatively modest (Table 1), household welfare could be improved by the potential revenue of the sale of roosters and eggs, estimated at approximately NAD 740 per month.

Although the extent of foraging and hunting in Namibia are not well documented, consumption of wild foods is common in some parts of the country. Modelling the impact of consuming wild foods such as mopane worms and green leafy vegetables (e.g. ombidi and omutete), showed that small quantities of these foods could make nutritious diets more affordable (see Table 1).
In addition to diversified diets, micronutrient intake could also be improved through large-scale fortification initiatives of, for example, maize or wheat-based products. CotD modelling showed that replacing non-enriched maize flour with fortified maize flour could lead to a reduction in the cost of the diet (see Table 1). Increasing access to nutrients is especially crucial for households with limited purchasing power (see Main Message 2 for non-affordability estimates). Legislation for mandatory fortification of staple products could increase access to nutritious diets, especially for vulnerable households.

Table 1: Description of potential interventions modelled using the Cost of the Diet software and their impact in terms of reduction of the cost of the nutritious diet

Household model	Parameters (assumptions)	Reduction of the cost of a nutritious diet
Diversified own production, greywater filtering system and irrigation	Daily amounts per household: 4.1kg of tomatoes, 1.3kg of onions, 3.6kg of cabbage, 1.6kg of butternut squash, 1.1kg of carrots.	28-60 percent
Indigenous chicken	• Five eggs per week/per person • One chicken/2 weeks/household	6-14 percent
Traditional and foraged foods[3]	• 40g mopane worms per person/day • 100g green leafy vegetables/person/day	16-46 percent 12-19 percent
Fortification	• Average staple consumption at market price	3-17 percent

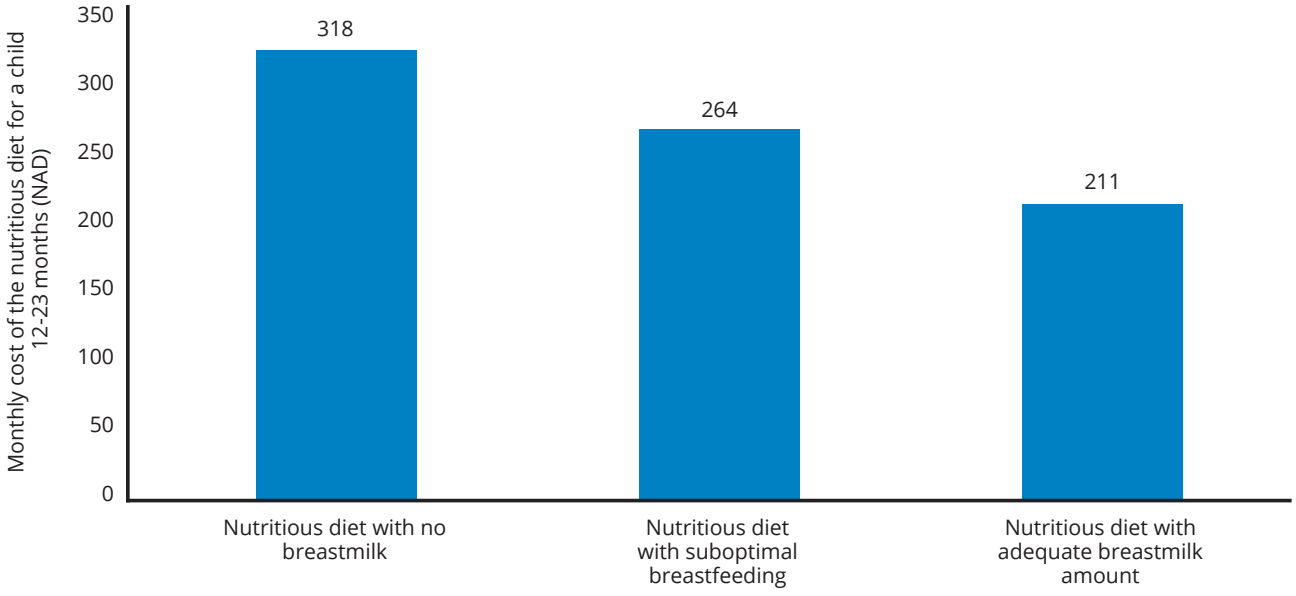
6.
Breastfeeding practices are suboptimal and exclusive breastfeeding rates are below global targets. Dietary diversity of children under two is low and associated with the level of household budget spent on food.

In Namibia, rates of exclusive breastfeeding are close to the World Health Organisation (WHO) target of 50 percent (49 percent), with an average exclusive breastfeeding duration of 3.5 months. Complementary feeding practices are also suboptimal.

Although 80 percent of children are introduced to solid and semi-solid foods at 6–8 months, only 9 percent of these consume a minimum acceptable diet. Stunting prevalence also increases as children start to consume solid and semi-solid foods (between 6 and 11 months) (1).

Breastmilk is highly nutritious. Ensuring that a child's diet is nutritionally adequate can be a greater challenge in the absence of adequate breastfeeding. Modelling in the CotD software showed that a nutritious diet without appropriate breastmilk consumption during the complementary breastfeeding period (6–23 months) would cost 34 percent more than a diet with age-appropriate consumption of breastmilk (Figure 12).

Figure 12: Cost of a nutritious diet for infants aged 12–23 months 1) without breastmilk, 2) with suboptimal breastmilk (50 percent recommended quantity), and 3) with optimal breastmilk content (39 percent of energy requirements, as recommended by Dewey and Brown)



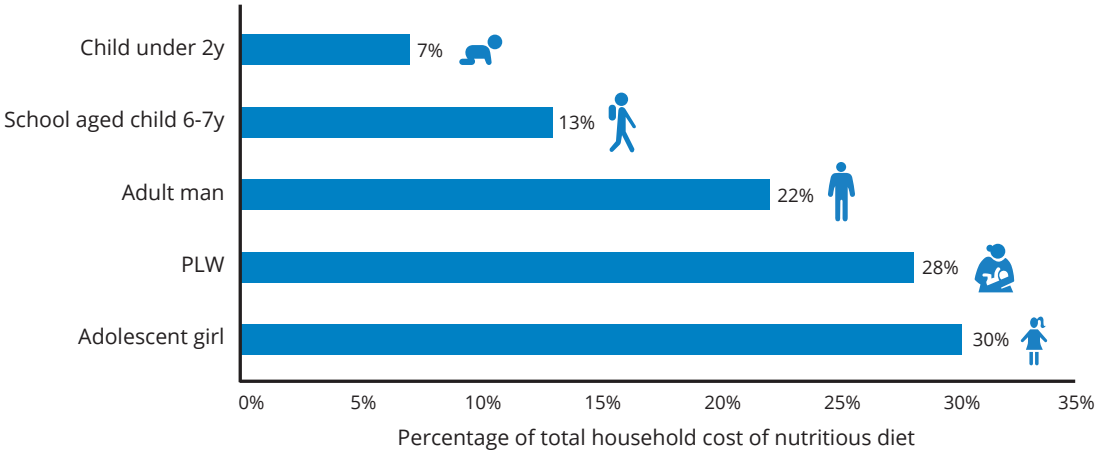
Approximately one in eight children aged 6–23 months is consuming an adequate diet (Minimum Acceptable Diet) in Namibia, with 31 percent of children meeting minimum dietary diversity and 41 percent meeting minimum frequency (1). Diets of infants and young children would need to include significantly more fruit and vegetables, legumes and animal source foods and do so more frequently, to sustain requirements for adequate cognitive development and growth. Households that spend a larger amount of their income on food, which is typical of lower income families, showed a lower percentage of children with adequate dietary diversity, highlighting economic access as a significant constraint.

[3] These foods were included in the diet at zero cost, on the assumption that they would be collected from the wild or cultivated in the garden.

7.
Adolescent girls and breastfeeding women have the highest cost of a nutritious diet and face a higher risk of not meeting their micronutrient needs. Targeted nutrition-specific interventions could help meet these needs.

The estimated cost of nutritious diets was highest for adolescent girls and pregnant and lactating women (PLW). Children under 2 represented 7 percent of the household's total diet cost, followed by school-age children (13 percent), adult men (22 percent), breastfeeding women (28 percent), and adolescent girls (30 percent) (Figure 13). Compared to other individuals in the household, adolescent girls and breastfeeding women require twice as much iron per kilocalorie than adult men or school-age children, therefore they require more micronutrient-dense diets. Examples of micronutrient-rich foods are animal source foods, such as meat, fish, eggs and dairy, which are often sold at a higher cost compared to food items that are primarily a source of energy, such as cereals or roots and tubers.

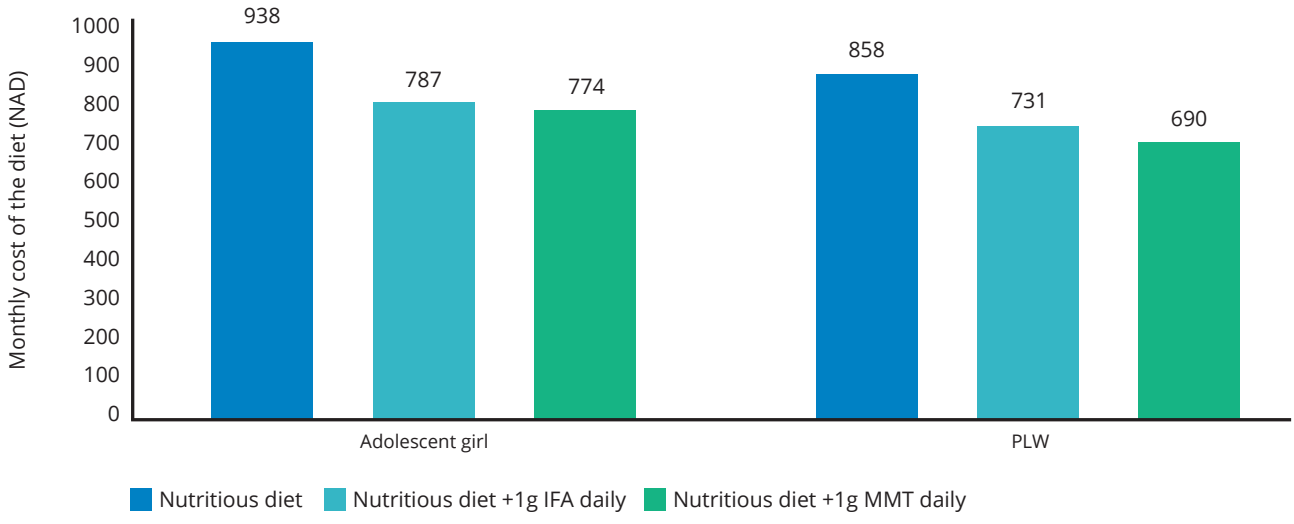
Figure 13: Proportion of total cost (percent) per household member (average across CPI assessments)



The analysis shows that meeting the requirements for calcium and vitamin C was primarily contributing to the high cost of the diet for all household members. In addition, iron and calcium were the key cost drivers for adolescent girls and PLW, and therefore are at higher risk of not having their requirements met.

In Namibia, 21 percent of WRA were found to be affected by anaemia, with prevalence reaching 33 percent in regions such as Kavango (1). The potential impact of iron and folic acid (IFA) supplements and multiple micronutrient tablets (MMT) on the cost of the diet for PLW and adolescent girls was modelled (Figure 14). For the former, the average cost of a nutritious diet could be reduced by 15 percent if daily IFA were provided and 20 percent if daily MMT were provided. For adolescent girls, the same daily amount of IFA could reduce the cost of nutritious diets by an average of 16 percent and 18 percent for MMT. In this model it was assumed that these supplements could be provided through health services at zero cost to individuals, thus the feasibility of procuring and distributing supplements would require further assessment.

Figure 14: Estimated impact on the cost of a nutritious diet if IFA supplements or MMT are provided to PLW and adolescent girls (at zero cost to the recipient)



Namibian women also face a higher risk of overweight and obesity compared to men, with 32 percent of WRA classified as either overweight or obese, ranking above Southern Africa regional averages (1). Urbanisation is on the rise, as is the consumption of processed and convenience food. Student health surveys found that among adolescents, 49 percent consumed a fast food meal at least once a week, and 47 percent consumed at least one carbonated soft drink daily (10). The impact of the consumption of processed foods such as carbonated soft drinks and potato chips on the cost of nutritious diets was modelled using the CotD software. The results showed that for adolescent girls and PLW, a small daily portion (25g) of potato chips could increase the cost of the diet by 7 percent and a daily can of soda (330g) could increase it by up to 12 percent. For school-age children, the cost of the diet could increase by 23 percent if a carbonated soft drink (330g) is consumed daily. The higher costs highlight the potential increase in the risk of not meeting nutrient requirements and/or excessive intake of energy (kilocalories) when processed, energy-dense and micronutrient-poor foods are consumed.

8.

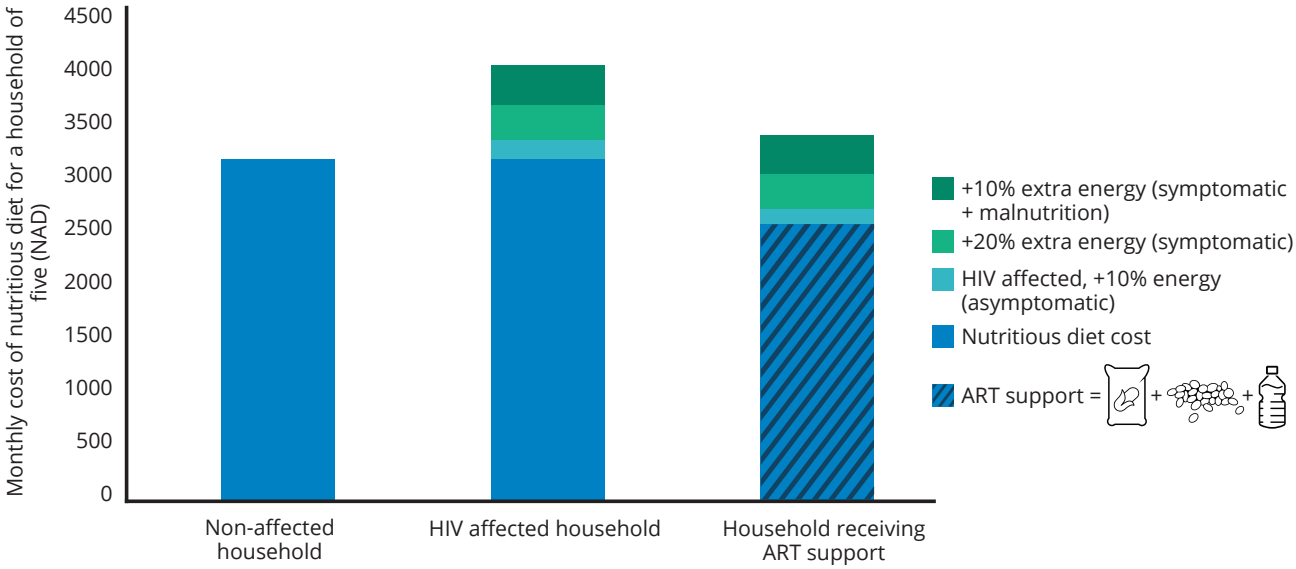
Living with HIV/AIDS significantly increases the cost of meeting nutritional needs. People living with HIV/AIDS in rural, remote areas are therefore very unlikely to be able to consume a healthy, nutritious diet.

Despite seeing progress over the last decade, Namibia remains among the countries with the highest prevalence of HIV/AIDS: 14 percent of adults aged 15 to 49 years are HIV positive, with prevalence as high as 24 percent in the region of Zambezi. Women are disproportionally affected by HIV/AIDS: 17 percent of women and 11 percent of men (15–49 years) are HIV positive, showing the need to target in a more gender-sensitive way. HIV/AIDS prevalence is also higher in more densely populated regions and among rural residents (1). Households in areas with a high HIV/AIDS prevalence spend relatively more of their food budget on cereals, although the cost of the diet was found to be lower in some of these areas (4).

People living with HIV/AIDS can have requirements for energy intake that are up to 50 percent higher and up to 100 percent higher in children, depending on symptoms and whether they are experiencing weight loss too (15). The cost of a nutritious diet is higher for people affected by HIV/AIDS and is likely to increase with severity of symptoms. The cost was recalculated for a child under two years, an adult man, and a PLW to account for increased energy requirements. For a child under 2, the cost of the diet could be up to 34 percent higher, up to 31 percent higher for an adult man and up to 26 percent higher for a PLW. Based on average expenditure in the region of Zambezi, the affordability gap for HIV/AIDS affected households could be up to 19 percent higher than for households not affected by HIV/AIDS (NAD 2,791 vs NAD 2,009 per month, for affected and non-affected households respectively) (4). Therefore, access to nutritious diets could be a greater challenge for households living with HIV/AIDS.

Antiretroviral therapy (ART) food support in the form of an in-kind ration, is provided to vulnerable households with a member affected by HIV/AIDS. The impact of the ration, which includes maize meal, split peas and vegetable oil, was modelled and results showed that the cost of the nutritious diet could be decreased by 20 percent on average. Therefore, ART support could help increase economic access to nutritious diets for vulnerable households, yet a considerable gap would remain (Figure 15).

Figure 15: The cost of the nutritious diet for a household of five, the additional cost reflecting the increased energy requirements due to HIV/AIDS, and the reduced cost of the diet when the ART food support in-kind ration is added to the diet

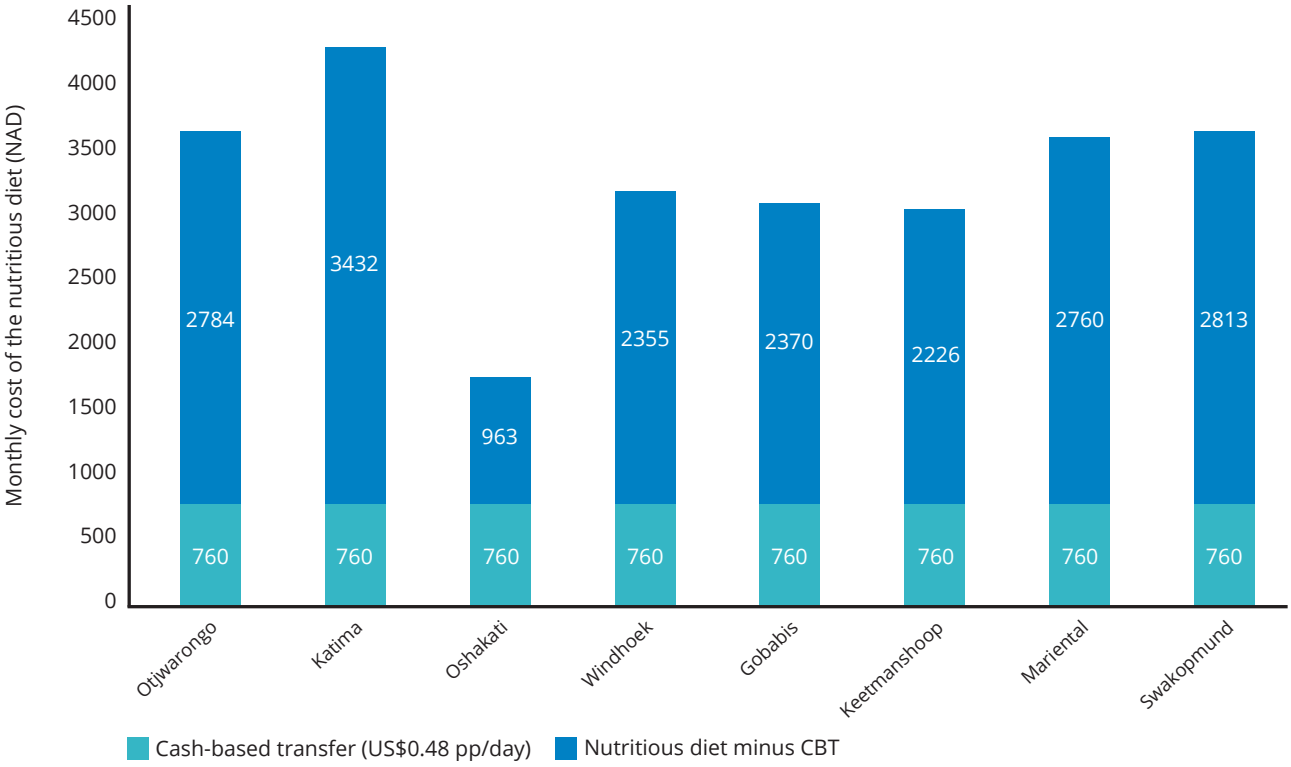


9.
Poverty is a main cause of insufficient and unbalanced diets. Safety nets could improve access to nutritious diets for vulnerable groups if they were targeted better.

The FNG analysis identified affordability as a key barrier to adequate dietary intake. Supporting the economically vulnerable is important, as wealth status is closely associated with dietary diversity of young children (Main Message 1). The same trend is visible in the impact of the main source of income on children's nutrition: where subsistence farming is more common, the percentage of children with adequate dietary diversity is lower. To break the intergenerational cycle of malnutrition, it is crucial to support households that currently cannot provide all family members with appropriate foods for a healthy diet.

Social Safety Net Frameworks and the Social Protection Floor are established concepts in Namibia for support of the elderly, disabled, veterans, mothers and children. Cash-based transfers (CBT) can be as high as NAD 2,200 for disabled people per month, but most nutritionally vulnerable individuals, such as women and children, would only receive up to NAD 250 per person per month (16). This leaves considerable gaps for the poorest members of the population. In addition, transfer amounts go further in some regions than others. Whereas a CBT of NAD 1,085[4] per month for vulnerable individuals would cover more than half of the household cost of the diet in Oshakati, it would cover less than a quarter in Katima Mulilo and about one third in Mariental and Swakopmund (Figure 16). It is therefore important to take local food availability and price levels into account when defining transfer values.

Figure 16: Remaining cost to buy a nutritious diet after receiving a CBT for vulnerable households (70 percent of transfer amount to go toward food expenditure) by CPI site



Social safety nets such as general food distribution improve access to a nutritious diet, however, there remain considerable gaps in affordability of a nutritious diet. A monthly ration[5] for a household of five would reduce the cost by 28 percent on average (equivalent to NAD 872 per month). The remaining gap after intervention per household per month differs between regions and is particularly high in Katima Mulilo at NAD 3,462. In Mariental it is NAD 2,675, Otjiwarongo NAD 2,741, and Swakopmund NAD 2,588. The maize meal ration is only partly used in the nutritious diet as other more micronutrient-rich foods need to be included to meet nutrient requirements without exceeding average energy intake. In addition to adjusting the transfer amounts, changing the ration composition or complementing it with fresh food vouchers could improve micronutrient intake and improve the economic burden of a nutritious diet on the household.

[4] Transfer amount of 0.48 USD per individual, daily; exchange rate USD 1 = NAD 14.8816 (January 2021).
[5] A daily ration (per person) consists of 383g of cereals (maize meal), 60g of pulses (split peas), 21g of vegetable oil and 5g of iodized salt.

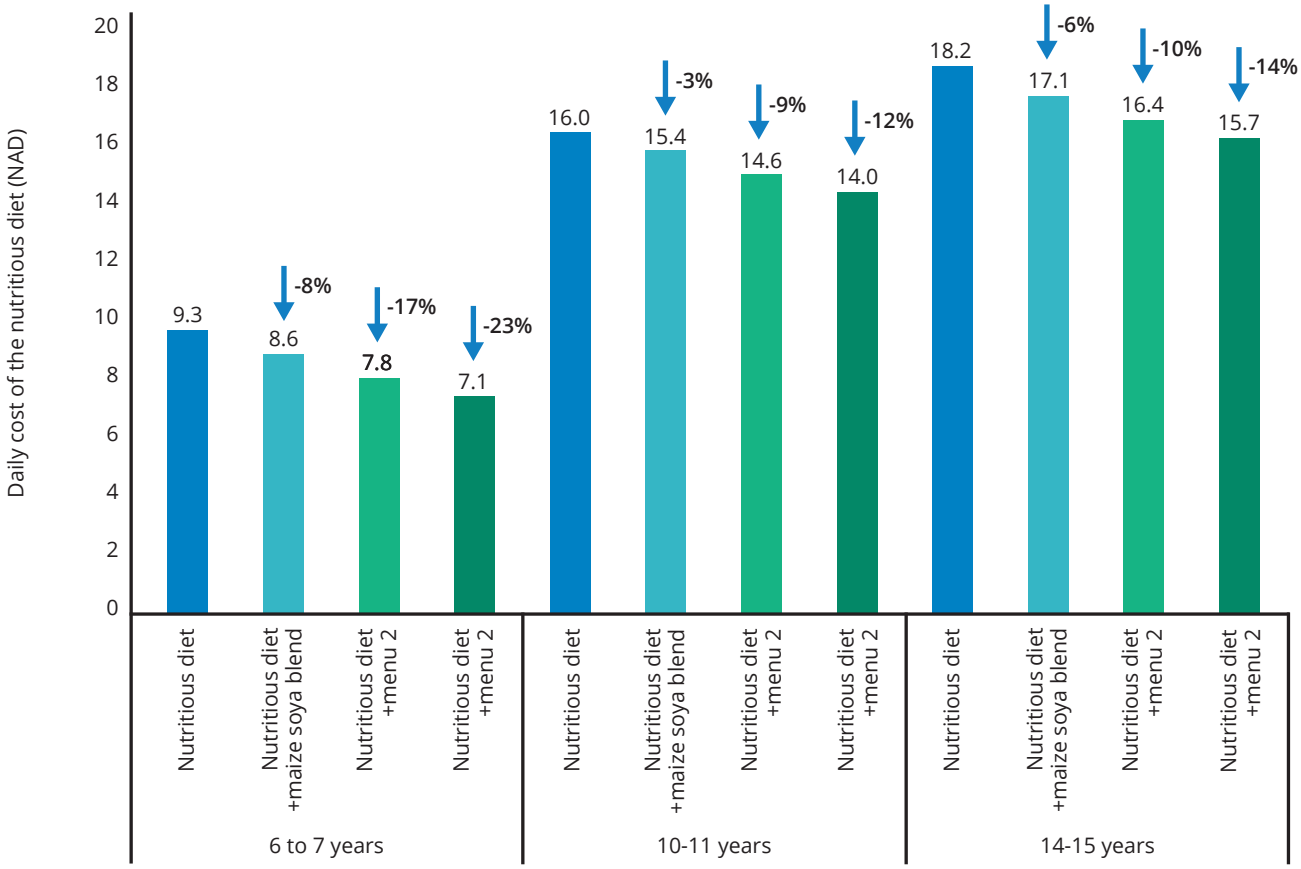
10.

School enrolment rates drop around upper secondary grades at a critical stage during adolescence. Nutritious and diverse school meals could incentivize attendance and contribute to improved dietary intake.

Although education in Namibia is mandatory and universal, enrolment starts to reduce around grade 5 and drops after grade 9 (17). This trend is visible for both sexes and no differences are visible between boys and girls in current enrolment. Little systematic information is collected on the reasons for dropping out, but it is likely correlated with economic and social push and pull factors. These include the need to look for a job, household chores or early marriage. If enrolment is indeed lower in poorer wealth groups, the lack of education can be an exacerbating factor in poorer individual development. According to the DHS (2013), the prevalence of adults with no education is higher in poorer regions and more remote areas such as Kunene, supporting the assumption that educational attainment is lower in poorer areas.

To estimate the impact of different school feeding programmes, the FNG in Namibia modelled three different types of school meals: a basic school meal consisting of a maize-soya blend porridge (currently served in schools across the country), and two pilot menus adding diversified, fresh foods to the porridge. Each of the pilot school menus included at least two fresh food groups from fruit, vegetable, or animal source foods (for full technical specifications please refer to the annotated slide deck). Assuming in-kind provision, the models showed a reduction in cost for all age groups, ranging from 12–23 percent for the most effective school menu, compared to 3–8 percent for the basic porridge meal (Figure 17).

Figure 17: Impact of home-grown school meal on the child's cost of a nutritious diet based on the pilot region of Kavango East (modelling for northern upland cereal and livestock livelihood zone)



Education in general and school meals in particular can serve as a unique platform to create incentives for improved attendance of children and adolescents. Diversified school meals can improve dietary intake and potentially support local production if meals are home-grown and sourced from nearby farmers or homestead production. Global evidence also shows that improved diversity of diets can promote lifelong healthier eating habits and generate awareness of the importance of a nutritious diet. In addition to helping children and adolescents eat healthier diets, this can also have carry-over effects onto their future children (see FNG topic brief "Maximizing the Contribution of School Meals to Healthy Diets for Improved Human Capital"[6]).

[6] Maximizing the Contribution of School Meals to Healthy Diets for Improved Human Capital is available at https://bit.ly/2ZBCCS0

11.

Combining interventions from multiple sectors could have a significant effect on reducing the cost of the nutritious diet for households. Improved targeting of interventions and greater employment opportunities could make nutritious diets more accessible.

The Harambe Prosperity Plan II outlines distinct development goals for Namibia. Nutrition is cross-cutting in several of these, particularly relating to the Goal for Zero Deaths and Improved Access to Social Healthcare. Activities outlined under these goals are multisectoral and require coordinated efforts from all sectors to move the needle on malnutrition. To estimate the impact of multisectoral efforts on the barriers to adequate nutrient intake, the FNG models a number of interventions, ranging from those provided by different government sectors to those provided by NGOs or private sector initiatives.

No single intervention can eliminate the household burden by itself – there are no silver bullets when it comes to nutrition. Combining interventions shows great potential to reduce the cost to the household. Following the strategies outlined by the Harambe Prosperity Plan II, the FNG in Namibia modelled a multisectoral household package to estimate the cost reduction of integrated programming of multiple interventions (Table 2). Leveraging the incremental contribution of each intervention (Figure 18) yields a notable difference when combined across all actors.

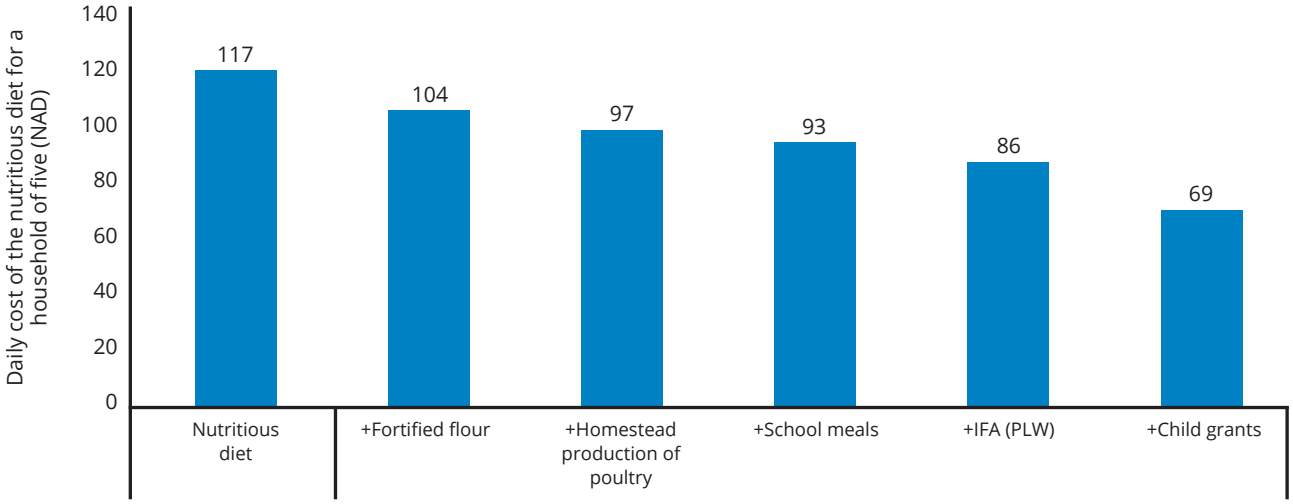
Interventions such as the child grant can contribute to improving access to healthy, nutritious diets for the most vulnerable, especially in those rural areas with non-affordability as high as 70 percent. To reach full potential, the size of cash transfer may need to be increased and availability of nutritious foods be ascertained, and it would need to be combined with behaviour change interventions, focusing on locally available cheap foods (e.g. green leafy vegetables, mopane worms) and age appropriate feeding practices. Additional interventions, such as staple fortification and increasing the availability of nutritious foods for specific target groups, would create an enabling food environment for cash and voucher interventions to be most successful, and at the same time provide access to consumers

Table 2: Interventions combined into a household package by target group

Target Group	Household Package
Child under 2 years	• Optimal breastfeeding • Child grant (NAD 250)
School-age child	• School meal • Child grant (NAD 250)
Adolescent girl	• School meal • Child grant (NAD 250)
Breastfeeding mother	• Iron and folic acid supplementation
All household members	• Fortified flour • Homestead egg & chicken production

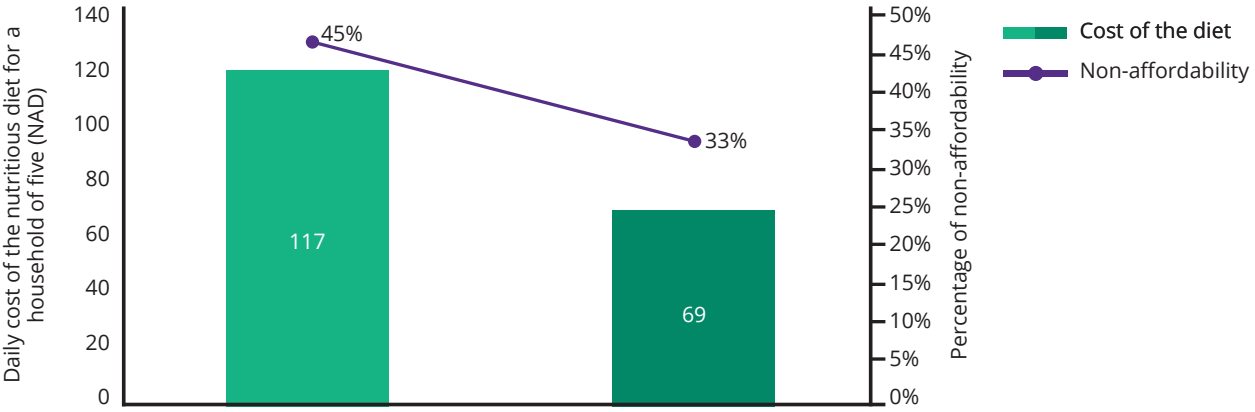
Modelling this package in Katima, Oshakati and Otjiwarongo showed a monthly reduction in the cost of a nutritious diet of around NAD 1,704 per household. With such a decrease in cost, non-affordability in these areas would be reduced by around 12 percent, closing the affordability gap for some households and, for others, bringing them a step closer to a nutritious diet, thus decreasing the magnitude of micronutrient deficiencies (Figure 19). Modelling the same package of interventions in the rural site of Omega 1 showed a reduction of cost from NAD 166 to NAD 68, and a reduction in non-affordability of 32 percent (from 79 to 47 percent), highlighting how these interventions could be even more impactful in a context where food availability and income are limited.

Figure 18: Incremental daily cost reduction by intervention (adding interventions from left to right) (averages based on selected regions of Katima, Oshakati and Otjiwarongo)



These results demonstrate the possible effects of a package of interventions delivered across multiple entry points and sectors to increase households' access to nutritious diets (Figure 19). The FNG also shows that addressing drivers of malnutrition require concerted efforts through all sectors and entry points. Line ministries, humanitarian actors and development partners must consider scaling up short- and long-term nutrition interventions. By continuing to scale up and combine incremental efforts through targeted and coordinated action, the vision of a healthy, nutritious diet being available, accessible, and affordable to all Namibians could be achievable.

Figure 19: Multisectoral household intervention package and the respective average reduction in cost and non-affordability of a nutritious diet (averages based on selected regions of Katima, Oshakati and Otjiwarongo)



Stakeholder recommended priorities

As part of the FNG process, online stakeholder workshops were held over two days to validate the findings and develop recommendations on how to jointly act on the results of the analysis. The first workshop focused on perspectives and interventions from the producer side (agriculture, fortification and private sector) and the other on those from the consumer side (health, social protection and education). During these workshops participants were asked to link FNG findings with current policy priorities to ensure that the analytical results feed into the relevant decision-making processes.

Each day workshop participants were tasked with identifying actions, gaps, actors and priorities for the sectors and multisectoral coordination. Using guiding questions related to FNG findings and Harambee Prosperity Plan II activities, participants discussed strategies for improving nutrition from an explicitly multisectoral perspective. The following recommended actions were consistently considered priorities throughout the discussions:

- **Establishing coordination mechanisms** across sectors and actors, a responsibility that was deemed essential and potentially to be located with the Nutrition and Food Security Alliance of Namibia (NAFSAN).
- **Incentivizing and supporting diversified agricultural production** at homestead and commercial levels.
- **Improving nutrient content and quality of food-based interventions** for education and social protection sectors.
- **Scaling up and using the full potential of post-harvest staple fortification.**
- **Introducing micronutrient supplementation for vulnerable groups.**

Details of workshop discussions are displayed in the table that follows.

AGRICULTURE

Actions	Gaps	Actors and roles	Priorities
• Support livelihood projects (chicken/garden projects) of vulnerable groups (PLHIV) in retaining and strengthening their livelihoods. • Combine household garden development with nutrition awareness/training sessions, material already developed by NAFSAN. • Improve access to healthy, nutritious foods in the south through climate-smart agriculture (trench-farming, water collection mechanisms) in deserts, targeting for orchards. • Include biofortified varieties in production priorities (high-iron beans, orange flesh sweet potatoes, zinc-fortified maize). • Review and expand list of foods that are VAT exempt (especially fruit and vegetables). • Collaborate with private food processing sectors to fortify grains such as maize on a larger scale. • Capacitate farmers to reduce post-harvest losses. • Reduce the ratio of extension officers to farmers for better coverage. • Strengthen the support for household and community gardening, including backyard gardening. • Support and build capacity of the smallholder farmers in the marketing of small-scale produce. • Strengthen cross regional trade to increase diversity of products across regions. • Strengthen climate smart agriculture – appropriate technologies should be implemented.	• Inadequate incentives for expanding diversified production by smallholder farmers. • Limited utilization of good communication material to improve nutritional awareness at community/ household level. • Lack of investment in rainwater harvesting systems. • Poor access to potable water in remote areas. • Limited access to farming related information for farmers. Limited knowledge and information sharing from research/evidence generation to programme implementers at the grass root level. • Lack of enforcing/ implementing legislation (e.g. food fortification). • Lack of coordination mechanisms between stakeholders for marginalized communities. • Poor relationships between extension officers and farmers.	• Ministry of Agriculture, Water and Land Reform to coordinate across stakeholders. • Ministry of Agriculture, Water and Land Reform, WFP and Ministry of Education to collaborate on ensuring the success of household garden development. • Ministry of Agriculture, Water and Land Reform and regional councils to explore rainwater harvesting systems/mechanisms. • Private sector and food processing actors to engage with smallholders and develop processing mechanisms for nutritious foods. • Namibia - Agricultural Mechanisation and Seed Improvement Project (NAMSIP) to support distribution of improved seeds. • University of Namibia (UNAM) and Namibia University of Science and Technology (NUST) to provide nutrition experts to support nutrient gap initiatives (e.g. nutritious complementary foods and indigenous plants).	• Connect farmers to markets and financial infrastructures. • Ensure food fortification and improve access to fortified food for vulnerable groups. • Engage the private sector to be part of the nutrition discussions by setting up SUN Business Network. • Identify the potential of indigenous foods and research their nutritional benefits. • Introduce organic community-based agriculture. • Ensure information reaches those at the grass root level to improve production. • Encourage contributions from private sector to improve and support producers/farmers, while encouraging efficiency and effectiveness of new production schemes. • Strengthen the development of water infrastructures. • Digitization of agriculture with implementation of new technologies. • Source funding and implement HACCIADEP value chains including poultry, horticulture, dairy, small stock and cereal.

SOCIAL PROTECTION

Actions	Gaps	Actors and roles	Priorities
• Ensure that food items in food assistance parcels are fortified. • Replace current in-kind support (food banks) with conditional basic income grant support for the most vulnerable and marginalized. • Give general food rations/ food vouchers to vulnerable PLHIV, coordinated with interventions of the Ministry of Health and Social Services. • Introduce food for work programmes for vulnerable populations	• Exclusion of young adults, particularly women, as vulnerable groups in social protection. • Lack of guidelines and regulation for providing fortified food to vulnerable individuals/targeting criteria for fortified products.	• Ministry of Gender, Equality, Poverty Eradication and Social Welfare, Office of the Prime Minister, Directorate Disaster Risk Management. • Ministry of Agriculture, Water and Land Reform.	• Social protection and grants to be targeted appropriately and made nutrition-sensitive (particularly for gender-sensitive and HIV-focused programmes) • Integrate behaviour change strategies to improve nutrient intake for child grants. • Allocate more funding for social protection and ensure that all targeted programmes have a nutrition-specific component.

EDUCATION

Actions	Gaps	Actors and roles	Priorities

• Improve the nutritional quality of school meals by:
  • involving community (e.g. in-kind donation of fresh, nutritious foods);
  • strengthening school gardening programme Including irrigation system to ensure continuity during school breaks; and
  • encouraging home-grown school feeding to complement the meal.
• Extend school feeding programme to secondary school and extend to breakfast and lunch.
• Include food preparation training in school curriculum to ensure awareness of nutritious food preparation, as well as safety of storing and serving foods.
• Include fortified foods in school meals.
• Provide guidelines for food that should be in meals and therefore what should be grown in the gardens (consider 'super foods' such as moringa and fortified staples).
• Create links between schools and local smallholder farmers.
• Complement food growing activities with nutrition education to understand the importance of diversity and consumption of nutritious foods.
	• Limited information on costs and financing of establishing school gardens, such as irrigation system to be used during school breaks.
	• Inadequate partnerships between education and private sector and local food producers.
	• Little formal structure to support community-led initiatives such as kindergartens and early child development centres on school feeding.
	• Outdated food based dietary guidelines for a locally acceptable healthy diet (need revising and include different target groups such as breastfeeding women).
	• Lack of integration of nutrition into different level school curricula.
	• Lack of forum to share best practices across schools.
	• Lack of community engagement in school gardens, many of which are abandoned.
		• Ministry of Education to coordinate partnerships on education across supporting partners.
		• Private sector partnerships to take a role in school feeding and the food system.
		• Parental communities, including local and traditional authorities, to get involved in supporting school feeding programme by volunteering help land when needed for school gardens.
			• Diversify school meals (home-grown school feeding programme).
			• Build operational capacity for handling fresh food supply at schools.
			• Strengthen linkages and support to smallholder farmers (education, training, agricultural inputs), especially women farmers, in supplying fresh, nutritious foods to schools.
			• Take a behaviour-focused view on curricula and transfer/teach practical nutrition skills in addition to nutrition knowledge.
			• Include nutrition education activities for school children by involving them in school gardens.

HEALTH

Actions	Gaps	Actors and roles	Priorities
• Provide iron and folic acid or micronutrient supplementation for adolescent girls, improving pre-pregnancy nutritional status. • Provide food rations for HIV/AIDS affected households, coordinated with Ministry of Health and Social Services interventions. • Advocate for improved breastfeeding practices (including for people living with HIV/AIDS), providing support and information. • Assess nutrition status regularly for HIV/AIDS affected individuals.	• No Ministry of Health mandate to provide healthy, nutritious foods and no coordination across ministries. • Outdated understanding of prevalence of micronutrient deficiencies required to identify nutrient gaps, and insufficient data collection needed. • Lack of education for mothers on adequate feeding practices from community health clinics.	• Ministry of Health to coordinate food provision to PLHIV with other sectors on. • Community Dieticians to support identification of pathways for improved nutrient intake (referred by nurses).	• Introduce the role of Community Dietitians. • Improve nutrition training for community health workers/nurses. • Establish responsibilities and capacity for coordination and information sharing and coordinate across actors on nutrition. • Provide nutrition education for the community. • Fortify food on a large scale. • Implement Baby Friendly Hospital Initiative (BFHI). • Sensitize and train all actors on complementary feeding. • Develop capacity of health workers on nutrition management for people with HIV/AIDS. • Strength iron and folic acid supplementation for PLW. • Discuss fortification and fortification standards at government level, including implementation through government mechanisms.

MULTISECTORAL COORDINATION

Actions	Gaps	Actors and roles	Priorities
• Establish community advocates for nutrition (well-known people with good social media presence). • Improve coordination and maintenance of school gardens through improved community engagement and ownership. • Set up committees to maintain level of interest in gardens and build capacity to maintain these. • Establish nutrition champions platforms. • Include academia in nutrition training and implementation, scaling up and improving capacity at university levels such as for first/second year nursing students). • Encourage the establishment of household vegetable gardens.	• Inconsistent awareness of ongoing activities across sectors. • Insufficient staffing and financing of Food and Nutrition Steering Committee, and lack of support from international donors to ensure functionality. • Inadequate inclusion of academia in government nutrition activities. • Unsympathetic private services such as banking; for example, no recognition of the fact that residents of informal settings have no credentials.	• Nutrition and Food Security Alliance of Namibia (NAFSAN) to take over coordination of food distribution for PLHIV between local actors such as churches, and to review ration/package. • Tertiary institutions to take the lead on nutrition-related research activities. • Ministry of Health and Social Services, Ministry of Agriculture, and Ministry of Education to lead initiatives); WFP, UNICEF, GIZ, FAO, NAFSAN, NUST, UNAM, etc. to coordinate.	• Develop reliable mechanisms to ensure alignment and coordination across sectors and types of actors. • Discuss fortification and fortification standards at government level, including implementation of legislation on fortification standards. • Integrate and align FNG findings with 6th National Development Plan and Food and Nutrition Policy implementation action plan (pending cabinet approval). • Inform drafting of SUN roadmap for Namibia based on COHA and FNG findings. • Build capacity among community members through communication and advocacy to empower them to take action and ownership of community garden activities.

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Acronyms

ART	Antiretroviral Therapy
BCC	Behaviour Change Communication
CotD	Cost of the Diet
CPI	Consumer Price Index
DHS	Demographic Health Survey
FEWS NET	Famine Early Warning Systems Network
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HACCIADEP	Harambee Comprehensively Coordinated and Integrated Agricultural Development Programme
HIES	Household Income and Expenditure Survey
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
HPP II	Harambe Prosperity Plan II
IFA	Iron and folic acid (supplements)
IFAD	International Fund for Agricultural Development
MMT	Multiple micronutrient tablets
NAD	Namibian dollar
NAFSAN	Nutrition and Food Security Alliance of Namibia
NAMSIP	Namibia - Agricultural Mechanisation and Seed Improvement Project
NamVAC	Namibia Vulnerability Assessment Committee
NCD	Non-communicable diseases
NSA	Namibia Statistics Agency
NPC	National Planning Commission
NUST	Namibia University of Science and Technology
OPM-DRM	Office of the Prime Minister Directorate Disaster Risk Management
PLW	Pregnant and lactating women
SUN	Scaling Up Nutrition
SBCC	Social and behaviour change communication
UN	United Nations
UNAM	University of Namibia
UNICEF	United Nations Children's Fund
USD	United States dollar
WFP	United Nations World Food Programme
WHO	World Health Organization
WRA	Women of reproductive age

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