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World Food Programme

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Fill the Nutrient Gap (FNG) Analysis

Maximizing the Contribution of School Meals to Healthy Diets for Improved Human Capital

A new approach to school meal programmes

Adequate nutrition can drive human capital development by preventing stunting and allowing children to reach their full cognitive and physical potential, enabling them to lead more productive and healthier lives. National school health and nutrition programmes (SHN) are instrumental in improving the school performance of boys and girls, which ultimately helps them fulfill their potential as adults. Through complementary interventions such as healthy school meals and nutrition education, schoolchildren of all ages can improve their diets, develop healthier food consumption preferences and practices, and model these for their families and communities. SHN programmes can also support local agriculture, strengthen and diversify local food systems, and address root causes of food insecurity by sourcing food for school meals from local smallholder farmers.

Poor health and nutrition, prevalent among students from disadvantaged communities, has a significant effect on education. It is a cause of the absenteeism that contributes to grade repetition, early school leaving, and poor education outcomes.

SHN programmes typically include an integrated package of health and nutrition interventions that seek to meet the needs of students in the local context. School feeding may be one of these interventions, with others such as hygienic practices promotion and facilitation, growth and weight monitoring, deworming, and health visits. SHN programmes can reach population groups that are not prioritized through traditional health and nutrition platforms. They need to be designed in a way that builds on existing education structures, addresses relevant health and nutrition challenges, and utilizes local resources.

There is a lack of information about schoolchildren, specifically those aged 5–9 years. A Fill the Nutrient Gap (FNG) analysis gives a better understanding of the barriers to nutrient intake of school-age children and can provide important information on the local food system and nutrition situation that can inform the design of SHN programmes and the formulation of healthy school meals.

The Fill the Nutrient Gap analysis

By examining the availability, cost, and affordability of a nutritious diet, the FNG analysis identifies bottlenecks across the food system that drive malnutrition. The analysis considers the characteristics of households least able to afford or access nutritious diets across food environments and seasons. It unpacks the underlying factors driving the cost of nutritious diets and highlights which nutritious foods are most challenging to access and for whom. FNG uses Save the Children's Cost of the Diet (CotD) software tool to explore specific questions related to how nutrition interventions, including school meals, could impact household or individual nutrient intake and diet costs. The FNG models the impact of school meals on the remaining cost of the diet for school-age children and adolescents, enabling the potential reduction in the household's overall financial burden for a nutritious diet to be calculated. This figure is then used to assess the cost-efficiency of the school meal's contribution to the child's needs.

By generating evidence, the FNG analysis enables policymakers and programme managers to evaluate and compare the potential contribution of schools as a platform to improve nutrition of school-going children, and their families and the wider community through secondary impacts. Based on the findings, the FNG aims to facilitate a policy dialogue between nutrition, social protection, health, education, agriculture and other sectors for coordinated decision making, so that each sector can better understand its entry points to improving nutrition. The FNG process and its findings can provide strong advocacy material to promote the integration of nutrition into SHN programmes for a greater impact on nutrition, health and overall development.[1]

Why does school health and nutrition matter?

SHN is a cost-effective intervention for resource-poor countries. Evidence shows that its benefits are far-reaching and can last a lifetime. SHN aims to achieve multiple outcomes:

- Prevent hunger and improve children's diets, not only with energy and protein but also necessary micronutrients (i.e. vitamins and minerals) and diverse healthy foods.
- Enhance school enrollment and attendance, particularly for girls.
- Reduce poverty by nurturing children's cognitive abilities and increasing chances of academic success.
- Stimulate local agricultural economies where foods are sourced locally.
- Educate children on lifelong healthy dietary practices.

Design of school-based programmes across contexts (as per WFP's 2020-2030 School Feeding Strategy)

Context 1: Crisis or humanitarian settings - ensuring consistent delivery of high quality school feeding

In fragile settings (conflict, recurrent shocks, remote locations), markets are often dysfunctional. Access to fresh and nutritious foods is low which puts children at risk of malnutrition. In such contexts, the aim of WFP's assistance is to increase both the quality and coverage of school meals programmes, relying mainly on in-kind contributions from WFP. School meals are an opportunity to ensure children have a high nutrient intake to balance the poor diets they might have at home. As it may not be economically or logistically feasible to source fresh foods locally for all schools, fortified foods are cost-effective options to increase the nutrient density of meals. These foods include fortified blended flour, cereals and oils, and micronutrient powders or supplements. A nutritious meal combined with other health and nutrition interventions such as deworming and sanitation, helps to ensure that this target group can reach adequate overall nutrition.

Context 2: Stable low-income and lower middle-income countries (LMICs) - transitioning and scaling up national school feeding programmes

In stable contexts WFP supports the transition and scaling up of national school meals programmes. WFP aims to strengthen systems and provide technical assistance in countries that have emerging capacities and are working on improving the scale and quality of national programmes. WFP engages with national governments to develop handover strategies, leading to a gradual decrease of WFP operational beneficiaries in the future.

[1] More information on the FNG process is available at https://www.wfp.org/fillthenutrientgap

In these contexts, food can be contributed by WFP, the government, or both, and the modality can differ according to context (in-kind, cash-based transfers (CBT), or vouchers). While it is important to take into consideration local eating habits and food preferences, the meal served at school should cover at least a third to a half of the children's micronutrient needs. WFP's role is to support the government by strengthening the link between food supply from smallholder farm production with healthy meals at schools, and also to fortified foods where applicable.[2]

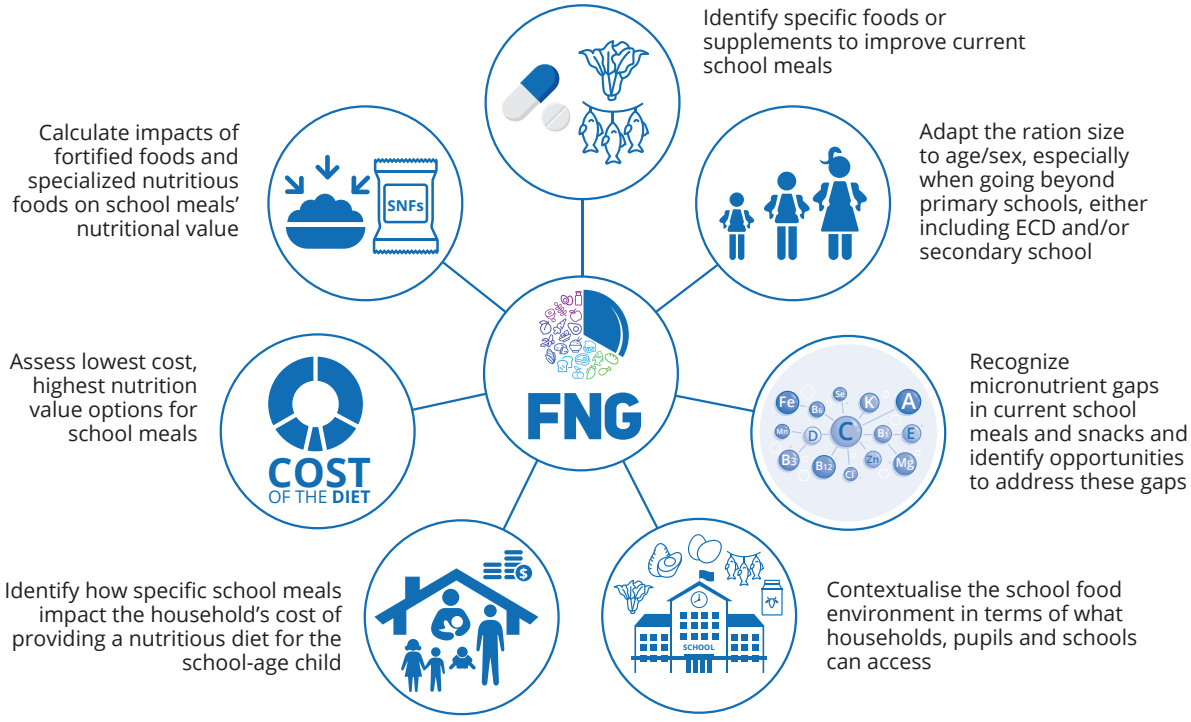
Context 3: Middle-income countries - support consolidation and strengthening of national programmes

Where the host government already owns and operates a national school feeding programme, WFP engages proactively with the national counterpart, providing technical support to strengthen the current programme. WFP supports the design, improvement and expansion of the programme, and the shift towards a home-grown school feeding programme, among other safety nets that are linked to the promotion of healthy food and nutrition. Through its Centers of Excellence against Hunger in Brazil and Côte d'Ivoire, WFP shares best practices and facilitates south-south cooperation, focusing on school-based programmes.[3]

FNG models school-based interventions for improved nutrition across all three contexts

Figure 1 describes the FNG approach to modelling school-based interventions, and the considerations during the iterative process of the multistakeholder engagement that is part of every FNG assessment.

Figure 1: The FNG approach to modelling school-based interventions



Country case studies

1.

Unpacking school feeding analysis in crisis or humanitarian settings - Context 1

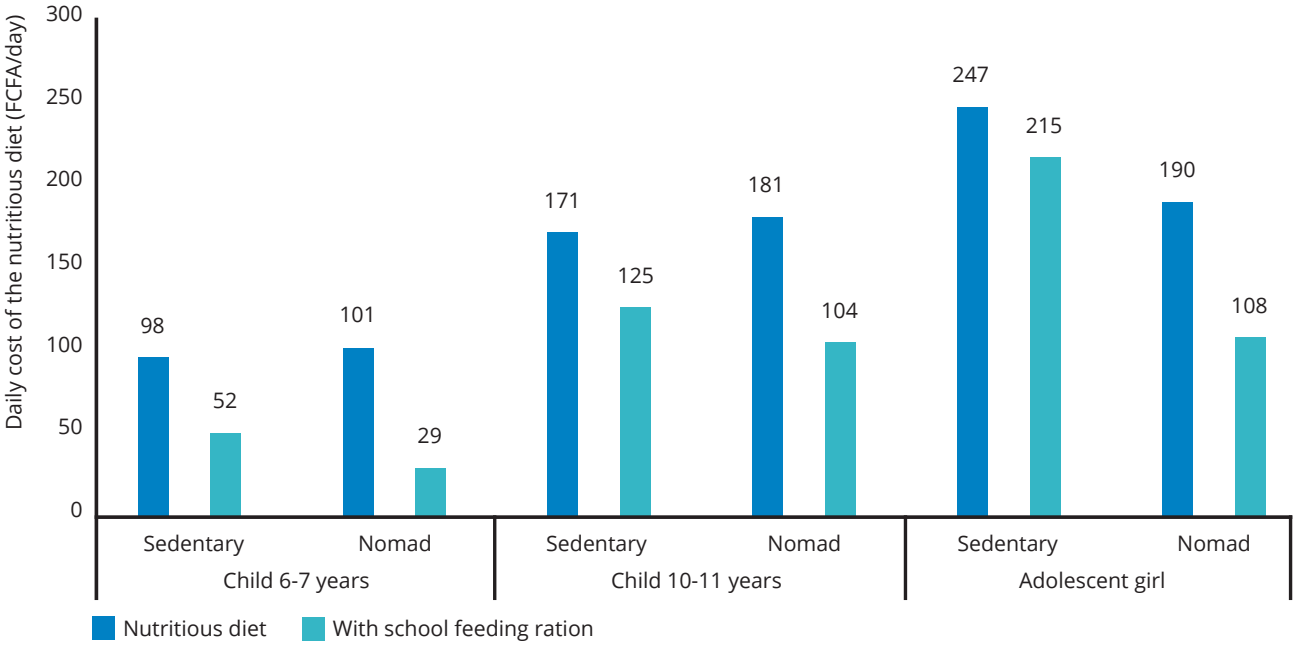
Aim: All vulnerable children in crisis-affected countries are covered by high quality SHN programmes implemented by WFP and delivered in partnership.

Niger example: Tailoring the ration to needs by age group and meeting adolescent girls' nutritional needs through school feeding.[4]

In Niger, the supply of nutritious foods in rural areas is inadequate, and unaffordability of fresh and animal source foods is high. In this context, adolescent girls are particularly vulnerable to malnutrition because iron-rich foods are expensive and their nutritional needs are not prioritized. Calculated as an average for both livelihoods, the current school meals ration decreases the cost of a nutritious diet of the child aged 6–7 years by almost two thirds (60%), the child aged 10–11 by more than a third (35%), and the adolescent girl by less than a third (28%) (see figure 2).

[2] See WFP's internal quick guide for school meals: https:// newgo.wfp.org/documents/school-meals-a-quick-guide
[3] www.wfp.org/centre-of-excellence-against-hunger
[4] A meta-analysis of school meals programmes across 32 sub-Saharan countries showed that on-site meals combined with take-home rations (THRs) increased the enrolment of girls in schools by 12%. Source: Snilstveit et al. in Chapter 12, Bundy et al. (2018) Re-imagining School Feeding: A High-Return Investment in Human Capital and Local Economies, Disease Control Priorities 3, v. 8.

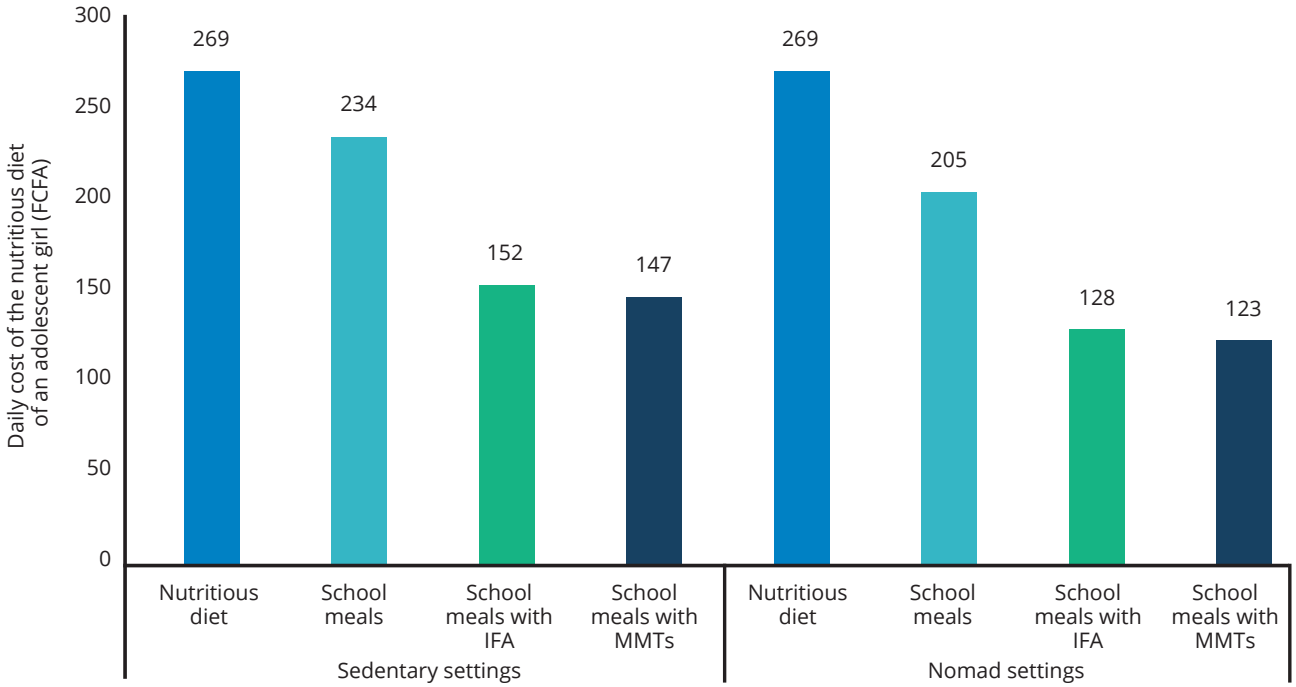
Figure 2: Reduction in the cost of the nutritious diet after consumption of school meals for Sedentary[5] and Nomad[6] children in Niger



This showed that school feeding programmes should set specific nutritional objectives for each age group and tailor meals accordingly. For example, when an iron and folic acid (IFA) supplement or a multimicronutrient tablet (MMT) is also provided to the adolescent girl every school day, it significantly increases her nutrient intake.

In figure 3, the cost of the nutritious diet of an adolescent girl reduces by almost half (44% to 46%) in sedentary settings and by a little over half (52% to 54%) in nomad settings. Reductions in the cost of diets is substantial as these supplements target the micronutrients which are often difficult to cover for this group because of their elevated micronutrient needs. The FNG analysis makes the case for daily provision of multimicronutrient tablets instead of IFA for a more diverse micronutrient intake.

Figure 3: Reduction in the cost of the nutritious diet after consumption of school meals without and with additional supplementation for Sedentary[5] and Nomad[6] adolescent girls in Niger



[5] Sedentary students refers to students from households with a primarily agricultural livelihood. Sedentary children receive 168 g of sorghum/millet, 35g beans, 25g oil, salt, and 50g of SC (equivalent to two meals per day) five days per week.
[6] Nomad students refers to students from households with primarily agro-pastoral or pastoral livelihoods. Nomad children receive 250g of sorghum or millet, 50g beans, 30g oil, salt, and 50g of SC (equivalent to three meals per day) seven days per week.

2.

Unpacking FNG school feeding analysis in stable low-income and lower middle-income countries (LMICs) – Context 2

Aim: WFP supports national governments to ensure that all vulnerable children are covered by high quality school feeding programmes.

Rwanda example: Optimizing for higher quality national school feeding programmes by shifting from in-kind to cash modality and a home-grown school feeding programme.

About a quarter of the total population in Rwanda is aged between 3 and 18 years.[7] Based on a cost-benefit analysis,[8] the Ministry of Education decided to implement a national school feeding programme from pre-primary to secondary level. The WFP country office in Rwanda supported the government in the design and change from in-kind to a cash modality. Taking a food systems perspective, the FNG analysis used information on the local availability of low cost nutritious foods to define optimized nutritious school meals menus at the lowest cost. This led to the implementation of a more diverse and nutritious meal (see an example in figure 4, of a meal with less maize pap, a larger serving of vegetables and with dried fish added). A survey of 36 low- and middle-income countries (mostly in sub-Saharan Africa) indicated that local purchases resulted in the inclusion of more diverse and fresh foods.[9]

Figure 4: Comparison of the school meals before and after the FNG analysis in Rwanda

Before

After

The FNG findings were used to develop advocacy messages, ten of which are:

1. A nutritious meal served across all primary schools is a major entry point for enhancing the food and nutrient intake of children in Rwanda.
2. A nutritious meal for most students costs on average 177 Rwandan Francs (RWF). Based on 2019 average prices, any budget below this will be unlikely to meet nutrient needs.
3. Seasonal variation and substitution can bring the daily cost down to RWF 135 when fresh foods are widely available and cheap. Allowing for flexibility in purchases maximizes savings.
4. Fortified blended foods – locally known as super cereal, shisha kibondo or nootri products – can be a good meal alternative for younger children. They may also be a feasible breakfast option for older children at boarding schools.
5. School meals need to be measured and portioned according to age and gender needs.
6. Ensuring adequate fortification of maize meal across the country is essential to providing sufficient micronutrients in the base meal.
7. Boarding schools should budget a minimum of RWF 770 per secondary school student per day to ensure adequate nutrient intake across three meals.
8. Adolescents, particularly girls, require additional attention. Schools can provide an excellent entry point for tailor-made interventions, including from other sectors.
9. When choosing between different school meals options, the infrastructure of schools, parent capacity, student profiles, and general food and nutrition security situations should be considered.
10. Overweight and obesity are increasing in the urban context. This can be prevented from becoming a national trend with healthy school meals, investments to support healthy diet practices, good food environments, and policies that prevent consumption of unhealthy snacks and drinks.

[7] Ministry of Education (MINEDUC) 2018. 2018 Education Statistics.
[8] Mastercard and World Food Programme 2017. School Feeding in Rwanda. Investment Case: Cost-Benefit Analysis Report.
[9] Aurino et al. (2016) Ghana home grown school feeding programme. Impact evaluation report. Partnership for child development, London.

3.

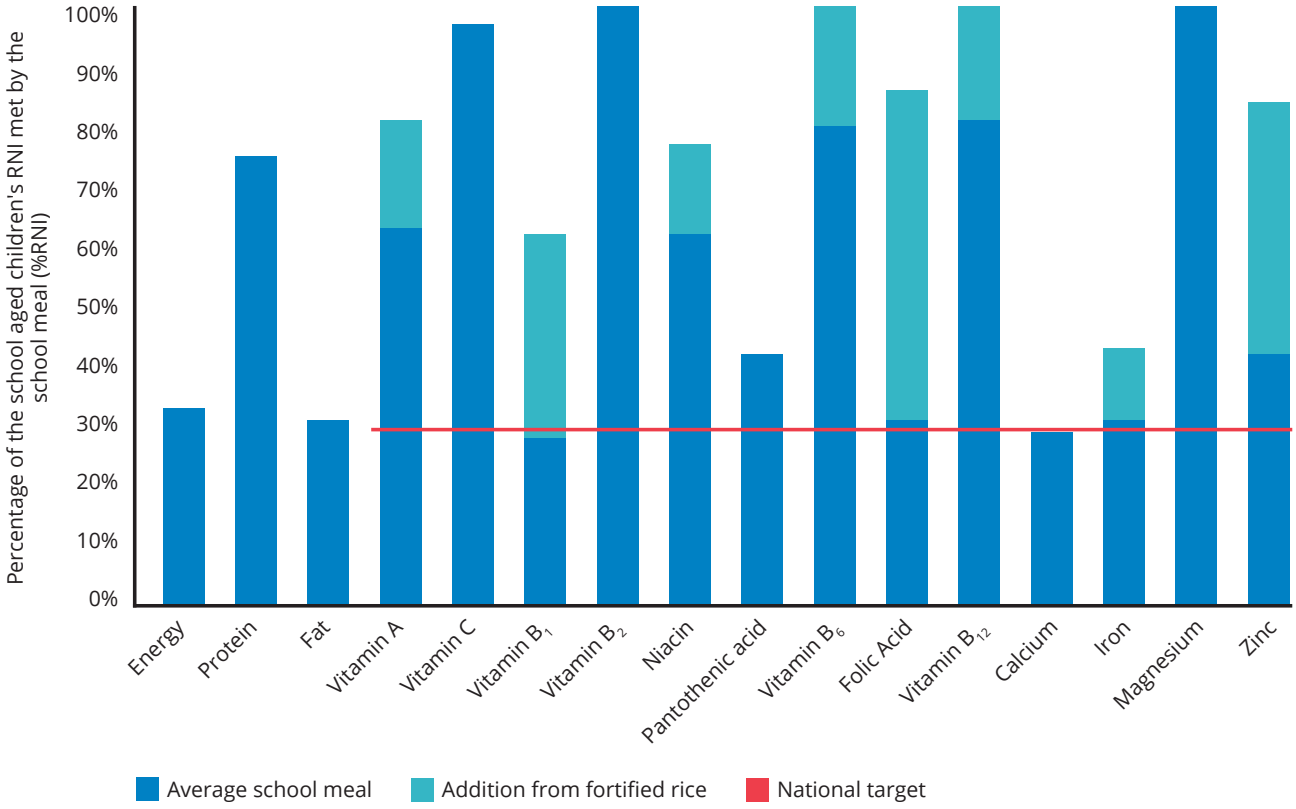
Unpacking FNG school feeding analysis in middle-income countries (MICs) – Context 3:

Aim: All vulnerable children living in extreme poverty in MICs are covered by optimized nutritious national school feeding programmes.

Philippines example: Improving the micronutrient content of school meals through a fortified staple and developing supply chains through partnerships with the private sector. In the Philippines, unfortified average school meals meet national nutrition targets for 6-7 year old children but not for children who are older. Rice fortification was identified as an appropriate intervention point for improving micronutrient intake, because rice is the most consumed food in the Philippines.

Based on the FNG recommendations, the school meals provided by the Philippines government now include fortified rice. Increasing micronutrient content of staples is a cost-effective way to improve nutrient intake if fortified rice can be supplied to markets or distributed through social assistance. With fortified rice, the daily nutrient intake of school-age children complies with the national standards for school meals (figure 5). Fortification significantly reduces the cost of a school-age child's nutritious diet due to its considerable contribution in covering micronutrient needs.

Figure 5: Percentage of 6-7 year old school-age children's recommended nutrient intake met by the school meals in the Philippines



How are FNG findings used to enhance nutrition integration in education policies and programmes?

FNG results have been used to analyze the nutritional gaps of ongoing school feeding programmes and identify potential ways to fill those gaps.

Examples include providing input to redesigning school meals menus, advocating for agriculture programmes for school gardens, and highlighting the potential benefits of including fortified foods and micronutrient powders in school meals. Figure 6 shows the support the FNG analysis can provide for school-based programme reviews, and figure 7 shows the countries per context for which FNG analysis has included a focus on SHN.

Figure 6: FNG school-based programme analysis framework

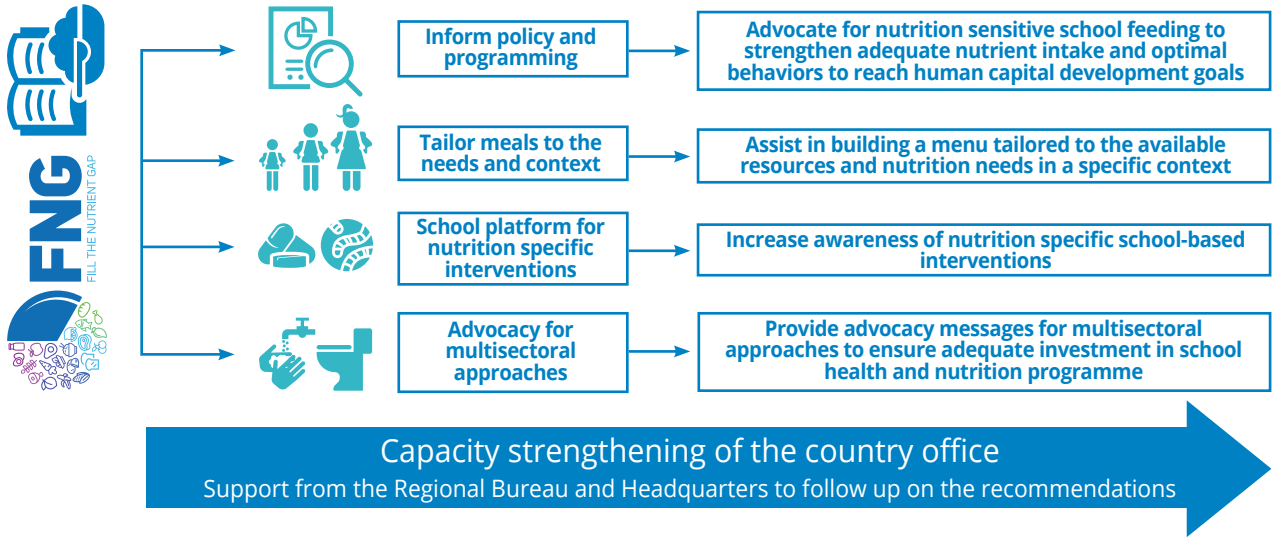


Figure 7: Countries within WFP context typologies and whether FNG focused on SHN was conducted

1 Providing operational support — **2 Transitioning to national programs** — **3 Consolidating and strengthening national programmes**

Crisis/Low Capacity → Stable Contexts/ Advanced Capacity

RBB	Afghanistan*	Bangladesh, Cambodia, Indonesia, Kyrgyz Republic*, Lao Myanmar*, Nepal*, Pakistan, Sri Lanka*, Tajikistan, Timor-Leste*	Bhutan, India, Philippines*
RBC	Algeria, Syria, Yemen	Armenia, Iraq, Jordan, Lebanon, Libya	Morocco, Tunisia
RBD	Burkina Faso*, Cameroon*, CAR, Chad, Guinea-Bissau*, Liberia, Mali*, Mauritania*, Niger*, Sierra Leone, The Gambia	Benin, Ivory Coast, Senegal	Ghana, Nigeria*, Sao Tome and Principe, Togo
RBJ	Democratic Republic of Congo*	Lesotho*, Mozambique*, Madagascar*, Malawi, Republic of Congo	Angola, Eswatini, Namibia, Tanzania, Zambia*, Zimbabwe
RBN	Burundi*, Somalia*, South Sudan, Sudan	Djibouti, Ethiopia*, Kenya*, Rwanda, Uganda	
RBP	Haiti	Cuba, El Salvador, Guatemala*, Honduras, Nicaragua	Caribbean countries, Colombia, Bolivia, Dominican Republic*, Ecuador*, Peru

*Countries with FNG analysis that included a focus on School Based Programmes

Other tools for analyzing aspects of nutrition in SHN programmes are available.

Optimus (contexts 1 and 2): Optimus is an optimization tool developed by WFP Supply Chain in close collaboration with field experts from all functional areas involved in managing WFP operations, from programme officers and port captains to nutritionists and pipeline managers. Optimus was developed to enable stakeholders to access the nutritional impact and estimate costs of providing food assistance interventions. By accessing data from WFP's systems worldwide, the software can help programme implementers consider operational constraints like sourcing and cost, while simultaneously providing information relevant to maximizing beneficiary outcomes in nutrition, such as micronutrient and energy coverage. It looks at operations from an end-to-end perspective, focusing on three decisions: 1 - the design of the food basket (which foods to provide, what ration sizes, etc.); 2 - the transfer modality selection (in-kind, cash, vouchers, or a hybrid; 3 - the sourcing and delivery plan (where and when to buy, where to ship, etc.). https://optimus.wfp.org/

PLUS (context 3): PLUS school meals planner software is the first digital solution that optimizes school meals by making them simultaneously more nutritious, cost-efficient and locally-sourced. The PLUS tool is a user-friendly online tool that helps users design school meals menus. It is available to all users, including those outside WFP. Based on food price and availability data input by its users, the PLUS tools can develop school menus within specific nutritional parameters determined by users, such as minimum micronutrient coverage or maximum energy coverage. The tool can also help users ensure meals are cost-efficient because it uses data on local food availability and prices to estimate costs. https://qa.plusschoolmenus.wfp.org/

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