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National Planning Commission

Fill the Nutrient Gap Nepal

Summary Report

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Foreword

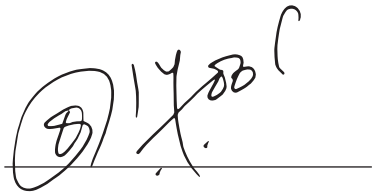
The National Planning Commission (NPC) led the study of the "Fill the Nutrient Gap (FNG)" in 2020 with technical support from the United Nations World Food Programme (WFP) and with engagement from multiple stakeholders.

Fruitful consultations were held over the past eighteen months in different stages such as the identification of potential data sources and domains, presentation of findings and finalization of recommendations. This process provided an opportunity to solicit inputs on the best practices while increasing buy-in of the outcomes. I am pleased to share this FNG report on behalf of the NPC.

I strongly believe that the recommendations from the FNG report will complement and further strengthen the use of our other national initiatives on food security and nutrition, such as the Multi-sector Nutrition Plan, the Agriculture Development Strategy and, to some extent, the Fifteenth Plan, among others. I therefore encourage all stakeholders to critically consider these recommendations as a reference for programme targeting and policy reviews.

The ongoing fifteenth plan includes different strategies and working policies to address the issues of food insecurity and malnutrition. It has a vision of building communities with food sovereignty, sustainable food and nutrition security. This plan aims at contributing to achieve zero hunger by 2030 and meet the target of nutrition by reducing stunting to fifteen percent, underweight to nine percent and wasting to four percent. Further, Nepal, as a member of Scaling Up Nutrition (SUN) movement, has committed to reducing malnutrition to meet the targets associated with the SDG 2. This FNG report will also assist programme designers and policy makers in developing innovative programmes to achieve these targets.

I would like to thank our partner WFP, which has worked with the NPC on this initiative. I also extend my appreciation to the National Nutrition and Food Security Coordination Committee for playing active role as a technical working group while preparing this report.



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Message

Nepal has demonstrated progress in improving most of the indicators related to the nutritional status over the last decades. The rate of stunting among the under five-year children has reduced from 49 to 32 percent between the period 2006 to 2019. The rate of underweight has reduced from 39 to 24 percent during the same period. Whereas, wasting remained almost stagnant which was 13 percent in 2006 and declined marginally to 12 percent in 2019 (NDHS 2016 and NMICS 2019). In this backdrop, we need to adopt evidence-based multi-sectoral nutrition investment to realize the targets incorporated in the World Health Assembly and Sustainable Development Goals.

Nepal has been taking multi-pronged approach like food availability, income-based, basic needs, entitlements, and sustainable livelihoods to address food insecurity and malnutrition. Government-led one door programme intervention is the key to achieve targeted results including outputs, outcomes, and impacts. Shift from distributive to production-based interferences are needed.

Conducting a systematic analysis to understand the underlying factors, challenges, and opportunities of addressing the different forms of malnutrition in Nepal is important. The findings of Nepal FNG analysis will support to the MSNP II (2018 -2022) interventions, and food security and nutrition initiatives in optimizing their contribution in improving nutrition of the most vulnerable groups. It will guide in scaling up the MSNP II. Fill the Nutrient Gap (FNG) analysis is one of the options to strengthen the multi-sectoral coordination, identify the bottlenecks and challenges, and explore the opportunities in formulating the evidence-based plans and in developing the effective policies to address the problem of food insecurity and malnutrition in Nepal.

We highly appreciate the contribution that the team of experts of World Food Programme and stakeholders have made to bring this document in this shape. We wish to acknowledge the valuable contribution of Dr. Usha Jha, former member of NPC, who provided the strategic guidance and led the process at the beginning. Similarly, thanks to the team of officials at the National Planning Commission, particularly Dr Basudev Sharma, Joint Secretary, and Laxmi Ghimire, Programme Director of NPC, who put their dedicated efforts to complete this analysis successfully. Special thanks are due to Dr. Kiran Rupakhetee, SUN Country Coordinator and Joint Secretary of NPC for coordinating and guiding the study team to complete the study successfully. Thanks to Chandra B. Thapa, National Food Security Programme Policy Officer, NNFSS, NPC for his support and contribution to the study. Finally, thanks to Nepal Rastra Bank for sharing food price data that were key for the cost of diet analysis.

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Message

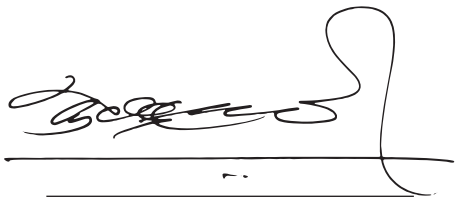
The Constitution of Nepal provides the right to food to the citizen. Referring to this provision, the Government of Nepal (GoN) enacted the 'Right to Food and Food Sovereignty Act, 2075 (2018)'. The SDG-2, which aims to "end hunger, achieve food security and improved nutrition, and promote sustainable agriculture" has been the priority of the GoN. The GoN has formed the institutional architecture like High-Level Nutrition and Food Security Steering Committee (HLNFSSC) and National Nutrition and Food Security Coordination Committee (NNFSCC) at the federal level and Nutrition and Food Security Steering Committees at the province and local levels. These committees oversee and steer the policy, strategy and programmes related to food security and nutrition.

Realizing the importance of evidence-based planning and policy formulation, the Fill the Nutrient Gap (FNG) analysis was conducted in Nepal. The FNG analysis report provides evidence to better target the MSNP II (2018-2022) and inform other food security and nutrition initiatives, including MSNP III formulation, to optimize efforts to contribute to achieve World Health Assembly and Sustainable Development Goal 2 targets.

The FNG analysis was designed and carried out with technical support of WFP to provide solid evidence on the country's nutrition and food security situation and provide strategic recommendations. The analysis was done nationally taking the three ecological zones into consideration. With the technical support of WFP, National Nutrition and Food Security Coordination Committee (NNFSCC) led the analysis process and provided overall strategic leadership and coordination for the FNG study.

The FNG analysis report has provided strategic recommendations by identifying situational factors that could contribute to improved diets, and build consensus among stakeholders on priority interventions and policies that support nutritious diets.

I would like to encourage all the stakeholders to use these evidences for future programming, and NPC commits to use the evidence in policy making and planning of nutrition, food security, social protection and education related interventions.



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Message

Thirty six percent of children in Nepal are chronically malnourished and ten percent suffer from acute malnutrition[1]. Multidimensional poverty, vulnerability to shocks, including the economic impact of the COVID-19 pandemic, and weak infrastructure have impeded Nepal's progress in reducing undernutrition despite continued efforts by the Government.

The prevalence of stunting amongst children from the poorest households is more than double that of the richest quintile and occurs across Nepal's geographical regions. Micronutrient deficiency, or "hidden hunger", is caused by inadequate diversity and limited essential nutrients in diets. Households in remote areas lacking a stable income and access to sufficient land can face economic and physical barriers to accessing healthy, nutritious diets, and the consumption of unhealthy processed foods and percentage of the population overweight or obese is increasing in Nepal. Dietary diversity is also limited by discriminatory food consumption practices within households based on gender and familial hierarchies.

Under the leadership of the National Planning Commission and with technical and financial support from the World Food Programme (WFP) Nepal, the Fill the Nutrition GAP (FNG) study was conducted through a consultative process to provide an accurate picture of nutrition and access to healthy diets in Nepal. WFP prioritises multi-sector, multi-stakeholder engagement as a means to accelerate progress in food and nutrition security, and I congratulate the National Planning Commission for leading the engagement and consultation process and producing the FNG study. The study will be vital in informing evidence-based programming and multi-sector involvement in the fight against malnutrition in Nepal and is the latest in a series of important joint publications with WFP.

I would like to thank all the stakeholders who were engaged in this analysis for their valuable input, and to express my sincere gratitude to the National Planning Commission for their leadership and strategic guidance, and for their continued support and dedication to ending hunger in Nepal.

Robert Kasca
Representative and Country Director World Food Programme Nepal

[1] Ministry of Health, Nepal; New ERA; and ICF. 2017. Nepal Demographic and Health Survey 2016. Kathmandu, Nepal: Ministry of Health, Nepal

Executive Summary

Nepal has made remarkable progress in reducing malnutrition over the past two decades yet one in three children continue to be stunted, high rates of micronutrient deficiencies persist, and new challenges are emerging in overweight, obesity, and diet related non-communicable diseases. Central to preventing all forms of malnutrition are healthy, diverse diets. It is imperative that they are available, accessible, and affordable for all, including the most vulnerable and specific groups across the life cycle such as pregnant and lactating women, adolescent girls and children under 2.

In 2020 the government of Nepal undertook a Fill the Nutrient Gap (FNG) analysis with technical support from WFP, aimed at strengthening the scale up of the second national Multisector Nutrition Plan (MSNP II). The analysis would provide evidence for ongoing and planned programming and develop recommendations for making the implementation of nutrition and food security policy more effective. The FNG analysis used a food systems approach to carry out a situational analysis of the barriers to consuming a nutritious diet among different target groups and contexts in Nepal. The FNG process included a review of existing data and literature identified by stakeholders, including secondary data on poverty, micronutrient deficiencies, and nutrition indicators; primary research conducted by development organizations, non-governmental organizations (NGOs) and academia; relevant government reports, conference materials and working papers; and discussions with experts. The process also included an analysis using the Cost of the Diet (CotD) linear optimization tool which enables users to estimate the cost of nutritious diets in given contexts using local market food price data. Based on the results provided by the CotD and household food expenditure data, the FNG analysis estimated the affordability of nutritious diets. Using this information, stakeholders identified interventions for improving access to nutritious foods.

Consultations for the FNG Nepal began in November 2019 and the analysis was launched in May 2020 under the leadership of the National Planning Commission (NPC) with technical assistance from WFP. The main objective of the FNG was to provide evidence to support scale up of programmes developed in Nepal's second Multisector Nutrition Plan, and to identify how different sectors could contribute to improving nutrition outcomes for the most nutritionally vulnerable groups across the life cycle. The FNG process, including design, relied heavily on the knowledge, inputs, and guidance of key stakeholders in Nepal across sectors, including line ministries, NGOs, UN partners, academia and the

private sector. The CotD analysis was carried out for a five-person household with individuals representing different stages of the life cycle to achieve a good per capita estimate of the lowest cost nutritious diet. The analysis considered food prices across four distinct seasons and was carried out in 16 distinct geographic areas which are representative of all seven provinces and all three agro-ecological zones (AEZ).
The analysis found that the lowest cost nutritious diet, one that meets energy and micronutrient requirements, is NPR (Nepalese rupee) 348 (USD 2.91) per five-person household per day, while the cost of a diet that meets only energy needs is NPR 141 (USD 1.22). While almost all households in Nepal would be able to afford the lowest cost energy-only diet (between 98 and 99 percent), at least 22 percent would not be able to afford the lowest cost nutritious diet. Non-affordability of the nutritious diet is lowest in the highly urbanized Kathmandu valley, while the highest rates of non-affordability - over 60 percent - are in the remote Mountain areas.

Current consumption patterns indicate that the most often consumed foods across all AEZs are cereal staples, oils and fats, and pulses. To meet nutrient needs, households need to be able to access and afford diverse foods groups, including animal source foods and fresh fruit and vegetables. In Nepal, however, the FNG analysis found that access to nutritious foods is unequal with lower availability and higher prices in the Mountain areas compared to the rest of the country. For households that purchase most of their food, market access and infrastructure are crucial to ensure access to nutritious foods, as data has shown that road infrastructure lowers food price levels and causes price volatility. Among hhouseholds with better road access, expenditure on non-staple foods is higher and nutrition outcomes for children under five years are better.

Given the high rates of consumption of cereal crops in Nepal, fortification is a good intervention to improve access to micronutrients that are harder to access through the existing food system. The analysis considered industrial fortification of rice and wheat flour and biofortification of wheat and found that all have potential to significantly impact on reducing the cost of a nutritious diet, hence increasing the likelihood of meeting nutrient needs. For households with access to adequate agricultural inputs such as land and human resources, another pathway to improve access to nutritious fresh foods is through home production. The FNG analysis used data from the Helen Keller International Suaahara project to model the benefits of homestead production of vegetables and poultry through consumption and income generation.

Social protection programmes can also contribute to improving nutrition outcomes by providing households with additional resources to purchase nutritious foods and by linking programmes to nutrition interventions. The FNG analysis found that existing programmes such as the Child Cash Grant only cover a small portion of a household's cost of a nutritious diet. Nepali households would benefit from the expansion of the programme in terms of geographic scope and increased transfer value. The impact of social protection programmes on nutrition can be further increased by using them as a platform to provide specific interventions which target the most nutritionally vulnerable individuals, namely pregnant and breastfeeding women, adolescent girls and young children.

The FNG analysis modelled the potential benefits of WFP's Mother and Child Health and Nutrition (MCHN) Programme implemented in Karnali Province. Through the provision of fortified blended flours it can fill nutrient gaps for the most vulnerable. The FNG analysis shows how interventions can contribute to the nutrition requirements of targeted individuals. Interventions include the promotion of optimal breastfeeding and nutritious complementary feeding for children aged 6-24 months, micronutrient supplementation for women and adolescent girls, and the provision of specialized nutritious foods for pregnant and breastfeeding women. Given the high rates of school enrolment in Nepal, school feeding programmes provide an excellent platform for improving children's nutrition. With inputs from the Ministry of Education, Science and Technology and WFP's school-based programming team in Nepal, the FNG analysis assessed the contribution of different school menus on nutrient intake and cost of the diet. It found that the inclusion of fresh nutritious foods such as eggs, milk and vegetables, can fill nutrient gaps left by standard school rations that contain staple cereals and pulses.

There is global consensus and growing evidence that addressing malnutrition requires multisectoral and multistakeholder engagement. The FNG analysis found that the cost of the diet can be substantially reduced when households benefit from interventions by a variety of sectors. The package of interventions increases affordability, making it possible for a greater proportion of the population to meet their nutrient needs. It is crucial to advocate for each sector to make its contribution towards operationalizing the MSNP II so that households in Nepal can fill their nutrient gaps.

Following the FNG analysis, the NPC and WFP held four thematic workshops: Health, Nutrition and Vulnerable Individuals; Agriculture and Fortification; Education and School Feeding; and Social Protection. Based on the FNG findings, stakeholders identified policy priorities for each sector and developed recommendations for government and development partners. A summary of the recommendations is provided at the end of this document and a full list of the recommendations is provided in the FNG Nepal final report.

Fill The Nutrient Gap **Nepal** | SUMMARY

Introduction to Fill the Nutrient Gap (FNG) Analysis

Nutrition is a crucial pillar in the development of a healthy, productive nation. Good nutrition enhances physical and cognitive development, prevents disease, and increases the potential of the workforce and society. Improving diets, especially of children, adolescents 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 the food, social protection, health, water sanitation and hygiene (WASH) and education systems. Interventions 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 analysis is an analytical process comprised of a secondary literature review in combination with CotD linear optimization[1] to understand local drivers that affect the availability, cost and affordability of a nutritious diet (details on the CotD analytical tool are provided in the box on page 9). Solutions for improving availability of nutritious foods, lowering their cost and/or increasing income, are then assessed for their potential to improve affordability, using the CotD software. In this way, the context-specific potential for impact of interventions that can be implemented by different sectors 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 Nepal in a sustainable way that is integrated across the country's food, health, social protection and education systems.

[1] The linear optimization method used by the Cost of the Diet software identifies the quantities of a selected basket of foods which can most cheaply cover energy and micronutrient needs for an individual or household. The optimization calculation minimizes total cost with the constraints of meeting or exceeding recommended nutrient intake (RNI) for nine micronutrients (certain micronutrient have excess limits in order to prevent potentially dangerous levels of intake) whilst meeting - but not exceeding - daily energy needs.

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 March 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

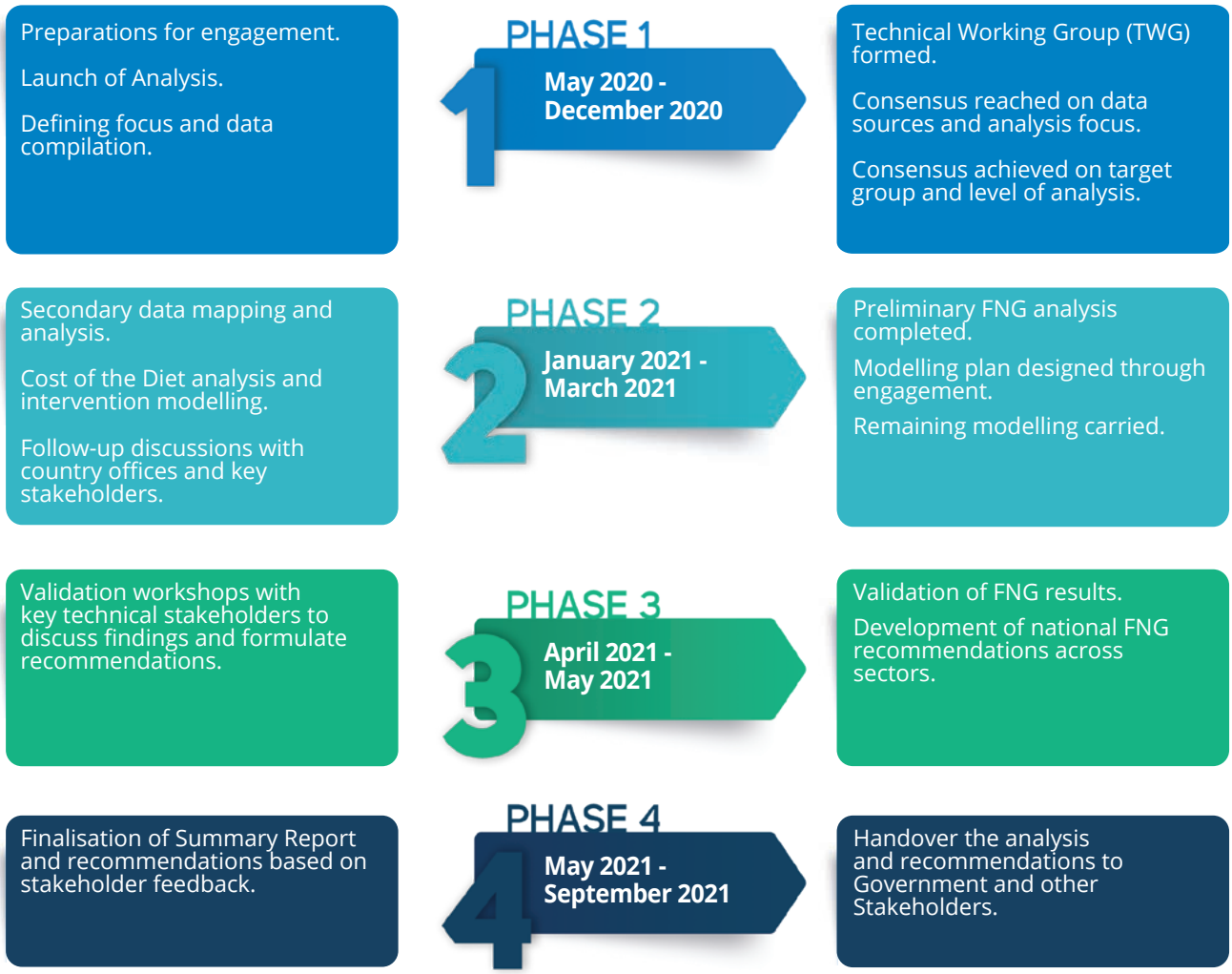
The overarching objective of the FNG analysis was to support the Government of Nepal's review of the MSNP II by analysing the potential contribution of ongoing and planned programmes to improving nutrition outcomes. The analysis was intended to support nutrition stakeholders (government line ministries, development partners, NGOs, academia, private sector and others) to make evidence-based programme and policy decisions related to nutrition and food security. Recommendations and advocacy messages generated by the analysis are based on evidence and are intended to promote expansion or implementation of programmes.

Process of the FNG Analysis in Nepal

The FNG process in Nepal was led by the NPC with WFP providing technical assistance. The National Nutrition and Food Security Coordination Committee (NNFSCC) served as the in-country technical working group (TWG) and spearheaded the overall analysis. The FNG analysis was informed by secondary data sources and CotD modelling, and the development of recommendations was guided by a wide range of stakeholders from different sectors (see full report for list).

The FNG Nepal analysis launched in May 2020 with meetings between WFP and the NPC, government, NGOs, UN agencies, private sector and other development partners. To define the focus, stakeholders met virtually in December 2020 and January 2021. They established consensus on the purpose and approach of the analysis and identified ongoing and potential interventions for modelling. In April and May 2021, the FNG team conducted six workshops to validate the FNG findings, including the modelling parameters used, and to identify stakeholder priorities for defining recommendations based on the findings. The first two workshops were held with the TWG and WFP Country Office staff for an internal validation of the findings, and the following four workshops were tailored to specific sector stakeholders (Health; Agriculture and Fortification; Education and School-based Programming; and Social Protection). Following the workshops, the analysis was fine-tuned, and recommendations were consolidated (Figure 1).

Figure 1: Fill the Nutrient Gap (FNG) process in Nepal



Methodology

The FNG analysis is composed of 1) a secondary literature review of the food, social protection and health systems, focusing on entry points for current and potential ways of improving diets and meeting nutritional requirements, and 2) a CotD analysis (Figure 2). The CotD analysis uses linear optimization to provide a detailed look at availability, cost and affordability of nutritious diets.

Secondary Data Analysis

Long-term solutions to malnutrition require transformation of the food system, shown in Figure 3, along food supply chains, food environments and consumer behaviors. The FNG secondary data analysis identifies: barriers to accessing healthy diets; platforms for reaching nutritionally vulnerable groups in the population; and opportunities for policy and programme interventions to improve access, availability and affordability of nutritious diets through multiple sectors including agriculture, health, WASH, social protection and education. Secondary data provides an understanding and interpretation of the findings on cost and affordability of nutritious diets. Examples include why non-affordability may be higher in areas with more multidimensional poverty or worse access to markets, infrastructure, and other drivers of economic activity. Secondary data also informs the selection of models for the FNG analysis and provides specific details for modelling parameters. Secondary data on Helen Keller International's Suaahara homestead production programme was used in the analysis to inform modelling on agriculture.

Figure 2: The FNG analytical framework

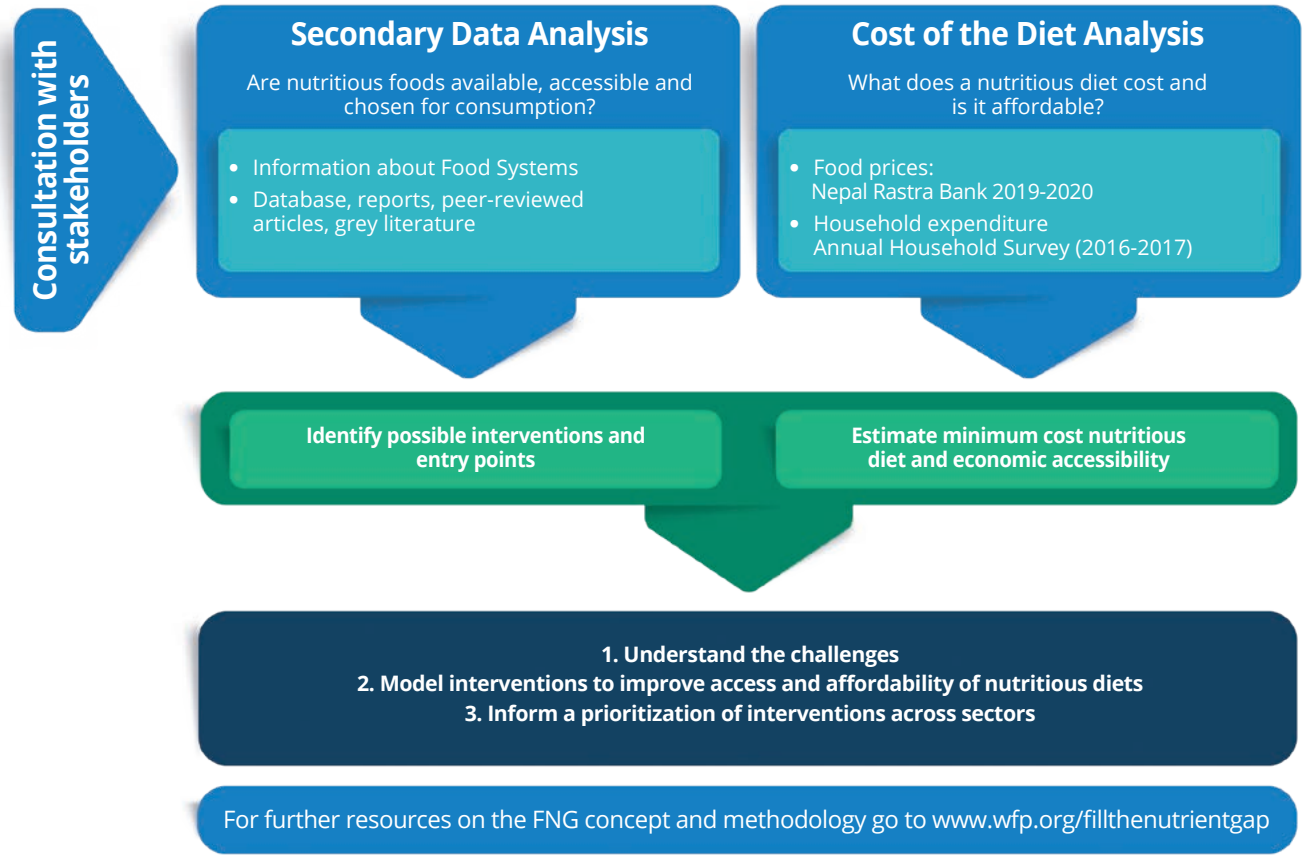
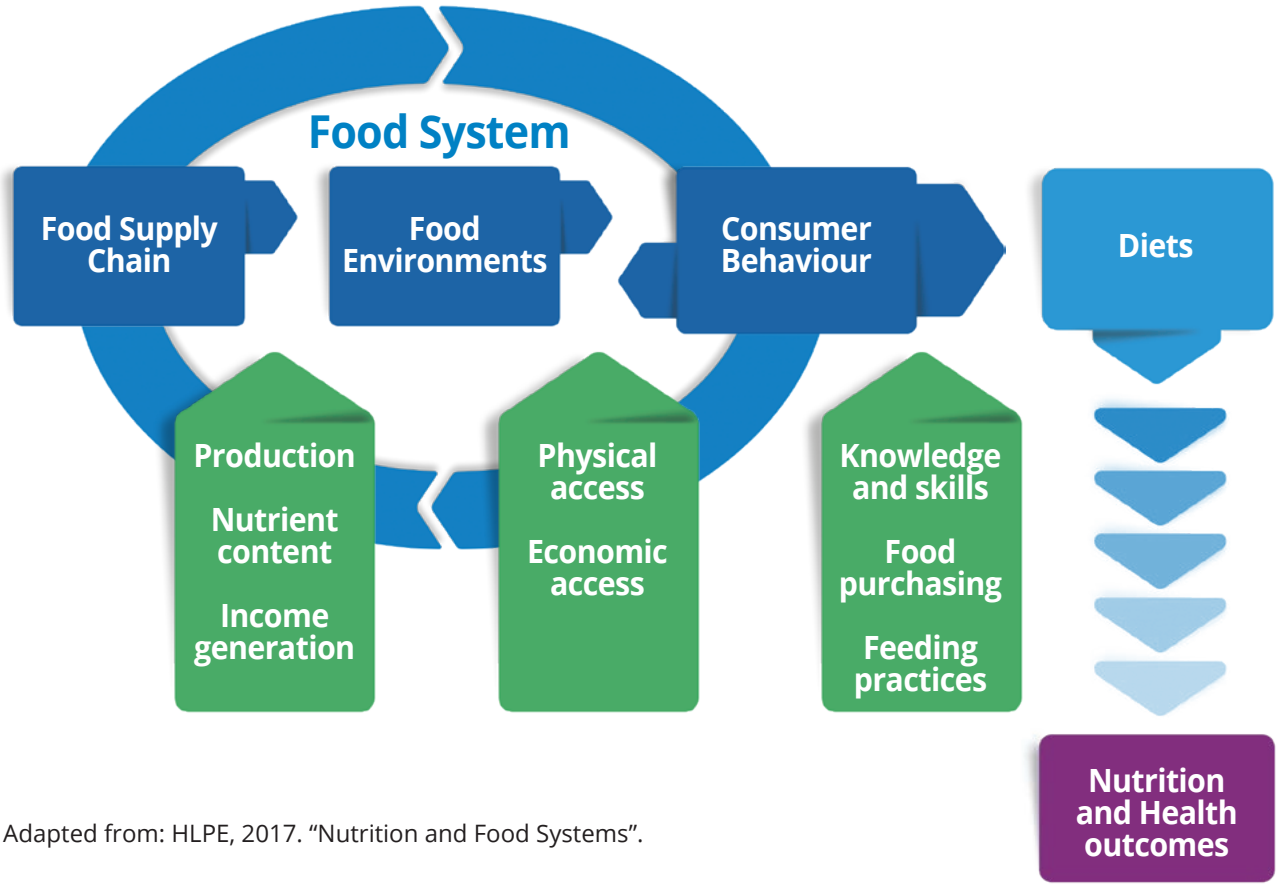


Figure 3: Food systems for diets and nutrition and health outcomes framework



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

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

Table 1 provides details on the data sources used for the CotD analysis, including the level of geographic disaggregation and the timing of data collection. These sources provided the data that were used to calculate the lowest costs of energy-only and nutritious diets.

Table 1: Data sources for the cost of the diet analysis

Data used in FNG analysis	Data Source	Aggregation	When data was collected
Price data for CotD (detailed consumer price index (CPI))	Nepal Rastra Bank	By 'geo-unit' (provinces divided by 3 agro-ecological zones)	April 2019-April 2020
Food expenditure data for non-affordability analysis from Annual Household Survey 2017	Nepal Central Bureau of Statistics	By agro-ecological zone (Mountain, Hill and Terai)	September 2016 - July 2017
CPI data, used to adjust food expenditure to match the point in time of food price data	Nepal Rastra Bank	National	All calendar years (use of CPI data to adjust to 2020)

Modelled household & main target groups for the analysis

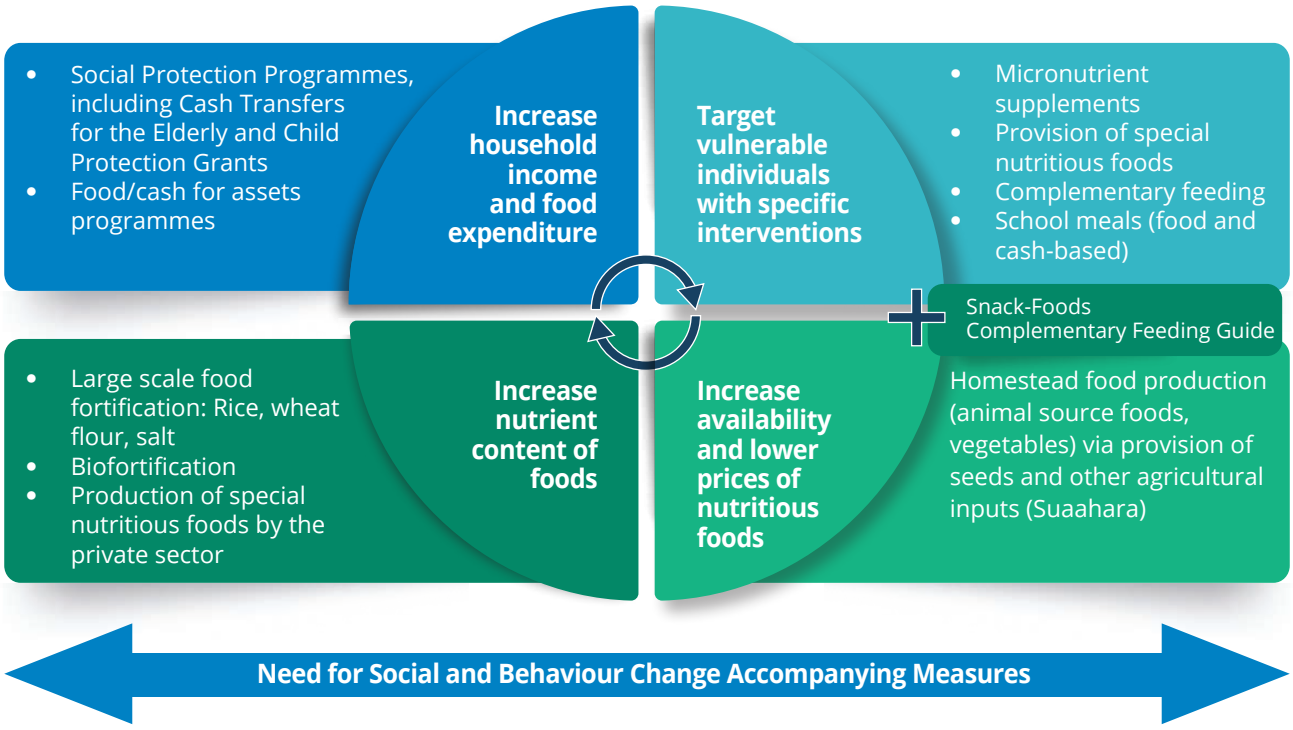
Modelled household: Based on national average household size, the FNG analysis was modelled on a 5-person household which included the following individuals:

- adult man
- breastfeeding adult woman
- adolescent girl
- school-going child
- breastfed child 6-23 months old.

This family composition provides for a good per capita average. Based on requests from stakeholders, certain models were run for individuals not in the modelled household (e.g. social assistance programmes for elderly citizens).

Scope of intervention modelling: The focus of the modelling was defined during stakeholder consultations and was based on the priorities defined by the NPC, the Nepal WFP Country office, and engagements with NGOs, donors, civil society, line ministries, UN and development partners. To identify concrete recommendations based on analyses, the FNG process concentrated on modelling the interventions outlined in Figure 4.

Figure 4: Entry points and interventions modelled to estimate reduction in cost of a nutritious diet

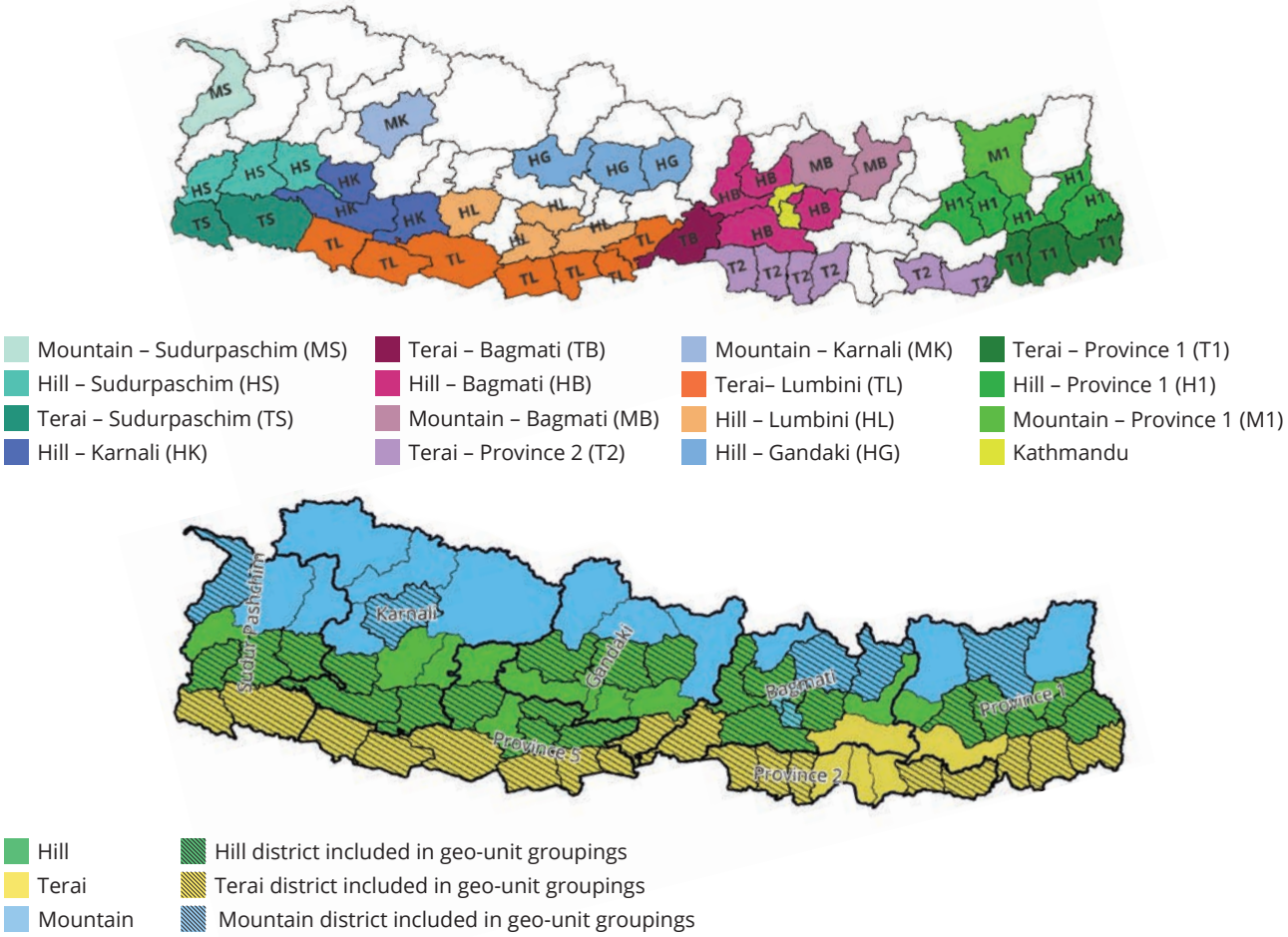


Scope of intervention modelling

Based on discussions with stakeholders during the inception workshop, the following parameters for analysis were agreed:

Geographic scope: Analyses were based on available data for food prices and expenditure. To account for variation among agro-ecological zones and provinces, the analysis created 16 unique geographical units (or geo-units) which break down each province by agro-ecological zone. The top map in Figure 5 shows the 16 unique geo-units used in the analysis, and the bottom map shows the geo-units as broken down by the three agro-ecological zones of Nepal.

Figure 5: Delineation of geo-units[2] used for the Nepal FNG analysis



Seasonality and month selection: To account for potential seasonal variation, the analysis was run for four seasons spanning the entire year.

1. Non-lean season 1: September to January
2. Lean season 1: February and March
3. Non-lean season 2: April to June
4. Lean season 2: July and August

Considerations for seasonal breakdown were based on crop calendars defined by the Nepal Thematic Report on Food Security and Nutrition (2013), which was written by the NPC in conjunction with the Nepal Central Bureau of Statistics, World Bank, AusAid, UNICEF and WFP. According to the report, harvests for main staple foods vary between agro-ecological areas, but generally rice is harvested between October and November and wheat is harvested between March and May. Most regions of Nepal are therefore assumed to have two agricultural lean periods per year: a winter lean period (February, March and April) and a summer lean period (July and August).

Modelling areas: Modelling areas were selected for interventions as appropriate. For example, interventions like rice fortification were modelled for all geo-units as they could be relevant across Nepal. School meal programmes, which are relevant to all areas of Nepal, have unique school menus in specified geographic areas and therefore were modelled in specific areas. Other programmes were modelled as appropriate. For example, the WFP supported Mother Child Health and Nutrition (MCHN) programme, was modelled only for the Karnali-Mountain geo-unit as it is only being implemented in this area.

[2] District groupings are used to comprise geo-units. For a complete list of which district falls into which geo-unit, please see the full report.

Considerations for interpretation and data gaps

Seasonal Considerations: Most of the CotD results presented in this report show annual averages across the four modelling seasons. Non-affordability estimates are also given as annual averages for the Terai, Hills, and Kathmandu areas. The dataset used to calculate expenditure percentiles did not include enough data points to allow for the calculation of non-affordability in non-lean season 2 and lean season 2 for Mountain areas. Averages for non-affordability estimated for the Mountain areas are therefore an average of non-affordability between non-lean season 1 and lean season 1.

Geographic Considerations: To simplify interpretations, results are often shown as averages of agro-ecological zones or as a national average. Any aggregated calculations use population weights and should therefore be interpreted as population-weighted averages. Because of data limitations, the cost and affordability of the nutritious diet could not be interpreted for every geo-unit. Results which present national averages are therefore calculated using results from those geo-units for which data is available and are weighted according to the populations in those geo-units.

Changes in income because of COVID-19 pandemic: The data used for this analysis pre-dates the COVID-19 pandemic which is likely to have had a negative effect on households' income levels. Results shown in this report should therefore be regarded as a conservative estimate of non-affordability which is likely to have increased in 2020 and 2021.

Main Messages

1.

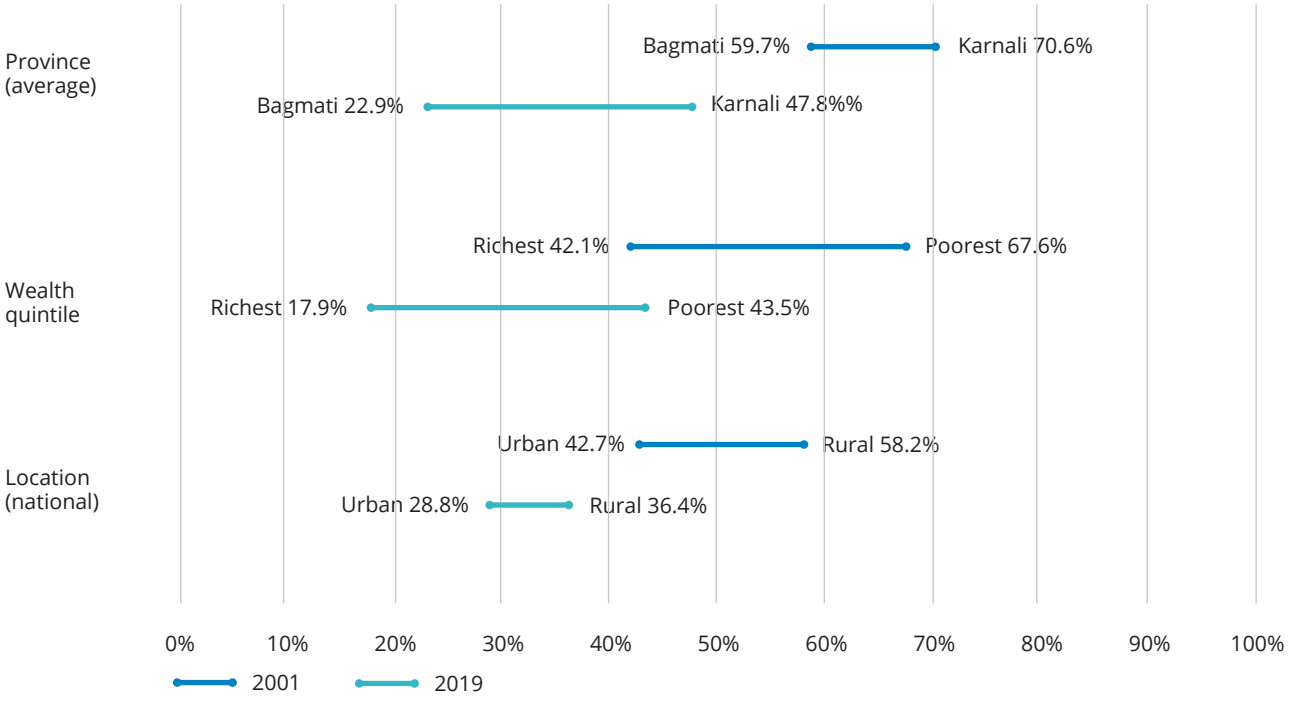
Despite significant reductions in stunting rates, undernutrition remains high and overweight and obesity are on the rise. There are significant socio-ecomomic and geographical inequities in nutrition outcomes.

Nepal has seen a significant reduction in stunting among children under 2 in the last two decades with stunting prevalence having dropped from 57 percent in 2001 to 32 percent in 2019 (DHS 2001, NMICS 2019).

However, stunting prevalence differs widely across Nepal based on where children live and their family's socio-economics status. Figure 6 uses data from 2001 and 2019 and shows the variation in stunting prevalence between the poorest and richest wealth quintiles, rural and urban locations, and the two provinces with the highest and lowest stunting rates. While stunting has decreased across all provinces, the rates of reduction have not been equal and reflect deepening regional inequalities. Similarly, while stunting among the richest and poorest households has reduced, the poorest continue to have higher rates today than the wealthiest households twenty years ago. While children in rural locations are more likely to be stunted, the gap in stunting rates between children in rural and urban households has declined considerably. However, between 2011 and 2016 there was a slight increase in the stunting rate among urban children. This shows that the urban poor are an increasingly vulnerable group which should be given due consideration in programme and policy design (Exemplars in Global Health, 2019).

There is a mixed relationship between ethnicity and stunting prevalence among children from 6 months to 5 years. According to the Nepal National Micronutrient Status Survey (NNMSS) 2016, stunting is higher among children belonging to historically disadvantaged castes such as Muslims (47 percent) and Dalits (40 – 44 percent) compared to those belonging to castes such as Newar (12 percent) and Hill Brahmin (17 percent). However, stunting is also high among the Chhetri and Terai Brahmin castes (38 – 41 percent).

Figure 6: Prevalence of stunting among children (0-59 months) (NMICS 2019, Exemplars in Global Health 2019)



Using four rounds of Demographic Health Survey data (from 2001 to 2016), a decomposition analysis carried out by Exemplars in Global Health (2019) shows that the following factors contributed to this reduction: parental education (25 percent); maternal nutrition status (19 percent); maternal and newborn health care (12 percent); reduction in open defecation (12 percent); increased household wealth (nine percent); reduction in fertility/pregnancy intervals (three percent); and other factors such as breastfeeding, region, child age, and presence of health facilities (11 percent). Nine percent of the change remains unexplained. Some of the external factors that may have contributed to the progress in stunting reduction include improvements made by the government and development partners within different systems – health, education and

sanitation – as part of a broader pro-poor strategy, decentralisation (albeit with its challenges), and an increase in international migrants sending remittances back home (Exemplars in Global Health, 2019).

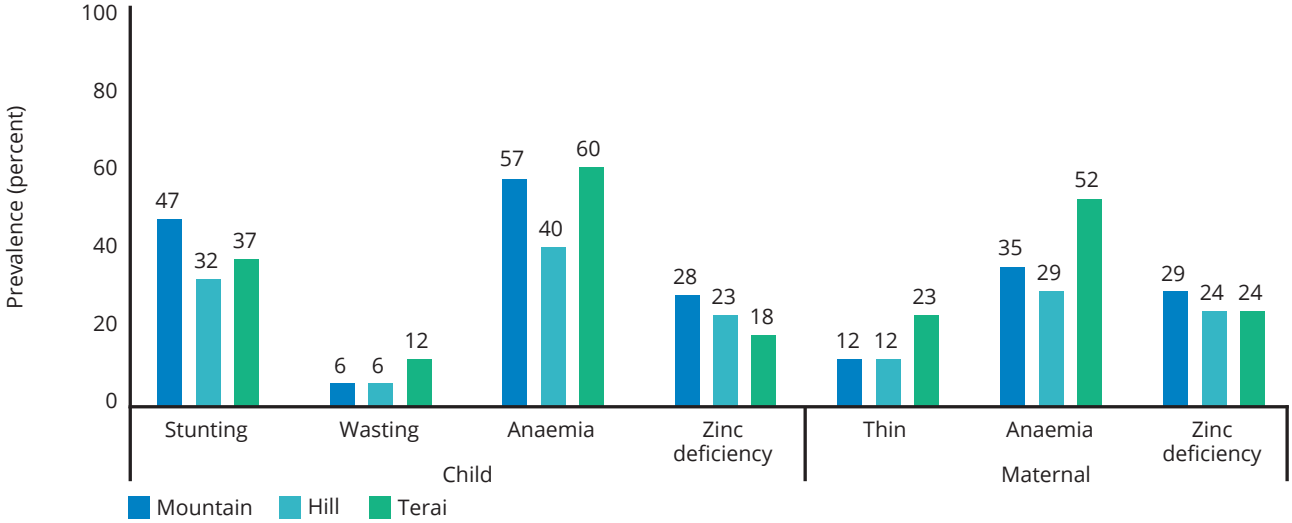
These factors contribute directly towards improving diets and access to better health services which can lead to better nutrition outcomes. For instance, parents who are educated are not only more likely to earn more but are also better able to act on new information related to healthy diets for themselves and their children. In particular, educated mothers are likely to be more empowered and have a say in how household resources are used. Having health facilities in their communities improves a household's chances of receiving nutrition-specific services such as nutrition education and micronutrient supplements for children, adolescent girls and pregnant and breastfeeding women. Wealthier households are able to buy more nutritious foods which can improve the dietary intake of individuals within the household including children and women who are pregnant and breastfeeding. An increase in economic status also allows a household to seek better healthcare.

Despite substantial improvements in stunting, wasting rates have remained stagnant in Nepal. Between 2001 and 2019 wasting prevalence among children under five years has remained between 10 and 13 percent. Wasting is highest among children under 6 months (15.7 percent) and gradually reduces in older age groups. Wasting rates show different geographic patterns than those of stunting or micronutrient deficiencies (Figure 7). Wasting rates are highest in the Terai and equally visible in urban and rural groups. While the Mountain areas have the highest rates of stunting and zinc deficiency, they are estimated to have the lowest rates for wasting. Like stunting, wasting outcomes may also be linked to ethnicity. Wasting rates among different ethnicities mirror trends for stunting. Wasting is estimated to be lowest among Newar children at 2 percent, and higher among children belonging to historically disadvantaged castes such as Janajati (10-12 percent), Dalit (7-17 percent), and among Muslims (25 percent). Wasting rates for Brahmin and Chhetri vary among different geographic areas, from 7 to 19 percent (NNMSS 2016).

Nepal is also facing a nutrition transition with increasing trends in obesity and overweight. Nationally, the DHS estimates that 17 percent of women of reproductive age are overweight or obese. Rural areas in particular are experiencing an increase in overweight: between 2001 and 2016, rates of overweight or obesity among women of reproductive age were highest but remained relatively unchanged in urban areas, while they increased from 5 to 15 percent in rural areas (DHS 2001; 2016). More details related to overweight and obesity can be found in Main Message 11.

Nutrition data also indicates that topography, climate, and factors unique to agro-ecology play an important role in explaining nutrition outcomes in Nepal. Figure 7 breaks down child and maternal nutrition indicators by agro-ecological zones (Terai, Hills and Mountains). The data shows that different areas are vulnerable to different nutritional issues. For example, although stunting and zinc deficiency rates for children are highest in the Mountains, wasting and anaemia rates are highest in the Terai.[3] One of the reasons for higher zinc deficiency among the Mountain population compared to the Terai regions could be because of the lower zinc content of soils at elevation (Shively et al., 2021). This indicates that programmes and interventions for reducing malnutrition should use a geographically targeted approach.

Figure 7: Variation in stunting, wasting, anemia and zinc deficiency prevalence among children (0-59 months) across provinces, wealth quintiles and location in 2016 (DHS 2016, NNMSS 2016[4])



[3] Wasting rates are highest in the Terai among the three agro-ecological zones. However, among the seven provinces, wasting rates are highest in Karnali province (which is located across both Hill and Mountain areas).

[4] Several sources in Nepal provide data on wasting. Figure 7 uses DHS 2016 rather than the more recent NMICS 2019 because the latter does not provide data by AEZs.

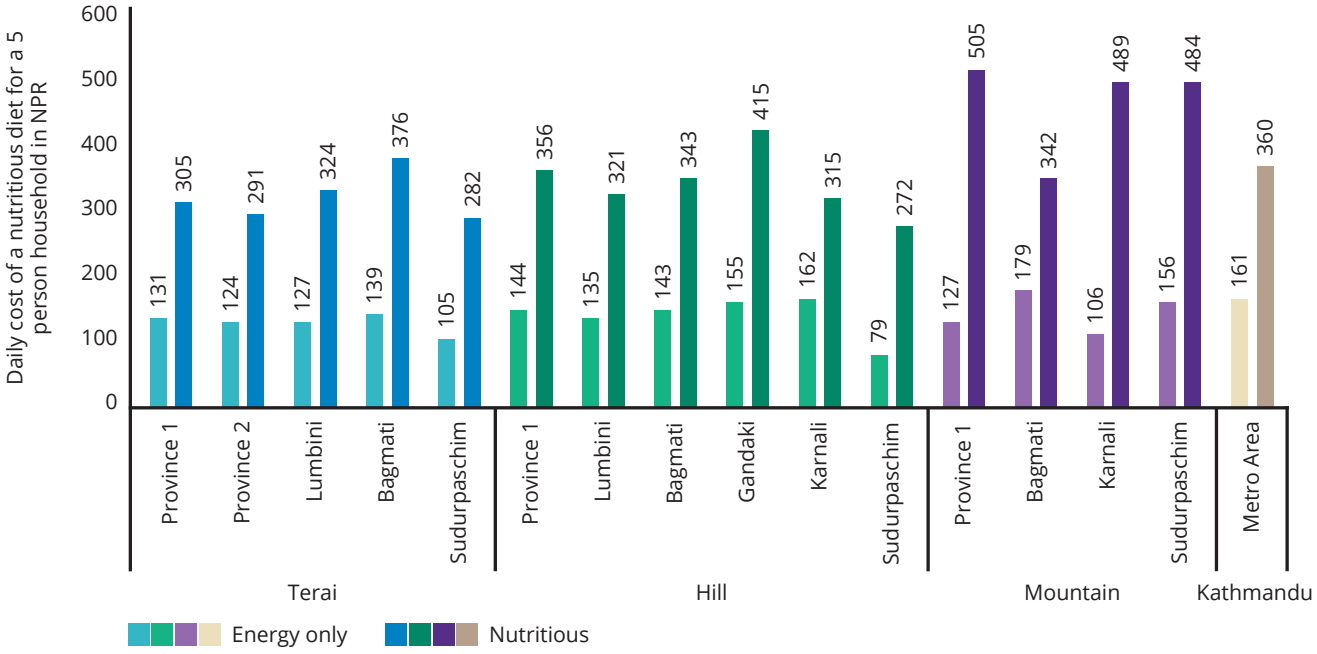
2.

The lowest cost nutritious diet is more than twice as expensive as a diet that meets only energy needs. The cost of a nutritious diet differs across geographic units and is particularly high in the mountains.

The FNG analysis estimated the costs of the energy-only diet and the nutritious diet for all 16 geo-units. Nationally per 5-person household per day, the average cost of the energy-only diet is NPR 141 (USD 1.22) and the average cost of the nutritious diet is NPR 348 (USD 2.91), translating into a 242 percent cost difference between the two. This large difference is because of the foods included in each diet. The energy-only diet is comprised of inexpensive staples and foods such as oil, while the nutritious diet is comprised of a diversity of food groups and includes cereals, animal source foods, fresh fruit and vegetables.

Figure 8 shows the cost of both diets by geo-unit. Across geo-units, the standard deviation for the energy-only diet was NPR 23 per household per day, while for the nutritious diet it was NPR 73, indicating that there is much greater regional variation in the cost of the nutritious diet across Nepal. Figure 8 also shows the patterns in diet costs across the agro-ecological zones. The lowest cost diets were generally found in the Terai, the costs increased somewhat in the Hills, and were highest in the more remote Mountains. The cost of the nutritious diet in Kathmandu was slightly higher than the national average (NPR 348), but still lower than in other more rural geo-units. Potential reasons for these price disparities are discussed further in Main Messages 4 and 5.

Figure 8: Cost of the energy only and nutritious diets by geo-unit (CotD 2021)



3.

At least one in five households would not be able to afford the lowest cost nutritious diet. In some mountain areas, over 60 percent of households would not be able to afford this diet.

Based on the cost calculation presented in Main Message 2, the FNG analysis estimated non-affordability, or what percentage of Nepali households would not be able to afford the energy-only and lowest cost nutritious diets. Nationally, at least 1 percent of households would not be able to afford the energy-only diet, and at least 22 percent of households would not be able to afford the lowest cost nutritious diet. Rates of non-affordability differ widely across geo-units as illustrated by Figure 9. Non-affordability rates hover around the national average in the Hill and Terai regions, but are more than double in the Mountains. Non-affordability is highest in the remote Mountain Sudurpaschim region and lowest in Kathmandu at 5 percent of households, reflecting the relatively higher income levels in the city. Among the Mountain geo-units, non-affordability is estimated to be the lowest in Bagmati province where Kathmandu is located, suggesting that proximity to Kathmandu, where wages are generally higher, explains lower non-affordability.

Figure 9: Non-affordability of the nutritious diet by geo-unit (dotted line represents national average) (CotD, 2021)

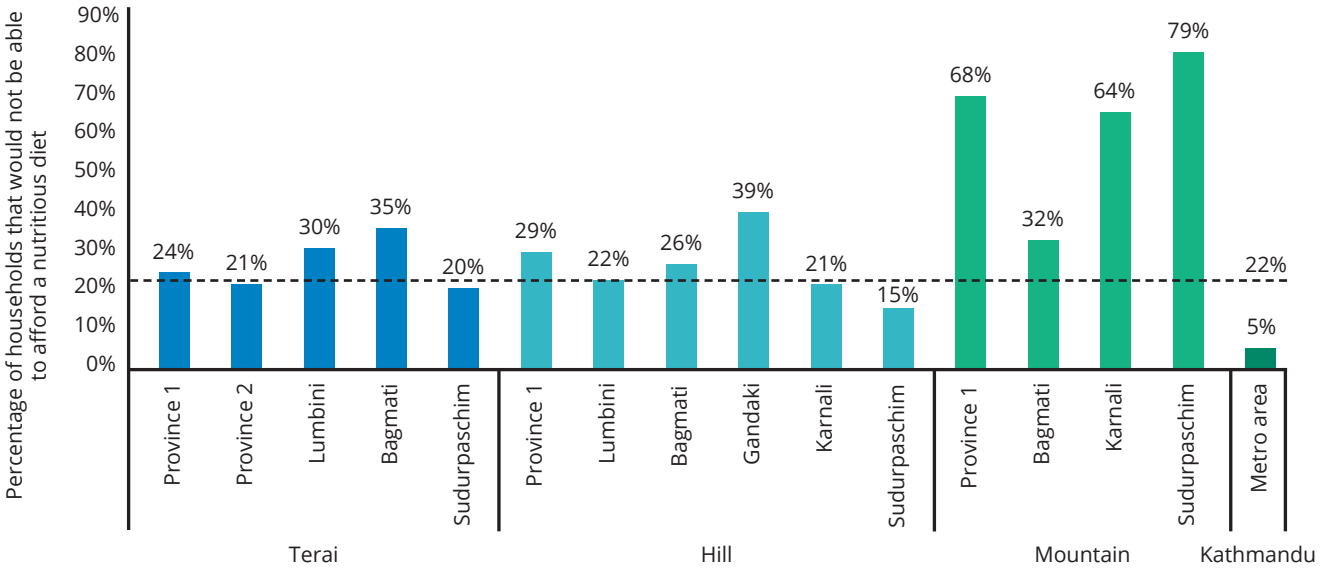


Figure 10 borrows from the 2020 SOFI report to illustrate the increasing levels of diet quality and the estimated cost and non-affordability at the different levels. The FNG analysis calculates the first two levels, the energy-only diet and the nutritious diet. The cost and non-affordability of a healthy diet, the third level in Figure 10, has been calculated for Nepal by Dizon et al. (2021). This diet includes foods from diverse food groups based on the recommended diet from South Asian food-based dietary guidelines and is intended to prevent all forms of malnutrition. Because the healthy diet is based on food-based dietary guidelines, it considers realistic food portion sizes and local preferences. The nutritious diet, which is optimized to meet nutrient needs at the lowest cost, does not consider realistic portion sizes or local preferences, and is therefore not an appropriate or culturally preferred combination of foods. A comparison of the three diets finds that healthy diets are more expensive than nutritious diets, reflecting the addition of more diverse foods which are often more expensive.

Almost all households in Nepal could meet their basic energy needs as diets comprised of staples, oils and fats are relatively inexpensive. However, the lowest-cost nutritious diets are far more costly than energy-only diets, and therefore a larger proportion of households (at least 22 percent) would be unable to afford it. As the nutritious diet is optimized to meet energy and nutrient needs at the minimum cost, the percentage of households that would not be able to afford this diet is likely to be much higher than 22 percent, because a self-selected nutritious diet would include more realistic quantities and preferred combinations of foods than those selected by the software.

While the healthy diet is only slightly more expensive (17 percent) than the nutritious diet, the increase in non-affordability is much higher (33 percent) and over half the households in Nepal would not be able to afford it. Considering that people do not choose their diets as optimally as the software does, the non-affordability of diets that meet nutrient needs is likely to be close to that of the lowest-cost healthy diet.

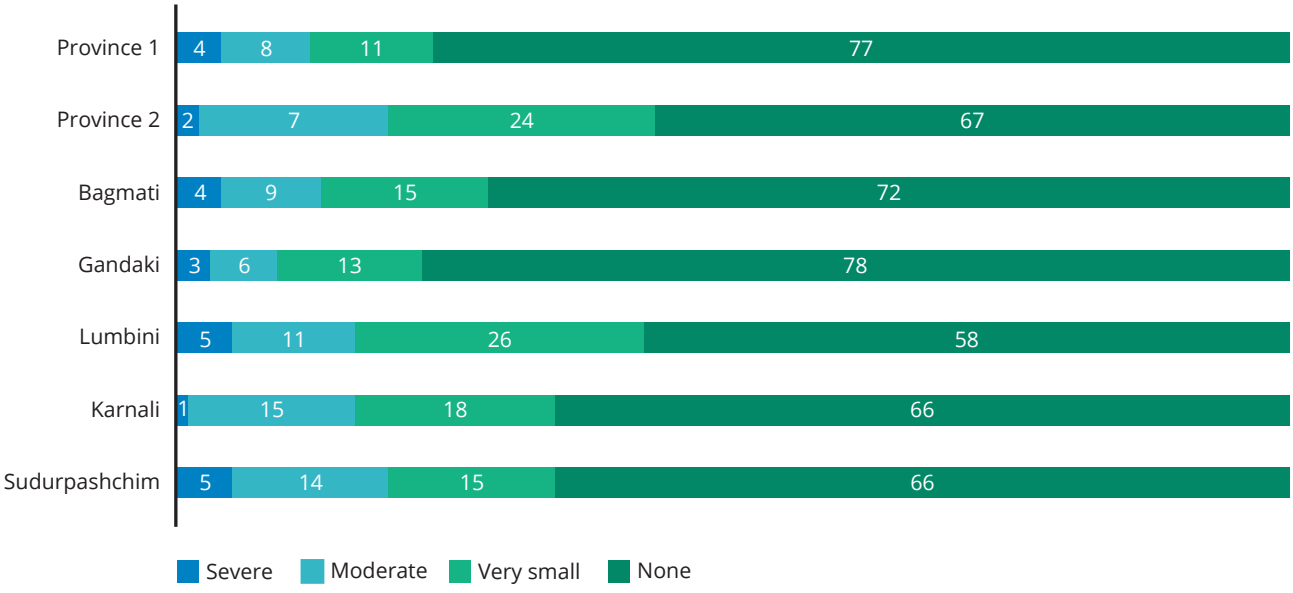
Figure 10: Three increasing levels of diet quality as defined by the 2020 SOFI report, and their respective costs and non-affordability. (figure adapted from FAO et al. 2020, with data for Nepal added from Dizon et al. 2021, CotD 2021)

Three increasing levels of diet quality

	Cost per capita	Non-affordability
HEALTHY DIET Includes foods from several food groups and has greater diversity within food groups	NPR 82	55%
NUTRIENT ADEQUATE DIET Meets required levels of all essential nutrients	NPR 70	22%
ENERGY SUFFICIENT DIET Meets needs for short-term subsistence	NPR 28	1%

Estimations of diet cost and affordability were based on data[5] collected before the COVID-19 pandemic. However, data from 2020 suggests that the depth of non-affordability is likely to have increased because of the related economic shocks Nepal faced. Nepal's economy and 40 percent of households depend on international remittances[6], which the World Bank predicts may have reduced by 15 percent because of COVID-19 restrictions (Walker T, Kwasoe Y, and Shrestha J, 2019). A survey carried out by WFP in April 2020 also found that household incomes were negatively affected by the pandemic across all provinces, as illustrated by Figure 11.

Figure 11: Households reporting a reduction in income because of COVID-19 (April 2020) (WFP 2020)



[5] Food price data was collected by the Nepal Rastra Bank using market survey data collection for CPI calculation between April 2019 and April 2020. Expenditure data was collected for the Nepali Annual Household Survey between September 2016 and July 2017 and adjusted for inflation to align with 2020.

[6] The 2016 Nepal Demographic and Health Surveys found that nearly 2 in 5 households had at least one migrant, either domestic or international, among household members.

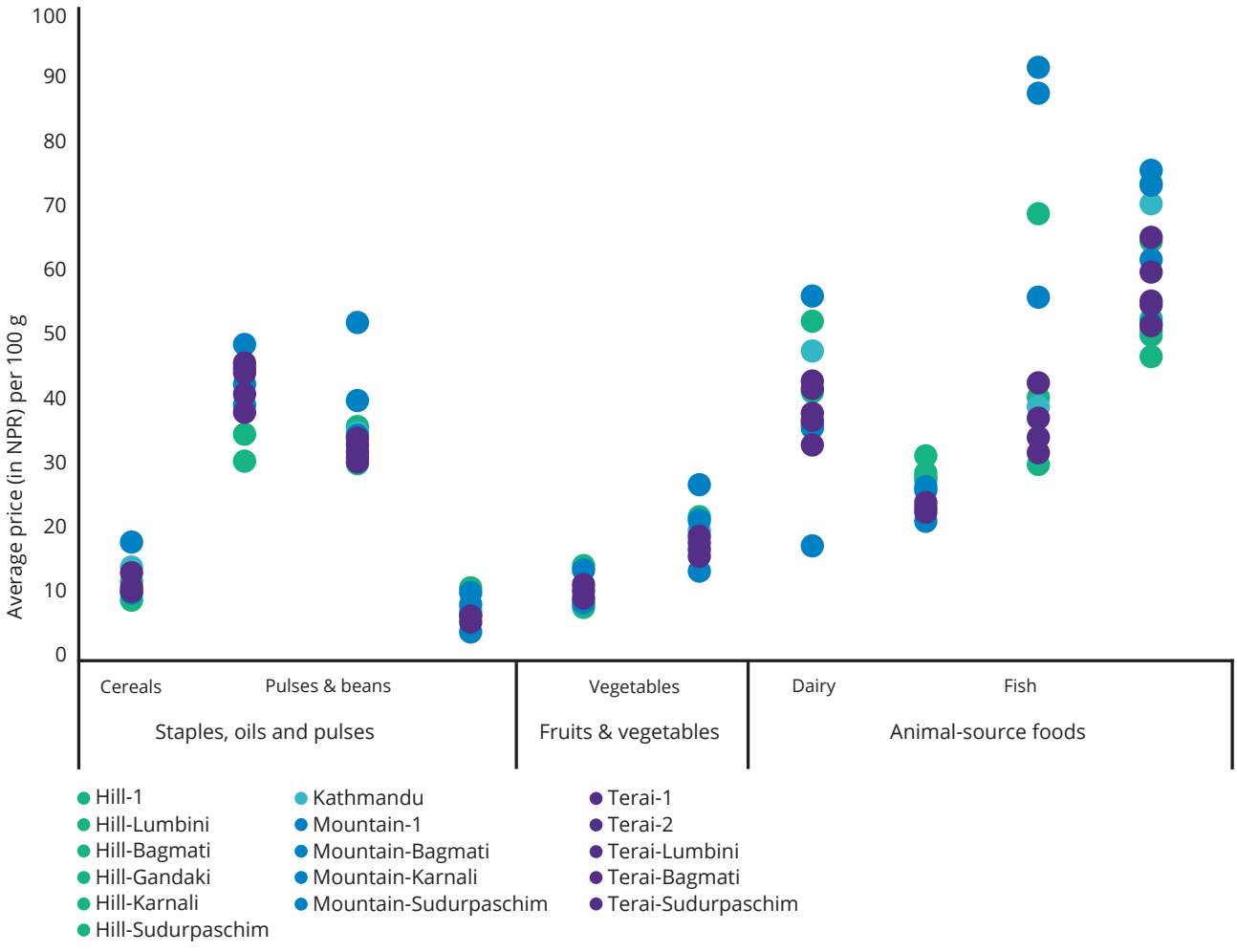
4.

In order to meet nutrient needs, households need to be able to access diverse diets which include foods like pulses, vegetables, and animal source foods. Prices for these foods differ widely across Nepal and are the highest for animal source foods.

Individuals need to consume diverse food groups in order to meet their nutrient needs. The CotD tool identifies which food items and in what proportions could meet nutrient needs at the lowest possible cost.[7] When examined at household level, nutritious foods such as those from animal sources, fruit and vegetables, make up around 75 percent of the optimized cost of the nutritious diet. Staples, such as cereals, roots and tubers, oils, and pulses, make up around 25 percent of cost, but contribute to most of the total food weight (42 percent). Staples contribute to the majority of energy needs (68 percent) in the optimized diet but lack sufficient micronutrients to cover the requirements of individual members of the household. Non-staple foods contribute only to about a third of household energy needs but are required to meet micronutrient needs. All vitamin B_{12} needs are met through animal source foods. Micronutrient-dense foods such as vegetables, fruit, pulses and animal source foods meet nearly all vitamin A needs, 90 percent of iron needs, 93 percent of calcium needs, and 61 percent of zinc needs.

Households must spend a relatively large share of their food budgets on non-staple foods to meet the nutrient needs of their members. This is often challenging for poor households in Nepal as the cost of nutritious foods tends to be higher than staple foods. Nutritious foods are also more expensive for households in more remote areas as availability is not equal across the country. Figure 12 shows the prices per 100g of different food groups by agro-ecological zones. While nutritious foods like fruit and vegetables are relatively inexpensive across all areas, prices of animal source foods are comparatively high and vary widely across Nepal. The prices of fish and meat are particularly high in the Mountain areas, although dairy products are comparatively less expensive.

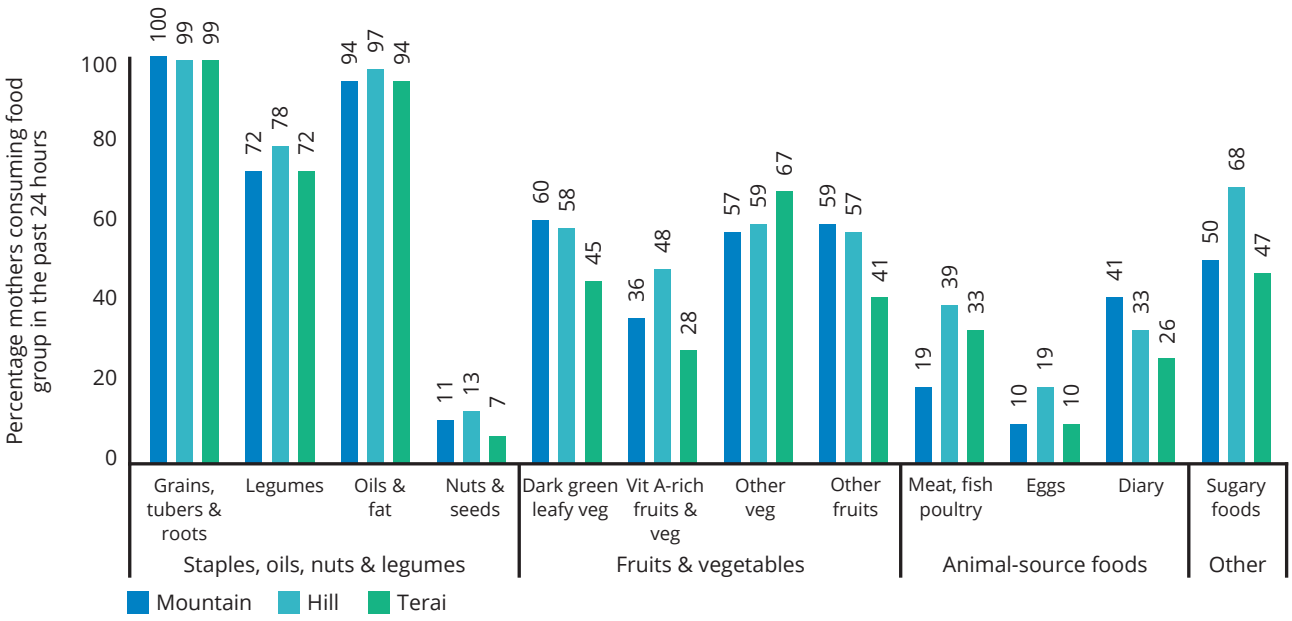
Figure 12: Commodity prices by geo-unit grouped by agro-ecological zone (Nepal Rastra Bank, 2020)



[7] The combination of foods which meet micronutrient needs at the minimum cost is not a recommended diet and is not designed to provide food-based dietary guidelines; rather, it shows which food groups can, at the lowest cost, contribute to coverage when consumed in varying proportions.

The ability of households to include particular foods into their daily diets is determined by their physical and economic access to these foods. Market data shows good availability of fresh, nutritious foods in the Hills and Terai areas, but the number of unique food items available in markets in the Mountains is lower than in the rest of country, particularly for animal source foods, vegetables, and pulses. Figure 13 shows food consumption by mothers, according to food group and agro-ecological zone, on the day preceding the survey. Consumption of staple foods like cereals, pulses, and oil are similar across geographies, but that of nutritious non-staple foods like fruit, vegetables, and animal source foods differs widely. Among the latter foods, prices could be a driver of consumption: fish and meat consumption is lowest in the Mountain areas, while dairy consumption is highest. Alarmingly, the proportion reporting consumption of sugary foods was roughly equal to, or higher than, the proportion reporting consumption of either vegetables or animal source foods, suggesting that these foods are easily available and selected (Figure 13).

Figure 13: Percentage of mothers who consumed particular food groups on the day preceding the survey (DHS 2016)



5.

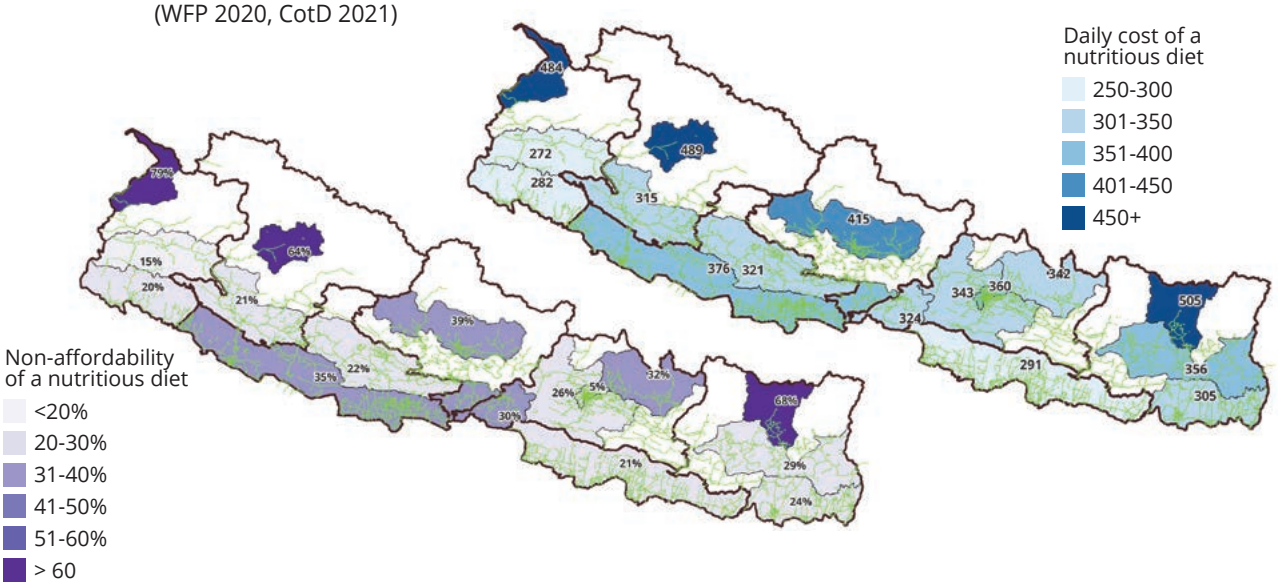
Access to markets is crucial to ensure households have access to a diverse selection of fresh nutritious foods. Investment in infrastructure is necessary to ensure households across agro-ecological zones can reach markets.

Road access in Nepal has improved over the years. There has been significant investment in infrastructure projects resulting in the road network increasing from 2,700 kilometres in the early 1970s to 42,000 kilometres (Exemplars in Global Health, 2019). However, even now just over half of the rural population (54 percent) in Nepal lives within walking distance of two kilometres of a road in good or fair condition as measured by the Rural Access Index (RAI) in 2015. The RAI varies across the country. In the southern Terai regions, where road and population density are high, the RAI is around 80 percent in some areas, while it is low in the Mountain regions which have more rugged terrain and a poor road network. Notable exceptions are the areas surrounding the metropolis of Kathmandu where road access is robust and the RAI is comparatively good.

Substantial research links road access to nutrition outcomes in Nepal. Improvements in road access and quality have been found to reduce the level and variability of the prices of rice and wheat and to off-set the effects of climate shocks. Households with better road access tend to spend more on non-staple foods and have better nutrition outcomes among children aged under 5.

Figure 14 compares the road networks in Nepal to the cost and affordability of nutritious diets. The cost of the nutritious diet is significantly higher in mountain areas where the road network is poorer. However, there appears to be no correlation between road networks and the cost of the nutritious diet in the Hills and the Terai regions. Road networks do appear to be linked to affordability of nutritious diets, indicating that areas with better infrastructure and access also tend to have higher incomes as there may be more income generating opportunities in these areas (WFP GeoNode).

Figure 14: Nepali road networks overlaid on FNG results for cost and affordability of nutritious diets (WFP 2020, CotD 2021)

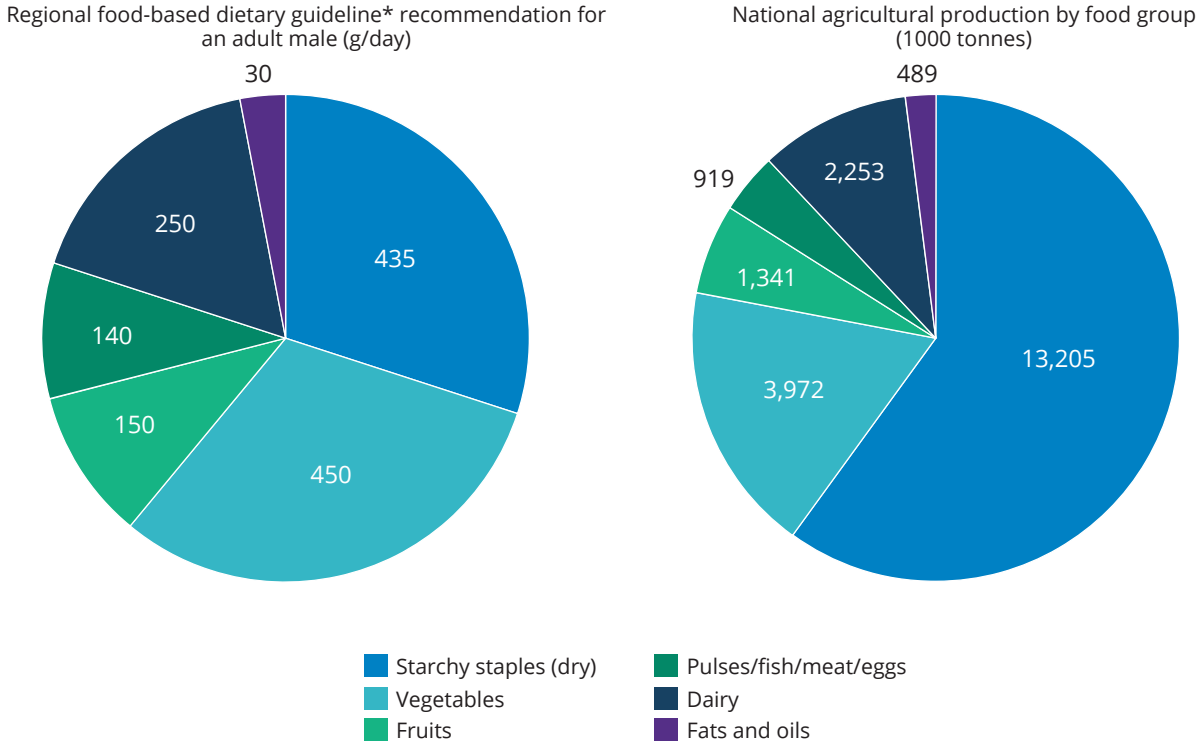


6.

Agriculture is dominated by staple food production and characterised by low productivity. Diversifying homestead production of livestock and fresh foods and commercial production of non-staple foods is crucial to improving dietary intake and affordability.

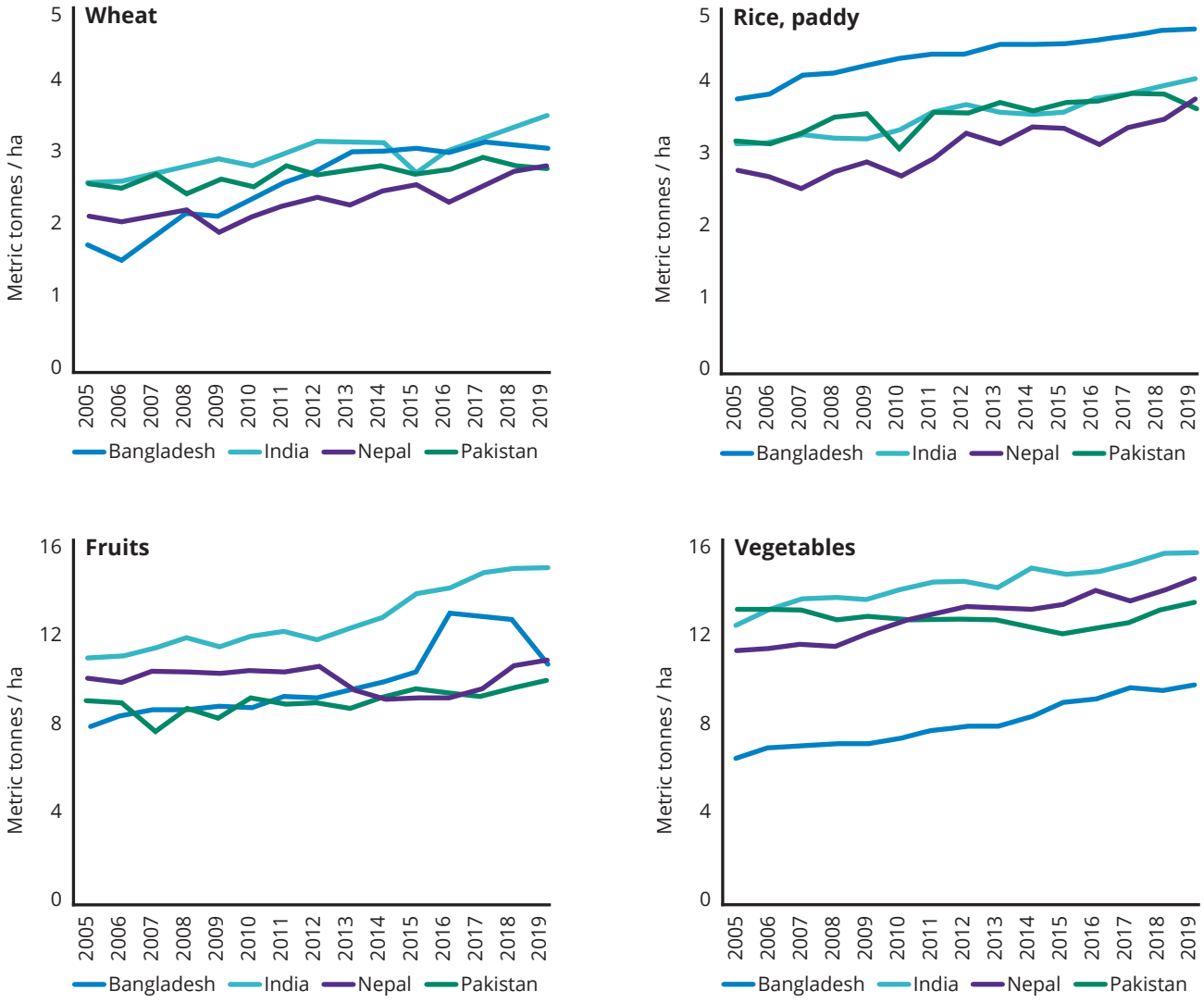
Agricultural production in Nepal continues to be primarily cereals. Figure 15 compares dietary intake by food group (as recommended by harmonized regional food-based dietary guidelines) with national agricultural production (in 2018). Agricultural production in Nepal does not align with recommended intake by food group as it is dominated by cereal production and lacks production of fruit, vegetables, and protein-rich animal source food. This indicates a need for diversity in production to ensure that adequate amounts of diverse and nutritious foods are available.

Figure 15: Comparison between recommended diets for South Asia and national agricultural production in Nepal by food group. (*Harmonised dietary guidelines based on Bangladesh and India FBDGs; FAOSTAT 2018)



Cereals occupy eight times more cultivated land than fruit and vegetables, despite these crops being less productive and lower value. Figure 16 compares the agricultural productivity of cereals (rice and wheat) and fruit and vegetables with other countries in South Asia. Nepal is comparatively disadvantaged in producing rice and wheat as it has the lowest yields per hectare among its neighbours. However, Nepal has progressively improved yields and production of fruit and vegetables and now has a comparative advantage for these commodities over other countries in the region, such as Pakistan and Bangladesh. The productivity and economic value of fruit and vegetables is greater than that of staple foods. This indicates that reorientation towards more diversified production could benefit the food system in terms of greater availability of nutritious foods and higher incomes for producers.

Figure 16: Comparison of yield of rice and wheat with fruit and vegetables in South Asian countries, 2005 to 2019 (FAOSTAT)



Agricultural production can benefit households in terms of income generation and diet diversification. Using data provided by the USAID-funded Helen Keller International Suaahara project, the FNG modelled the impact of agricultural production interventions which can provide food for a household's own consumption and income through sales of surplus production. In line with Suaahara's objectives, the modelling included the production of fresh garden food and eggs. The specific parameters used in the model are provided in Table 2.

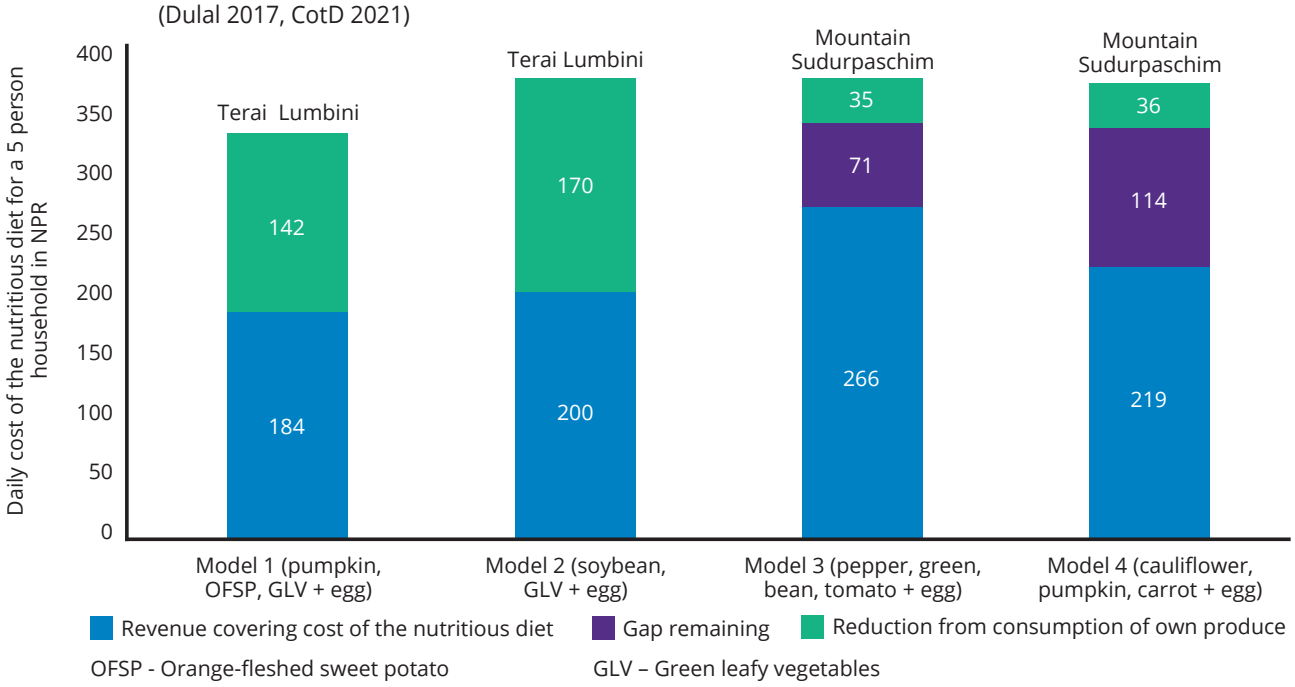
Table 2: Parameters used in agricultural production gardening based on the Suaahara programme (HKI 2021)

Model	Modelling Zones	Season	Production Commodities	Amounts Consumed by Household (weekly)
Homestead Garden 1	Terai Lumbini	Non-lean season 1 (September-January)	Soybean Pumpkin OFSP Colocasia leaf Egg	Produce: 12.5 kg Eggs: 12
Homestead Garden 2	Terai Lumbini	Lean season 1 (January-March)	Mustard leaf Spinach Soybean Egg	Produce: 10 kg Eggs: 9
Homestead Garden 3	Mountain Sudurpaschim	Lean season 2 (June-September)	Capsicum Green bean Tomato Egg	Produce: 12.5 kg Eggs: 9
Homestead Garden 4	Mountain Sudurpaschim	Lean season 1 (January-March)	Cauliflower Pumpkin Carrot Egg	Produce: 12.5 kg Eggs: 9

Note: The potential additional burden placed on women who are employed or otherwise engaged in household chores and activities was not able to be captured in the model, and it is crucial to consider this in the design and implementation of agricultural programmes. The Suaahara project was made possible through considerable training and other support mechanism which enabled participant engagement and for the project to scaled up across Nepal.

All four gardening packages showed good potential for covering the cost of the diet from production and sales. Figure 17 shows that for the gardens modelled in Terai Lumbini, the combination of consumption (shown in the dashed line) with the income generated through sales of produce at wholesale prices (shown in blue)[8] could cover the entire cost of the nutritious diet. The two diets modelled for Mountain Sudurpaschim also cover substantial portions of the total cost of the nutritious diet, but still leave a gap (shown in purple) that would need to be covered by other household resources or through other interventions.

Figure 17: Coverage of the cost of the nutritious diet through consumption and sale of produce and eggs (Dulal 2017, CotD 2021)



Note: While each of the foods selected in all four models contributed to covering micronutrient needs, the selection of the final food basket included in each model makes a large impact on how much consumption reduces the cost of the nutritious diet. The impact of the foods selected for Terai Lumbini have a greater impact than foods selected for Mountain Sudurpaschim. This difference is driven primarily by the large impact that soybeans and green leafy vegetables make. Soybeans provide a large share of daily energy and vitamin B1, vitamin B2, and niacin, and the green leaves provide over 100 percent of vitamin A and vitamin C needs and contribute meaningfully to covering calcium, magnesium, and folic acid.

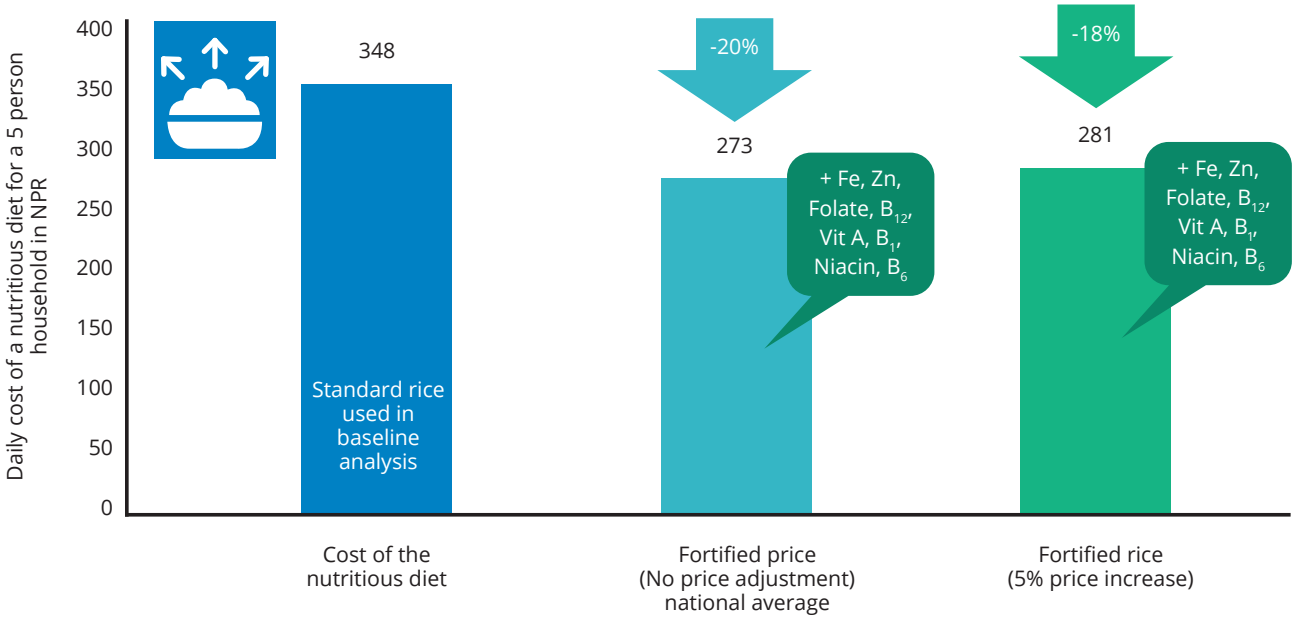
[8] Wholesale prices were assumed to be 40 percent of market prices. Based on reporting from the Kathmandu Post (2020).

7.

Fortification of staple foods can provide an additional source of micronutrients for households that cannot access enough fresh foods. Post-harvest fortification of rice and wheat flour and biofortification of wheat have good potential to increase the micronutrient content of foods that are consumed by a large part of the population.

The FNG analysis found that good opportunities to increase the availability of micronutrients in the food supply come from industrial fortification of staple foods, point-of-use fortification with micronutrient powder (MNP), and fortified complementary foods for infants. Rice is the most widely consumed staple food in Nepal. A majority of households in Nepal (60 percent) regularly purchase industrially milled rice, with the highest proportion of consumers in the Mountain areas (77 percent of households) and among the lowest wealth quintile (79 percent of households). This indicates that fortified rice is a suitable vehicle for improving nutrient intake of those who are unable to fulfil their micronutrient requirements from other sources. The FNG modelled the potential benefits if households were to purchase and consume fortified rice instead of unfortified rice. The model compared nutrient intake and the cost of the nutritious diet for households consuming unfortified rice and those consuming rice fortified post-harvest with a pre-mix in line with WFP's fortified rice specification. Results for this model, shown in Figure 18, illustrate that even if the price of fortified rice is five percent more than that of unfortified rice, it can reduce the cost of nutritious diets by one fifth.

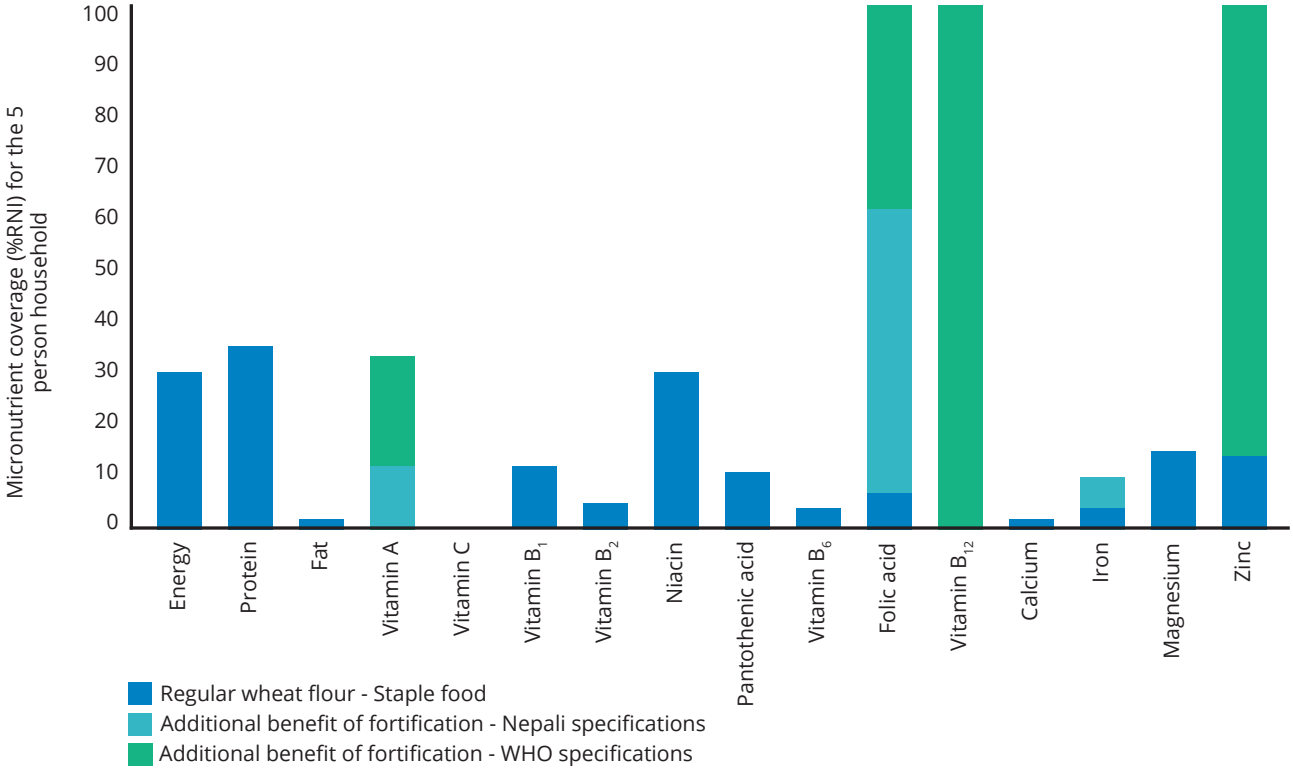
Figure 18: Reduction in the cost of the nutritious diet when including fortified rice, under two pricing scenarios (WFP 2020, CotD 2021)



The analysis found that the potential benefits of rice fortification differed across agro-ecological zones. Under the five percent price increase scenario, consumption of fortified rice instead of unfortified rice reduced the cost of the nutritious diet for households in the Mountains, Hills and Terai by 28 percent, 17 percent and 15 percent respectively.

At the time of analysis in 2020, the national standards for fortification of wheat flour in Nepal were below WHO recommended specifications. Although wheat flour fortification is mandatory in Nepal, the Food Fortification Initiative estimates that only 20 percent of industrially milled wheat flour is fortified. According to the NNMSS 2016, only 36 percent of atta (fine wholewheat flour) and 13 percent of maida (refined flour) was fortified to standard (60 mg iron/kg flour) when tested at household level for iron. To show the additional benefits of adopting WHO standards, the FNG analysis modelled the cost of a nutritious diet for a household consuming Nepal-standard fortified wheat flour and for consuming wheat flour fortified to WHO standards. The model assumes that the household consumes wheat flour and rice as its main staples. The results show that consuming wheat flour fortified at Nepali standards rather than unfortified wheat flour, reduces the cost of the nutritious diet by 8 percent. However, if the wheat flour was fortified to WHO standards, the cost of the nutritious diet reduced by a further 8 percent. This is because the WHO standard of fortified wheat flour provides additional essential micronutrients such as vitamin A, folic acid, vitamin B_{12} and zinc (Figure 19).

Figure 19: Micronutrient coverage provided by standard wheat, plus additional coverage provided by the Nepali fortified wheat flour standard and the WHO fortified wheat flour standard (WHO, WFP 2021)



Biofortified wheat can reach those households which do not purchase industrially produced wheat flour but consume either the wheat they produce themselves, or flour processed at local, small-scale mills. Using the specifications provided by HarvestPlus, the FNG analysis examined the benefits of replacing wheat with biofortified wheat as a staple food (household staple food consumption was assumed to be 50 percent rice and 50 percent wheat flour). While the cost of the nutritious diet would only decrease marginally (two percent), the biofortified wheat provides additional coverage of iron and zinc, two micronutrients that are expensive to access from the existing food system in Nepal and would be specifically important for households that do not have access to industrially milled fortified flour.

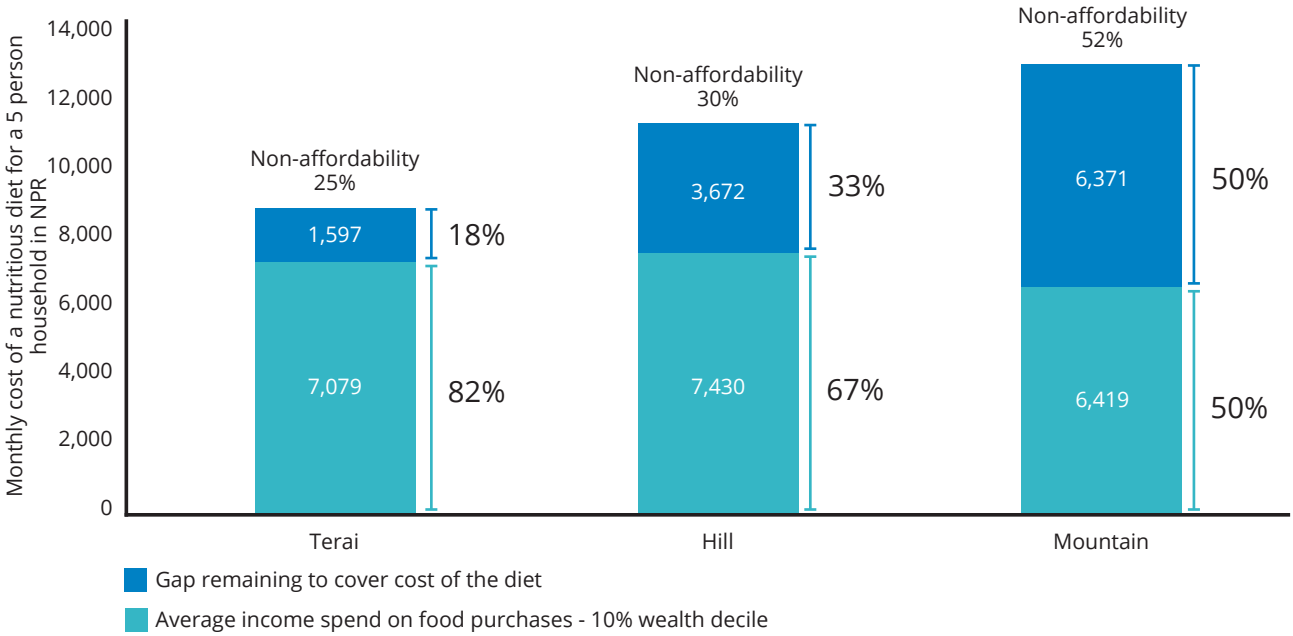
8.

Economic barriers prevent households from accessing nutritious diets. Social safety nets can contribute towards making a nutritious diet more affordable for the poorest households, particularly those in remote areas.

A large proportion of Nepali households live in economic and/or multidimensional poverty. As described in Main Message 3, access to nutritious diets is hindered by economic incapacity. Drivers of poverty differ between provinces and agro-ecological zones. Karnali and Province 2 have the highest levels of multidimensional poverty; at least one in every two households is poor. In Karnali, poverty is driven primarily by low wealth (among other factors) while in Province 2 it is driven by poor development outcomes such as those related to sanitation and schooling. The differing structural dimensions of poverty across Nepal indicate a need to focus on long-term systems approaches to improving economic outcomes and critical and immediate social assistance.

The FNG analysis examined the depth of unaffordability of the nutritious diet for the different agro-ecological zones, as shown in Figure 20. It shows how far households in the bottom ten percentile (in terms of expenditure) are from being able to afford a nutritious diet. Households in the Mountains have a larger affordability gap (50 percent) compared to those in the Hills (33 percent) and Terai (18 percent), although in the latter gaps to access nutritious diets remain. The affordability gap in the Mountains is driven by relatively higher costs of nutritious food items and comparatively lower incomes than the other agro-ecological zones.

Figure 20: Affordability gaps for the nutritious diet by agro-ecological zone (AHS 2017, CotD 2021)



Social protection programmes have the potential to contribute to reducing the gap in meeting the cost of the nutritious diet. The FNG analysis examined two national government social assistance programmes, the Child Cash Grant and the Senior Citizens' Allowance. The Child Cash Grant is currently limited to selected districts of the country while the Senior Citizens' allowance is a national programme. Under the Child Cash Grant, households with children under 5 are provided with NPR 400 per month for up to two children. Figure 21 shows the extent to which the cash transfer covers the cost of the nutritious diet for a child under 2 and for the household in the Mountain zone of Karnali province (one of the areas where this programme is currently implemented).

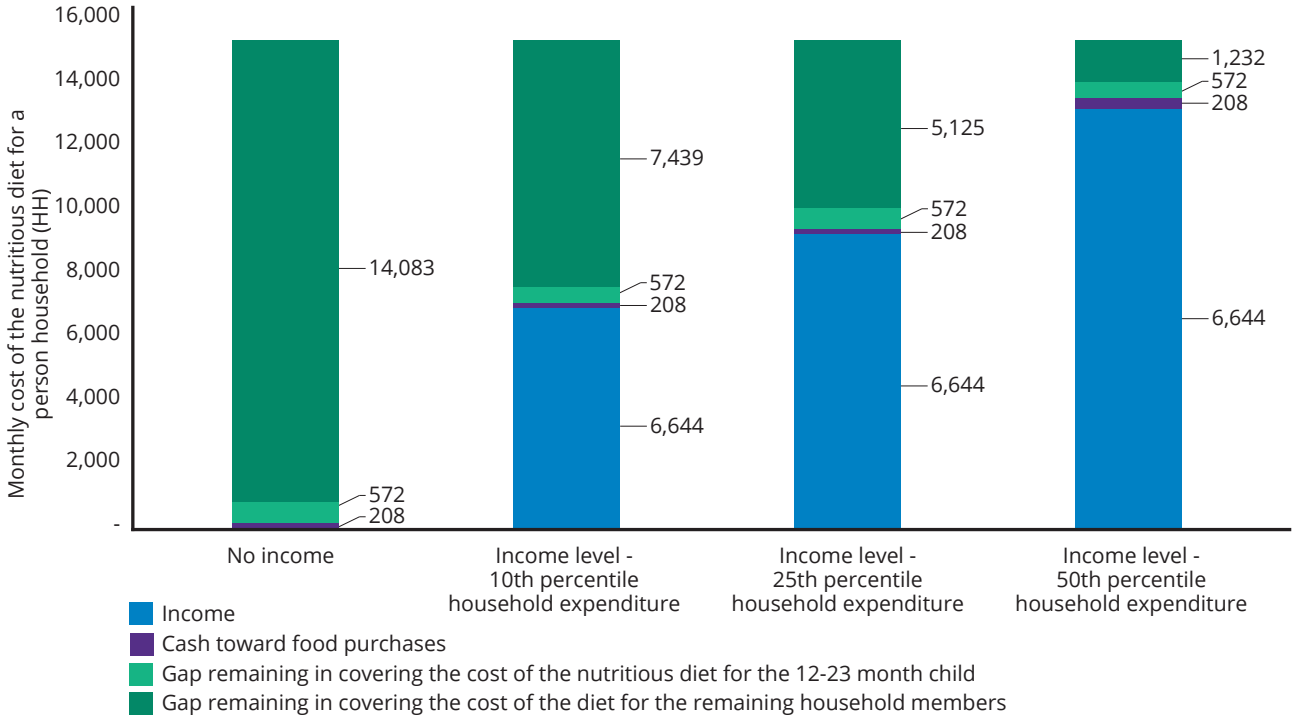
Assuming that 52 percent of the cash transfer goes towards food purchases[9], the current transfer amount only covers 35 percent of the total cost of the diet for the child under 2, and less than 2 percent of the total household cost of the nutritious diet. Even for households spending the median amount on food purchases (shown by the last bar in the figure), the addition of the transfer to current household food expenditure does not enable the household to fully cover its cost of the nutritious diet. This indicates the need to increase the size of the cash transfer. It is important to note that social and behaviour change strategies should be used to complement nutrition-sensitive social protection programmes like the Child Cash Grant, so that households can make healthier food choices and maximize the nutritional value of the

[9] According to the Annual Household Survey 2016/2017, at the national level Nepali households spend on average 52 percent of their income on food.

transfer. If households were to purchase foods which do not meet energy and nutrient needs (i.e. unhealthy foods or foods poor in nutrients), the efficacy of the transfer would be lower than what has been assumed in these calculations.

In addition to larger transfers, horizontal expansion to other districts must also be prioritized. At the current transfer size, the addition of the cash grant to the Terai, Hills, and Mountain regions, and Kathmandu, could cover 60 percent, 46 percent, 49 percent, and 50 percent respectively of the total cost of the diet for the child under 2, which is higher than in Karnali-Mountains.

Figure 21: Coverage of the cost of the nutritious diet by the child cash grant under various household (HH) income scenarios (UNICEF, AHS 2017, CotD 2021)

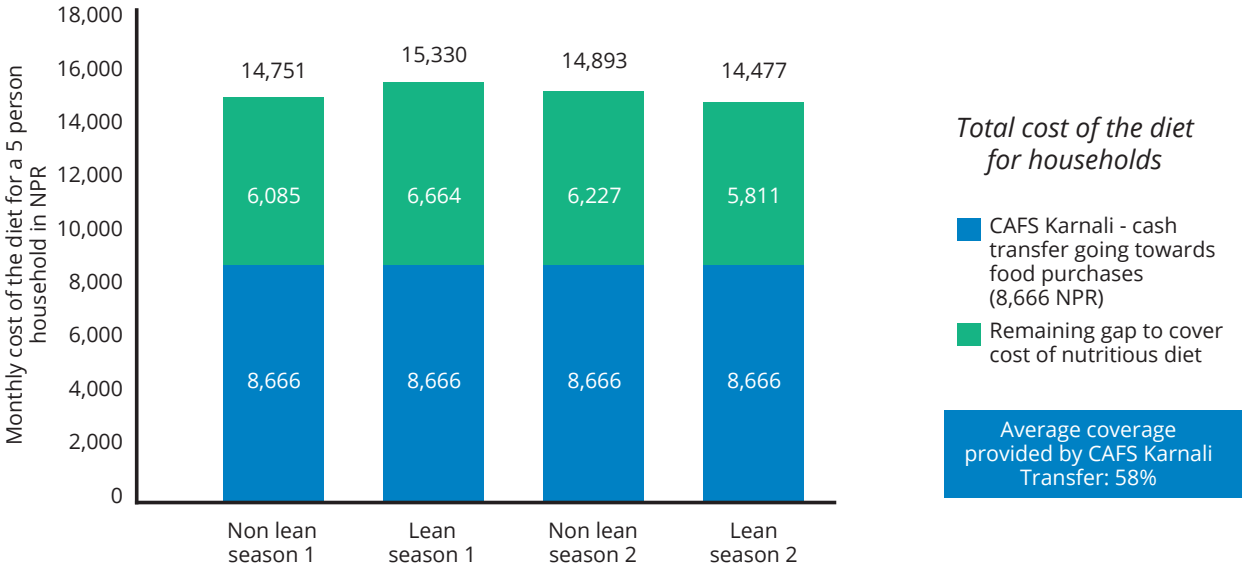


Under the Senior Citizens' Allowance, a person over 70 years of age receives NPR 2,000 per month. To assess the impact of the allowance on covering the cost of the diet for a household with an elderly person, the FNG modelled household was revised to replace the adult man with an elderly woman. The analysis assumed that 52 percent of the cash transfer (i.e. NPR 1,040) was used for food purchases. On average, the allowance covers less than half (47 percent) of the monthly cost of the nutritious diet for an elderly woman, and only 10 percent of the total household nutritious diet cost.

The FNG analysis also modelled the impact of cash-for-work programmes like WFP's CAFS Karnali programme. It provides beneficiaries with 60 days of paid employment and a total cash payment of NPR 40,000 in selected districts of the Mountain Zone in Karnali Province. Assuming one member of the household (with no other source of income) works for three months and spends 65 percent of their earnings on food, the cash provided by the programme could cover only three fifths of the cost of the nutritious diet for the household (see Figure 22).

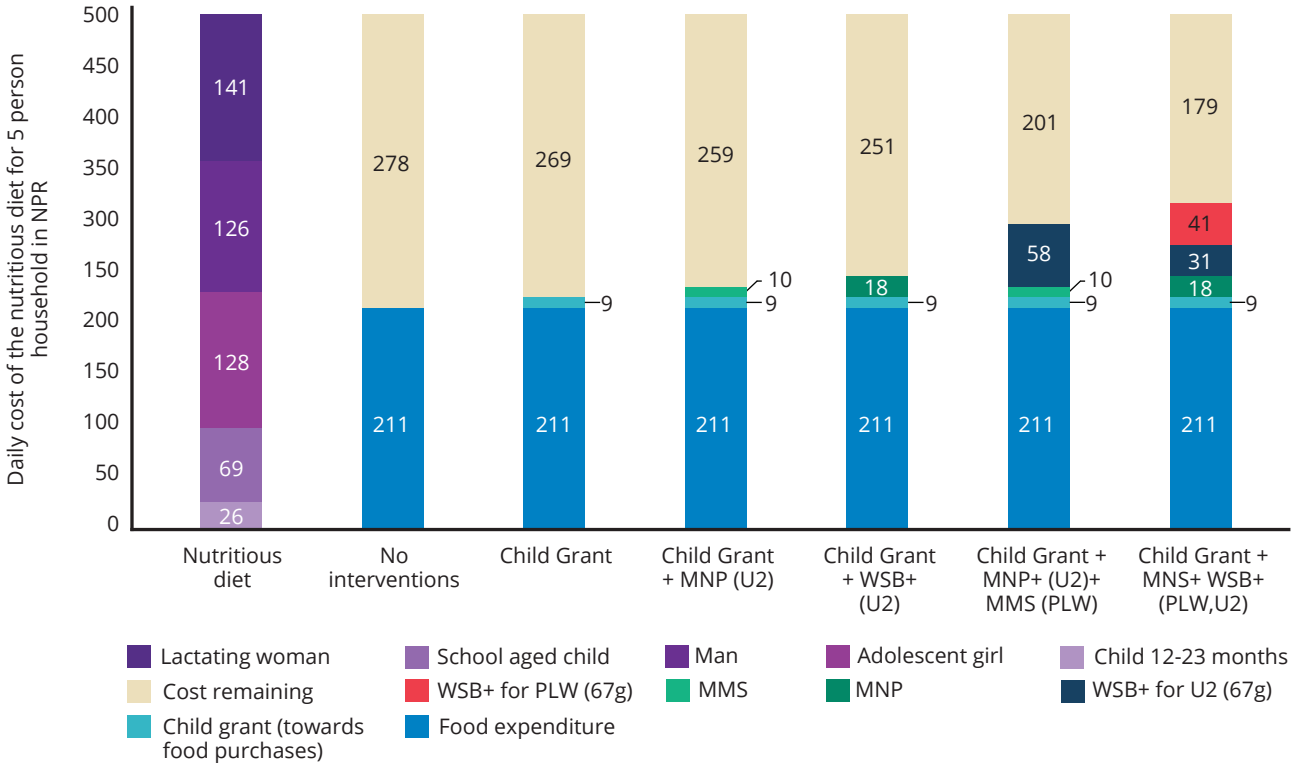
[10] The number of stunted children for 2019 was calculated using population census data from 2011.
[11] Half of the women (50%) had consumed food from 5 or more of 10 food groups (grains/tubers/roots/starchy foods, legumes, meat/fish/poultry, dark green leafy vegetables, fruit and vegetables rich in Vitamin A, other vegetables, other fruit, nuts/seeds, eggs, and cheese/yoghurt/other milk products).

Figure 22: Coverage of the cost of the nutritious diet provided by the CAFS Karnali transfer (CotD 2021, WFP 2021)



Households may receive social assistance from multiple programmes along with other nutrition services. For households in the bottom 10 percentiles of expenditure, adding nutritious foods and supplements such as daily multiple micronutrient supplement (MMS) for the pregnant and breastfeeding woman (PLW), Super Cereal (WSB+) for the PLW and child under 2 (U2), or micronutrient powder (MNP) for U2, to the CAFS Karnali transfer, would further increase coverage of the cost of the diet from 58 percent to 77 percent. Figure 23 shows that when additional interventions are added on top of the Child Grant, the combined coverage of the household's nutritious diet cost increases to 63 percent compared to 45 percent when only the Child Grant is provided. The impact of social assistance programmes on reducing the cost of the nutritious diet can be increased by using the social assistance platform to provide other targeted services that reduce the cost of the nutritious diet. For example, households that receive the Child Grant could also receive specialised nutritious foods for the children. Main Message 12 discusses in further detail how layering interventions can enhance the impact on making nutritious diets more affordable.

Figure 23: Coverage of the daily cost of the nutritious diet through the child cash grant and layering of additional nutrition-specific interventions



9.

The breastfeeding woman is the most nutritionally vulnerable individual in the household, putting her and her child under 2 at heightened risk of malnutrition. Targeted interventions such as supplementation or provision of nutritious foods for mother and child could improve their nutrient intake.

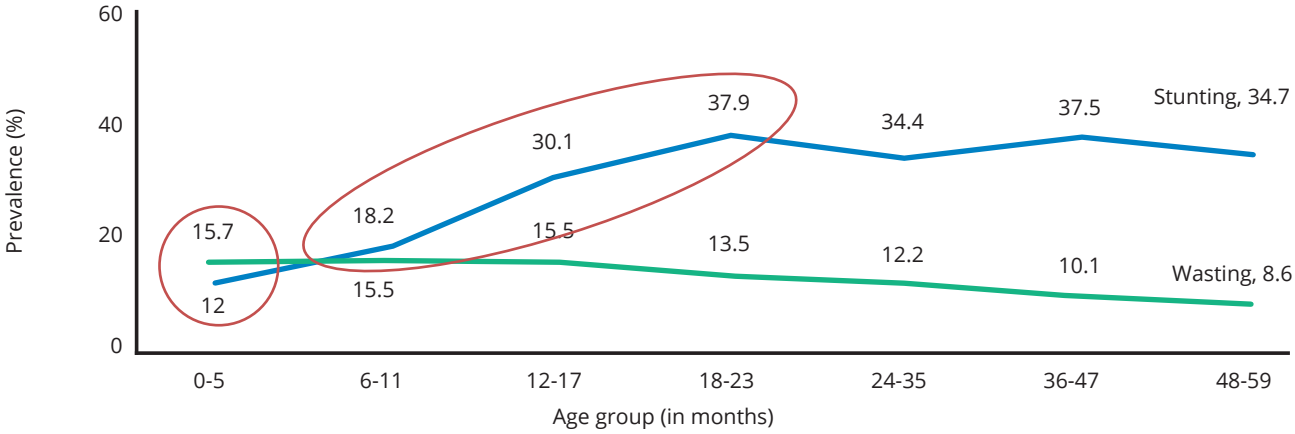
While stunting rates in Nepal have declined by half since 2001 and the number of stunted children by approximately 34 percent[10], stunting continues to affect almost one in three Nepalese children under 5 (NDHS 2001, NMICS 2019, Population and Housing Census 2001 and 2011). Determinants of nutritional status of children include the nutritional status of their mothers and the behaviours adopted by their caregivers (Lancet series on Maternal and Child Nutrition, 2008). According to the 2016 DHS, 17 percent of women are thin and just 50 percent consume an adequately diverse diet[11], indicating risk of poor maternal nutrition.

In Nepal, wasting rates are the highest among children under 6 months (16 percent), reflecting a poor start in life arising from factors such as low birth weight, poor maternal nutritional status, poor hygiene, and exposure to illness (see Figure 24). This indicates the need for improvements in antenatal care, support for better nutrition during pregnancy, and an increased focus on reducing early child-bearing, a risk factor for low birth weight. Fourteen percent of women in Nepal (20-24 years) reported having had a child before the age of 19 years (DHS 2016). High rates of wasting in children under 6 months also indicates the need for exclusive breastfeeding which provides the infant with access to essential nutrients and is important from a hygiene and immunological perspective. To improve rates of exclusive breastfeeding, mothers need knowledge and guidance on its importance, and they need to be supported and enabled to breastfeed, including nutrition support when necessary.

Inadequate breastfeeding practices can also raise the cost of the nutritious diet for a child during the complementary feeding period (6–23 months). Results from the FNG analysis show that the daily cost of nutritious diet for a child of 12-23 months who receives the optimal amount of breastmilk is NPR 19.80. If the child were to receive half the optimal amount, the cost would increase by 30 percent to NPR 25.7 per day, and if the child were not breastfed at all, the cost would substantially increase to NPR 32.40 per day (by 64 percent).

In addition to breastfeeding, the timely introduction of complementary feeding at six months and the quality and quantity of complementary foods given to children, are crucial for nutritional development. Data from Nepal shows that stunting rates increase drastically between the ages of 6 and 23 months, indicating the need for better complementary feeding practices (NMICS 2019; see Figure 24).

Figure 24: Stunting and wasting prevalence among children from birth to 59 months in Nepal (NMICS 2019, Chaparro et al 2014)

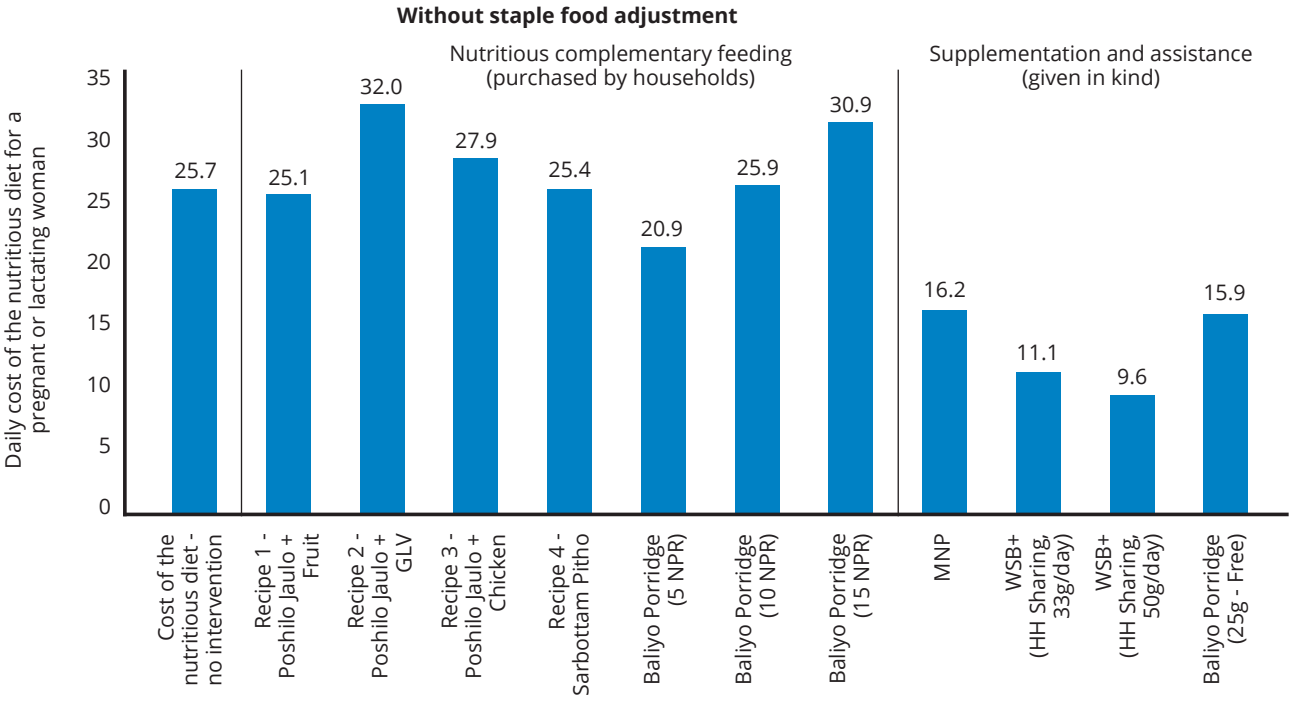


The FNG analysis modelled the impact of a child receiving a portion of a nutritious local complementary feeding recipe[12] or a portion of Baliyo porridge, a locally produced fortified blended flour (FBF), instead of a standard portion of cereal staple food. The analysis (as shown in Figure 25) was done for different price level scenarios as these foods would need to be purchased by the household. The cost of the diet either increases or remains the same when these foods are provided, reflecting the higher cost of the nutrient-adequate diet when including these foods. However, if coupled with other assistance, such as the child grant (discussed in Main Message 8), the economic burden for the household to purchase these foods can be offset.

[10] The number of stunted children for 2019 was calculated using population census data from 2011.
[11] Half of the women (50%) had consumed food from 5 or more of 10 food groups (grains/tubers/roots/starchy foods, legumes, meat/fish/poultry, dark green leafy vegetables, fruit and vegetables rich in Vitamin A, other vegetables, other fruit, nuts/seeds, eggs, and cheese/yoghurt/other milk products).
[12] Recipes were shared by UNICEF. Recipe 1 includes 17g wheat flour, 17g maize flour, 17g soybean, and 20g banana; Recipe 2 includes 17g wheat flour, 17g maize flour, 17g soybean, and 20g of green leafy vegetables (spinach); Recipe 3 includes 17g wheat flour, 17g maize flour, 17g soybean, and 5g chicken; and Recipe 4 includes 17g rice, 17g lentils, 3g ghee, 3g liver, 6g carrot, and 5g spinach.

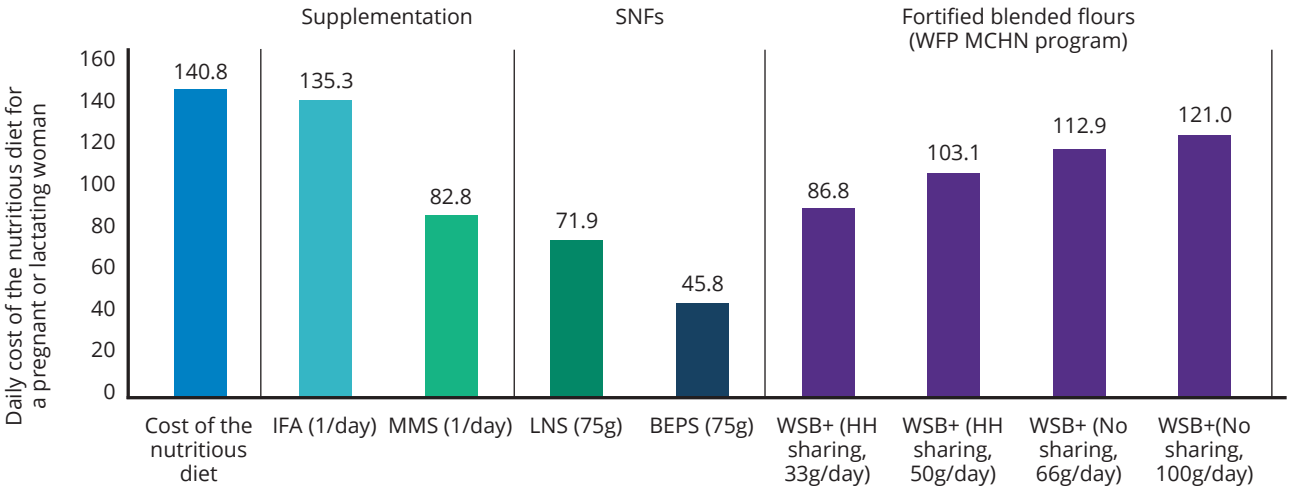
The FNG analysis also modelled the impact on the cost of the diet if specialised nutritious products such as Micronutrient Powder[13] (MNP), Wheat-Soy Blend Plus (WSB+) and Baliyo Porridge were provided to the household in-kind through food assistance interventions, health centres, or other platforms such as social assistance programmes. Given that these are provided for free to the household, the reduction in the cost of the diet is significant. For example, when children are given WSB+, the daily cost of their nutritious diet reduces by 57 to 63 percent (depending on the extent to which the food provided is shared with other household members).

Figure 25: Reductions in the cost of the diet for the child 12-23 months under market-based interventions (purchased by households) and programmatic interventions (given in kind)



The CotD analysis finds that the breastfeeding woman accounts for 30 percent of the household's total cost of the nutritious diet. Lactation requires intake of additional energy, protein and micronutrients, which raises the cost of meeting the woman's nutrient needs. These increased needs can be covered by the provision of specialised nutritious foods and/or micronutrient supplements such as Iron and Folic Acid (IFA) tablets or Multiple Micronutrient Supplements (MMS); specialized nutritious foods (SNFs) like lipid-based nutrient supplements (LNS) and balanced energy-protein supplements (BEPS); and fortified blended flours such as WSB+ (see Figure 26 for impact on the remaining cost to the household (HH) of meeting the woman's nutrient needs).

Figure 26: Reductions in the cost of the diet for the breastfeeding woman under various interventions



[13] Micronutrient powder is locally branded in Nepal as Baal Vita.

Adolescent girls are another group particularly vulnerable to poor nutrition outcomes and account for 28 percent of the total household cost of the nutritious diet. Compared to their male equivalents, adolescent girls need more micronutrients but fewer calories, so they require more micronutrient-dense foods. In Nepal, 57 percent of adolescent girls had low dietary diversity and a fifth have had anaemia. Fourteen percent of women between the ages of 20-24 began childbearing in their adolescent years, which further increases the risk of micronutrient deficiency for them and their children (NNMSS 2016, NMICS 2019). Targeted interventions such as IFA supplementation can improve micronutrient intake for this group. Weekly supplementation of IFA for a non-pregnant adolescent girl can reduce the daily cost of the diet from NPR 96 to NPR 87, while daily IFA supplementation for a pregnant adolescent girl can reduce the cost of the diet from NPR 110 to NPR 93 per day.

10.

School-age children and adolescent girls have insufficient dietary diversity and low intake of nutritious foods. By including more nutritious foods, school meals can reduce the household cost to provide a nutritious diet.

School enrolment in Nepal is high: nationally 95 percent of children attend primary school and 85 percent of children aged 13-16 attend secondary school. Schools serve as good entry points for providing interventions that can improve the nutrition of children and adolescents. Providing meals at school can also serve as an incentive for families to keep sending their children to school and contribute to improving learning outcomes. In Nepal there are two modalities of school feeding programmes: food-based and cash-based.

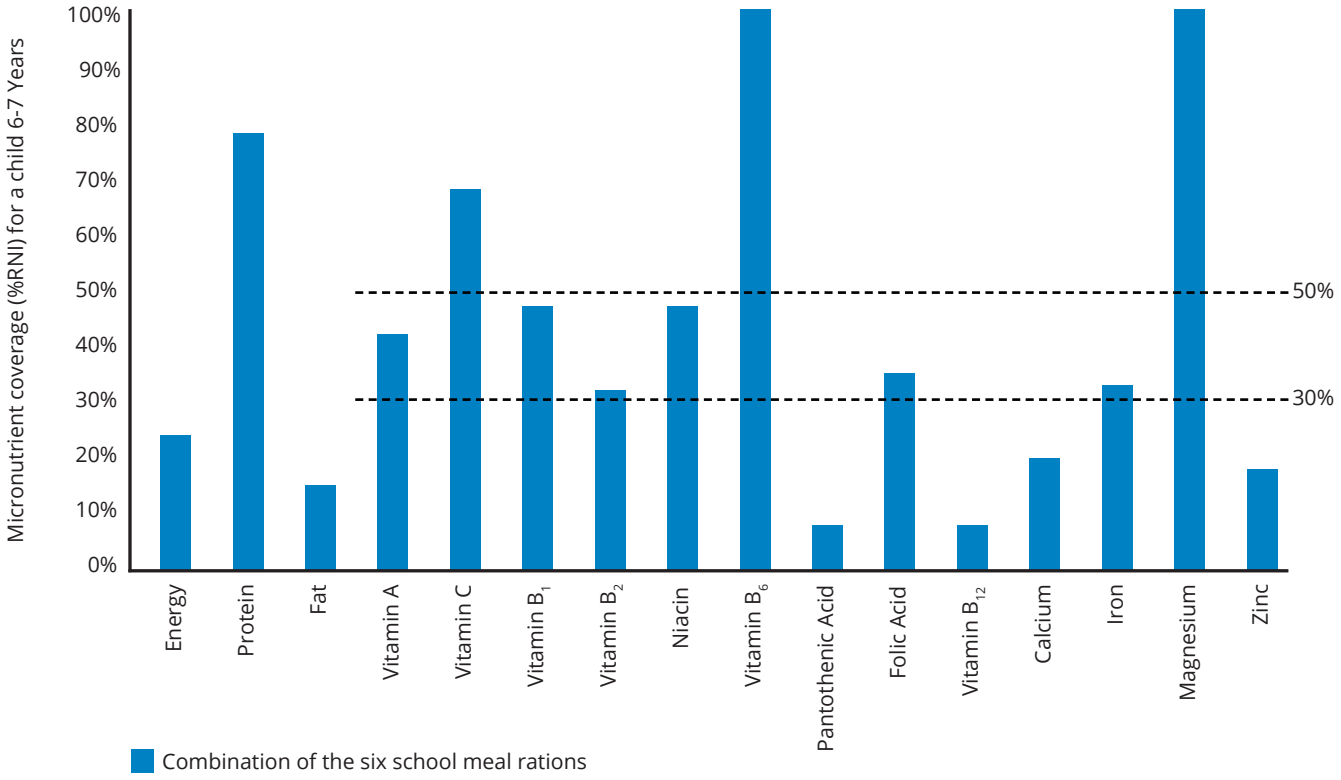
Food-based programmes are provided to children from early childhood education (ECE) to Grade 8 only in targeted geographic areas in Sudurpaschim province. The programme, supported by WFP, includes a standard base ration consisting of staple foods and pulses (80g of fortified rice, 20g of pulses, 10g of edible oil, and iodized salt). Given the ongoing procurement of fortified rice, the FNG analysed the benefits of fortified compared to unfortified rice. On top of the fortified ration, the addition of nutritious foods such as vegetables, eggs and milk can contribute towards further reducing the cost of the nutritious diet by 30 to 44 percent for the school-age child, and 17 to 25 percent for the adolescent girl (as shown in Table 3).

Table 3: Reduction in the cost of the nutritious diet for school-going children provided by additions to school meals

Base ration	Nutritious food added to base ration	Reduction in the cost of the nutritious diet – child 6-7 Years (%)	Reduction in the cost of the nutritious diet – adolescent girl (%)
80g of rice, 20g of pulses, 10g oil, and iodized salt	No change to ration	15	10
	Fortified rice (replacing unfortified rice)	23	15
	Fortified rice + 50g colocasia leaves + 40g pumpkin	30	19
	Fortified rice + 1 egg – 75g	34	17
	Fortified rice + 1 glass of milk – 125 ml	44	25

Cash-based modality programmes are being rolled out nationally for children between ECD and Grade 5. The government of Nepal is providing schools in the Terai and Hill zones with 15 NPR/child/day and schools in the Mountains with 20 NPR/child/day for school feeding programmes. WFP's Nepal country office has worked with Imperial College, London on developing school menus based on local nutritious recipes that can be prepared by schools with the allocated cash per child. The FNG analysis modelled one menu (six unique meals given over the school week) of recipes to calculate the extent to which each meal provided micronutrient coverage and could reduce the cost of the diet for children aged 6-7. For example, in Terai, Province 2, providing these six diverse school meals could reduce the cost of the diet for the school-age child by 32 percent and by 13 percent for the adolescent girl. However, the current programme does not include secondary school children or adolescents. The school meals contribute widely towards the micronutrient requirements of the school-age child (as shown in Figure 27). However, some key micronutrient requirements, such as vitamin B_{12}, zinc and calcium, are not well covered by the school meal.

Figure 27: Micronutrient coverage provided by menu of six diversified nutritious school meals under cash-based modality



Note: The dashed lines represent 30 percent and 50 percent of micronutrient coverage. In Nepal, the aim of school feeding programmes is to cover at least 30 percent of a child's daily micronutrient needs.

11.

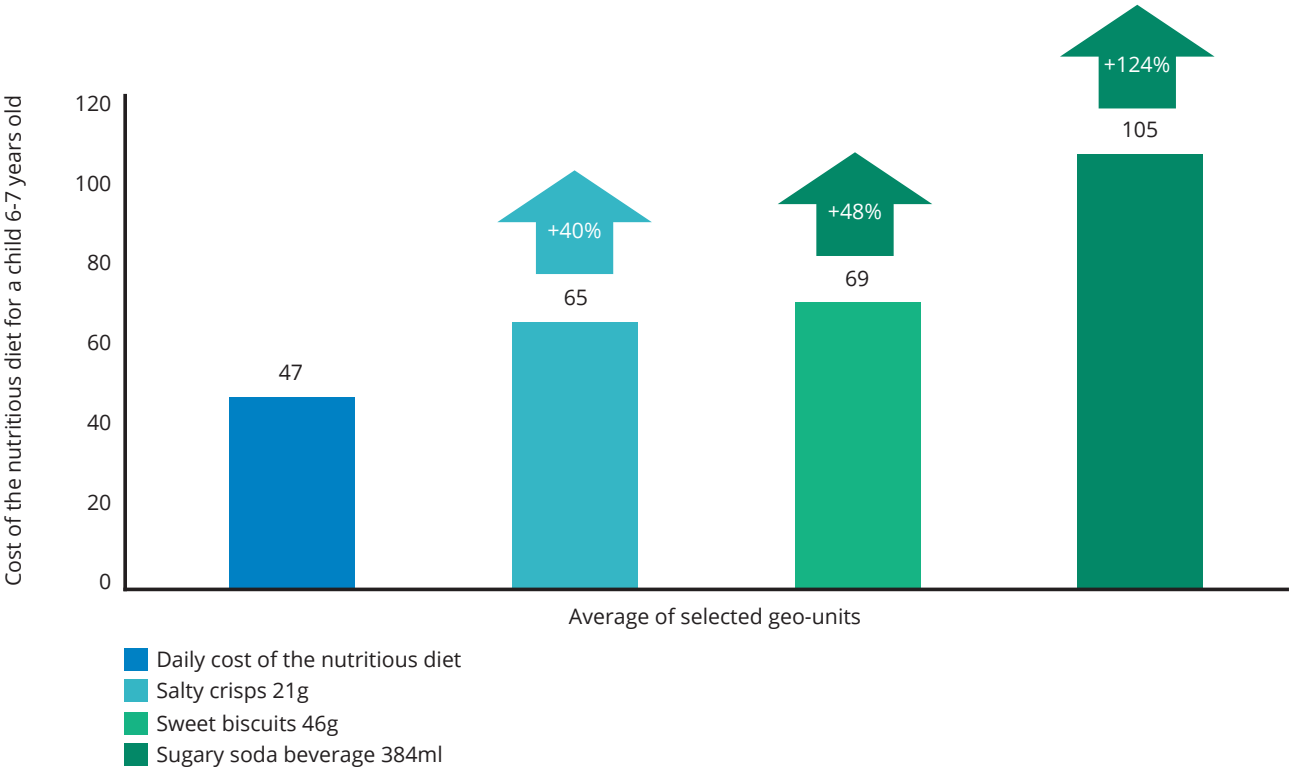
Overweight and obesity are an emerging form of malnutrition in rural and urban areas. The availability and intake of unhealthy, processed foods also increase the risk of overweight and obesity in children and adolescents.

There has been an increase in overweight and obesity among children under 5. In 2001, fewer than 1 percent of children under 5 were overweight or obese, which increased to 2.6 percent in 2019 (NDHS 2001, NMICS 2019). While this rate remains relatively low for young children, rates of overweight and obesity among older age groups are higher and are of increasing concern in rural and urban areas. In 2016, 4 percent of rural adolescent girls and 10 percent of urban adolescent girls were overweight or obese (NNMSS 2016). These problems extend into adulthood. In Nepal, overweight and obesity among women of reproductive age has increased drastically between 2001 and 2016, particularly among rural populations where overweight and obesity increased from 5 percent to 15 percent of women. The risk of chronic non-communicable diseases (NCDs i.e. cardiovascular disease, hypertension and diabetes) is higher for people who suffer from overweight or obesity and for people who suffered undernutrition early in life.

Unhealthy and non-diverse diets are at the root of undernutrition and overweight, obesity and NCDs. Secondary data indicates that access to foods high in fat, salt and sugar, produced at home or purchased from markets, is widespread among all age groups, including very young children (DHS 2016, NNMSS 2018). Pries et al. (2018) found that 91 percent of children aged 12-23 months in Kathmandu valley regularly ate unhealthy snack foods, and 33 percent of children regularly drank sweetened beverages. The NNMSS 2018 also found that over three fifths of adolescent girls in urban and rural areas regularly consumed sugary foods.

To understand the impact of consumption of these foods on nutritious diet costs, the FNG analysis modelled the consumption of three commonly consumed snack foods-salty crisps, sweet biscuits and sugary soda, purchased at market prices. The addition of these unhealthy foods in the diet generates an increase of 40-124 percent in the nutritious diet cost of the school-age children (Figure 28). This increase results from the fact that these children receive a large amount of their calories and fat from a single food source which doesn't provide required micronutrients. The optimised diet must then include more micronutrient-dense foods to fill the remaining nutrient gaps without providing an excess of energy or fat as these have already been consumed.

Figure 28: Increase in the cost of the nutritious diet due to the consumption of unhealthy snack foods (CotD 2021)



12.
Combining interventions from different sectors has the potential to cut the cost of a nutritious diet by half. Existing momentum on the multisectoral approach should be leveraged and strengthened.

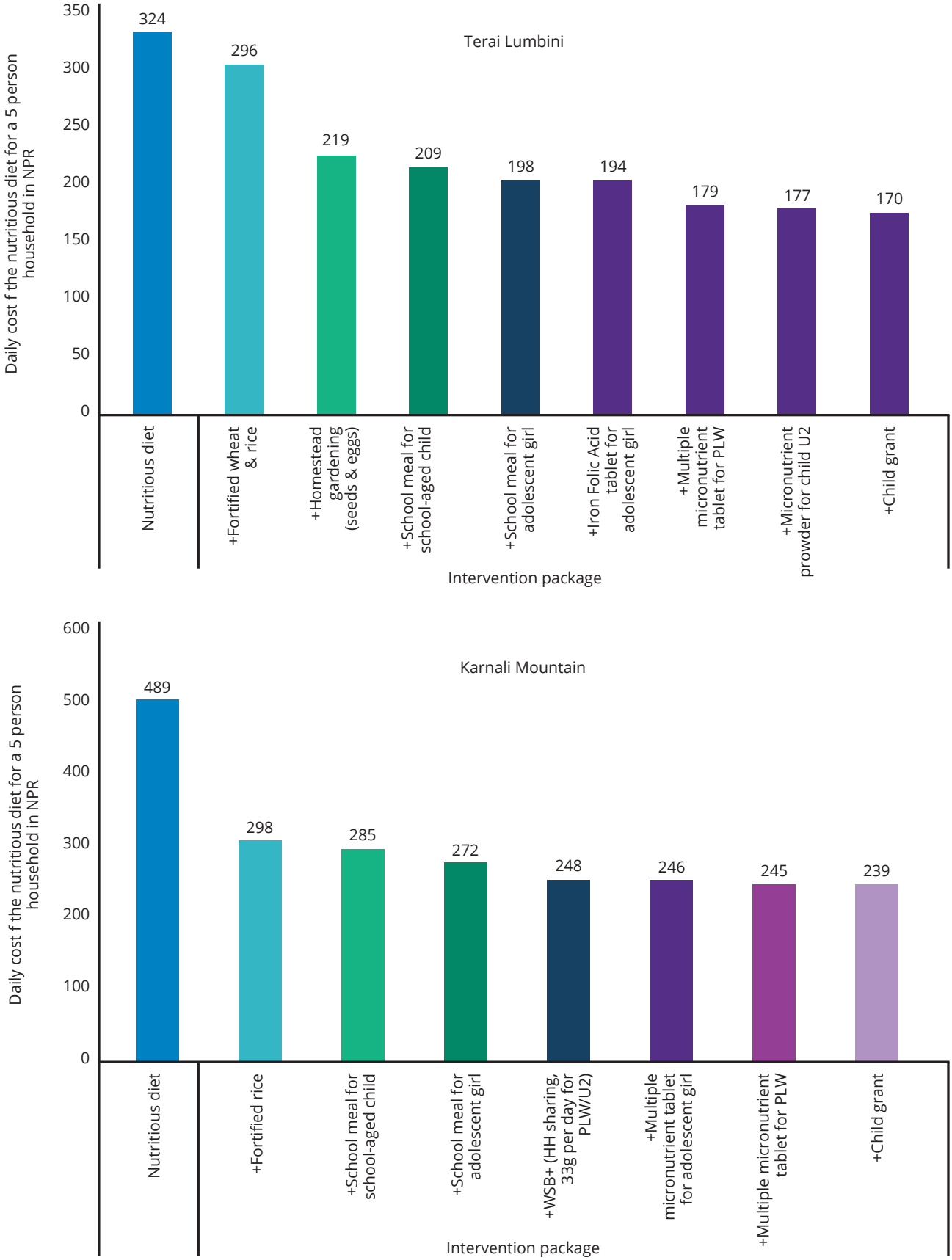
Increasing availability of, and economic access to, better quality diets needs to be a key component of Nepal's efforts to combat malnutrition. A coordinated approach across sectors is needed for a greater impact and to ensure efficient and targeted use of resources. Interventions from different sectors can be combined and provided as a package to households. This package includes the following types of interventions: targeted interventions for vulnerable individuals (supplementation, school meals); increasing the availability of nutritious foods (market-based interventions, smallholder production, diversifying homestead gardens); increasing nutrient content of foods (staple food fortification) and; increasing household purchasing power (cash transfers, income generation).

The FNG analysis estimated the daily cost of a nutritious diet for two different packages[14]. Household Package 1, intended as a development package in areas with good market access and livelihood opportunities, includes the following interventions: replacement of standard staple with fortified staple food, improved seeds and poultry for homestead production, nutritious school meals for children aged 6-7 and adolescent girls, weekly IFA supplement for adolescent girls, daily MMT for lactating women, and MNP (equivalent to 2.5g per week) for children aged 12-23 months. For households in the Terai regions of Lumbini, this package of interventions would reduce the daily cost of the nutritious diet from NPR 324 to NPR 172 per day, resulting in a 47 percent reduction in cost.

Household Package 2[15] is intended for crisis-affected or particularly vulnerable households. This package includes the following interventions: replacement of standard staple with fortified staple food, nutritious school meals for children aged 6-7 and adolescent girls, MCHN interventions (2kg of WSB+ distributed per mother and child under 5 per month assuming intra-household sharing), daily MMT for lactating women and adolescent girls, and the Child Cash Grant. Package 2 reduces the cost of the nutritious diet from NPR 489 per household per day to NPR 237 per household per day, resulting in a 52 percent reduction in cost. Results for the reduction in the cost of the diet for both modelling packages is shown in Figure 29.

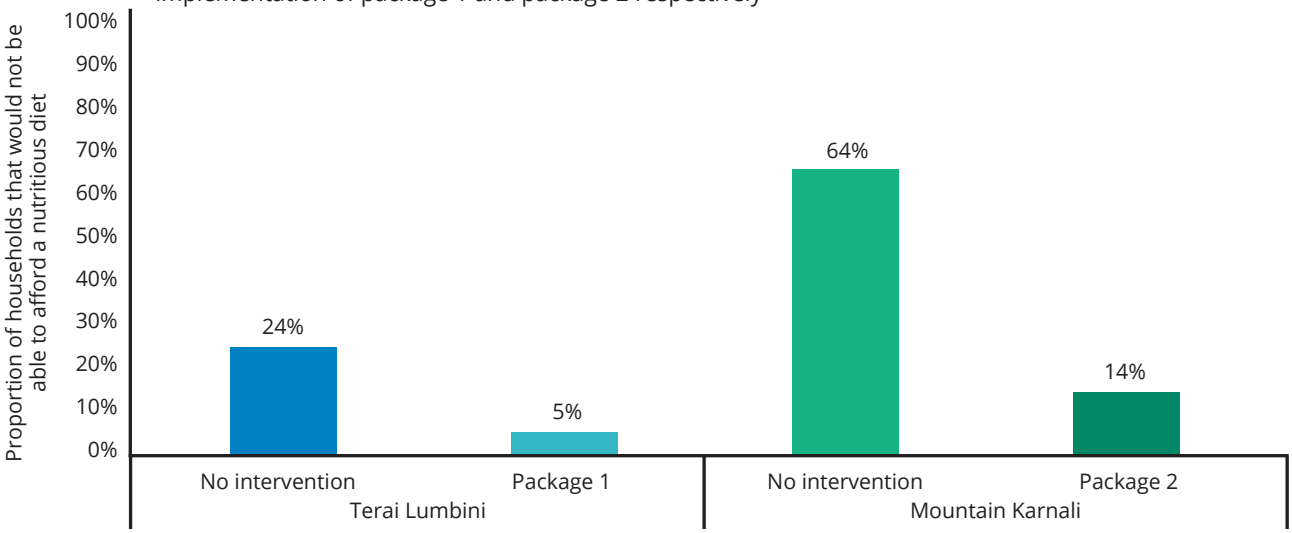
[14] Both packages assume optimal breastfeeding for the child 12-23 months.
[15] At the request of stakeholders, a second version of package 2 was also modelled. In this revised package, WSB+ for children aged 12-23 months was replaced with 2.5g of MNP. The total cost of the nutritious diet under this revised package was NPR 242.3 per household per day (the total final cost of the nutritious diet for the original Package 2 was NPR 238.6 per household per day, as shown in Figure 29).

Figure 29: Reduction in the cost of the nutritious diet for two modelling areas after various interventions representing package 1 and package 2 respectively



As interventions provide households with additional micronutrients or income to put towards covering nutrient gaps, household non-affordability of the nutritious diet is reduced. The total reduction in non-affordability with the combination of interventions from each package is shown in Figure 30.

Figure 30: Proportion of households unable to afford the nutritious diet without interventions and after implementation of package 1 and package 2 respectively



Addressing the drivers of malnutrition requires 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. The FNG analysis has documented that combining incremental efforts through targeted and coordinated action makes the vision of an available, accessible and affordable healthy, nutritious diet more achievable for Nepalese households.

Recommendations

The findings of the FNG analysis in Nepal were first presented and validated with the NNFSCC technical working group under the leadership of the NPC. This was followed by four validation workshops that were held with key stakeholders in April and May 2021 covering the following themes: (1) health, nutrition and vulnerable individuals, (2) agriculture and fortification, (3) school-based programming and, (4) social protection. Following a presentation of sector-specific FNG findings, a moderated discussion was held with workshop participants on identifying how current programming can contribute more towards improving nutrition. Participants were asked to identify necessary steps towards implementing or improving programmes, which were framed as sector-specific recommendations. Table 4 provides a summarized overview of the recommendations. For a complete list of detailed recommendations, please refer to the FNG Nepal final report.

Sector	Recommendations
Cross-Cutting	• Operationalize the multisectoral nutrition strategy to ensure a more coherent approach across sectors, among different partners, and at different levels of government. This will enable targeting of the most nutritionally vulnerable individuals to maximize impact and efficient use of resources. • Strengthen human resource and technical capacity of local-level governments to plan and deliver integrated nutrition programmes across the life cycle. • Increase domestic financing for nutrition, strengthen tracking of public expenditure on nutrition, and incentivize private sector investment in nutrition.
Health: Supplementation and specialized nutritious products	• Increase availability and scale up provision of nutritious products such as micronutrient supplements and specialized nutritious foods. Target these at economically vulnerable populations, those suffering from wasting, and nutritionally vulnerable individuals such as pregnant and breastfeeding women and children under two. • Improve the quality of implementation of nutrition services delivered by the health sector to increase coverage and effectiveness of existing nutrition interventions.

Agriculture and value chain development	• Ensure that the current revision of the Agriculture Policy takes a food systems approach and is informed by evidence, including FNG results. • Promote and enable the cultivation of local nutritious crops and animal source foods, including through scaling up homestead production programmes such as Suaahara, leveraging farmer field schools, and improving linkages with school meals programmes. • Strengthen technical capacity and provide resources at local level to deliver effective, inclusive and timely nutrition-sensitive agriculture extension services. • Strengthen the value chain of nutritious foods through improvements in market road infrastructure and post-harvest food management
Dietary quality and food safety	• Encourage healthy food consumption behaviours through effective regulations and governance, and by disincentivizing the production, promotion and retail of unhealthy processed foods. • Use social behaviour change strategies to encourage the production and/or purchase and consumption of healthy and nutritious foods, and to address inequitable intra-household food allocation practices. • Develop and enforce standards to ensure quality and safety of foods produced and distributed through retail outlets and social safety net programmes.
Fortification	• Review fortification standards and strengthen regulatory monitoring structures to create an enabling environment for fortification of rice and wheat flour. • Provide incentives and training to value chain actors to increase the production and distribution of rice and wheat flour fortified as standard. • Incentivize the production and retail/in-kind distribution of fortified foods for specific target groups such as children under five and pregnant and breastfeeding women. • Expand the biofortification programme to reach customers not covered by post-harvest fortification. Do this by promoting already released biofortified varieties (zinc wheat, lentils), introducing other crops such as vitamin A maize and zinc-enriched maize and rice, and developing a regulatory and monitoring structure.
Education	• Improve the nutrient content of school meals and use locally available nutritious foods to stimulate their demand, with benefits to the local economy. • Ensure adequate financing for effective implementation of existing plans for school meals programmes, and advocate for increasing geographic scale-up and expanding targeting to include adolescents. • Improve standards, policy coordination and governance of food and nutrition at schools at all tiers of government. • Use schools as a platform to deliver WASH, health and nutrition services and education to school-age children and adolescents.
Social protection	• Make social protection programmes more nutrition sensitive by reviewing the cash-based transfer size to ensure it is sufficient to contribute to the cost of a nutritious diet, and by using social protection programmes as a platform for delivery of - or link to - other nutrition interventions for specific target groups. • Expand geographic coverage of existing social assistance programmes, improve targeting such that households in most need are covered, and ensure programme design (modalities, transfer size) is context-specific. • Improve economic access of households to enable them to afford nutritious diets through livelihood programmes targeted towards households in most need.

Acronyms

AEZ	Agro-ecological Zone
CotD	Cost of the Diet
CPI	Consumer Price Index
DHS	Demographic and Health Survey
ECD	Early Childhood Development
FAO	Food and Agricultural Organization
FBF	Fortified blended flours
FNG	Fill the Nutrient Gap
HKI	Helen Keller International
IFA	Iron and folic acid supplements
LNS	Lipid-based nutrient supplements
MMS	Multiple micronutrient supplements
MNP	Micronutrient powder
MSNP II	Multi-sector Nutrition Plan (Phase II)
NCD	Non-communicable disease
NMICS	Nepal Multiple Indicator Cluster Survey
NNFSCC	National Nutrition and Food Security Coordinating Committee
NNMSS	Nepal National Micronutrient Status Survey
NPC	National Planning Commission
NPR	Nepali Rupees
SNF	Specialized nutritious food
SOFI	State of Food Security and Nutrition Report
TWG	Technical Working Group
U2	Child under 2 years
USD	United States Dollars
WFP	World Food Programme
WHO	World Health Organization
WSB+	Wheat Soy Blend Plus

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