Fill the Nutrient Gap

Democratic Republic of the Congo

Final report

WFP
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SAVING LIVES
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Fill the Nutrient Gap - DRC

I. Introduction

The Democratic Republic of the Congo (DRC) suffers from widespread chronic food insecurity across the country. In June 2020, the Integrated Food Security Phase Classification (IPC) analysis estimated that 21.8 million people were food insecure, an increase by almost 7 million people from July 2019. The highest proportion of food insecure people were located in the Kivus, the Kasais and Grand Katanga, while parts of Kasai Central, the Kivus, Ituri and Tanganyika were classified as being in an emergency phase (1).

Rates of malnutrition were found to be high - almost 43% of children under five were stunted, with over 30% prevalence in all provinces except Kinshasa. The provinces of Kasai Central, Kwango and Sankuru were at an emergency threshold with more than 50% of children stunted (2). Micronutrient deficiencies were common among vulnerable groups, including children, adolescents, and women of reproductive age (WRA). Rising rates of overweight (OW) and obesity in urban areas and amongst wealthier groups indicates that the country is headed towards the triple burden of malnutrition[1].

In 2020, as a consequence of the Covid-19 pandemic, countries moved towards a greater reliance on domestic food supply, many imposing export bans to ensure adequate supply for their own populations (3). Unfortunately, the DRC falls far short of producing enough food and relies heavily on neighbouring countries to meet the needs of the DR Congolese population. Higher international food prices due to the imposed export bans (4) could be one of the reasons for the increased number of food insure households.

The past decade has seen a 5% decline in livelihoods in the agricultural sector (5). High rates of poverty, gender inequalities, lack of basic services, and poor access to and availability of nutritious foods in markets has reduced access to quality food for 65% of rural people. Barriers to sustainable food production include monopoly production of cassava, high post-harvest losses (PHL), and lack of developed power and transport infrastructure. There is a tendency to consume a staple-heavy diet, with low nutritious food intake, such as animal source foods, fruits, and vegetables.

Opportunities exist to improve the food system and nutrition situation in the DRC. Agricultural production could focus reducing post-harvest losses, diversifying and increasing nutritious food varieties and small-scale animal husbandry. The Sun Business

[1] Undernutrition (underweight, stunting and wasting), overweight and obesity, and micronutrition deficiencies.

Network (SBN) could act as a coordinating mechanism to engage with the private sector, advocating for in-country food processing and fortification. An increase in social safety net expenditure to at least the 1.5% of GDP could bring the DRC up to the same level of expenditure as other Sub-Saharan Africa and low-income countries (6).

A detailed, integrated social behaviour change communication (SBCC) strategy is required to increase household dietary diversity and shift feeding practices away from a staple-heavy diet to greater consumption of nutrient-dense foods to prevent all forms of malnutrition.

FNG in the Democratic Republic of the Congo: Objectives

The principle objectives of the analysis are as follows:

1. To inform the evaluation and reformulation of:
    a. The National Multisectoral Plan for Nutrition (PNMN 2021-2025)
    b. WFP's Country Strategic Plan (CSP 2021-2024)
    c. The Humanitarian Response Plan (HRP 2021-2023)
2. To identify the constraints linked to weak availability, limited access, and inadequate utilisation of nutritious foods.
3. To develop a situation analysis and improve understanding of household access to nutritious foods.
4. To strengthen multisectoral engagement to improve access to nutritious foods, nutrition, and food security.
5. To promote the development of multi-sectoral policies and programmes to improve the affordability of nutritious food.

The FNG analysis was coordinated by PRONANUT in collaboration with the Clusters (Food Security and Nutrition), the SUN Business Network, the SUN system of the United Nations, the Ministry focal points, the World Food Programme (WFP) country office, the WFP Regional Bureau, the International Fund for Agricultural Development (IFAD) country office, the FNG team at WFP headquarters, the World Bank and diverse partners, including NGOs from multiple sectors.

II. Methodology

The analysis included an analysis of secondary data sources, alongside linear programming using the CotD software. The objective of the FNG analysis was to identify the most appropriate policies and programmatic interventions to improve the population's access to nutritious foods to meet the specific nutrient needs of vulnerable targets groups. Specific barriers to access to adequate nutritious foods were analysed and the interventions identified by stakeholders were modelled.

FNG in the Democratic Republic of the Congo: Process

The first phase of the FNG process in DRC took place in November-December 2019, with inception meetings in November 2020. The second phase took place from January-December 2020, with data collection, validation of primary results and development of the modelling plan. The third phase was from January-March 2021, with dissemination of the results to technical partners and stakeholder.

During the first phase, the FNG DRC team met with PRONANUT, governmental partners, the Nutrition and Food Security clusters, non-governmental organisations (NGOs), the SUN Business Network (SBN), UN agencies and other development partners to introduce the concept of the FNG analysis and collect the interest of stakeholders in the topics covered in the analysis. This allowed agreement on the level of analysis, priority provinces and different focus areas. These meetings were able to facilitate information exchange between the consolidation of key secondary data sources, and identification of interventions and entry points for analysis and CotD modelling. Stakeholders identified target groups like infants, pre-school and school-aged children, PLWs and adolescent girls.

During the second phase, the FNG DRC team examined over 200 secondary data sources. Cost of the Diet analysis was conducted to estimate the cost of a nutritious diet and to calculate the non-affordability of a nutritious diet in the 10 provinces. During the third and final phase, modelling results and secondary data analysis was validated through online sessions between the FNG team and the WFP country office, PRONANUT, and the Food Security and Nutrition clusters.

THE COST OF THE DIET (COTD) ANALYSIS

The Cost of the Diet (CotD) software uses linear programming to understand the extent to which poverty, food availability and food prices can affect the ability of households and individuals to meet their nutrient needs. The software uses food price data collected in markets across the country to calculate the quantity, combination and cost of local foods needed to meet the energy and nutrient requirements of an individual or household.

The FNG approach identified a nutritious diet that takes into account appropriate staple foods in different regions. The CotD software calculated the cost of the cheapest nutritious diet, which includes typical staple foods and excludes forbidden or ‘taboo’ foods. The diet is referred to as the “nutritious diet” in this summary.

Data collection

In April and May 2019, an initial collection of market price data was carried out by WFP in collaboration with PRONANUT in Kasai Central and Tanganyika during a first food cost exercise to inform the emergency response. In March and April 2020, the food price data was collected in markets across the provinces of Central Kongo, Kasai, Ituri and Lualaba. Imposed movement restrictions due to the Covid-19 pandemic, le food price data collection for the provinces of North and South Kivu, Kwilu and Kwango was delayed and later collected in August 2020.

Data on the population's food expenditure is compared to the cost of a nutritious diet and used to estimate the proportion of the population that currently spends less than the minimum cost of a nutritious diet. This estimate is referred to as the "non-affordability of a nutritious diet" in this summary. Non-affordability can be estimated and compared across different seasons and zones. The analysis used data from the Unified Core Welfare Indicator Questionnaire Survey (E-QUIBB / RDC 1-2016), as expenditure data were available at the territory level with the distinction of rural and urban areas.

Household members selection

The minimum cost of a nutritious diet was estimated for a typical household of six members, including an child 12-23 months who is breastfed, a child 4-5 years, a school-aged child 10-11 years, an adolescent girl 14-15 years, a breastfeeding woman and an adult man. Two servings of preferred staple foods per day were included in the calculation of the nutritious diet to represent 50% of daily energy intake, which is the World Health Organization (WHO) recommendation. The preferred staples were identified for each geographical zone by the WFP country office and the PRONANUT teams. The list of staples by geographic area was then validated in an online workshop by all stakeholders. The two portions were modelled for all household members, except the child 12-23 months, who received one portion of staple food per day to supplement breast milk.

Defining the modelling plan

The selection of potential interventions was made through the secondary data review and consultations with stakeholders. The interventions included:

- increased availability of local nutritious foods
- increased yields through improved farming techniques or income diversification
- school feeding

- different types of supplementary or specialised nutritious foods (SNF) available in markets and/or through social safety nets
- improved nutrition intake of nutritionally vulnerable individuals, notably pregnant and lactating women (PLW), adolescent girls and children under 5 years
- food assistance programmes; in-kind and cash
- integrated nutrition-specific and -sensitive intervention packages

It is important to note that the modelled interventions are theoretical. The interventions should be accompanied by a comprehensive SBCC strategy to promote nutritious diets and consumer choice towards the most nutritious foods.

The FNG analysis was conducted in 10 provinces, which were defined by PRONANUT and validated by the WFP country office and stakeholders.

FILL THE NUTRIENT GAP: A SITUATION ANALYSIS FOR MULTISECTORAL DECISION-MAKING TO PREVENT MALNUTRITION

Malnutrition has two direct causes: inadequate nutrient intake and disease. The *Fill the Nutrient Gap* analysis focuses on inadequate nutrient intake. The objective is to inform a country's national policies on ways to improve the nutrition status of the population, with a focus on the most vulnerable individuals and groups. The FNG analysis evaluates the capacity of the population to make healthy food choices. It considers the availability, physical access and affordability of nutritious food needed for adequate nutritional intake. The analysis seeks to understand the underlying situation that lead to a population's food choices. Finally, the FNG identifies context-specific interventions that could be implemented by different sectors to address nutrient deficiencies.

The analysis includes two parts:

1. A review of secondary data and information on factors affecting nutrient intake. This is framed by a food systems approach, which identifies the following elements as pillars to the food system: food production and supply (production, value chain, transport, processing and storage), food environment (physical and economic access); food consumption and behaviours (knowledge and skills, purchasing power, dietary practices and habits). The review of secondary data includes trends in malnutrition, food production and supply chain characteristics, the food environment and population dietary behaviour patterns.
2. The evaluation of economic barriers and their impacts on access to nutrient-rich foods. For this analysis, the FNG team used the CotD software, developed by Save the Children (UK), to model the economic impact of potential interventions on nutrient intake.

Improving nutrition requires a targeted and coordinated effort by many sectors. The FNG analysis is designed to inform multisectoral decision-making and, therefore, involves stakeholders from multiple sectors, including the food system, health, education, and social protection during the analysis.

Stakeholders define the focus areas and priorities of the FNG analysis. They provide data and information sources that enable identification of context-specific barriers and entry points. The stakeholders define the objectives and establish a common understanding of problems and possible solutions, including nutrition-sensitive interventions that can be implemented by different sectors using existing delivery platforms (e.g. social security, food processing, market approaches, antenatal care, school feeding programmes, and more).

The FNG analysis was developed by WFP with technical support from: 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.

As of February 2021, the FNG analysis had been concluded in 30 countries and was ongoing in an additional eight countries.

III. Key messages

Key message 1: Despite its vast size and immense potential for sustainable food supply, the DRC does not produce enough food and relies heavily on expensive imports to meet the needs of its population.

The second largest African country behind Algeria, bordered by nine countries[2], the five Great African lakes[3] and a small (45km) strip of the Atlantic ocean coastline, the DRC has the potential to produce enough food to feed its entire population of roughly 90 million. In fact, it has been hypothesized that the country has the potential to feed the entire African continent. The Covid-19 pandemic has exacerbated the country's fragile food security situation, with 21.8 million people estimated to be acutely food insecure, described by the Scaling Up Nutrition (SUN) Movement as "…the largest food crisis in terms of absolute numbers" (7).

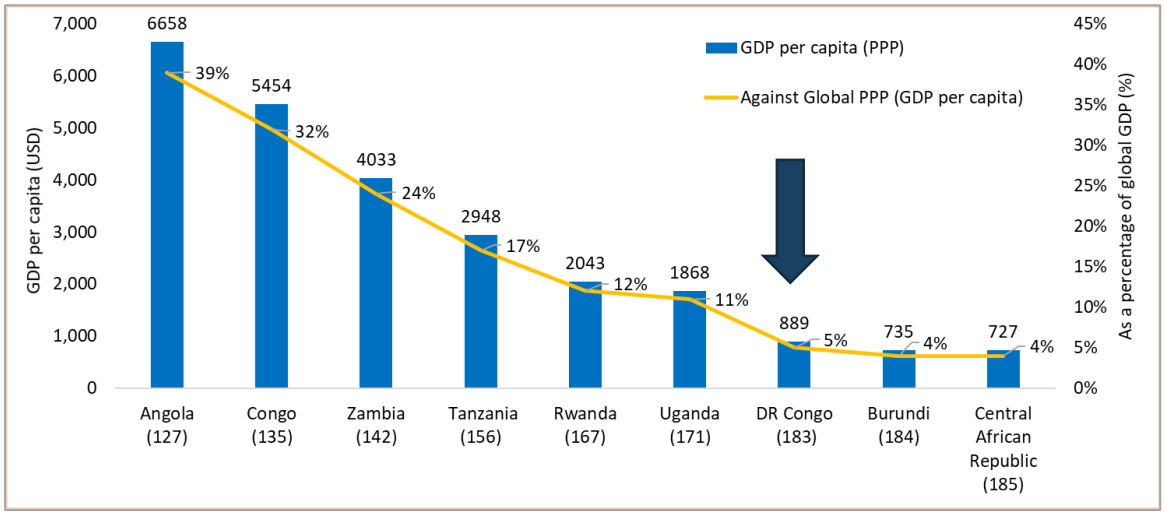

Figure 1. GDP per capita (PPP) for DRC and eight surrounding countries, and comparison as a percentage of world GDP (PPP) (8).

An in-depth analysis of DRC's food system found it to be thoroughly unproductive, with the country relying heavily on expensive imports from surrounding countries to meet its need. Error! Reference source not found. shows the gross domestic product (GDP) per capita[4] (at P PP[5]) for DRC and eight of its nine surrounding countries (South Sudan not available), as well as percentage (%) comparison to world PPP GDP. The DRC ranks 183 of 190 countries,

[2] Angola, Burundi, the Central African Republic, the Republic of the Congo, Rwanda, South Sudan, Tanzania, Uganda, and Zambia

[3] Lakes Albert, Edward, Kivu, Tanganyika and Mweru

[4] Gross domestic product (GDP) per capita shows a country's GDP divided by the country's total population.

[5] Parity purchasing power (PPP) provides a more accurate picture of true differences in income by accounting for the relative cost of living, rather than simply using an exchange rate (74).

producing less than half the amount ($889 USD per person) than seven of its surrounding neighbours ($1,868+ USD per person), ranking only slightly higher than Burundi (184, $735 USD per person) and Central African Republic (185, $727 USD per person). A worldwide comparison shows that DRC earns only 4% of what other countries were earning par habitant (8).

In 2020, two-thirds (65%) of the DR Congolese population worked in agriculture (8), yet only 20% of the country's GDP comes from the sector (9). This paradox is likely due to the predominantly small-scale familial subsistence farming nature of agricultural production in DRC. Three quarters (74%) of farmers were considered small-scale, cultivating less than or equal to 2ha, whilst the remaining quarter (26%) cultivated more than 2ha (10). More women than men work agriculture: 73% of the female population and 59% of the male population (8).

Of the DRC's 2.2 million km^2 land area, 13.9% was dedicated to agriculture: 42.2% cropland and 57.8% under permanent pastures or meadows (11). Although more land *could* be dedicated to agriculture usage, the EAT Lancet Commission advised that a sustainable food system, projected to support a population of 10 billion globally by 2050, will require that no more land be used (12). As well, 6% of DRC's total land area was already considered degraded (13). Only 0.03% of agricultural land area was equipped for irrigation, while 0.19% is dedicated to organic agriculture (14). According to a 2018 study conducted by the International Food Policy Research Institute (IFPRI) (5), fewer than one in five households holds a written land title.

Agriculture experienced a 5% reduction in the number of people working in the sector, from 70% in 2010 to 65% a decade later (8). The number of small and medium-sized enterprises (SME) has dropped and there has been a shift in livelihood activities towards commerce and trade (5). In addition to production and supply chain challenges, farmers have faced major obstacles such as corruption and insecurity (15). The country was thus reliant on agricultural imports from neighbouring countries, such as maize flour from Uganda and Zambia. In 2020, at the beginning of the Covid-19 crisis, Zambia imposed a formal export ban on maize, however government to government exports to DRC continued (16).

Table 1 compares the total value ($1,000 USD) of agricultural imports and exports for DRC in 2019, and fish for 2017, as well as the value for each of major food groups. Agricultural exports ($89,819,000) were only 7% of imports ($1,254,186,000 USD). Cereals, meat and oil accounted for more than half ($720,491,000 USD) of all agricultural imports. Imported foods could be more expensive due to the costs associated with import duties, transportation, storage and more. As of 2020, import tariffs for agricultural goods and large food items were 5% and 10%, respectively (17).

Table 1. Value ($1,000 USD) and quantity (tonnes) of importations and exportations of agricultural products (total) and food groups for 2019 (14)*; fish for 2017* (18).

	Value in $1,000 USD of:		Value of imports as a percentage of exports (%)	Quantity in tonnes		Value in USD per tonne	
	Import	Export		Import	Export	Import	Export
Agricultural products	1,254,186	89,915	7%				
Cereals	384,309	2,410	1%	784,317	7,387	490	326
Tubers	5,540	505	9%	25,728	1,174	215	430
Legumes	7,268	36	0%	17,682	204	411	176
Meat	211,320		0%	191,806		1,102	
Fish**	167,418	158					
Eggs	397		0%	210		1,890	
Milk	31,156	35	0%	12,565	34	2,480	1,029
Vegetables	35,722	2,197	6%	38,348	1,921	932	1,144
Fruits	13,911	1,353	10%	14,951	1,358	930	996
Oil ***	124,862	3,889	3%	156,123	9,449	800	412

* the quantity includes legumes and nuts
**2017 figure
*** the quantity includes oil and fats from animals and vegetables

Farmers have been plagued by a range of challenges resulting in low productivity and, in recent years, there has been a gradual shift away from food production in the DRC. Improvement in production yields, strengthening the supply chain, revitalisation of access routes and infrastructure, investment within the existing systems, and policies and plans to guide the process could result in a shift from being a major food importer to, at the very least, a more sustainable system - one not so reliant on food imported from neighbouring African countries.

Key message 2: Agricultural productivity in DRC is low. Improved agricultural techniques could increase yields, thus increasing availability of nutritious foods and strengthening livelihoods.

The DRC's main staple crops are cassava, maize and rice (11, 13), for which it does not produce enough to feed its population. A comparison of per capita yield production[6] between the DRC and its nine surrounding countries, for the three main staples and palm oil, consistently found the DRC to be one of the least productive. As seen in figure 2, the red dots indicate DRC's position in comparison to other countries. In 2018, the country's net food deficit was estimated at 6.9 million tonnes, worth 22% of the national food requirements (20), explaining the need for high quantities of food imports.

[6] Per capita yield production = (yield / total population)

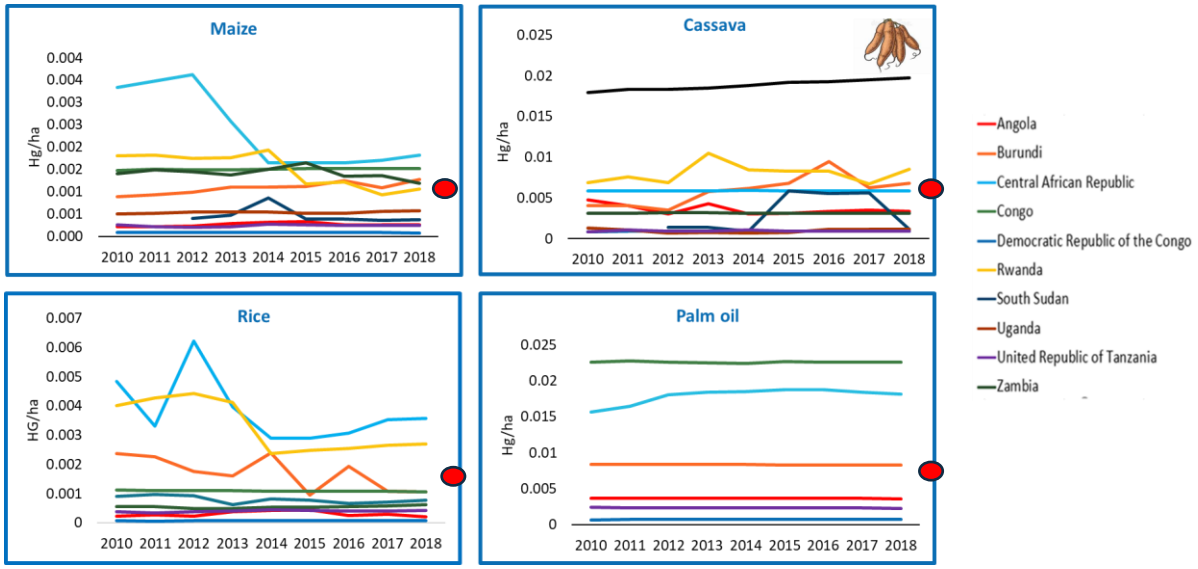

Figure 2. Comparison of per capita yield (hg/ha) for four main staple crops (cassava, maize, rice, palm oil) between DRC and its nine surrounding countries.(14)

A World Bank (WB) analysis on the potential for Nutrition Smart Agriculture (NSmartAg) in DRC found that, of the foods contributing to optimal food intake, DRC fell short in both production and consumption. The only exception was for starchy vegetables, of which the WB estimated that the country produced 1,645% and consumed 493% of the planetary health boundary[7] set by the EAT Lancet Commission (2020).

Table 2 shows the land area harvested (ha), production (tonnes) and yield (hg/ha) for five major food groups in DRC, including the WB estimates of percent production and consumption contributing to optimal nutrient intake. The cereal and root/tuber food groups – staple foods - account for 72% of land area dedicated to crop production. In 2019, the DRC produced over 40 million tonnes of cassava (14), but not enough maize and rice. According to the FAO, lack of cassava processing skills has led to high post-harvest losses (21).

[7] "The planetary boundaries identify and define the biophysical safe operating space for environmental systems and processes that contribute to the stability and resilience of the Earth System" (pp.461)(12)

*Table 2. Area of land harvested (ha), production (T), yield (hg/ha), World Bank estimation of production contributing to optimal nutrient intake (%) and estimated consumption contributing to optimal nutrient intake (%) for 7 food groups in DRC in 2019. *Estimated based on a graph in the DRC's NSmartAg Country Profile.*

	Area harvested (ha)	Production (tonnes)	Yield (hg/ha)	Production contributing to optimal nutrient intake (%)	Consumption contributing to optimal nutrient intake (%)
Cereals	4655874	3576686	7682	46%	66%
Tubers	5242797	41977448	80067	1645%	493%
Legumes	881756	408978	4638	15%	32%
Nuts	495000	455356	9199	55%	16%
Vegetables	89567	578116	64546	29%	37%
Fruits	1391062	6817272	201940	42%	10%*
Oil	1004114	2465798	24557	0%	30%*

Fishing was estimated to account for 12% of agricultural GDP in 2010 (22), however one report mentioned the difficulty in accounting for informal trade, such as small quantities of artisanal fish products along the borders of Uganda and Zambia (23). In 2016, the DRC produced 58% of total fish consumed ($407,793,000 USD) and imported the remaining 41% (18).

Figure 3 illustrates the results of food consumption portion of the National Wellbeing Survey (QUIBB) in 2014. When asked about how frequently foods from six food groups[8] were consumed, it was clear that animal-source foods (ASF) (meat and offal, fish, eggs) were either never or rarely (1-2 days) being consumed on a regular basis by the majority of participants (24). Data from the QUIBB was aligned with food consumption scores reported in the CFSVA report: tubers consumed every day (6.5 days, mostly cassava), cereals consumed an average of 4.3 days per week (mostly maize), legumes and nuts 3.8 days per week, vegetables consumed 5.7 days per week, animal-source foods 2.5 days per week and oil an average of 6.1 days per week. Dairy products and fruits were reported as rarely being consumed, at 1.3 and 0.5 days per week, respectively (10).

[8] Cereal and tubers, legumes and nuts, meat and offal, fish, eggs and vegetables

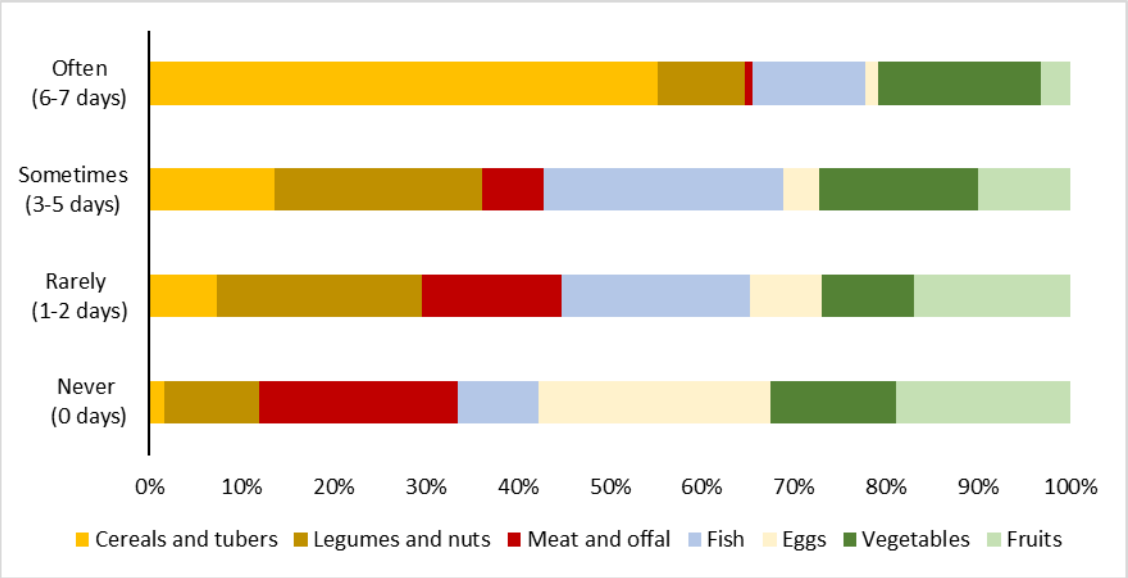

Figure 3. Results from the 2014 QUIBB survey on frequency of food consumed by food group.

According to the FAO, high prevalence of plant and animal diseases impedes agricultural production (25). Only 2% of farmers used modern techniques and less than 1% had access to modern machinery (2). A joint FAO, IFAD and WFP evaluation report on rice and maize production claimed that low yields were due to low use of improved varieties, agricultural inputs and damage caused by pests (20). According to the 2014 Comprehensive Food Security and Vulnerability Analysis (CFSVA) (10), common barriers and constraints to agriculture production faced by farmers included lack of access to improved (51%) and traditional (45%) seed varieties, lack of modern equipment and production tools (45%), pests and disease (enzootic, epizootic and panzootic diseases) (44%), agricultural labour (39%), poor soil quality (24%), lack of rainfall and water for irrigation (24%), lack of access to ploughs (22%), lack of draft animals (21%), limited access to land (20%), security (15%) and floods (5%).

According to Marivoet et al (5), animal husbandry was practiced in Ituri, Nord-Kivu and Haut-Lomami, but had almost disappeared in Kwilu, Kwango and Tanganyika. In Sud-Kivu, farmers rear small livestock, such as poultry, rabbits, swine, and cavies (guinea pigs). Major challenges reported by farmers to smallholder livestock production included animal diseases (78%)[9], lack of feed (60%), lack of money (28%), animal theft (21%), animal shelter and/or space (13%), lack or cost of transport (5%), predators (5%), lack of veterinary medicines (4%) and time to search for animal fodder (2%) (26). Availability of feed/fodder during the dry season seemed was also a serious challenge. A recent FAO situation update

[9] African swine flu every 6 years resulting in animal deaths. Avian flu and Newcastle disease in chickens (26).

reported that livestock production was on the decline due to looting and recurrent animal diseases (25).

An analysis of fruit yields found that pineapples, papayas, mangoes, mangosteens and guavas and citrus fruits account for 77% of total fruit yields. Low fruit exports indicate that the almost 7 million tonnes of fruit produced each year were either consumed in the DRC or lost post-harvest. According to the CFSVA and WB reports, fruit consumption fell far short of optimal consumption.

Production and consumption analysis showed room for improvement. However, planning could focus on making small shifts away from intense cassava production, towards more diversified small-scale farming systems. Improved crop yields could reduce the reliance on imports and long distances that food travels to markets. A focus on prioritizing animal-source foods, legumes, vegetables, and fruits specifically could result in a shift from a staple-heavy to more a diverse, nutrient-dense diet.

Key message 3: A nutritious diet is unaffordable for half the population due to the high cost of nutritious foods and low food availability in certain provinces.

DRC ranks 175 out of 189 countries on the Human Development Index. In 2018, the life expectancy at birth was 60, a 10-year increase from 50 in 2000 (27). The WB estimated that 64.5% of the population lived in multidimensional poverty and 76.6% lived below the income poverty line of $1.90 USD (PPP) per day. Of the employed population, 86.5% were considered "working poor" – living on less than $3.20 USD (PPP) per day – and 79.7% were considered vulnerable workers[10]. Less than half (43%) of the population were skilled workers. The rate of child labour (5-17 years) was 27% (13), while 21% of youths (15-24 years) were not in education, employment or training (28).

The cost of an energy-only diet for an average household of 6 people[11] was estimated at 1,798 CDF per day ($2.73 USD). An estimated one in every 10 households (10%) could not afford this diet, which lacks dietary diversity and essential nutrient needs. Alternatively, the cost of a nutritious diet was estimated to be 5,391 CDF per day ($2.73 USD) for an average household of 6 people in DRC. The Cost of the Diet (CotD) analysis estimated that 52% of

[10] Vulnerable employment = Workers "less likely to have formal work arrangements and are therefore more likely to lack decent working conditions, adequate social security and 'voice' through effective representation by trade unions and similar organizations. VE is often characterized by inadequate earnings, low productivity and difficult conditions of work that undermine workers' fundamental rights (75).

[11] A child (either sex) 12-23 months, child (either sex) 4-5 years, a school-aged child (either sex) 10-11 years, an adolescent girl 14-15 years, a breastfeeding woman 30-59 years and an adult male 30-59 years.

the DR Congolese population could not afford a nutritious diet that meets both energy and nutrient needs.

Five territories were observed as having particularly high non-affordability, with more than 75% of the population estimated to be unable to afford a nutritious diet: Mweka (87%), Kasai; Kazumba (83%), Kasai Central; Kalemie (86%) and Mitwaba (80%), Tanganyika; and Kenge (79%), Kwango. High non-affordability means that the most vulnerable groups[12] face even greater challenges of meeting nutritional needs and are at high risk of all forms of malnutrition[13]. This was reflected in high prevalence of stunting also recorded in these provinces, at 47.4%, 53.7%, 40.8% and 54.6% in Kasai, Kasai Central, Tanganyika and Kwango, respectively (29).

Demographic analysis found non-affordability to be higher in rural, rather than urban areas, clearly illustrated in figure 4. Ten of the 37 analysed rural territories were estimated to have higher than 75% household NA[14]. A further 19 rural territories were estimated to have between 50-74% household non-affordability. The urban picture was less bleak; however, it should be noted that six territories were estimated to have 50% or more households unable to afford a nutritious diet[15]. High non-affordability in rural areas may be due to the fact that, rather than food being grown in rural areas and transported to urban areas which is most commonly the case, food was being imported and transported to rural areas, likely resulting in higher food costs.

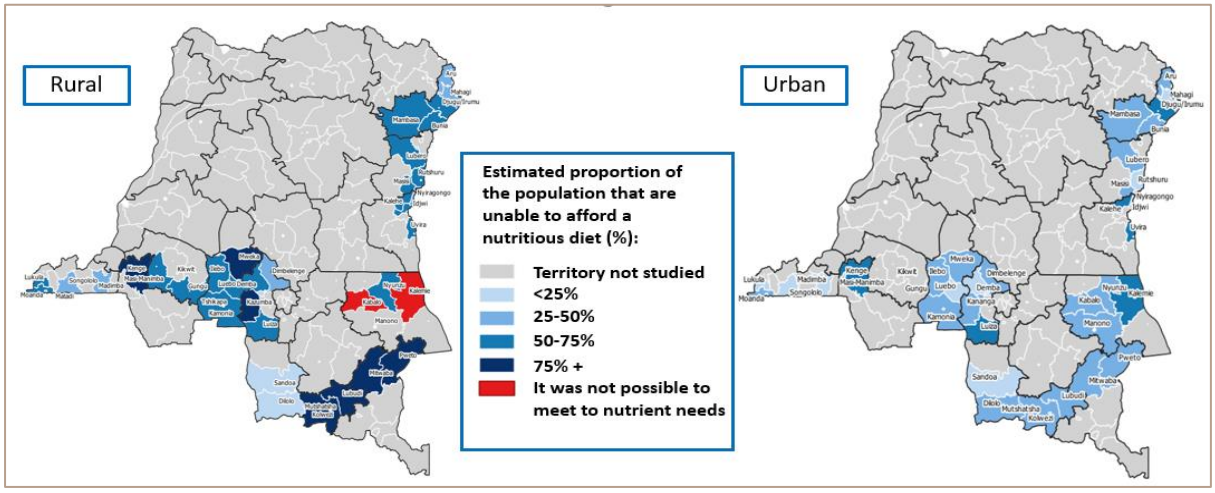

Figure 4. Estimated proportion of rural and urban households unable to afford a nutritious diet, by territory (%).

[12] Children, adolescent girls, pregnant and lactating women, elderly persons, disables persons, people living with HIV, etc.
[13] Undernutrition (underweight, stunting and wasting), overnutrition (overweight and obesity), and micronutrient deficiencies
[14] NA >75% = Mweka (93%), Kasai; Mutshaha (86%) and Lubudi (81%), Lualaba; Kalemie (97%), Mitwaba (97%) and Pweto (85%), Tanganyika; Kazumba (83%), Kasai Central; Masimanimba (75%), Kwilu; Kenge (84%), Kwango; and Nyiragongo (76%), Nord-Kivu.
[15] Urban NA > 50%: Iruma (57%), Ituri; Kalemie (61%), Tanganyika; Luiza (60%), Kasai Central; Kenge (57%), Kwango; Bakavu (56%), Uvira (55%) and Kalehe (61%), Sud-Kivu.

It should be noted that rural Kabalo, in Tanganyika province, was excluded from the analysis, as there were only 8 foods found in markets and the CotD software was unable to calculate a nutritious diet for any of the six household members. As well, in rural Kalemie, it was not possible to meet the nutrient needs for the adolescent girls (AG). However, rural Kalemie remained in the analysis. This was one of the reasons for the estimated high non-affordability.

An analysis of provincial food availability helps to explain the high non-affordability, especially in Tanganyika. Foods found in markets were classified into 10 food groups, after excluding sugar and condiments. Less foods were available in rural areas, with an average of 63 foods recorded across the analysed provinces. Urban markets recorded an average of 71 foods across the same provinces.

Limiting nutrients are those hardest to meet using locally available foods and often drive up the cost of the diet. The main limiting nutrients from the surveyed provinces included pantothenic acid and vitamin B12 for all household individuals, calcium for all except the pregnant and/or lactating woman (PLW), iron for all except the young child (4-5 years), and zinc only for the two children under 5 years (12-23 months, 4-5 years).

As an example, Table 3 shows foods identified as being the least expensive sources of limiting nutrients in Kasai province by CotD software. It was assumed that all foods, except canned sardines in oil and sesame seeds, could be produced locally and, thus, considered in intervention plans.

Table 3. Nutritious foods identified as being the least expensive sources of limiting nutrients from the Cost of the Diet analysis of the Kasai province.

Food items	Pantothenic acid	Vitamin B12	Iron	Calcium	Zinc
Beef liver	X	X			
Small freshwater fish	X	X		X	
Canned sardines in oil		X			X
Eel, mixed species	X	X	X	X	X
Dried flying ants	X		X	X	
Groundnuts	X				X
White beans, raw			X		X
Palm nuts	X		X		
Sesame seeds				X	X

Avocados[16]	X			X	
Coconut[16]				X	
Cassava leaves	X		X	X	X
Amaranth leaves				X	

*those highlighted in red were assumed to be imported

Tanganyika was found to be particularly food poor, with only 22 foods recorded in rural areas and 39 foods in urban areas. No eggs were found in rural Tanganyika, with only one meat product, milk product and oil product recorded, and less than half the number of foods from all other food groups than other rural areas. As mentioned previously, there were not enough foods found in rural Kabalo[17] to calculate a nutritious diet.

The QUIBB survey results found that 57.7% of surveyed participants reported an acceptable food consumption score, whilst 26.7% reported limited and 15.6% reported poor food consumption. The rural and urban results reflect similarly to the non-affordability results, with a higher proportion of surveyed participants in rural areas reporting limited (29.4%) or poor (17.3%) food consumption scores than urban areas (21.3% limited; 12.2% poor) (24).

Key message 4: Post-harvest losses are high at every stage of the supply chain. Better road and energy infrastructure is needed to reduce perishable losses.

The EAT Lancet Commission advised that low-income countries should focus on cutting waste at primary production, logistics and storage, and enhancing the variety and seasonality of foods (12). This should be a key area of focus for the DRC, as agricultural income has largely been hindered by high post-harvest losses (PHL). An example of PHLs were fall armyworm attacks on maize causing a 45% loss (0.9 million T) in 2017/18 growing year, an increase by 17% from the previous year (20).

An analysis of maize and rice post-harvest losses was conducted in 2015 in Kwilu and Kongo Central, two of the provinces that produced large quantities of the two staples. Losses were found at every stage of the supply chain: on-farm storage, transport, storage at bulking depots, and point of sale (markets). Figure 5 highlights some areas where losses were experienced in Kwilu's maize supply chain. Quality losses were observed during on-farm storage, transport and point-of-sale, while further losses were due to weevils, insect, mould[18] and moisture during storage at bulking and terminal depots (30). Data on PHL of

[16] Avocados and coconuts contribute a good amount of fat, which was also limiting in many areas.

[17] Foods found in rural Kabalo: 1 cereal (Maize, grain or flour), 1 root/tuber (cassava, dried), 2 legumes (bambara groundnut, cooked; groundnut, shelled), 1 fish (catfish, dried), 1 milk product (cow's milk, powdered), 2 fruits (mandarin; red tomatoes).

[18] Aflatoxins, poisonous carcinogens produced by mould found in soil, grains and crops, prevention could reduce significant PLHs. Commonly found in staple foods in hot and humid climates, aflatoxins have severe negative effects on human and

nutritious foods (animal-source foods, fruits and vegetables) was not available, however, it was assumed that these would also be high. It would be important to monitor losses of fresh and perishable food in order to develop strategies to reduce them.

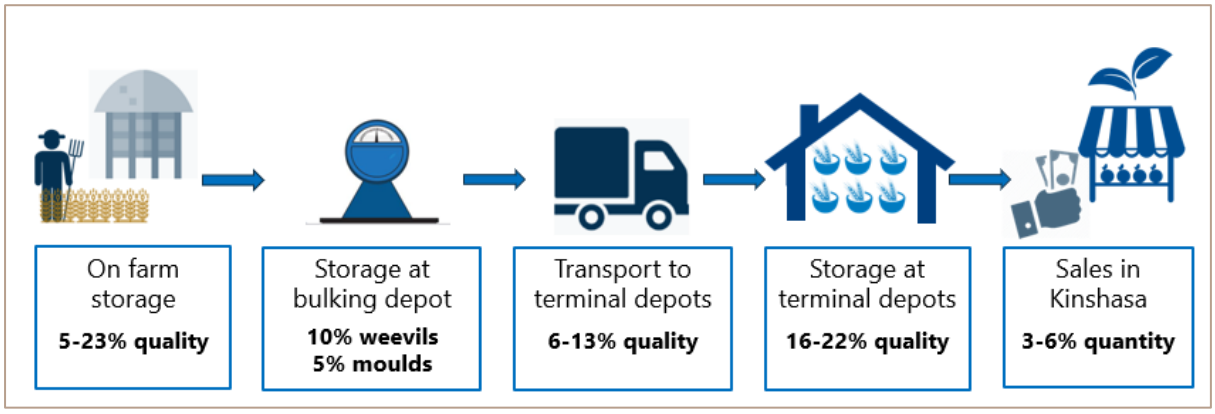

Figure 5. Example of losses found in the maize supply chain in Kwilu province. Graphic reproduced from data in FAO-IFAD-WFP brief 'Mainstreaming food loss reduction initiatives for smallholders in food deficit areas – food loss analysis for identification of critical loss points and solutions of maize and rice value chains in The Democratic Republic of the Congo'.

Cold storage, cold chain transport and many food processing techniques require power to operate. Electricity was identified as a major challenge despite the country's potential to be the largest power exporter in the African continent due to the Inga falls and Congo river (31). As the economy relies heavily on extractive industries (mining), electricity has been prioritised to cities catering to this sector. According the WB, DRC had the third largest population in the world without access to electricity (32). In 2014, the National Society of Electricity's (SNEL - Société Nationale d'Electricité) change in legal status to a 'business corporation', rather than a government entity. This has provided an opportunity for the private sector to participate in the development of DRC's power sector (32).

The DRC's road network was found to need vast improvements and major financial investment. Less than 2% of DRCs roads were paved and, due to long-term conflict, more than half of roads and infrastructure needed repair. Road conditions were reported as: 11% good, 16% fair and 59% bad. Many roads were subject to checkpoints, operated by DRC security forces, that set up temporary road blocks, where vehicles would be searched for

animal health, including vomiting, abdominal pain, and death. Aflatoxin exposure, in utero, through breastmilk and complementary diets, has been linked to growth impairment (76). An analysis of crop samples in the DRC and Burundi found 51% aflatoxin contamination above the EU maximum tolerable level (4 µg/kg). Unprocessed grains had lower levels of contamination compared to processed groundnut, maize and sorghum (77). PHLs due to aflatoxins could be avoided through training, improvements in infrastructure and proper storage and handling techniques. Aflatoxin control was estimated to cost $31 million (USD) annually (44).

weapons, valuables and travellers checked for identity papers (33). Poor road conditions lengthen transport time, increase the burden for those transporting food to markets and increase the cost. Many areas within highest non-affordability were also found to no paved roads, including Ituri, Nord-Kivu and Tanganyika.

An examination of distance farmers face traveling to markets found that 11% of farmers travel 1-5km and 32% travel more than 5km, 47% travel less than 1km to the nearest access road to reach markets[19] (2). It was assumed that this did not include any additional distances needed to travel once access roads were reached. Long distances on unpaved, uneven roads could lead to food damage or loss, especially for fresh nutritious food items. In rural areas, eighty-five percent (85%) of subsistence farming outputs headed directly to farmers' homes, while 10% went directly to market and the remaining 5% went to processing plants. Of the outputs that went directly to the household, 70% was carried on the head/back, 15% by motorized vehicle, 9% by bicycle and 6% by cart (34).

A joint FAO-IFAD-WFP workshop in 2017 outlined the need for training and capacity building on PLHs and their prevention: good harvest and postharvest management practices targeted to men/women based on time and resource constraints; postharvest management and monitoring of storage facilities; improved storage facilities at farm and bulking stages; inclusive value chain development; and increasing women's participation in decision-making over post-harvest activities (30).

In IFPRI's publication on Agricultural Extension, Ragasa and Ulimwenga highlighted that the DRC's extension workers were predominantly trained on crop production; only 13% specializing in livestock and veterinary services, 3% in fisheries and aquaculture, none with specialization or training in post-harvest or marketing skills. A quarter of extension workers have only primary education and most government agents do not have a university degree. The authors recommend that extension workers be provided with regular, institutionalised training, with the skill set expanded to include food preparation, nutrition and health advice to be able to respond to both challenges faced by farmers and provide advice to consumers (food preparers) on "how to best utilize their existing food production and resources to maximize the nutrient intake of children" (35).

According to WFP, PLHs are a key entry point to improve the livelihoods of smallholder farmers and their communities, via reducing food loss, supply chain efficiency and nutritional awareness (36). A focus on consistent trainings and skills building, and improving

[19] 10% did not respond

the power and transport sectors, could improve the availability of nutritious foods, improve agricultural income, and reduce dependence on other African countries for food supply.

Key message 5: The DRC's social protection framework is weak for the region and reliant 100% on donor funding. This makes it hard to deliver well-coordinated, nutrition-sensitive social protection with potential to improve nutrition outcomes.

In a comparison of social safety net provision, the DRC fell well behind its African counterparts by providing less than half of the global average (1.5% of GDP) in Sub-Saharan Africa and other low-income countries (37). Of the 0.72% of GDP spent on social safety nets in the DRC, 0.04% went towards public works, while 0.69% went to in-kind transfers. More money was allocated to humanitarian activities rather than development (6). Social protection is a powerful tool that can be used to mitigate risks, promote household resilience and economic growth. Some key examples of entry points for the most vulnerable households and individuals include cash-based transfers (conditional or unconditional), cash for assets, fresh food vouchers, in-kind food basket and free nutritious school meals.

According to the most recent Human Development Report, the DR Congolese government spent approximately 1.5 % of GDP on education (13). The World Bank's Emergency Equity and Systems Strengthening in Education Project (EESSE) (2020-24), designed to provide free schooling to primary school children, strengthening teachers' salaries and improve governance and public financial management, saw an increase in school enrolment by an estimated 2.5 million additional children following announcement of the free school policy. According to the proposal, the WB pre-Covid-19 estimates anticipated a two-percentage point reduction in poverty through the project alone (38). This could be a key area of focus, as linking the education and agricultural sectors could target multiple vulnerable groups (school-aged children, adolescent girls, small-scale farmers) through the school feeding (SF) programme, attract and keep children in school, provide them a nutritious school meal and support the local market system.

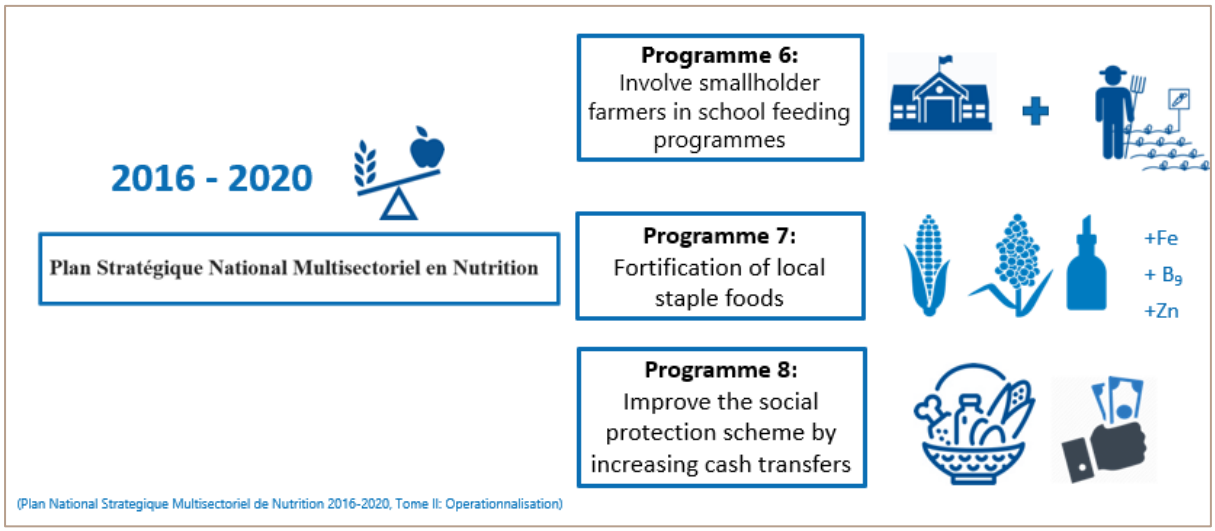

Figure 6. Selected Programmes from the DRC's 2016-2020 Strategic Multisectoral National Nutrition Plan.

The DRC's current governance system, with a fragile political framework, threatens the effectiveness of the best laid plans. An example was the World Bank's decision to delay funding for the $800 million (USD) EESSE project due to an investigation of alleged fraud and corruption related to public funds in the education sector and weak internal control (39). To achieve progress in the NMSPN's programmatic outcomes (figure 6), better governance mechanisms and significantly more funding is needed.

The DRC's last (2016-2020) National Multisectoral Strategic Plan for Nutrition (NMSPN) reported that actions for nutrition-sensitive sectors, such as agriculture, education, social protection, and water and sanitation, had been included in plans. Additionally, there are multiple groups, including the Nutrition Cluster (UN, PRONANUT, NGOs), Nutrition working groups at PRONANUT, the Multisectoral Nutrition Group chaired by the Ministry of Agriculture, coordinating nutrition activities. Yet, despite the presence of these groups and clear actions to improve nutrition outcomes, the country did not have enough financing or capacity to deliver its plan (40), achieving only 44% of the SUN objective on financing tracking and resource mobilization (41).

Affordable, nutritious foods are a prerequisite to reduce malnutrition in all its forms. The current high non-affordability in the DRC has led to poor quality diets, as the social system framework supporting vulnerable individuals and the sectors involved in producing and distributing nutritious foods are weak. Institutional improvements, including stronger governance systems, multisectoral policies, targeted strategies and government funding for nutrition-sensitive social safety nets could be strengthened to achieve a much higher impact on nutrition.

Key message 6: The types and amount of food assistance must be adapted to the food environment to have the optimal effect on nutrition.

According to the Global Nutrition Cluster et al., cash and voucher assistance can impact underlying determinants of adequate nutrition in three ways: by enabling the purchase of goods (food) and access to services (health, transport, etc.) that could have positive impact on maternal and child nutrition; by improving participation in nutrition SBCC activities if provided conditionally; and by increasing care-giver time through alleviating household stress and economic pressure, while at the same time enhancing women's decision-making power. Cash transfers paired with SBCC activities can provide the mutual benefit of providing the means and knowledge/skills to caregivers, while at the same time empowering them to use the skills through cash purchases (42). Vouchers for fresh food have the added benefit of being able to track how cash was spent in the market system.

Though the cost of a nutritious diet, at 5,391 CDF ($2.75 USD) per day or 163,940 CDF ($83.00 USD) per month, was estimated to be unaffordable for 51% of the analysed DR Congolese population, there are several interventions that could help reduce the diet cost and improve food access. Cash-based transfer (CBT) and in-kind/general food assistance (GFA) were modelled to understand in which of the analysed territories the interventions could have the greatest impact on meeting nutritional needs.

A Minimum Expenditure Basket (MEB)[20] analysis (43), conducted in July 2020, recalculated the cash transfer value required to meet essential needs in the DRC. A revised amount of 25,000 CDF ($12.50 USD) per person monthly, or 150,000 CDF ($75.00 USD) for a 6-person household, was considered more favourable to meeting nutrient intake in the DR Congo's food environment, where nutritious foods were expensive. This equated to a daily household CBT amount of 4,930 CDF ($2.50 USD). As there was an assumption that 70% will be used for food purchases, 3,450 CDF ($1.75 USD) per day was modelled. It was estimated that this transfer could reduce the nutritious diet cost by 60%, to 2,111 CDF ($1.10 USD) per day[21], or 64,195 ($33.50 USD) per month, for the household.

Figure 7 illustrates the variation between provinces in terms of potential CBT impact on nutritious diet affordability. On average, NA dropped from 51% of households to 17% with the CBT. Kongo Central, Kasai, Nord-Kivu, Sud-Kivu and Ituri could reduce household non-affordability to less than 20% with a CBT intervention. It is important to remember that CBTs would only be appropriate in contexts where market systems are functioning, and nutritious

[20] "The Minimum Expenditure Basket (MEB) is defined as what a household requires in order to meet basic needs – on a regular or seasonal basis – and its average cost"(78).

[21] The national weighted average was used to calculate impact and, as certain territories would have 100% of HH food cost covered by the CBT intervention, this is reflected in a slightly higher amount of 2,111 CDF.

foods are available and accessible. CBTs should also be accompanied by targeted nutrition messages outlined in the SBCC strategy.

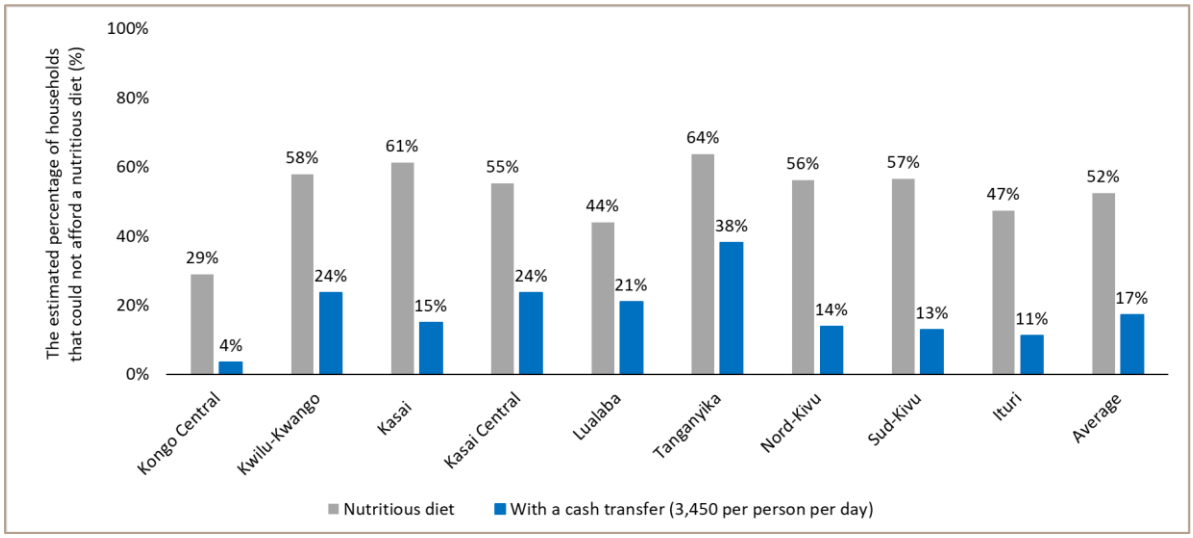

Figure 7. Comparison of the estimated percentage of households unable to afford a nutritious diet by province (%) before and after a cash-based intervention (3,450 CDF per person per day).

In-kind / general food assistance (GFA) was also analysed to understand where the in-kind modality might be more appropriate than cash. The standard daily per capita ration, distributed in the DRC, included 400g cereal (maize flour), 120g legumes (red kidney beans), 30g fortified palm oil and iodized salt[22]. Two ration types were modelled: one with the "full" household portion (100%) and one with a "half" household portion. On average, non-affordability of a nutritious diet reduced from 52% of households to an estimated 22% with full ration and 31% with half ration.

Figure 8 shows that in most provinces, including Kongo Central, Kwilu-Kwango, Kasai Central, Lualaba, Nord-Kivu, Sud-Kivu and Ituri, full food assistance (dark blue) could more than half the number of households unable to afford a nutritious diet. However, in certain provinces, a half GFA ration could also significantly reduce the number of households unable to afford a nutritious diet, namely in Lualaba (20% NA) and Sud-Kivu (33% NA).

[22] Daily household ration: 2,400g cereals, 720g legumes, 180g oil.

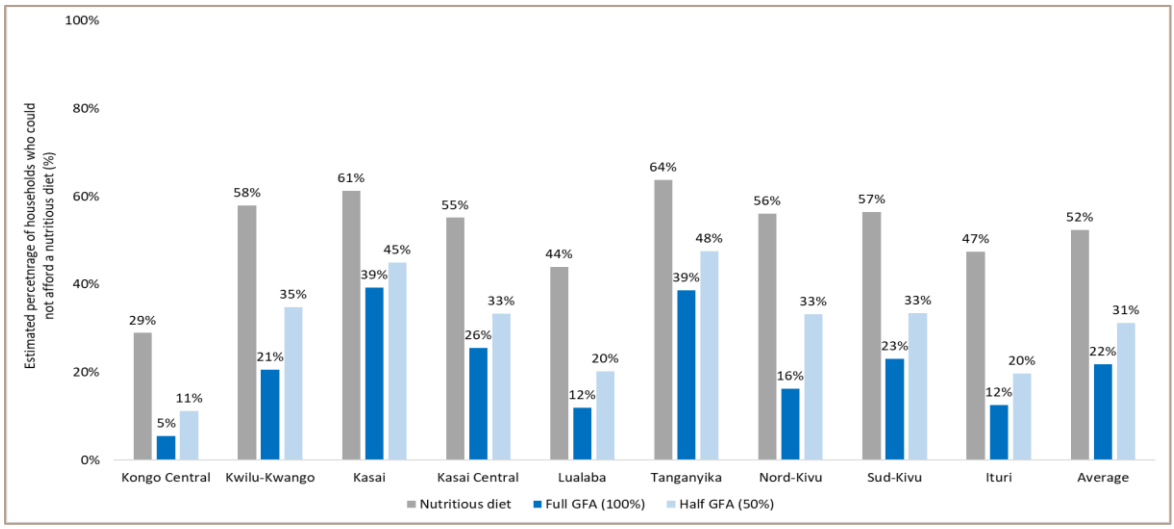

Figure 8. The estimated percentage of households unable to afford a nutritious diet; with a full GFA package (100%); with a half GFA package (50%).

The maps in Figure 9 illustrate where either a CBT intervention of 3,450 CDF ($1.75 USD) per household per day or full GFA intervention of 2,400g cereals, 720g legumes, 180g fortified oil and iodized salt per household per day could have the most impact in reducing the cost of the nutritious diet in rural[23] and urban[24] territories. The territories highlighted in blue favour a cash transfer modality, while those in red favour an in-kind modality. In areas where there were not enough nutritious foods available in local markets for purchase, CBT would not be appropriate.

[23] Rural territories where a GFA could reduce the HH cost of a NUT diet by more than CTB included: Lakuala, Kongo Central; Iruma and Mambasa, Ituri; Mutshasha and Lubudi, Lualaba; Kenge, Kwango; Masi-Manimba, Kwilu; Nyiragongo, North-Kivu; Uvira, South-Kivu.

[24] Urban territories where a GFA could reduce the HH cost of the NUT diet more than a CBT included: Lukuala, Kongo Central, Mutshasha, Lubudi and Kolwezi, Lualaba; Kabalo and Kalemie, Tanganyika; Kenge, Kwango; Ville de Goma, Masisi, Lubero, Nord-Kivu; Bakavu, Uvira, and Kalehe, Sud-Kivu, Iruma, Ville de Bunia and Maghi, Ituri.

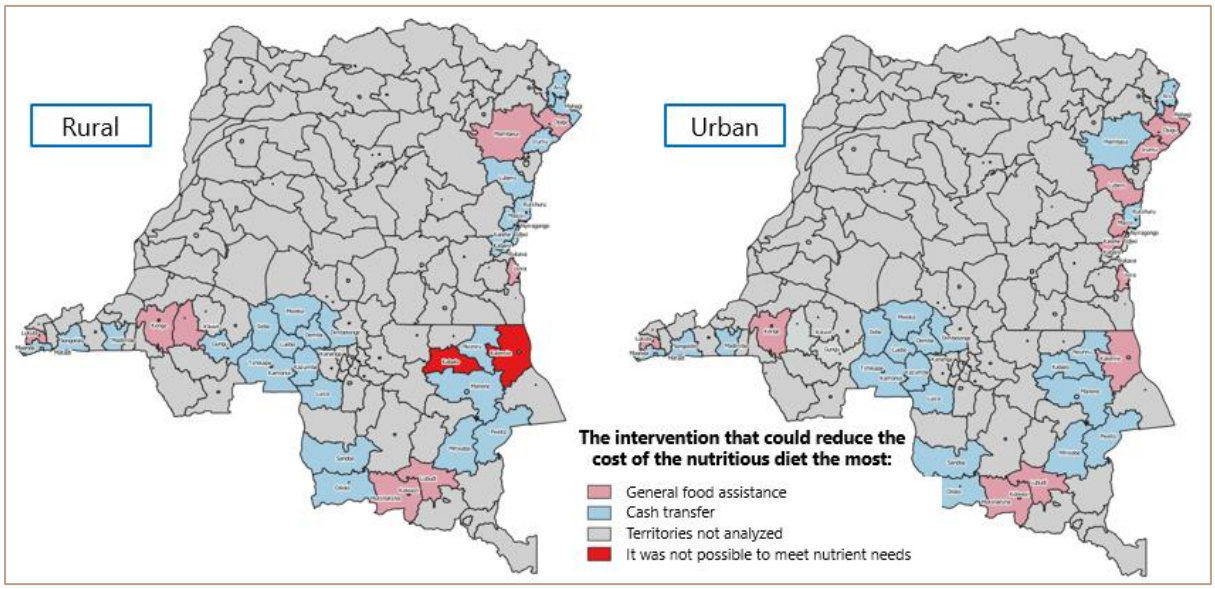

Figure 9. Territories identified as having the household nutritious diet cost lowered the greatest by general food assistance(pink) or cash-based assistance (blue), by rural and urban area. In red areas, cash and GFA are still unable to meet nutrient needs.

The World Bank's policy brief, *Scaling Up Nutrition in the DRC: What will it cost?*, emphasized the need to "expand to demand-side interventions, such as behaviour change campaigns that change the choices households make for good nutrition" (44). An adequate cash transfer in areas with functioning food markets, accompanied by targeted nutrition messages outlined in a SBCC strategy, could enable purchase and consumption of nutritious animal-source foods, fruits and vegetables and thus promote behavioural change towards healthier and more varied diets.

Key message 7: The rural environment presents heightened nutrition challenges, with 65% of households estimated to be unable to afford a nutritious diet. This requires a localised, opportunity-based and coordinated rural approach.

Rural areas had lower school enrolment rates, literacy levels and greater inequality between men and women. Access to food, electricity, clean water, hygiene facilities and basic services was more limited. Rates of stunting were 15% higher in children living in rural areas (47.1%), versus those living in urban areas (32.5%) (2). The prevalence of stunting was higher in children of uneducated mothers at 50.8%, whilst only 13.1% of children from mothers with a higher education were stunted (45). This is one of many important reasons why it is critical that all children – not just boys - get an education.

Fifty-five percent of the DR Congolese population live in rural areas. The annual growth rate of urban population was 4.5% from 2000-2018 and was projected to grow by 4.2% from 2018-2030 (27). As of 2018, 78% of the urban population lived in slums. Only one-fifth of

the population (19%) had access to electricity, with 51% access in urban areas (% rural not available) (46). Only 37.6% of households owned a radio, 19.4% owned a television, 51.8% had a land or mobile telephone (33.4% females, 53.2% males), and 5.3% owned a computer (47).

According to the State of the World's Children (SOWC) report, 43% of households had access to basic drinking water services[25] (23% rural, 69% urban), 20% had basic sanitation services[26] (18% rural, 23% urban) and only 4% had basic hygiene facilities[27] (2% rural, 7% urban) (27). As of 2016, only 4% of the population had access to clean fuels and technologies for cooking (46). The most common sources of energy for cooking were charcoal (7.7% rural, 65.8% urban) and wood (91% rural, 28.9% urban), with 6% of households using electricity in urban areas (2). Lack of basic resources and knowledge about food safety can lead to sickness and disease. As an example, Konzo[28] prevalence was estimated to affect 1% of the population, yet, in some areas, such as former Bandundu (Kwilu, Kwango, Mai-Ndombe), Kasai Oriental and Kasai, prevalence rates were as high as 30% (48).

People living in rural areas are at a disadvantage regarding education, especially women. While almost three quarters (72.2%) of children aged 6-12 years attended school in urban areas, less than half (46.6%) of children the same age attended school in rural areas, with a higher number of boys (59%) attending than girls (55.5%) (29). IFPRI found that the most common reasons for children missing school for more than one month included the inability to fund education and sickness (20% boys, 17% girls) (10). Low school attendance in rural areas has resulted in low literacy rates. The majority (84.1%) of men in rural areas were literate, yet, only half (49.6%) of women were able to read and write (2), underscoring robust gender inequality existing in rural areas.

Differences between rural and urban areas was also reflected in the cost of a nutritious diet in each area. The average cost of a nutritious diet for 6 people in rural DRC was 5,170 CDF ($2.62 USD) per day, which was estimated to be unaffordable for 61% of households. As a comparison, the average cost for the same household in urban areas was 5,706 CDF ($2.88

[25] Basic drinking water services = an improved drinking water source, where collection time not > 30 minutes round trip incl. queuing (improved sources: piped water; boreholes or tubewells; protected dug wells/springs; rainwater; and packaged or delivered water).

[26] Basic sanitation services = an improved sanitation facility that is not shared with other HHs (improved facilities include: flush/pour flush to piped sewerage systems, septic tanks or pit latrines; ventilated improved pit latrines; composting toilets or pit latrines with slabs).

[27] Basic hygiene facilities = handwashing facility with water and soap available on premises.

[28] Konzo is an irreversible paralytic disease due to sustained dietary exposure to cyanide mainly from improperly processed cassava. Konzo may be prevented through a method of retting (soaking) cassava in water to remove cyanogens for a minimum of 3-4 days (79). "Short soaking" (only 1-2 days) occurs when cassava not given enough time to leach out the cyanide. Reasons for short soaking noted as pressure to sell cassava at market, fear of cassava being stolen (80), and not having appropriate resources (water) to soak the cassava (81).

USD) per day and would be unaffordable for an estimated 39% of households. The lower NA in urban areas is likely due to higher and diversified income sources, including fewer livelihoods dependent on subsistence farming, and more diverse, easily accessible, and available food options.

Figure 10 illustrates the range of daily diet cost of a nutritious diet. Territories where the daily cost was the estimated to be the highest (>8,000 CDF daily) were: Mweka (8,125 CDF), Kasai; Mutshasha (8,970 CDF), Lualaba; Kalemie[29] (11,375 CDF) and Mitwaba (11,365 CDF) Tanganyika; and Kenge (8,483 CDF), Kwango. The highest prevalence of stunting was observed in Kwango, at 55% (2).

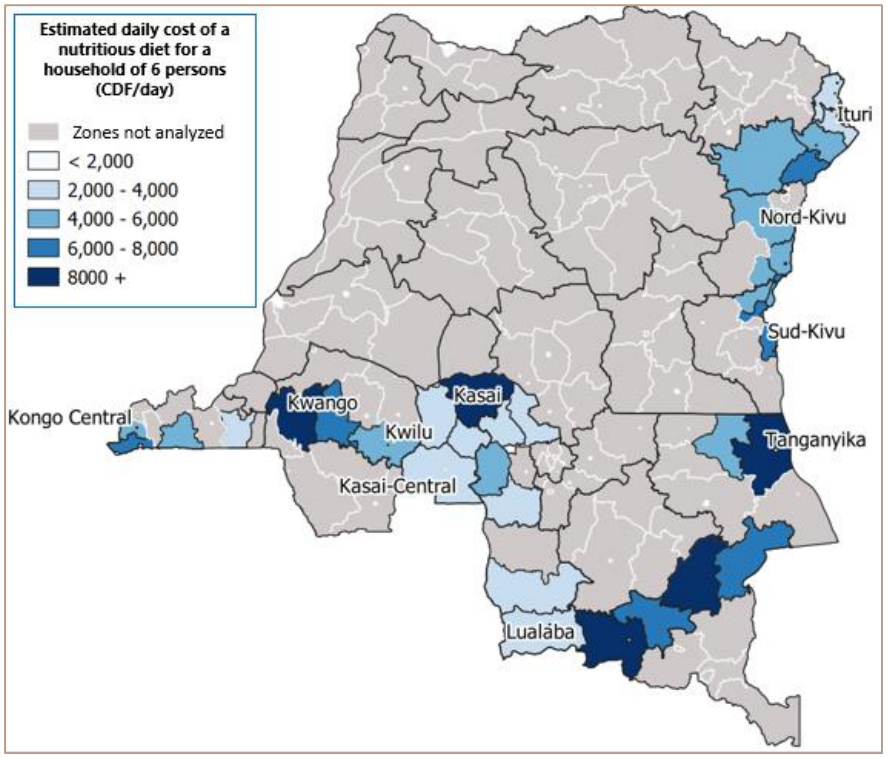

Figure 10. The estimated daily cost of a nutritious diet for an average household of six members in rural areas by province (CDF per day).

[29] The daily food cost in Kalemie was high, yet still unable to meet nutrient needs for the adolescent girl using locally available foods.

Key message 8: The newly created SUN business network has the potential to strengthen the food system by stimulating the much-needed participation of the private sector.

The Democratic Republic of the Congo joined the Scaling Up Nutrition (SUN) movement in 2013. While the country has made progress in key areas of institutional transformation[30] for improved nutrition outcomes, funding for nutrition has been a key challenge. The global Sun Business Network (SBN) platform was created to engage and support businesses to act, invest and innovate with all stakeholders at the national, regional and global level through partnerships and collaborations to improve nutrition outcomes and end malnutrition in all its forms (49).

In November 2019, a two-day workshop held in Kinshasa helped to define the private sector needed to participate in the national effort to improve food and nutrition security in the DRC. The SUN/DRC Provisional Committee, elected during the workshop, could facilitate engagement amongst private sector actors, and coordinate activities through numerous avenues, including but not limited to: food import and exports, value chains, trade activities, social investment resources, distribution models, farmers' associations (agriculture, aquaculture, livestock, crafts), education, micro-finance and financing mechanisms (50).

While the DRC has seen a gross improvement in the prevalence of iodine deficiency, from 42% in the early 1990s to currently 1% (51). According to an evaluation conducted by PRONANUT (52), focus groups with communities in 30 clusters found that goitres[31] were thought to be associated with contaminated water or witchcraft, and iodised salt and its benefits were unknown to the population. Yet, according the 2019 SOWC report (27), 82% of households consumed iodised salt. To eliminate iodine deficiency altogether and inform the population of the benefits of consuming iodised salt, educational messages could be built into SBCC strategy, as part of school health curriculum and the community health system.

Fortification involves adding nutrients, such as iron, folic acid, zinc and B vitamins, to foods to increase their nutritional content and prevent deficiencies, such as anaemia. The DRC did not have a policy or legislation related to fortification of rice, maize, or wheat flour. According to the Food Fortification Initiative, as of 2017, DRC had two industrial mills (>20 metric tons/day) to process wheat, five for rice processing and none for maize, despite it being the most consumed staple in the country. 100% of wheat and 5% of maize were produced in an industrial mill. Fifty-five percent of wheat was fortified. No maize and rice

[30] SUN Institutional Transformation pillars: Bringing people together into a shares space for action; Ensuring coherent policy and legal framework; Aligning actions around common results; Financing tracking and resource mobilisation.
[31] Abnormal enlargement of the thyroid gland, normally due to iodine deficiency.

were fortified (53). Local, rather than centralised processing could ensure that agricultural produce does not have to travel long distances to be both processed and sold.

An improvement in production yields, decreased PHLs and local processing could reduce the DRC's heavily reliance on neighbouring Uganda and Zambia for imports of maize. Local fortification could further increase the nutritional content of maize flour. The SBN could be the ideal coordination mechanism to ensure that these focus areas are prioritized. Food fortification was modelled to understand the impact that the intervention could have on diet cost and nutrient coverage.

Figure 11 shows the estimated cost of a nutritious diet for a household of 6 people that might consume regular maize flour as one of their main staple foods versus a household that might consume fortified maize flour[32]. The fortified maize flour was modelled using the price of regular maize flour with a 5% increase to adjust for the assumed higher price of fortified flour[33]. Replacing regular flour with the fortified flour resulted in a 36% household nutritious diet cost reduction, from 5,391 CDF ($2.73 USD) to 3,450 CDF ($1.75 USD) per day.

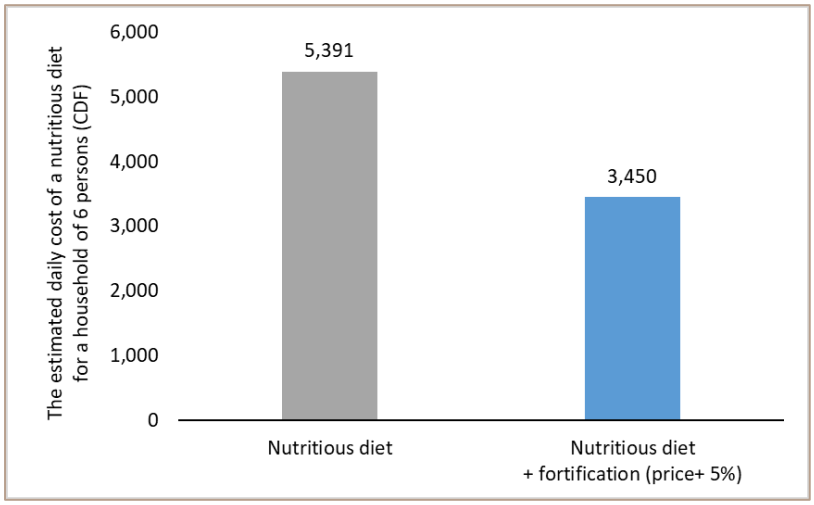

Figure 11. The daily cost of a nutritious diet for a household consuming non-fortified maize flour versus the daily cost of the same diet consuming fortified maize flour.

[32] Nutritional composition of fortified maize flour per 100g: energy (kcal) 362; protein (g) 8.1; fats (g) 3.6; saturated fat (g) 0.5; monounsaturated fat (g) 0.9; polyunsaturated fat (g) 1.6; carbohydrate (g) 76.9; fibre (g) 7.3; phytate (mg) 800; RAE (ug retinol) 150; vitamin B1 (mg) 0.5; vitamin B2 (mg) 0.2; niacin (mg) 7; vitamin B6 (mg) 0.6; folate (mcg) 216.67; vitamin B12 (mcg) 1; pantothenic acid (mg) 0.43; calcium (mg) 6; copper (mg) 0.13; iron (mg) 4, with 5% absorption rate; magnesium (mg) 127; manganese (mcg) 0.37; phosphorous (mg) 241; potassium (mg) 287; sodium (mg) 35; zinc (mg).

[33] A 5% conservative increase was applied in line with feedback from WFP's Fortification experts in Regional Bureaus.

Figure 12 shows the difference in nutrient coverage for one daily portion of regular maize flour for a household, currently being consumed in DRC and distributed as part of an in-kind food assistance ration, and the additional nutrient coverage through provision of fortified maize flour. The fortified flour could cover more than half of daily vitamin B1 (59%), niacin (64%), vitamin B6 (63%), folic acid (76%), vitamin B12 (59%), magnesium (82%) and zinc (112%). Vitamin B12 and zinc were identified as limiting nutrients in DRC - difficult to attain from the local diet and driving up the cost. Vitamin B12 is found in animal-source foods, which were relatively expensive in DRC and thus rarely consumed. Fortification of this important staple food could make a significant impact on the cost of the diet, while at the same time provide the household with almost all of vitamin B12 and zinc requirements.

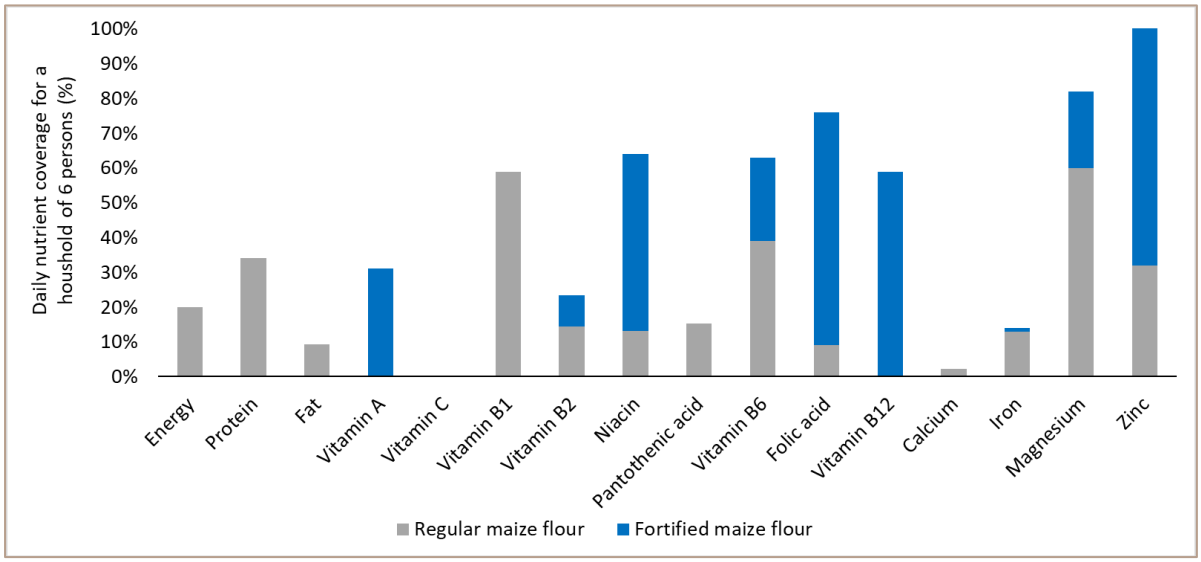

Figure 12. The estimated nutrient coverage of maize flour (grey) and the additional coverage provided through consumption of fortified maize flour (blue).

Key message 9: At the rural level, there is an opportunity to improve access to nutritious food by strengthening livelihoods, increasing the availability of nutritious foods through linkages to markets and increased household income.

Movement from subsistence farming to participation in local market systems could improve livelihood outcomes, farmers' incomes and stabilize market prices (54). An analysis of livelihood activities found that more than half of people (55%) engage in just one activity, while 30% engage in two and 11% engage in three livelihood activities. Those focusing on just one income activity – the majority food crop farmers and agricultural labourers – had 90% of income come from the one activity (10). Given the high rates of post-harvest loss, this puts those focusing on just one activity at high risk of income loss should the livelihood be subject to one of the previously mentioned shocks (e.g. disease, pests, climactic interference). The education system provides an opportunity to both link smallholder

farmers to schools via the SF programme and improve the nutritional quality of school meals, while at the same time increasing production of diverse and nutritious foods.

An analysis of the SF programme found that the basic meal provided did not include any fresh vegetables or animal-source foods. Transition from a regular SF to home-grown school feeding (HGSF) programme could have multiple benefits: for children, increased nutritious foods and dietary diversity; for households and communities, employment opportunities, engagement with and ownership of the SF programme, increased household dietary diversity and better eating habits; for farmers, traders and processors, income opportunities, increased access to markets, inputs, credit, increased dietary diversity, more resilient agriculture, stronger local food system; and finally for governments, a more inclusive education and social protection system, a diversified agricultural sector and increased economic activity (55).

A market garden resilience intervention, using foods currently being grown in rural areas of Tanganyika province (tomato, aubergine, cassava leaves and okra[34]), was modelled to understand its impact on the cost of the diet in this area. For this intervention, it was assumed that 40% of produce would be consumed by the household and 60% sold for income. A second intervention was modelled using cassava leaves and avocado[35], two foods identified as less expensive sources of key limiting nutrients (pantothenic acid, iron, calcium, zinc) in the region. Avocados are also an excellent source of fat, which was also found to be limiting in this area. Avocado production has been identified as a great opportunity for small-scale farmers to generate income and strengthen food security in rural economies, if provided support from private and public sectors (56). It was assumed that 40% of cassava leaves would be consumed by the household and 60% sold for income, while 100% of cultivated avocados would be consumed by the household. The results are presented in Figure 13.

[34] Assumption: 150m^2 land area, with 25% dedicated to okra, tomato, aubergine, and cassava leaves each. Weekly household consumption of 5kg tomatoes, 5kg cassava leaves, 2kg okra, 2kg aubergine (81% edible portion).
[35] Assumption. 150m^2 land area, with 25% dedicated to cassava leaves and 75% dedicated to avocado trees. Weekly household consumption of 5kg cassava leaves and 2.8kg avocados (~1 avocado per day).

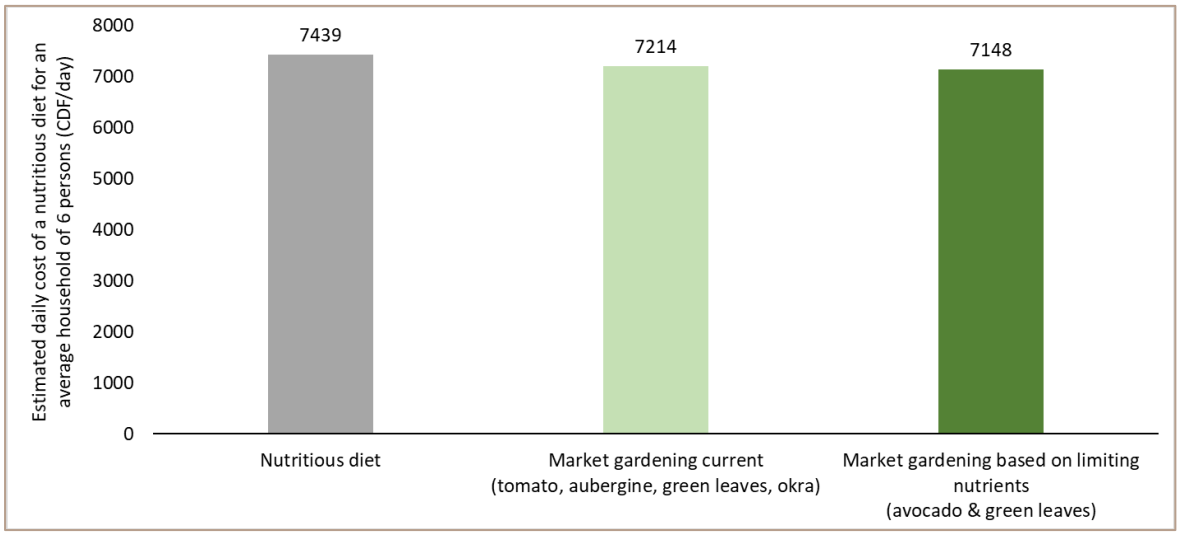

Figure 13. The estimated daily cost of a nutritious diet for an average household of 6 people in Tanganyika; current market gardening intervention; market gardening intervention targeting key limiting nutrients.

The estimated cost of a nutritious diet for a household of 6 persons in Tanganyika was 7,439 CDF ($3.76 USD) per day. The current resilience intervention, estimated to provide the modelled household with 5kg each of tomatoes and cassava leaves, and 2kg each of okra and aubergine per week for consumption, would reduce the nutritious diet cost by an estimated 3% to 7,214 CDF ($3.66 USD). The proposed intervention, estimated to provide the modelled household with 5kg cassava leaves and 2.8kg[36] avocados per week (one avocado per day) for consumption, would reduce the nutritious diet by slightly more (4%), to 7,148 CDF ($3.63 USD) per day. Though this intervention would require dedicated land to grow and cultivate the avocado trees and cassava leaves, producing these highly nutritious foods would not be as labour intensive and time-consuming as producing, for example, staple food crops.

Bamboo was examined as a potential livelihood opportunity. A January 2020, the DR Congolese government was reported to have decided to invest 100 billion CFA ($50,508,380 USD) through a partnership between Congo National Development Fund and the Ministry of Forest Economy to launch the cultivation project in underprivileged urban neighbourhoods (57). Sileshi and Nath (58) suggested that bamboos were ideal for rehabilitation of degraded forest land due to their rapid growth cycles and soil binding properties. This intervention could allow the DRC's poor-quality soils to build up fertility more quickly. Bamboo could be used for food, handicrafts, furniture, construction materials and much more. This intervention was modelled as a stand-alone activity and as part of a

[36] Edible portion = 2,072g weekly (equivalent to 1 avocado per day).

resilience package. It was assumed that bamboo would be cultivated 22 days per month with income of 4,900-6,868 CDF ($2.5-$3 USD) per day[37].

The FAO reported having distributed 1,000 guinea pigs and rabbits between January to October 2020 (25). This intervention was modelled to determine that impact that guinea pig/rabbit rearing could have on rural households in Tanganyika. It was assumed that 2,000g could be produced weekly, with an edible portion of 1,520g for the household. In Sud-Kivu, farmers rearing livestock reported keeping livestock as assets for cash, with household meat consumption being of low priority. Pigs and goats were mostly sold, while smaller animals (rabbits, chickens) and animal-source foods (e.g. eggs) would be sold and consumed at a 50:50 ratio (26). This type of intervention could be accompanied by SBCC messages informing farmers of the importance of household consumption, particularly for those individuals in the household requiring the nutrients provided by these foods, such as women, girls and young children.

Figure 14 illustrates the potential impact that three livelihood interventions and two resilience packages (A and B) could have on the daily cost of the diet in Tanganyika. The nutritious diet cost for an average household of 6 persons was estimated at 7,439 CDF ($3.75 USD) per day. The guinea pig/rabbit intervention could reduce the daily diet cost by 41% to 4,369 CDF ($2.20 USD) daily, while cash crop intervention (bamboo) could reduce it by 40% to 4,439 CDF ($2.24 USD) daily.

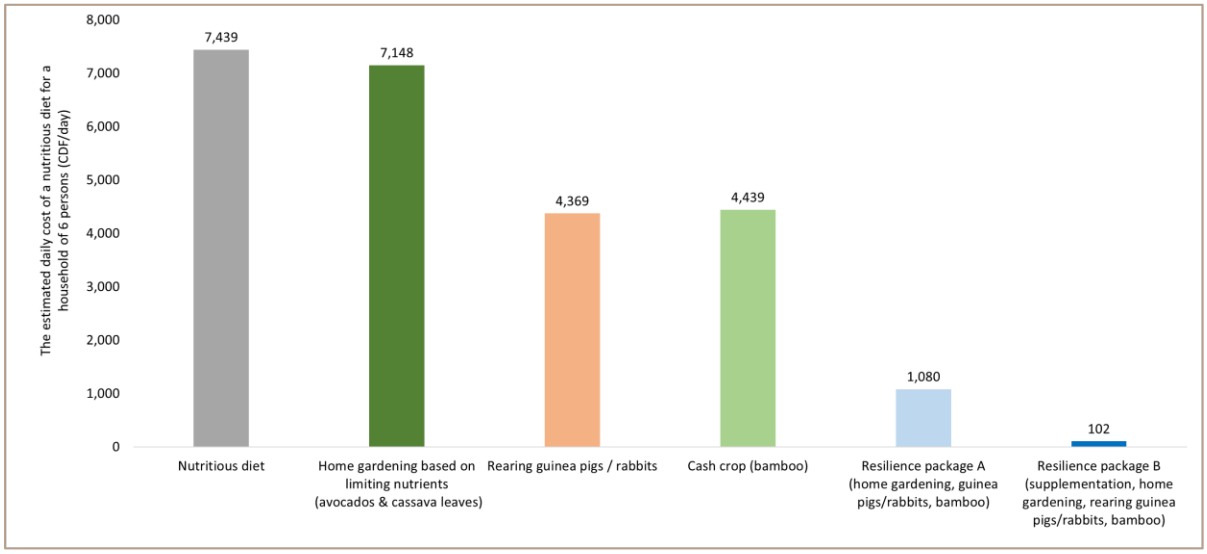

Figure 14. The estimated cost of a nutritious diet (CDF/day) for an average household of 6 people; with a market gardening intervention (avocado & cassava leaves); with a guinea pig/rabbit intervention; with a bamboo

[37] Total daily revenue estimated at: 5,881 CDF x 22 days = 129,382 monthly. 70% = 90,567 or ~3,000 daily revenue.

intervention; combined resilience package (avocado, cassava leaves, guinea pig, bamboo); with the resilience package and MMT.

The combined packages could have the greatest impact on both reducing the cost of the diet and increasing nutrient intake. The resilience package (A) that included the market garden, guinea pig/rabbit and cash crop interventions could reduce the daily diet cost by 95%, to 1,080 CDF ($0.55 USD). Meanwhile, package B, the same as package A with the addition of a MMT for the adolescent girl and pregnant and lactating women, could further reduce the cost of the nutritious diet to only 105 CDF ($0.05 USD) per day.

Figure 15 illustrates the nutrients that could be covered by resilience package B, via consumption of one avocado (296g), cassava leaves (243g), guinea pig (217g) and 1g MMT (for the adolescent girl and PLW) daily for a household of 6 people. The models did not account for income generated from market sales of the remaining 60% of cassava leaves, which could lower the cost of the diet further.

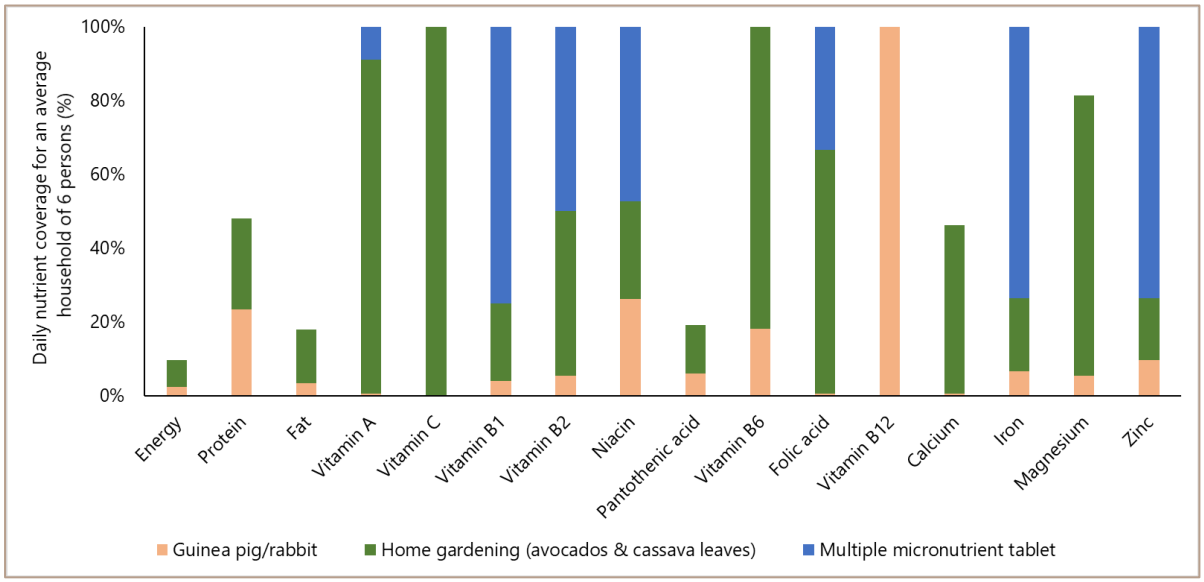

Figure 15. The nutrient coverage provided by a resilience package, including a micronutrient tablet, for an average household of 6 people.

Key message 10: There is an opportunity to improve school feeding by including fresh foods, animal-source foods and nutrition-specific intervention for the extremely vulnerable.

The country's Education Sector Plan (2016-2025) set the target of 3,000 schools providing subsidised school meals by 2025. Yet, the government's 2016 National Social Protection policy mentions school feeding plans only once, with complete financing from WFP to implement the programme (59). The number of assisted schools dropped by more than 80%, from 1,000 in 2014 to 163 in 2020 at the time of an external programme evaluation

(60). At the time of analysis, the school feeding programme was only operating in North Kivu.

The SF evaluation found that 87% of households thought that the lunch meal contributed to some of the children's' nutritional needs. However, small rations and limited diversity were two key challenges. Though the ration was considered sufficient for small children, interviewees felt that the portions were inadequate for older children. While overall dietary diversity was found to slightly increase for the poorest children, it did not necessarily increase for children from wealthier households. Lack of proper cooking equipment was also a challenge, with three quarters of schools using proper equipment and only 5% of these considered the type and quality of equipment to be adequate (60).

Currently, only seven[38] African countries have produced food-based dietary guidelines that are adapted to the nutrition situation, eating habits and culture (61). The guidelines could be used by PRONANUT, the Departments of Education and Health, to guide what nutrients and foods to prioritise in programmes and menu-planning. Nutrient-based standards provide advice on the proportion (%) of total requirements that should be targeted for energy, protein, and essential nutrients (e.g. calcium, vitamin A, B12, zinc…). The recommendations could advise on the inclusion of specific fruits and vegetables, protein-source foods (fish, eggs, liver, beans, lentils, etc.), staples, including the use of fortified foods. The guidelines could warn against over-consumption of sugar, fats and salt to halt the rise of overweight and obesity. Finally, guidelines could help food preparers design menus using locally available foods that meet minimum nutrition and SF standards, including in SF programmes (62).

As many low -and-middle-income countries are currently experiencing the triple burden of malnutrition, the DRC could be at the same risk if OW and obesity are not simultaneously and strategically addressed alongside undernutrition and micronutrient deficiencies. The rise of OW and obesity in the DRC should be noted. Four percent (4%) of children were found to be OW or obese (47). While this doesn't seem a cause for concern, the rate of OW amongst adolescents (10-19 years) has been steadily rising. As of 2016, 13.5% of girls and 5.7% of adolescent boys were considered OW in DRC (28). According to the most recent Global Nutrition Report, one in ten DR Congolese adult women were obese (3.6% of men) (63). Food-based dietary guidelines linked to an SBCC strategy could guide all sectors on targeted messages directed at specific individuals and groups at different entry points, including education, food supply and health sectors, and at different income levels.

[38] Countries with FBDG: Benin, Kenya, Namibia, Nigeria, Seychelles, Sierra Leone, South Africa

The current school feeding ration provides children 120g cereal (maize), 30g beans (red kidney), 10g fortified oil and iodized salt. The cost of a nutritious diet for a school-aged child (10-11-year-old) was CDF 960 ($0.49 USD) per day. It was estimated that this meal reduced the cost of the diet for the school-aged-child by 15%, to 814 CDF ($0.41 USD) per day.

The same school meal was modelled with an additional three interventions to understand their effect on both nutrient intake and daily food cost. The first intervention was a 0.4g portion of multi-micronutrient powder[39] (MNP), the second a 40g portion of cassava leaves and the third both MNP and cassava leaves added to the current SF ration. Figure 16 illustrates cost of a nutritious diet for a school-age child compared to each of the interventions. The addition of MNP reduced the daily cost by 24% to 734 CDF ($0.37 USD), while adding cassava leaves reduced the cost by 17% to 797 CDF ($0.40 USD). Adding MNP and cassava leaves to SF reduced the cost of the meal by 24% to 726 CDF ($0.37 USD).

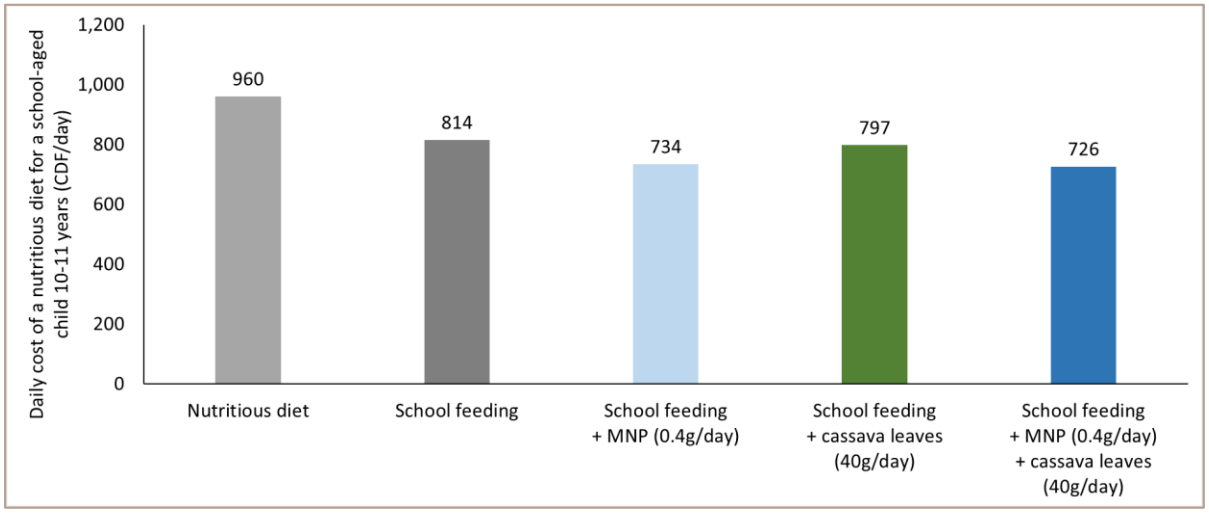

Figure 16. Estimated cost of a nutritious diet for a school-aged-child (10-11 years) compared to four interventions: School feeding, SF + micronutrient powder (0.4g/day); SF + cassava leaves (40g/day) and; SF + MNP (0.4g/day) + cassava leaves (40g/day).

Figure 17a shows the nutrient coverage by the current SF meal for the school-aged-child, with many, including vitamin A, vitamin C, vitamin B2, niacin, pantothenic acid, vitamin B12 and iron, falling below the 30% coverage target of daily nutrient needs for school feeding programmes (64). Meanwhile, figure 17b shows the potential impact of the current SF ration combined with the MNP and cassava leaf interventions. Whilst MNP clearly had the biggest impact, the cassava leaves provide additional amounts of vitamins A, C, B2, niacin, folic acid, calcium, iron, magnesium, and zinc. The two interventions hit or exceeded many target

[39] Micronutrient powder per 100g packet: RAE (ug retinol) 125,000; Vit C (mg) 7,000; Vit B1 (mg) 220; Vit B2 (mg) 220; Niacin (mg) 3,000; B6 (mg) 250; Folate (mcg) 76,500; Vit B12 (mcg) 450; Copper (mg) 150; Iron (mg) 3,100; Zinc (mg) 1,400.

nutrient requirements; however, they had little impact pantothenic acid and calcium. For this reason, adding avocado (pantothenic acid) or small dried fish (calcium) to the meal – two of the cheapest sources for the school-age-child identified in the CotD software - could make more of an impact.

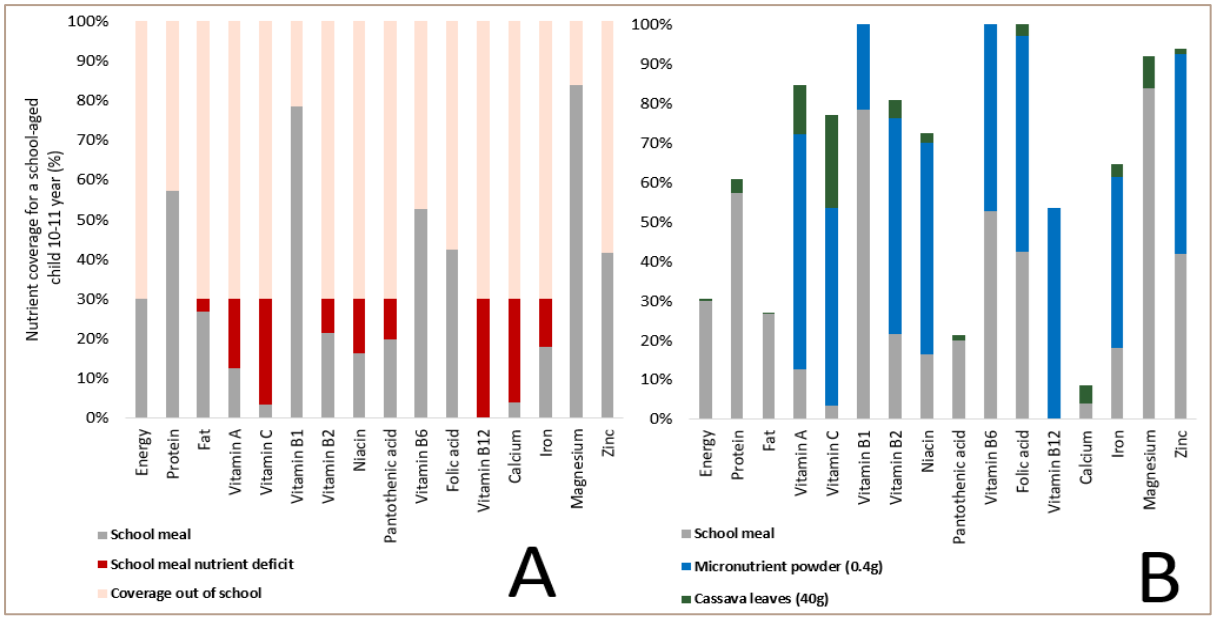

Figure 17a. The estimated percentage of nutrients covered by the current school meal for a child 10-11 years (%). Figure 17b. The estimated percentage of nutrient coverage by a school meal with combined MNP (0.4g/day) and cassava leaf (40g) interventions.

Key message 11: Adolescent girls and pregnant and/or lactating women have the highest nutrient needs and account for half the household cost of a nutritious diet. Targeted interventions for these individuals could reduce the cost of the nutritious diet by 40% for an average household.

Adolescent girls and pregnant and/or lactating women (PLW) have higher nutrient requirements than other household members. Adolescent girls are particularly at risk of iron deficiency anaemia due to rapid growth during the adolescent period and losses due to menses. The World Health Organization (WHO) recommends daily iron supplementation as a public health intervention for menstruating women and adolescent girls where prevalence of anaemia is 40% or higher for a period of three consecutive months (65). As well, WHO recommends iron and folic acid supplementation for pregnant women to meet their own needs, and to ensure foetal development (66).

Sexual and gender-based violence was common in the DRC, with 13% of young women (18-29 years) having experienced some form of sexual violence before the age of 18 (2). According to the World Bank, more than one third (36.8%) of women 14-49 had

experienced physical and/or sexual violence within the 12 previous months. Only 31% of women 15-49 made their own informed decisions regarding sexual relations, contraceptive use, and reproductive health care. Close to 20% of women 15-49 used contraceptives, while 27% of women 15-19 had children or were pregnant at the time of survey (46). The adolescent birth rate[40] was found to be 65% higher in rural (136/1,000), rather than urban (82/1,000) areas (47).

A comprehensive gender equality survey found that men tended to be the household decision maker. However, when it came to participation in household tasks, men saw themselves as only being responsible for paying bills and house repairs. Women were primarily responsible for cleaning, cooking, buying food and washing – this is in addition to being carers of children and elderly and being the primarily subsistence farmers. Older, employed and those who regularly consume two meals (for both sexes) reported greater joint decision-making (67).

Children who are malnourished in the first two years of life and gain weight later in childhood and/or adolescence are at a greater risk of nutrition-related chronic diseases (68). The prevalence of OW and obesity in women of reproductive age was found to be 18.9% and 7.1% in urban areas, and 8.7% and 1.2% in rural areas, respectively. Unsurprisingly, large discrepancies were found between wealth groups: OW prevalence in WRA from poor and rich wealth groups was 6.8% and 22.6%, respectively. Meanwhile, obesity prevalence in poor and rich wealth groups was 0.4% and 10.2%, respectively (2). The trend towards overweight and obesity in urban areas and amongst wealthier income groups indicates emerging negative dietary patterns, underscoring the importance of dietary diversity and targeted SBCC messages to prevent all threats to malnutrition - not just chronic and acute malnutrition - as incomes rise.

In the DRC, prevalence of anaemia was 40.1%, 40.6% and 44.1% amongst adolescent girls, non-pregnant women and pregnant women, respectively (69). The estimated daily cost of a nutritious diet for an adolescent girl in DRC was 1,511 CFD ($0.77 USD). Two nutrition-specific interventions were modelled to understand the potential impact on both cost of a nutritious diet for this individual and effect on nutrient intake.

Figure 18 shows the potential impact of an iron and folic acid (IFA) tablet[41] and a multiple-micronutrient tablet[42] (MMT) on the AG's nutritious diet cost. The IFA supplementation (1g daily) could reduce the nutritious diet by 41%, to 988 CDF ($0.50 USD) per day, while the

[40] Births per 1,000 women
[41] Iron and folic acid (IFA) supplementation per 100g = Folate (mcg) 66,667; Iron (mg) 6,000 with 7% iron absorption factor.
[42] Multi-micronutrient tablet (MMT) supplementation per 100g = RAE (ug retinol) 80,000; vitamin C (mg) 7,000; vitamin B1 (mg) 140; vitamin B2 (mg) 140; niacin (mg) 1,800; vitamin B6 (mg) 190; folate (mcg) 66,667; vitamin B12 (mcg) 260; copper (mg) 200; iron (mg) 3,000, with 7% absorption factor; and zinc (mg) 1,500.

MMT (1g daily) could reduce the adolescent girl's daily diet cost by 43%, to 855 CDF ($0.43 USD) per day.

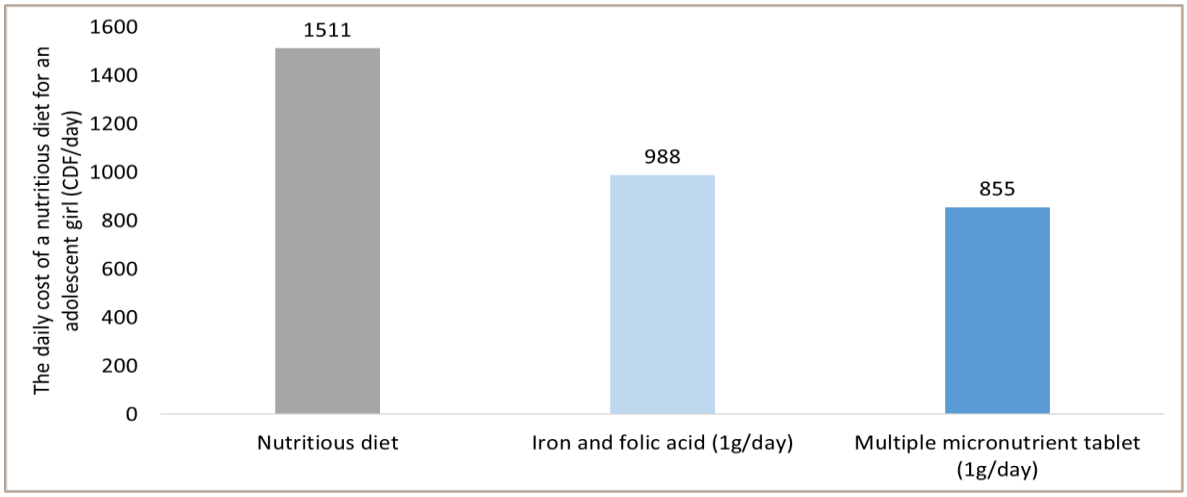

Figure 18. The estimated daily cost of a nutritious diet for an adolescent girl; with an iron and folic acid (IFA) supplement (1g/day); with a multi-micronutrient (MMT) supplement (1g/day).

Figure 20 shows the potential impact that each of the two supplements could have on nutrient intake for an adolescent girl. In lighter blue, the IFA intervention was estimated to meet 100% of folic acid and 97% of iron requirements for the girl. In dark blue, the MMT intervention was estimated to meet 100% of RNIs for vitamins A, C, B1, B2, B6, B12, niacin, folic acid, iron and zinc.

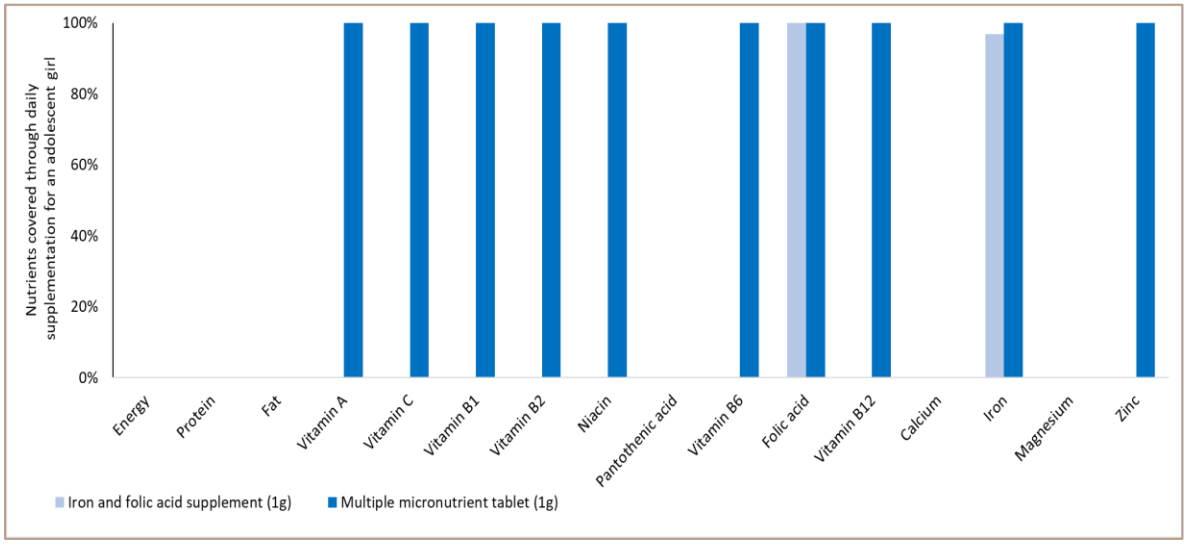

Figure 19. The nutrients covered through daily IFA (dark blue) and MMT (light blue) supplementation for an adolescent girl.

The estimated cost of a nutritious diet for a pregnant and lactating woman was 1,280 CDF ($0.65 USD) per day. Figure 21 shows the potential impact of IFA and MMT interventions (1g daily) on the PLW's daily diet cost, as well as an additional Super Cereal[43] (SC) and fortified oil[44] intervention. Though a standard portion of SC for a PLW was 200g, a slightly smaller portion (120g) was modelled as it was assumed that the ration would be shared with other household members. The results show that the SC and oil intervention could reduce the nutritious diet cost for the PLW the most, by 34%, to 846 CDF ($0.43) per day. The IFA and MMT interventions could reduce the nutritious cost by 15% (1,083 CDF / $0.55 USD daily) and 29% (913 CDF / $0.46 USD daily), respectively.

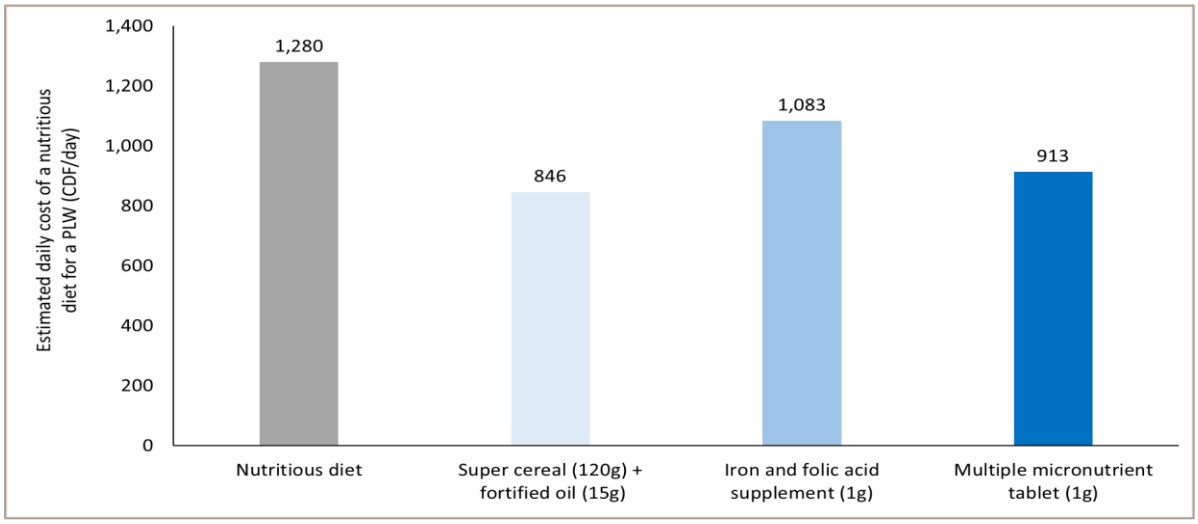

Figure 20. The estimated daily cost of a nutritious diet for a PLW; with a Super cereal (120g) + fortified oil (15g) intervention; with a daily IFA (1g) intervention; with a daily MMT (1g) intervention.

Key message 12: Infant and young child feeding practices are sub-optimal. Community-based approaches to behaviour change need to be prioritised and included in an SBCC strategy.

According to the most recent Demographic Health Survey (2), an estimated 43% of children under five years of age are stunted (low height-for-age) and 8% of children are wasted (low weight-for-age) in the DRC. Additionally, there is a high prevalence of anaemia amongst children under five years; on average, 61.2% of males and 55.4% of females are anaemic (haemoglobin <11g/dl), with prevalence of anaemia as high as 76.4% in children 6-8 months (2). While national-level data was not available, zinc deficiency (adjusted) prevalence

[43] Super cereal (SCB+/WSB+) per 100g = energy (kcal) 380; protein (g) 14; fat (g) 6; RAE (ug retinol) 1039.04; vitamin C (mg) 90; vitamin B1 (mg) 0.6; vitamin B2 (mg) 1.7; niacin (mg) 11; vitamin B6 (mg) 1.3; folate (mcg) 200; vitamin B12 (mcg) 2; pantothenic acid (mg) 2.1; calcium (mg) 420; iron (mg) 10, with 5% absorption factor; magnesium (mcg) 150; phosphorous (mg) 280; potassium (mg) 140; and zinc (mg) 7.

[44] Fortified palm oil per 100g = energy (kcal) 884; fat (g) 100; saturated fat (g) 49.3; monosaturated fat (g) 37; polyunsaturated fat (g) 9.3; RAE (ug retinol) 720.7; iron (mg) 0.01, with 5% absorption factor.

was found to be 23.1% and 24.8% in children 6-12 months and 24-59 months in Sud-Kivu, respectively, and 20.1% and 27.2% in children 6-12 months and 24-59 months in Kongo Central, respectively (70). The last report outlining global prevalence of vitamin A deficiency (VAD) estimated that 61.1% of preschool-aged children were suffering from VAD (serum retinol <0.70µmol/l) (71).

Breastfeeding plays an important role within the first two years of a child's life by providing infants and young children with essential nutrients for growth and development. The WHO recommends that mothers initiate breastfeeding within the first hour after birth, exclusively breastfeed (no other food or water) for the first six months of the child's life, and continue to breastfeed up to two years, with complementary feeding of nutritious foods from six months (72). An examination of breastfeeding practices in the DRC found that 47% of mothers initiated breastfeeding within the first hour after birth, 54% of children under six months were exclusively breastfed, and 79% of children are introduced to solid or semi-solid foods between 6-8 months of age (47). Of the children who were weighed at birth (24% not weighed), 11% were low birth weight (< 2,500g) (47).

According to the SOWC report, 79% of children were introduced to solid, semi-solid or soft foods between the ages of 6-8 months, as recommended by the WHO (27). However, a study on the barriers to optimal breastfeeding in South Kivu found few mothers engaged in optimal feeding practices due to poverty, heavy work burden, lack of decision making-power in the household, and perceived milk-insufficiency. Around 20% of women gave food other than breastmilk within the first three days after birth and half of interviewed mothers felt that it was ok to give water to children less than 6 months old (73). The SOWC reported a minimum diet diversity (MDD)[45] of 17%, minimum meal frequency (MMF)[46] of 35%, minimum acceptable diet (MAD)[47] score of 8% for children 6-23 months. As well, 29% of children under two consumed zero fruits and vegetables (27).

Finally, the most recent Multiple Indicator Cluster report (47) stated that 88% of children 12-15 months and 50% of children 20-23 months had consumed breastmilk on the previous day. Therefore, modelling was performed with the assumption that breastfeeding practices in DRC were suboptimal (at only 50% (266g) of breastmilk provided per day).

[45] MDD = Breastfed children consumed foods from 5 of 8 food groups during the previous day

[46] MMF = Child received solid, semi-solid or soft foods (including milk for non-BF children) the minimum number of times or more the previous day (2x for BF infants 6-8 months, 3x for BF children 9-23 months, 4x for non-BF children 6-23 months)

[47] MAD = A proxy indicator for the energy adequacy and micronutrient density of a child's diet, combined. For non-BF children, it also accounts for consumption of 2 milk feeds. For BF Children = Children 6-23 months who have met MDD and MMF in the past 24 hours. For non-BF = Children 6-23 months who meet MDD (4 of 6 food groups after dairy removed) and MFF and received 2 milk feeds in the previous 24 hours.

Figure 22b shows the potential reduction in daily food cost for a child 12-23 months with two interventions: a medium quantity lipid-base nutrient supplement (LNS-MQ) 'Plumpy Doz' and a Ready-to-Use-Supplementary-Food (RUSF) 'Plumpy Sup'. The cost of a nutritious diet for a sub-optimally breastfed child dropped by 57%, from 281 CDF ($0.14 USD) daily to 121 CDF ($0.06 USD) daily, with the LNS-MQ intervention and by 73%, to 77 CDF ($0.04 USD), with the RUSF intervention.

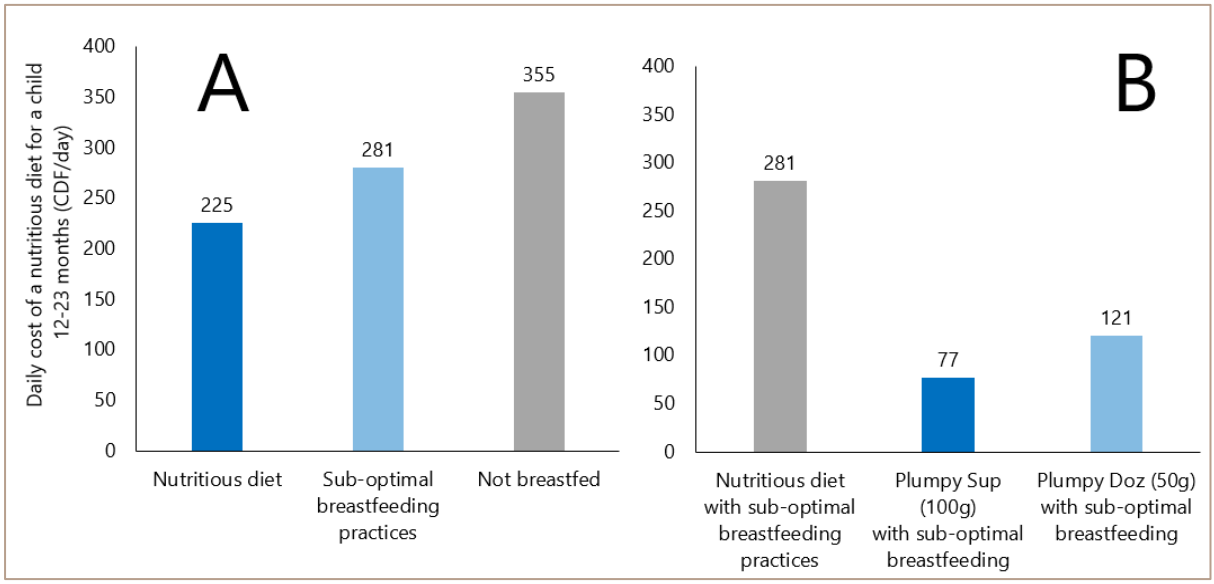

Figure 21a. The cost of a nutritious diet for a child 12-23 months with optimal BF, sub-optimal BF and absence of BF. Figure 22b. The cost of a nutritious diet for a child 12-23 months (CDF/day) with sub-optimal feeding practices; with an LNS-MQ (Plumpy Sup 100g) intervention; with an RUSF (Plumpy Doz 50g) intervention.

Figure 23 illustrates that the nutrients covered by sub-optimal breastmilk provision accompanied by an RUSF supplement could meet almost all a 12-23-month child's daily energy, protein and essential nutrient requirements. The LNS-MQ and RUSF interventions offer a way to cover the nutritional needs of the children on top of breastmilk, particularly in fragile settings where nutritious foods are scarce.

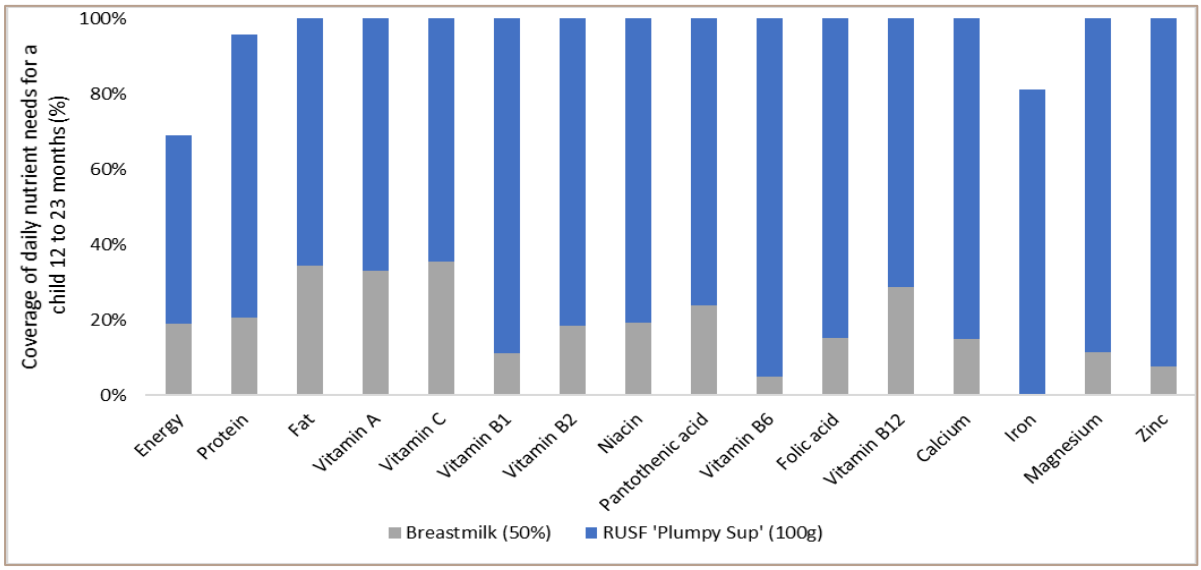

Figure 22. Nutrient coverage for a sub-optimally breastfed child 12-23-months with an RUSF (Plumpy Sup 100g) intervention.

Maternal, infant and young child feeding practices - including breastfeeding and complementary feeding - should be a core component of a national SBCC strategy and integrated into all pre- and post-natal activities for both men and women.

Key message 13: Improved interventions, delivered by all sectors, can improve access to nutritious food for most households.

To better scale up assistance, programmes and policies designed to prevent and treat malnutrition must take a multi-sectoral approach to address the needs of the most vulnerable to improve coverage and ensure sustainability. In emergency response, resilience and development scenarios, nutrition-specific interventions, such as supplementation or specialised nutritious foods could help meet the micronutrient needs of children, while iron and folic acid tablets or multiple-micronutrient tablets can cover a large proportion of the needs for adolescent girls and pregnant and lactating women. Adolescent girls, as well as other school-age children, could also benefit from nutritious or fortified meals. School feeding offers an important opportunity to encourage parents to keep children in school and provide children with meals that cover a significant proportion of their micronutrient needs. Based on this and discussions with stakeholders, the FNG study modelled integrated intervention packages adapted to different contexts, the results of which are presented below.

Emergency package

In humanitarian crisis response, when systems are under pressure, household assistance must be highly integrated to cover food and nutrition needs, including for the most vulnerable individuals in the household. For seasonally food-insecure people, displaced people and refugees, it is imperative that social protection and emergency response programmes continue to meet not only energy needs, but also a significant portion of individual micronutrient needs. Often, these people are entirely dependent on assistance. In settings with functioning markets, including availability of affordable nutritious foods, voucher distribution and cash transfers, alone or coupled with in-kind food aid of staple items, are cost-effective ways to improve household capacity to purchase nutritious foods. The level of assistance should be targeted to particularly vulnerable people (school-aged children, adolescent girls, pregnant and lactating women) to address micronutrient deficiencies most effectively. For this assistance, it is essential to reinforce the importance of the specific needs of vulnerable individuals, such as women, children and girls to prevent malnutrition in all its forms. The first integrated package is designed for an emergency response and is detailed in table 4 below.

Table 4. Details of selected interventions for an emergency response package, modelled in Ituri, North-Kivu, South-Kivu, Tanganyika, Kasai and Kasai Central.

	Nutrition-specific	Education	In-kind assistance	Cash assistance
Child 12-23 months	Plumpy Doz (50g) or Plumpy Sup (100g)			
Child < 5 years	Plumpy Doz (50g) or Plumpy Sup (100g)			
Child 10-11 years		School feeding with micronutrient powder (0.4g)		
Adolescent girl	Multiple micronutrient tablet (1g)			
Pregnant or lactating woman	Multiple-micronutrient tablet or a ration of Super Cereal with fortified oil			
Household			In-kind food assistance ration (Maize flour, beans, fortified oil, salt)	Cash transfer

The integrated emergency response package reduces the cost of the nutritious diet for the household by an estimated 70% with in-kind assistance and almost 85% with a cash transfer (figure 23). On average, the household would need an estimated 800 – 1,500 CDF daily to

cover the remaining amount of the nutritious diet. The emergency response package could meet the needs of the poorest populations with interventions targeting the most vulnerable individuals and later move towards more sustainable resilience support to improve of livelihoods outcomes. Figure 25 shows the household's estimated nutritional coverage provided through an emergency response package. After the integrated emergency response package, the number of households unable to afford a nutritious diet reduced from more than half of households to only 3-4% of those with cash-assistance and 9-11% of those with in-kind assistance (figure 24).

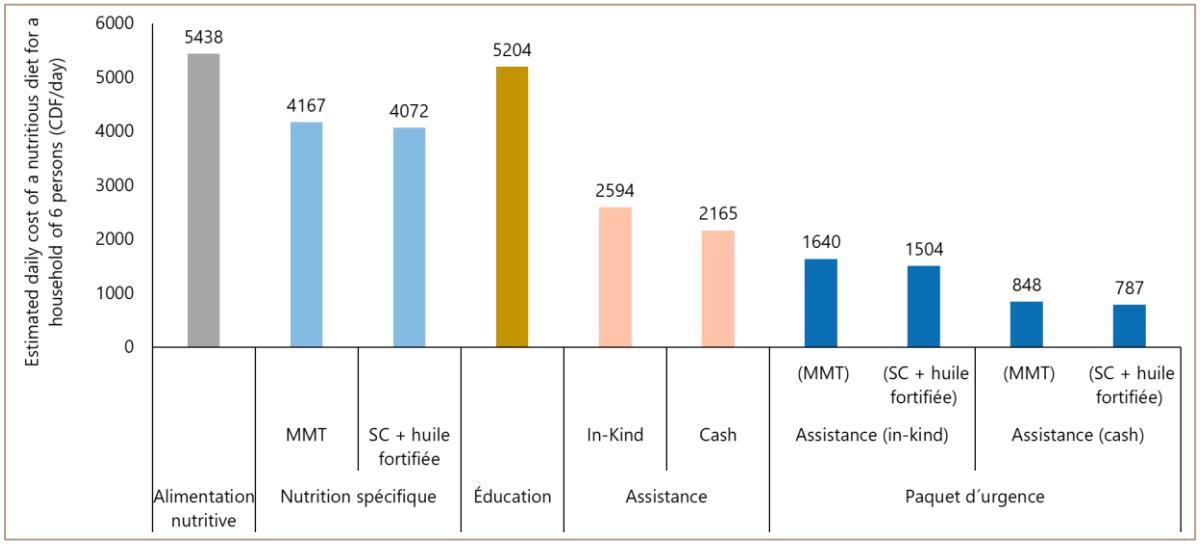

Figure 23. The daily cost of a nutritious diet and selected interventions, including integrated emergency packages (in-kind and CBT).

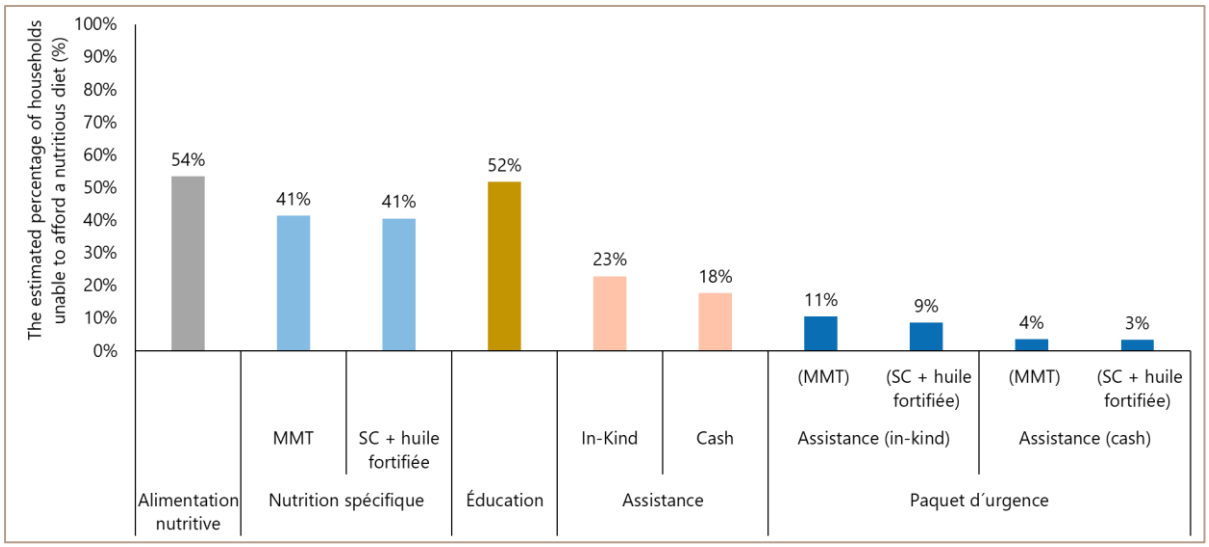

Figure 24. The estimated percentage of households able to afford a nutritious diet; with selected interventions and two integrated emergency packages.

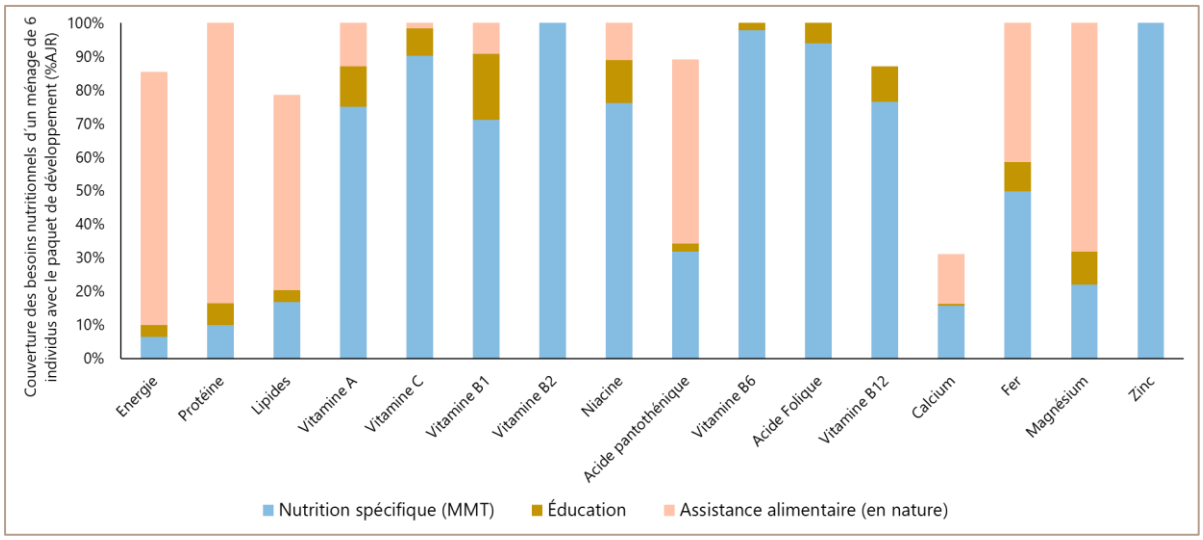

Figure 25. The nutrient coverage for a household of 6 persons with an emergency package (in-kind assistance).

Resilience package

Greater efficiency in the supply chain of nutritious foods could have a beneficial effect on reducing their cost, especially in rural areas which are particularly affected by high import prices and transport costs. It is essential to strengthen the sector and invest in infrastructure suitable for fresh food and animal feed, such as power, roads, water supply, storage facilitates and cold chains that allow for the production and movement of food in these areas. Although cereals and tubers do not cover most micronutrient needs, reducing post-harvest losses and improving production could strengthen livelihoods and generate additional income needed to improve household diets. Crop diversification through widespread market gardening, legume cultivation and horticulture could result in more nutritionally sensitive farms targeted at limiting nutrients. Ultimately, this could strengthen household resilience through greater diversity of nutritious foods and lower risk than those associated with monoculture farming. The interventions included in the modelled integrated resilience package are detailed in table 5 below.

Table 5. Details of selected interventions for a resilience package modelled in Ituri, North-Kivu, South-Kivu, Tanganyika, Lualaba, Kasai and Kasai Central.

	Nutrition-specific	Education	Agriculture
Child 12-23 months	Plumpy Doz (50g)		
Child < 5 years	Plumpy Doz (50g)		
Child 10-11 years		School feeding with micronutrient powder	
Adolescent girl	Tablet of multiple micronutrients (1g)		

Pregnant or lactating woman	Tablet of multiple micronutrients (1g)		
Household			-Improving yields of staple foods (cereals, legumes) -Diversifying production: leafy greens and avocados -Producing animal-source foods (eggs)

Figure 26 shows that the integrated resilience package is estimated to reduces the cost of a nutritious diet for a household by half. This could promote access to a diversified diet for different individuals in the household. The proportion of households unable to afford a nutritious diet dropped from 54% with no intervention to 21% with an integrated nutrition package, as shown in figure 27. Additionally, the nutrient coverage with a resilience package (figure 28) shows that a good proportion of nutritional needs are covered by specific nutrition interventions, school meals and the household's own production.

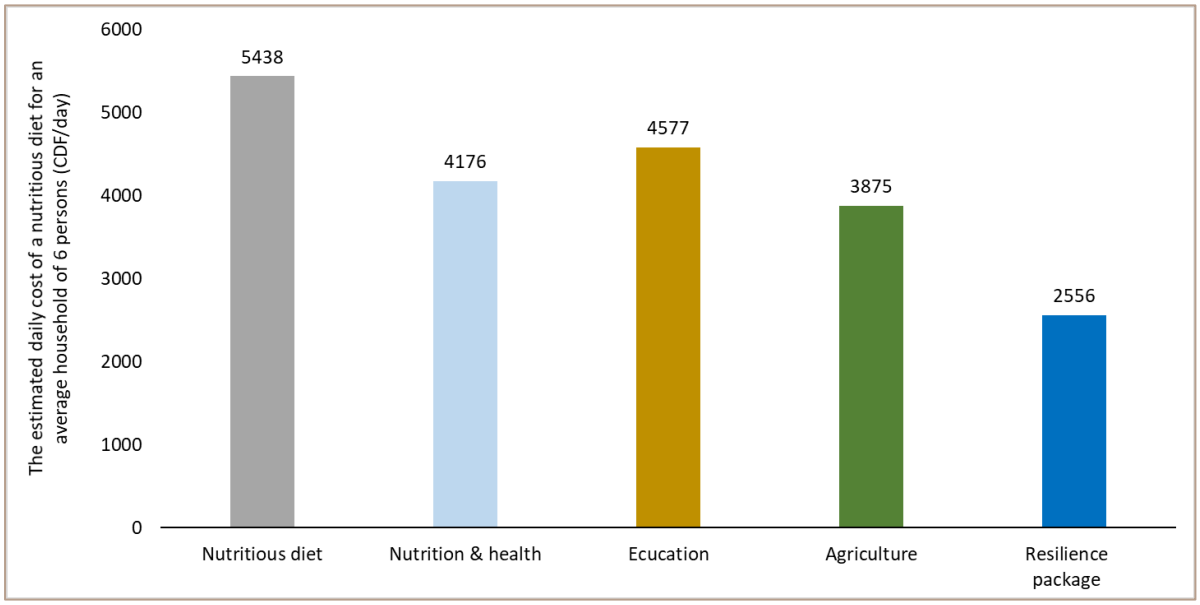

Figure 26. The daily cost of a nutritious diet, with specific interventions (nutrition & health, education, agriculture) and an integrated resilience package.

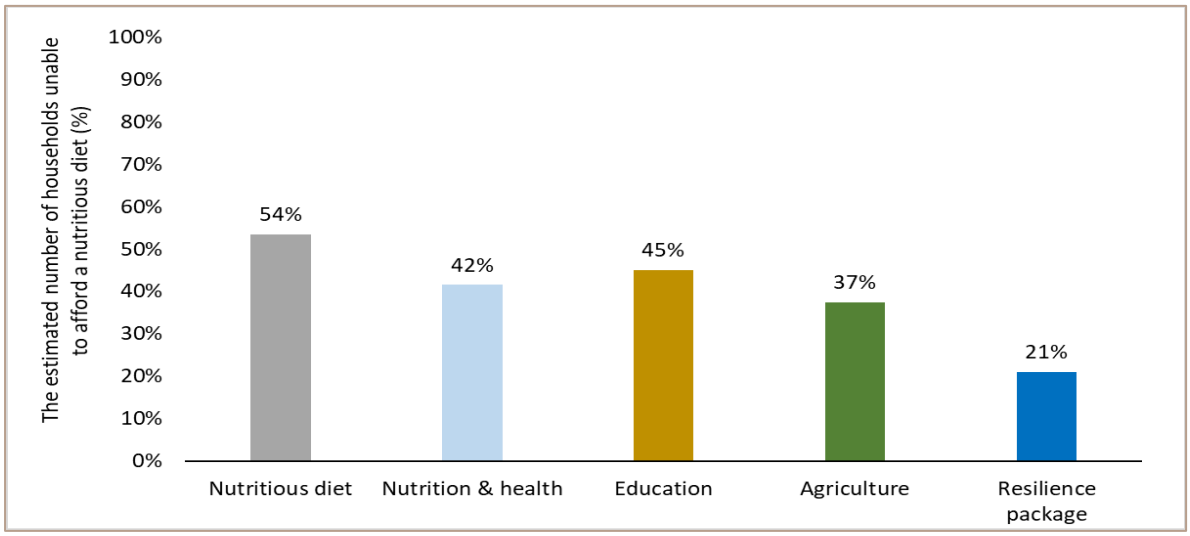

Figure 27. The estimated percentage of households unable to afford a nutritious diet, with selected interventions (nutrition & health, education, agriculture) and an integrated resilience package.

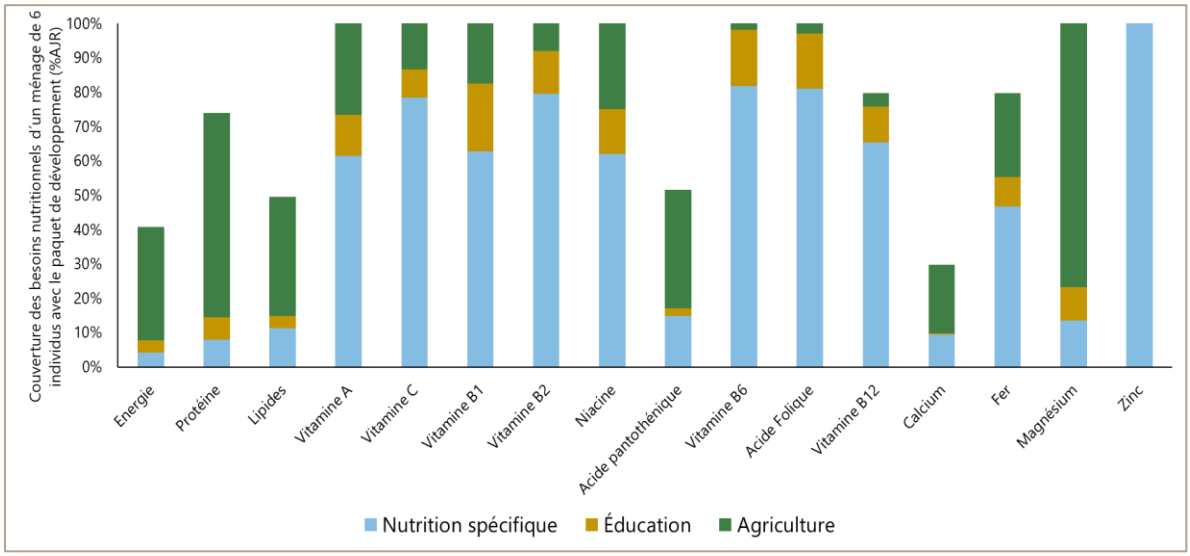

Figure 28. The nutrient coverage for a household through nutrition-specific, education and agriculture interventions.

The development package

Improving value chains can increase the availability and, thus, profitability of nutritious foods. In turn, this encourages inclusion of nutritious foods in the diet and in production. Many value chains in DRC could be further developed - for example: private sector fortification of staple foods, fish farming, small livestock rearing, and vegetable production. The third development package is tailored to areas with greater market functionality and food availability. This package includes market-based interventions, including fortification of

maize flour or vegetable oil. The interventions modelled in the third integrated development package, which focuses on fortification, are detailed in table 6 below.

Table 6. Details of selected interventions for a development package modelled in Kwilu, Kwango and Kongo Central.

	Nutrition-specific	Education	Agriculture	Fortification
Child 12-23 months	IYCF			
Child < 5 years	IYCF			
Child 10-11 years		School feeding with micronutrient powder		
Adolescent girl	Tablet of multiple micronutrients			
Pregnant or lactating woman	Tablet of multiple micronutrients			
Household			- Improved yields (cereals, legumes) -Diversifying production: leafy greens and avocados -Production of animal-source foods (eggs)	Fortification of maize flour and vegetable oil

Although the integrated resilience package is more based on market-related interventions, supplementation for women of reproductive age has been recommended as they have been identified as particularly vulnerable. The cost of nutritious food was estimated to be reduced by more than half through the development package (figure 29). Figure 30 illustrates that the number of households able to afford a nutritious diet

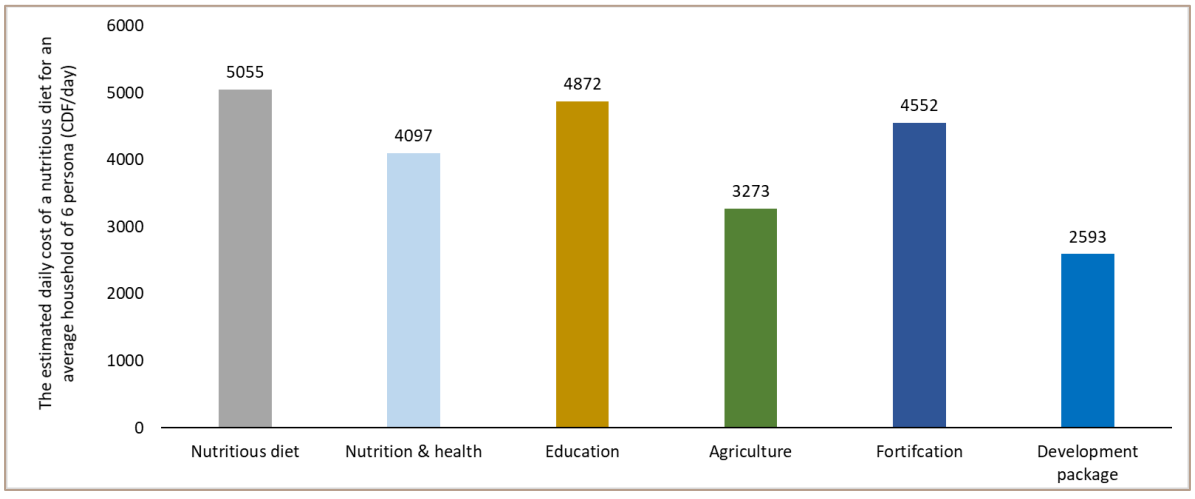

Figure 29. The estimated daily cost of a nutritious diet for an average household of 6 persons, with selected interventions (nutrition & health, education, agriculture, fortification), and a development package.

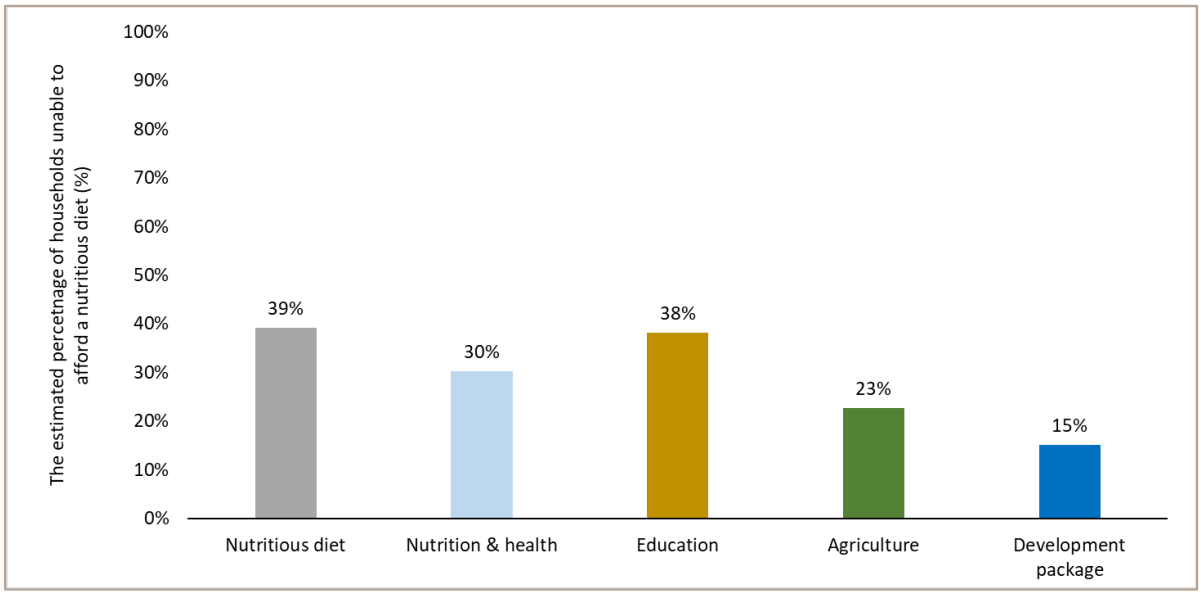

Figure 30. The estimated percentage of households unable to afford a nutritious diet, with selected interventions (nutritious & health, education, agriculture) and a development package.

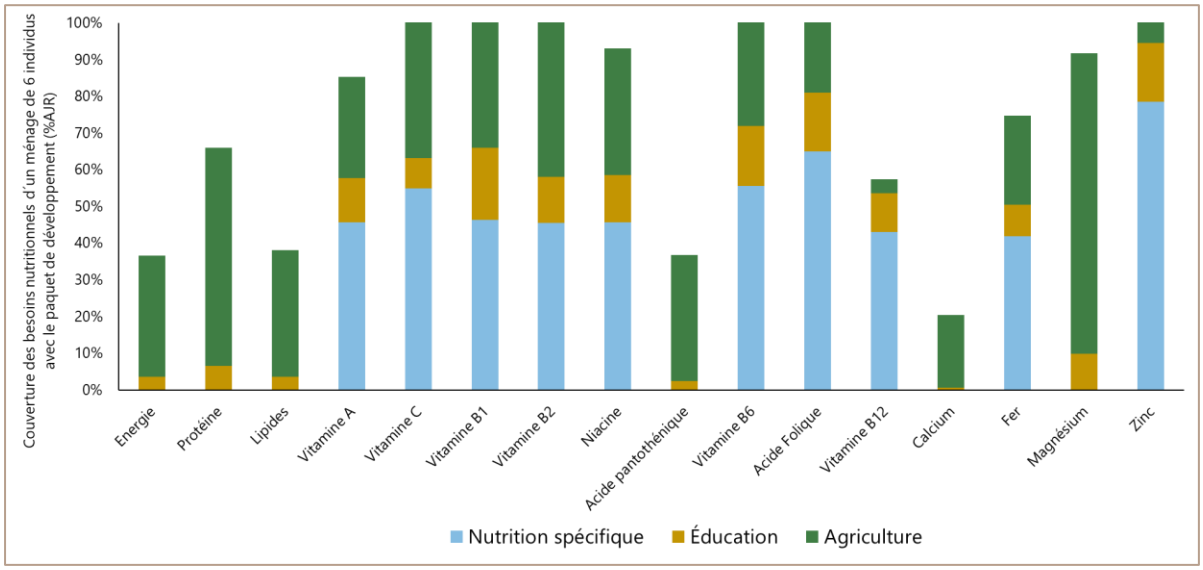

Figure 31. The nutrient coverage for a household provided by nutrition-specific interventions, school feeding and household food production.

In the DRC, the multisectoral opportunities for improving nutrition through the food system are not being exploited to the required extent. The capacity for food production – specifically nutritious fresh produce and animal-source foods – is insufficient to cover the need of the population. The rural food system is particularly characterized by an uneven supply of nutritious foods, due to insufficient supply of perishable foods, inadequate infrastructure, lack of power and road networks, and insecurity.

A nutritious diet composed of diverse food groups is two to three times more expensive than a diet covering only energy needs and remains inaccessible for one in two households. Low household income and fragile livelihoods in rural areas limits dietary diversity, an important determinant of malnutrition. While urban areas are characterised by a higher standard of living and have comparatively greater access to a diverse diet than those in rural areas, urban areas also favour overweight and obesity. Both rural and urban settings require tailored strategies engaging the private and social welfare sectors to address low dietary diversity that leads to the double burden of malnutrition.

Given the challenges identified by the FNG analysis, it is imperative that implementation of the National Multisectoral Strategic Plan for Nutrition focus on improving nutrition through an approach that engages stakeholders in food, social protection, education, and health systems. The DRC must now focus on the following challenges that prevent people from accessing nutritious food: lack of value chains, infrastructure and/or storage; limited access to and/or high cost of nutritious foods; and low demand for nutritious food. Intervention strategies must be tailored to specific contexts, make nutritious food more affordable, account for local production and development opportunities and be implemented in conjunction with behaviour change communication by all sectors.

Pregnant and lactating women, adolescent girls, and children under two years should benefit from strategies to improve care and feeding practices. PLWs and adolescent girls account for the largest share (50%) of the nutritious diet for the household, and targeted interventions, such as the provision of iron and folic acid or multiple-micronutrient tablets, are cost-effective ways to meet the high needs (iron & vitamin B12) of these individuals in the DRC's current food environment.

Children under two have specific needs and sub-optimal IYCF practices creates greater vulnerability to malnutrition. IYCF practices needs to be improved, especially in situations where childcare is a responsibility that competes with field work in rural areas or employment activities in urban areas.

For low-income households, producing nutritious foods and generating income through agricultural activity can be a strategy to improve dietary diversity and reduce malnutrition. However, for households without livelihoods, in crisis situations, food and nutrition strategies need to be highly integrated to reduce the risks to women, adolescent girls and young children. In the case of internally displaced persons, integrated assistance programmes through in-kind transfers, cash transfers or vouchers, complemented by specific nutrition interventions targeting the most vulnerable individuals, have the potential to close high nutrient gaps and prevent malnutrition.

IV. Recommendations

FNG recommendations - AGRICULTURE, LIVESTOCK and FISHERY sectors		Linkages with other sectors
Governance	• Approve the decree for the constitution of a national food security and nutrition programme (PROSANA) that will coordinate all nutrition actions in the sector, including the implementation of FNG recommendations. • Engage stakeholders in agriculture, livestock, fisheries to form a working group with PRONANUT and nutrition stakeholders. Disseminate the FNG analysis results, recommendations, and roadmap. Where necessary, include Infrastructure and Energy as supporting actors to Agriculture.	Infrastructure, Energy
Regulatory and policy framework	• Identify local provincial and territory-level opportunities to enhance nutritious food production based on the FNG results. • Identify bottlenecks associated with Infrastructure and Energy and prioritize investment in both sectors that could best address barriers to the supply of nutritious food. • Integrate identified priorities into national Agriculture, Infrastructure and Energy plans and strategies. • Reform the land law to reduce inequalities in access to land and establish a mechanism to anticipate conflict, raising community awareness. • Reform the agricultural law to include land use planning and incentives for farmers to diversify crops, especially fresh and animal-source foods.	Infrastructure, Energy
Programmes and interventions	• Identify and strengthen existing programmes to diversify the production and supply of nutritious foods. Include communications to increase the consumption of nutritious foods in the community and among farmers, especially for individuals with high nutrient needs to increase nutritional impact. • Continue research and popularise the use of improved seeds – bio-fortified or pest-resistant - (e.g. INERA/ OBAMA Mosaic Africa Resistant).	Government, NGOs, Private Sector, Local Authorities, Research

	• Link producers to the private sector for staple food fortification and nutritious food processing. • Focus research on appropriate technologies for nutritious food supply. Prioritise funding to make these technologies available, if necessary, train for their use. • Reduce the risks linked to production of nutritious foods through contract farming and insurance schemes.	
Capacity development	• At the Agricultural technical services level, strengthen the knowledge of nutrient-rich crops and their importance for the population based on the FNG results. • At the Agricultural technical services level, build capacity on the integration of nutritional objectives and integration of monitoring indicators for improving dietary diversity in plans and programmes. • Establish mechanisms for local ownership of projects to facilitate sustainability.	Government, NGOs
Advocacy	• Establish policies or strategies to encourage NGOs to invest more in livestock and fisheries, by specific territory. • Advocate for Infrastructure and Energy sectors to develop and support the systems that supply nutritious foods.	NGOs, Infrastructure, Energy
Behaviour change communication	• Promote the nutrition-sensitive agriculture, in particular raise awareness of nutrient-rich crops and their benefits to the population based on the FNG findings. • Use Community Health Workers to encourage dietary diversity among farming communities. • Promote the list of local nutrient-rich agricultural products (Caterpillars, mushrooms, etc.)	Community Health Workers, ITALPs
Finance / budget	• Prioritise investments that support the supply of nutritious foods, especially fresh and animal-source foods.	Budget et Plan

FNG Recommendations – EDUCATION sector		Linkages with other sectors
Governance	• Engage education, nutrition, and food system stakeholders to form a working group for nutritious school meals. • Organise a workshop to brainstorm and define the nutritious school meals approach, including nutritional objectives. • Appoint national and provincial coordination for the supervision of school feeding activities. • Appoint a nutrition focal point in schools to ensure sustainability of support.	Health, Social Protection, Agriculture
Regulatory and policy framework	• Integrate nutrition objectives into the school feeding law currently being drafted. • Propose and vote on a law in favour of nutritious food in schools. • Promote and disseminate the law on nutritious foods in schools.	Health, Social Protection, Agriculture
Programmes and interventions	• Conduct a school meals inventory. • Develop a multi-stakeholder roadmap (e.g. organise local agricultural cooperatives to supply school meals). • Implement the education roadmap on nutritious food in schools., • Monitor and evaluate the implementation of the roadmap.	Health, Agriculture, Planning
Capacity development	• Develop a nutrition module and train education and teaching staff on nutritious foods. • Train staff (school feeding personnel, logistics support and kitchen staff) in the management of nutritious school feeding programme, including purchase, storage, and food safety of nutritious foods.	
Advocacy	• Use FNG analysis advocacy messages to sensitize parliamentarians on the importance of nutritious school feeding, especially in rural areas, to pass the law on nutritious school feeding. • Advocate for the mobilization of resources from technical and financial partners to finance the roadmap on nutritious school feeding.	Health, Agriculture

Behaviour change communication	• Organise campaigns to encourage girls to attend school (via media, Community Health Workers) • Organise awareness-raising sessions on nutritious foods for Management Boards, Parental Committees, Community Leaders, Trade Union Organisations and pupils/teachers. • Develop guidance on nutritious food in schools (in collaboration with Health and Agriculture). • Encourage and promote school gardens and small-scale animal husbandry (in collaboration with Agriculture).	Communication, Health, Agriculture
Finance / budget	• Allocate funds to operate school canteens that serve nutritious meals. • Mobilise and diversify the financing sources for school feeding through school gardening and market gardening initiatives (income-generating activities) and link agricultural projects to the schools). • Encourage community participation in the nutritious school feeding model.	Planning

FNG Recommendations – SOCIAL PROTECTION AND GENDER sectors		**Linkages with other sectors**
Governance	• Engage Social Protection stakeholders to form a working group with PRONANUT and nutrition stakeholders. • Disseminate the results of the FNG analysis, recommendations, and roadmap, including Gender stakeholders.	PRONANUT
Regulatory and policy framework	• Improve the integration of vulnerability to the various forms of malnutrition (pregnant and lactating women, adolescent girls, children under 5 years, people with disabilities) in Social Protection policies and plans.	Health, Agriculture, Education
Programmes and interventions	• Identify, based on the FNG results, the targeted interventions and adequate cash transfers required to cover the nutritional needs of vulnerable groups. • Conduct gender analysis in nutrition (assess the degree of women's participation and leadership, adolescent girls and other vulnerable groups).	PRONANUT

	• Develop a social protection approach that aims to empower women and other vulnerable groups, while promoting male participation.	
Capacity development	• Strengthen the capacity of social protection and gender stakeholders in nutrition.	PRONANUT
Advocacy	• Organise advocacy sessions with Social Protection decision makers to strengthen the capacity of Social Protection to empower vulnerable individuals to adopt a nutritious diet.	PRONANUT
Behaviour change communication	• Organise awareness-raising campaigns on good nutrition for vulnerable groups within the community, raising awareness for the nutrition needs of each group and creating demand for nutritious foods to meet each group's needs. • Strengthen the promotion of women's rights and organise awareness campaigns on the fight against gender-based violence, early marriage, and positive masculinity.	PRONANUT, Health
Finance / budget	• Increase resources for Social Protection and programme coverage as a strategy for reducing poverty and improving the affordability of nutritious food.	

FNG Recommendations – HEALTH sector		**Linkages with other sectors**
Governance	• Obtain strategic support from all sectors to engage in work to implement the FNG recommendations. • Engage more widely with all sector stakeholders, PRONANUT and Nutrition to promote the FNG analysis results, recommendations, and roadmap. • Integrate the FNG roadmap into the SUN roadmap.	Agriculture, Commerce, Social Protection, Education, Energy, Infrastructure, Gender, Private Sector
Regulatory and policy framework	• Develop a food guide to define the standards of a nutritious diet in the DRC in the context of preventing malnutrition in all its forms, including overweight and obesity. • Carry out an analysis of the opportunities for fortification of staple foods, in particular maize	Agro-food Industries, Commerce, Education

	and rice. Develop the regulatory framework for staple food fortification.	
Programmes and interventions	• Create linkages with sectors engaged in activities that target women and adolescent girls (Agriculture, Education, Social Protection) to increase micronutrient supplementation coverage. • Develop and implement the strategy to prevent and reduce obesity in urban areas.	Agriculture, Education, Social Protection
Capacity development	• Strengthen the capacities of Health Providers and Community Health Workers on the cost of a nutritious diet and on appropriate advice so that children, girls, and women meet their specific nutritional needs through locally available and inexpensive nutritious foods.	Education, Training Institutions
Advocacy	• Advocate all sectors to prioritise actions that contribute to nutrition as detailed in the roadmap.	Agriculture, Commerce, Social Protection Education, Energy, Infrastructure, Gender, Private Sector
Behaviour change communication	• Integrate into all health-led awareness raising opportunities good care and nutrition considerations on the cost of nutritious foods for effective adoption of best practices (IYCF, Community Health Workers)	
Finance / budget	• Help other sectors to advocate for the funding of quality programmes and investments that have a better effect on the supply and demand of nutritious food and that have a high return on investment.	Agriculture, Commerce, Social Protection, Education, Energy, Infrastructure, Gender, Private Sector

FNG recommendations – PRIVATE sector		Linkages with other sectors
Governance	• Engage all stakeholders in the private sector network to form a working group with PRONANUT and nutrition stakeholders. Disseminate the FNG results, recommendations, and roadmap.	Commerce, Infrastructure
Regulatory and policy framework	• Exempt imported agricultural products and inputs.	Agriculture, Research
Programmes and interventions	• Link the SBN with the Infrastructure sector to improve and maintain farmer feeder roads. • Support research and promotion of improved seeds and breeds of small and large livestock. • Develop processing and conservation units. Specifically, develop staple food fortification and nutritious food processing and preservation. • Develop fortified products for school aged children et adolescent girls (school feeding) • Develop and strengthen the production of RUTFs and LNS-MQ foods (for management of acute malnutrition) and local production of complementary foods of good nutritional value. • Continue with Research and encourage the use of technologies appropriate for the provision of nutritious foods.	Education, Commerce
Capacity development	• Strengthen local private sector competencies to engage in fortification et processing through targeted SBN actions.	PRONANUT, Commerce
Advocacy	• Advocate with food industry to streamline the marketing of high-fat, high-sugar, and low-nutrient foods to create demand for nutritious foods.	Commerce, Agro-food
Behaviour change communication	• Apply private sector marketing strategies to create demand for nutritious foods.	All sectors
Finance / budget	• Secure resources for Private Sector network operations.	

FNG Recommendations – COMMERCE sector		Linkages with other sectors
Governance	• Engage all stakeholders in Energy, Infrastructure and Commerce to form a working group with PRONANUT and other nutrition stakeholders. • Disseminate FNG results, recommendations, and roadmap. Include Agriculture when necessary.	Agriculture, Livestock, Fishing PRONANUT
Regulatory and policy framework	• Identify local provincial and territory-level opportunities to strengthen nutritious food production based on the FNG results. • Identify bottlenecks associated with Infrastructure and Energy and prioritise investments that would best address barriers to the supply of nutritious food. • Integrate the identified priorities into national Agriculture, Infrastructure and Energy plans and strategies. • Identify incentives (laws, subsidies, exemptions) for the production, processing and trade of nutritious foods and adjust the regulatory framework to support these incentives. • Regulate the production, processing and trade of nutritious foods and trade of high-fat, high-sugar, and low-nutrient foods.	Agriculture
Programmes and interventions	• Promote and enforce regulatory frameworks. • Implement infrastructure and energy investment plans and prioritise the supply of nutritious foods.	Justice
Capacity development	• Raise awareness of the importance of nutritious food and a nutritious diet for the population amongst technical service providers.	PRONANUT
Advocacy / Finance, budget	• Prioritise investment in the supply of nutritious food.	

V. Acronyms

AG	Adolescent girl
BF	Breastfeeding
BMI	Body mass index
DRC	Democratic Republic of the Congo
CBT	Cash-based transfer
CDF	Congolese Frank
EESSE	Emergency Equity and Systems Strengthening in Education Project
FAO	Food and Agricultural Organisation of the United Nations
FBDG	Food-based dietary guidelines
GAM	Global acute malnutrition
GDP/PIB	Gross domestic product
GFA	General food assistance
HGSF	Home grown school feeding
IFA	Iron and folic acid
IFPRI	International Food Policy Research Institute
IPC	Integrated Food Security Phase Classification
IYCF	Infant and young child feeding
LNS-MQ	Medium quantity lipid-base nutrient supplement
MAD	Minimum acceptable diet
MDD	Minimum dietary diversity
MEB	Minimum expenditure basket
MMF	Minimum meal frequency
MMT	Multi-micronutrient tablet
MNP	Micronutrient powder
NA	Non-affordability
NSmartAg	Nutrition Smart Agriculture
OW	Overweight
NMSPN	National Multisectoral Strategic Plan for Nutrition
NGO	Non-governmental organisations
PHL	Post-harvest loss
PLW	Pregnant and lactating woman
PPP	Parity purchasing power
PRONANUT	Programme National de Nutrition
QUIBB	Enquête avec questionnaire unifie à indicateur de base du bien-être en RDC
RNI	Recommended nutrient intakes
RUSF	Ready-to-use supplementary food
SBCC	Social behaviour change communication
SBN	SUN Business Network
SC	Super cereal (CSB+/WSB+)
SF	School feeding
SNEL	Société Nationale d'Electricité / National Society of Electricity

SOWC	State of the World's Children
SUN	Scaling Up Nutrition
UNHDR	United Nations Human Development Report
UNICEF	United Nations Children's Fund
USD	United States dollar
VAD	Vitamin A deficiency
WB	World Bank
WFP	United National World Food Programme
WRA	Women of reproductive age

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