



Food and Agriculture Organization
of the United Nations

Nutrition guidelines and standards for school meals

A report from 33 low and middle-income countries





Nutrition guidelines and standards for school meals

A report from 33 low and middle-income countries

Required citation:

FAO. 2019. Nutrition guidelines and standards for school meals: a report from 33 low and middle-income countries. Rome. 106 pp.
Licence: CC BY-NC-SA 3.0 IGO.

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO in preference to others of a similar nature that are not mentioned.

The views expressed in this information product are those of the author(s) and do not necessarily reflect the views or policies of FAO.

ISBN 978-92-5-131183-7

© FAO, 2019



Some rights reserved. This work is made available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; <https://creativecommons.org/licenses/by-nc-sa/3.0/igo/legalcode/legalcode>).

Under the terms of this licence, this work may be copied, redistributed and adapted for non-commercial purposes, provided that the work is appropriately cited. In any use of this work, there should be no suggestion that FAO endorses any specific organization, products or services. The use of the FAO logo is not permitted. If the work is adapted, then it must be licensed under the same or equivalent Creative Commons licence. If a translation of this work is created, it must include the following disclaimer along with the required citation: "This translation was not created by the Food and Agriculture Organization of the United Nations (FAO). FAO is not responsible for the content or accuracy of this translation. The original [Language] edition shall be the authoritative edition.

Disputes arising under the licence that cannot be settled amicably will be resolved by mediation and arbitration as described in Article 8 of the licence except as otherwise provided herein. The applicable mediation rules will be the mediation rules of the World Intellectual Property Organization <http://www.wipo.int/amc/en/mediation/rules> and any arbitration will be conducted in accordance with the Arbitration Rules of the United Nations Commission on International Trade Law (UNCITRAL).

Third-party materials. Users wishing to reuse material from this work that is attributed to a third party, such as tables, figures or images, are responsible for determining whether permission is needed for that reuse and for obtaining permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

Sales, rights and licensing. FAO information products are available on the FAO website (www.fao.org/publications) and can be purchased through publications-sales@fao.org. Requests for commercial use should be submitted via: www.fao.org/contact-us/licence-request. Queries regarding rights and licensing should be submitted to: copyright@fao.org.



Contents

<i>Acknowledgements</i>	vi
<i>Abbreviations</i>	vii
<i>Executive summary</i>	ix
Introduction	1
The role of schools as centres for development	1
A focus on nutrition	2
The need for nutrition guidelines and standards	4
Methodology	7
Socio-ecological model	7
Participants and recruitment	7
Survey instrument	7
Data collection	8
Sample of countries	8
Limitations	9
The report: aims and structure	11
A note on terminology	11
Section I. Setting the scene for school meal programmes	15
Broad nutritional and dietary issues in schoolchildren	17
Overview of school meal programmes and their potential implications for nutrition guidelines and standards	18
1. <i>Types of school meal programmes in place within the sample countries</i>	18
2. <i>Main programme objectives</i>	18
3. <i>Policy and legal frameworks supportive of school meal programmes</i>	26
4. <i>Main targeting approaches for selecting beneficiaries</i>	31
5. <i>Broad modalities of food procurement, distribution and preparation</i>	34
6. <i>Some examples of meals/snacks provided</i>	40
7. <i>Complementary interventions</i>	46
Section II. Nutrition guidelines and standards	49
State of nutrition guidelines and standards in the respondent countries	51
1. <i>Countries with official nutrition guidelines and standards</i>	51
2. <i>Types and focuses of the NGS identified</i>	54
3. <i>Energy and nutrient-based standards</i>	57
4. <i>Food-based standards and guidelines</i>	61
5. <i>Relevance of food-based dietary guidelines</i>	69
6. <i>Food safety linkages to the NGS</i>	70
7. <i>References to the food environment and other available foods</i>	72
8. <i>Mechanisms in place/recommended to aid the implementation of the NGS</i>	75
9. <i>Monitoring of NGS</i>	77
10. <i>Some challenges identified to successful implementation of NGS</i>	79
Section III. Recommendations	83
<i>References</i>	87
<i>Annexes</i>	91
Annex I. Low and middle-income countries considered for the survey	92
Annex II. General information about survey respondents	94



Acknowledgements

Nutrition Guidelines and Standards for School Meals: A Report from 33 Low and Middle-Income Countries, is the result of a collaborative effort between FAO's Nutrition and Food Systems Division with other technical divisions (Development Law and Food Safety) and regional/sub-regional/country offices.

Firstly, we wish to acknowledge the contributions from FAO focal points and our partners from government institutions, who dedicated their time and expertise to the optimal completion of the School Meals Nutrition Guidelines and Standards (NGS) survey.

This report was prepared by Melissa Vargas under the technical supervision of Fatima Hachem and Ana Islas.

Particular thanks are extended to: Ellen Muehlhoff (ex-FAO) who commissioned this work; Yenory Hernández-Garbanzo, who led the initial technical work including the conceptualization of the study design, literature review, survey development and recruitment of participants in collaboration with Rachel McBride (ex-FAO); and to Melissa Vargas, who built on this work to lead the follow-up recruitment, literature review, data collection, data analysis and development of the report.

We would also like to thank all the following individuals who supported the technical development and revisions of this report: Fatima Hachem, Ana Islas, Luisa Cruz, Komkrit Onsrithong, Luana Swensson, Margret Vidar, Deborah BadombenaWanta (ex-FAO), Diana Carter, Andrea Polo Galante and Dirk Schulz.

Acknowledgements are extended to the Nutrition and Food Systems Division publications technical review team, to Paul Neate for editing and significantly improving the readability of the report and to Maria Guardia for the layout and graphic design of the final publication.



Abbreviations

FAO	Food and Agriculture Organization of the United Nations
FBDGs	Food-based dietary guidelines
GLOPAN	Global Panel on Agriculture and Food Systems for Nutrition
HGSM	Home-grown school meals
ICN2	Second International Conference on Nutrition
LMICs	Low and middle-income countries
M&E	Monitoring and evaluation
NGOs	Non-governmental organizations
NGS	Nutrition guidelines and standards
SDGs	Sustainable Development Goals
SFNE	School-based food and nutrition education
UNU	United Nations University
WFP	World Food Programme
WHO	World Health Organization





Executive summary

Poverty eradication, health, education, food security and nutrition continue to be pillars of sustainable development. Schools can make a sizeable, lasting impact on these determinants of development through various pathways, and holistic school meal programmes have an important role to play. Still, many of these programmes can further benefit from a stronger emphasis on the quality, adequacy and nutritional composition of the meals provided, primarily through the development and implementation of nutrition guidelines and standards (NGS).

This report provides a descriptive overview of the situation of school meal NGS in 33 low and middle-income countries as reported through a global survey, and identifies key aspects to consider for stakeholders who are planning to develop or update their NGS **in the context of school meal programmes**. This document is part of FAO's work on school food and nutrition, and is in line with the Second International Conference on Nutrition (ICN2) Framework for Action, and the work plan of the United Nations Decade of Action on Nutrition.

The findings are organized in two sections. The first provides the context and identifies the main characteristics of school meal programmes relevant for establishing, improving and/or implementing effective nutrition guidelines and standards. The second presents the official school meal NGS identified in the respondent countries, their scope, the complementary efforts that aid their implementation, the main monitoring and evaluation actions and key challenges reported.

Section I highlights the need for a good understanding of the current situation of school meal programmes within a country and the context in which they operate in order to devise nutritional guidelines and standards that are feasible, responsive to actual needs and appropriate in scope. This requires the active involvement of all sectors and stakeholders relevant to school meals.

In addition, programme objectives, policy and legal frameworks, targeting approaches and modalities for procurement and meal preparation all have important implications for the development of NGS. Conversely, the implementation of NGS also affects various aspects of school meal programmes. These interactions need to be clearly identified and understood from the development stage to support policy integration and adequate implementation.

In Section II it is shown that the majority of respondent countries have some general recommendations available to guide the composition of the meals and/or snacks provided by school meal programmes, yet only 13 (mostly from Latin America) reported official NGS, and eight were in the process of developing them at the time of the survey.

Energy-based standards were the standards most frequently reported by the countries with official NGS, followed by target protein, fat and carbohydrate content. Iron and vitamin A were the most common micronutrient-based standards. The majority of the energy standards were set at 30% of the total requirement for lunch and between 20% and 25% for snacks and breakfast. For protein, the standards for lunch ranged from 20% to 35% of the total protein requirement or 10%–15% of the total energy. Only three countries provide upper limits for saturated fat, sugar and sodium in their standards. Iron, vitamin A and zinc values are commonly set at 30% of requirements for lunch and 20% for snacks.

Countries with official NGS most commonly defined minimum portion sizes and specific food preferences and/or restrictions regarding cereals, grains and tubers, followed by provisions and frequency of fruits and meats. Nine countries reported details about the provision of vegetables, legumes and milk and dairy, while seven countries reported specifics about the use of oils. Restrictions of sugars, sweets and processed and fried foods are less prominent, as are restriction on salt content and indications about the provision of water.



Most of the fruit- and vegetable-related standards focus on minimum provision, portion sizes and frequency of consumption, emphasizing provision of fresh produce and, less frequently, local produce. Portion sizes for fruit range from 100 g to 150 g, and desired frequency varies from twice a week to daily. Common restrictions include fruits with syrup, canned and candied fruits and fruits with added sugar. For vegetables, set quantities for lunch range from one to two portions, while frequency ranges from three times a week to daily. Emphasis is placed on variety of vegetables and use of fresh produce. Restrictions are mostly for canned and/or pickled vegetables.

Standards relating to animal-source foods focus on portion sizes and frequency. Portions range from one to two and sizes vary depending on the type of food. When mentioned, red meat is limited to one to three times per week. Restrictions include processed, cured, canned, preformed and fatty meats, except in the case of Peru where canned meats are common in the meals.

Monitoring is usually not specific to the nutrition guidelines and standards, but integrated within the school meal programme's monitoring and evaluation system.

The engagement of school staff and community members and integration of school-based food and nutrition education were frequently mentioned as mechanisms to support the implementation of the school meal NGS.

The main identified challenges to successful implementation of NGS relate to issues inherent to the school meal programmes: equipment, infrastructure and processes at the school level; lack of capacities at different levels; issues in the technical translation and use of NGS; attitudes and perceptions; and monitoring and evaluation.

Main recommendations from the report in the context of school meal programmes include the following:

- School meal NGS should be well integrated with policy and legal frameworks related to school feeding, school health and other relevant areas.
- NGS should be a central part of school meal programmes, as these have **critical linkages to processes of the whole school**, including food procurement, meal planning and food preparation, capacity development of foodservice staff, the food environment, community involvement and food and nutrition education. There are opportunities in these linkages that, if strategically exploited, can aid the enforcement of NGS and expand their positive effects.
- The approach and processes followed to develop NGS will depend on the quality of data, time, resources and capacities available at national level. Technical cooperation between countries, partnerships with academia, development of project proposals, and technical support and capacity development from UN agencies can support development of quality NGS where there are resource constraints.
- **There is no one-size-fits-all model of nutrition standards for school meals**, given that different countries and programmes have different objectives, target groups and possibilities. Internationally recommended nutrient-based standards may not be suitable in all contexts.
- **More emphasis should be placed on setting upper limits for saturated fat, sugar and sodium**, especially in contexts where overweight and obesity are prevalent among schoolchildren, or when school meal programme modalities make use of industrialized snacks.
- The focus of the food-based standards and the way these are framed in terms of food groups, limited foods and quantities, restrictions and promotion of inter- and intra-food-group variety need to be in line with programme objectives and context. **Balance is recommended between the level of detail and flexibility of implementation.**
- In cases where the promotion of healthy diets is the main objective of school meal programmes, **NGS should, as much as possible, be aligned with the principles, messages and food groups of national food-based dietary guidelines.**



- Inclusion of general recommendations on dietary diversity and nutritional quality and development of simple and practical materials breaking down food-based standards can enhance adherence to them and their effectiveness in practice.
- **Food safety is critical to achieve the aims of school meal NGS.** The extent of the linkages and complementarity between standards in both areas should be well defined, and supported by a strong legal framework, capacity development to key actors and coherence among all relevant materials (normative, informational, educational).
- NGS for school meals should not be detached from broader efforts to improve nutrition for schoolchildren (including interventions to improve the school food environment). **There should be consistency between guidelines and standards for meals provided by school meal programmes and those to improve the food available (sold and offered) at schools.**
- Integrating food and nutrition education with school meal NGS helps establish meal times as learning opportunities and, at the same time, enhances effects on food practices.
- **Investing in monitoring and evaluation**, including adopting adequate indicators specific to school meal NGS, is essential to determine needed changes, compliance and short-, medium- and long-term impacts. Monitoring systems should also account for periodic revision of NGS, according to emerging needs and changing nutrition priorities.





Introduction

The role of schools as centres for development

Poverty eradication, health, education, food security and nutrition continue to be the essential priorities and targets for sustainable development (United Nations General Assembly, 2015). Schools can make a sizeable, long-lasting impact on these determinants through various entry points and opportunities (Bundy *et al.*, 2009; Faber *et al.*, 2013; WFP, 2013; GLOPAN, 2015).

One such entry point is the (regular) provision of nutritious meals through school-based programmes. This can improve vulnerable children's attendance levels, attention capability and parent motivation, potentially affecting academic performance and future enrolment, particularly for girls (Bundy *et al.*, 2009; WFP, 2013; World Bank, WFP and PCD, 2016).

Depending on the modality of food provided and presence of complementary interventions, and subject to the context and resources available, diet-related benefits can range from alleviating short-term hunger, to fulfilling critical gaps in micronutrient and protein intake through increased dietary diversity, to modelling what a healthy meal should look like (Adelman, Gilligan and Lehrer, 2008; Aliyar, Gelli and Hadjivayanis Hamdani, 2015).

Home-grown school meal (HGSM) programmes can also broaden their impact to benefit local agriculture and the local economy by providing structured demand, stable markets and income opportunities to smallholder farmers and processors, thereby raising overall food security at community level. HGSM programmes have been recently recognized as strategies that can aid in the achievement of multiple Sustainable Development Goals (GLOPAN, 2015; WFP and FAO, 2018).

Furthermore, when backed by household influences, quality school-based food and nutrition education (SFNE) – within and beyond the classroom – improves food-related knowledge, skills, capacities and practices of children, their families and school staff (Silveira *et al.*, 2011; Verstraeten *et al.*, 2012; Cardoso da Silveira *et al.*, 2013; Hawkes, 2013; GLOPAN, 2015; Meiklejohn, Ryan and Palermo, 2016;).

The presence of enabling factors including high parental and community engagement, the existence of supportive health and hygiene services, food and nutrition policies, and a healthy school environment (healthy food available, restriction of marketing and promotion of highly processed foods, adequate spaces for physical activity), have also been shown to favour nutrition and health within the school population (WHO, 2006; Constante and Lock, 2009; World Bank, WFP and PCD, 2016). A strong political and legal framework that deals with school food and nutrition has been identified by the World Bank as a "critical component of an effective education system" (World Bank, WFP and PCD, 2016).

National school meal programmes, in particular, are globally widespread (representing an important public investment), and many have evolved and transitioned to incorporate complementary actions and synergies that are conducive to results beyond alleviating short-term hunger and improving attendance (Bundy *et al.*, 2009; Drake, Woolnough and Burbano, 2016).

While there are still evidence gaps and research needs, the potential benefits of school-based multicomponent, multidimension intervention packages are many (GLOPAN, 2015). To make a sizeable impact towards development, governments are being encouraged to implement coherent and context-driven school-based policies and programmes that address nutrition, education, health and food security, simultaneously and effectively (FAO and WHO, 2014).



FAO's school food and nutrition approach

As a direct response to the international call for improved nutrition and food systems, and in the context of ICN2 and the UN Decade of Action on Nutrition, FAO devised a corporate framework for action in schools. This focuses on the most effective options and on the synergies between and within sectors that represent multi-win outcomes in nutrition, food security and community development.

This framework aims to support countries in ensuring that schoolchildren consume adequate, nutritious, diverse, safe and enjoyable food in the school to support improved learning, but also to foster lasting, healthy food-related practices that extend to their families and, when possible, to favourably impact the local food system and economies in the process.

The School Food and Nutrition Framework is focused on four areas: a) promoting a healthy school food environment and adequate and safe meals; b) integrating effective food and nutrition education throughout the whole school system; c) stimulating inclusive procurement and value chains; and d) creating an enabling political, legal, financial and institutional environment. The framework identifies explicit linkages, points of entry and areas of technical support for each of these.

Some countries are already leading the way with holistic school meal programmes and other food and nutrition programmes. As such, FAO's main role is to support governments by:

- identifying and sharing successful, cost-effective experiences, and drawing best practices and lessons learned;
- identifying entry points and linkages between different sectors (especially agriculture, education, social protection, nutrition and health) to obtain sustainable multi-win outcomes;
- providing technical assistance and advice in the organization's various areas of expertise;
- assisting the creation of enabling regulatory frameworks;
- building or strengthening institutional capacities; and
- facilitating mechanisms for improved sectoral coordination, evaluation and accountability.

The approach aims to make existing programmes more cost-effective and sustainable within a food-systems context, and to support the inception of new approaches, where needed.

A focus on nutrition

Poor diets and malnutrition have well documented, devastating effects on children's health, school performance and ability to learn, thus damaging their future productivity and earning potential (Walker *et al.*, 2007; Victora *et al.*, 2008; Black *et al.* 2013). In contrast, good nutrition can promote optimal growth and development, better learning and overall health and well-being.

Interventions that focus on the first 1000 days (from conception through the first 2 years of life) are critical to achieve a positive impact on child nutrition and development. However, the subsequent preschool and school years (to adolescence) should not be disregarded or neglected, as they represent another window of opportunity to promote healthy diets and practices, and to support catch-up growth and the prevention of malnutrition in all its forms.

The school years are a dynamic period of growth and development, where children experience key "physical, mental, emotional and social changes. In other words the foundations of good health and sound mind are laid during the school age period" (Srivastava *et al.*, 2012). Yet, schoolchildren are still vulnerable to malnutrition due to diverse factors, including inadequate availability and access to a nutritious and varied diet; poor household distribution, management and preparation of food; exposure to influences that promote low nutritional value foods; diminished caregiver attention; and higher susceptibility to infectious disease (Mispireta, 2012; Mwaniki and Makokha, 2013; Degarege, Degarege and Animut, 2015).



In this context, strategies and investments that focus on the school years should not compete with but rather complement early infancy interventions for sustainable gains in nutrition (Bundy *et al.*, 2009; Buhl, 2010; Crookston, 2013; Fink and Rockers, 2014).

Effects of school meal programmes on nutrition

School meal programmes are increasingly concerned with improving dietary quality and nutrition in children. Some research has been done to determine the effects of these programmes, particularly in-school feeding, on nutrition outcomes (Greenhalgh, Kristjansson and Robinson, 2007; Kristjansson *et al.*, 2007; Adelman, Gilligan and Lehrer, 2008).

In lower-income countries, the effects of school meals on average weight gain have been generally positive, while the evidence is mixed for height gain (Kristjansson *et al.*, 2007; Bhutta *et al.*, 2013). Several reasons have been proposed for this lack of conclusive results, including the quality of available studies, inherent status and conditions of the beneficiaries, and programmatic considerations.

It is important to note the complexity of establishing direct associations between food provision and achieved nutritional status in schoolchildren (measured through anthropometry), as there are many mediating factors and pathways that are not accounted for (Ahmed, 2004; Adelman, Gilligan and Lehrer, 2008). However, there is a call for more studies that not only follow a high-quality methodological design but also clearly identify the theory and pathways followed by the interventions (Greenhalgh, Kristjansson and Robinson, 2007; Jomaa, McDonnell and Probart, 2011).

Reasons that have been proposed for the lack of apparent impact of school feeding on growth include: baseline nutritional and health status and age considerations; rejection of school meals/snacks offered; and possible intrahousehold reallocation of food resources among beneficiaries of school feeding (Greenhalgh, Kristjansson and Robinson, 2007; Adelman, Gilligan and Lehrer, 2008).

There are numerous programmatic considerations that can affect impact of school feeding on nutrition outcomes. These include: programme duration; regularity and composition of the meals provided; and the type of complementary strategies in place that address other determinants of nutrition (e.g. food and nutrition education, deworming, providing micronutrient supplements, providing support and education to parents, physical activity interventions, restrictions on the sale of other foods). This strengthens the case for multidimensional, multicomponent school food programmes (Pérez-Rodrigo and Aranceta, 2001; WFP, 2013; GLOPAN, 2015; Aliyar, Gelli and Hadjivayanis Hamdani, 2015).

Positive effects of nutritious and fortified school meals on micronutrient intake (mainly iron, zinc and vitamin A) have been found, specifically in children with low baseline indicators (Adelman, Gilligan and Lehrer, 2008; Jomaa, McDonnell and Probart, 2011).

Some reviews have shown promising results from school feeding on determinants and risk factors for obesity, especially for multicomponent programmes (healthy meal provision, nutrition education, parental involvement and an enabling environment) but further and stronger evidence is needed (Pérez-Rodrigo and Aranceta, 2001; Lobelo *et al.*, 2013). This is particularly significant for low and middle-income countries given the alarming prevalence and impacts of overweight and obesity of schoolchildren (Ramachandran and Snehalatha, 2010; Muthuri *et al.*, 2014; Rivera *et al.*, 2014).

In contrast, some studies, particularly from Latin America, have proposed that school meal programmes may have contributed to rising obesity trends, partly because of inadequate targeting and monitoring mechanisms, excessive focus on calories and little attention to meal quality and contextual adequacy (Uauy and Kain, 2002; Uauy and Diaz, 2005; Rivera *et al.*, 2014).



Stronger programme emphasis on nutrition

Current school meal programme modalities vary considerably between and within countries because they respond to different priorities, possibilities and contexts. Nevertheless, many international organizations and researchers have suggested that such programmes would benefit from a stronger emphasis on nutrition, particularly by integrating SFNE and focusing on the quality, adequacy and nutritional composition of the food basket, including a higher demand for fresh produce, when viable (IOM, 2010; FAO and WHO, 2014; Aliyar, Gelli and Hadjivayanis Hamdani, 2015; GLOPAN, 2015; Kristjansson *et al.*, 2016). As the investment is already high, children that benefit should have an opportunity for guaranteed access to nutritious food that supports their development and needs and contributes to the prevention of all forms of malnutrition.

There is also a pressing need both to create enabling environments through policies and legal frameworks, and to develop student and family capacities (partly through food and nutrition education) that contribute to the formation and consolidation of healthy food and lifestyle habits and food literacy;¹ this should be considered as a matter of human rights (Storcksdieck *et al.*, 2014; FAO and WHO, 2014).

Policy-makers, legislators, programme planners, civil society, rights groups, parent groups, individuals and other stakeholders have a crucial role in ensuring that schools become a protected setting where all children can not only exploit their learning and academic potential but also be part of a system that will foster better food, better nutrition and better health within and beyond its 'walls'.

The need for nutrition guidelines and standards

The development of nutrition guidelines and standards (NGS) has been recommended and prioritized internationally (as a first step) to ensure that school meals and other available foods are in line with target children's needs and context.

International organisations recommending the development of nutrition guidelines and standards

ICN2 Framework for Action. Recommendation 16: "Establish food or nutrient-based standards to make healthy diets and safe drinking water accessible in public facilities such as hospitals, childcare facilities, workplaces, universities, schools, food and catering services, government offices and prisons, and encourage the establishment of facilities for breastfeeding" (FAO and WHO, 2014)

Global Panel on Agriculture and Food Systems for Nutrition, Healthy meals in schools Policy Brief. Recommendation 1: "Define a national policy goal to revise and update the nutritional standards for school meals, which should be consistent with national dietary guidelines: Policy-makers should make 'healthy meals' a minimum requirement for all food programmes in schools, and use this requirement to promote ancillary nutrition education, physical activity and behaviour change activities." (GLOPAN, 2015)

WHO, Global action plan for the prevention and control of noncommunicable diseases 2013–2020. Policy options for promoting healthy diets: "Promote the provision and availability of healthy food in all public institutions including schools, other educational institutions and the workplace. For example, through nutrition standards for public sector catering establishments and use of government contracts for food purchasing" (WHO, 2013).

NGS are usually set to increase the likelihood that the food and meals provided meet a significant (and not excessive) proportion of the daily nutritional requirements of children; in other words, to make school meal programmes more nutrition-sensitive. At the same time, guidelines and standards are needed to provide clear

¹ This refers to the everyday practicalities associated with navigating the food system and using it in order to ensure a regular food intake that is consistent with nutrition recommendations. Food literacy is the scaffolding that empowers individuals, households, communities or nations to protect diet quality through change and strengthen dietary resilience over time (Vidgen and Gallegos, 2014).



specifications to schools as to what a recommended meal or snack means in practice. They can even be more comprehensive and include recommendations to foster a healthier school food environment (Storcksdieck *et al.*, 2014; Aliyar, Gelli and Hadjivayanis Hamdani, 2015; Fernandes *et al.*, 2016).

Implementing NGS can also influence the local food system; by directing procurement towards more nutritious crops and ingredients they can potentially encourage producers and farmers to consider a diversified production. At the same time, NGS can include or link to the restriction of provision, sale and marketing of foods and food products of low nutritional value (BIDPA, 2013; GLOPAN, 2015; Fernandes *et al.*, 2016).

Certainly, the existence of standards and guidelines is not enough to guarantee that the food available in schools responds to the nutritional requirements of children and that it is actually being prepared and consumed in the intended way, let alone to improve nutrition levels in children. However, they are a necessary first step that demonstrates commitment towards setting a minimum quality for school food, and can be an effective tool to improve the local food system, if implemented within a coherent, multisectoral approach.

The effectiveness of NGS depends on many factors, including smart design, appropriate monitoring and evaluation, flexibility, enabling conditions, infrastructure, capacities, and the presence of complementary components such as SFNE or food safety interventions (Upton, Upton and Taylor, 2012; Ensaff, Russell and Barker, 2013).

To date, many countries have been implementing or are starting the process to implement NGS relevant to school meal programmes and beyond.





Methodology

A mix-methods approach was used to map school meals NGS. The approach included the following core elements: a) development of a survey and its administration to relevant stakeholders; b) a review of official country-specific government documents; c) a review of relevant and available online resources (peer-reviewed articles and grey literature); and d) direct follow-up with survey respondents.

Socio-ecological model

The framework used for designing the mapping exercise and guiding the development of the survey's content was based on the socio-ecological model. This model recognizes the multiple levels at which healthy eating can be promoted in schools and the interaction between these levels. Thus, for this context, school meals NGS were not viewed in isolation; policy and environmental conditions that support the adoption and implementation of NGS were also assessed.

Participants and recruitment

The following criteria were used to select the convenience sample of countries for the survey:

- The country was classified as a low or middle-income economy (LMIC) according to the World Bank.² The study was limited to LMICs as there have been previous mappings and reviews for high-income countries, mainly in the European region, Asia and the Americas (Storcksdieck *et al.*, 2014; Kim *et al.*, 2017; Lucas *et al.*, 2017).
- The country has a government-owned school meal programme targeted mainly to primary schoolchildren, or is in the process of transition (i.e. has concrete plans to adopt a programme run by a non-government implementer). Countries refer to these programmes using the following terms: school feeding programme, home-grown school meals, home-grown school feeding, meal scheme programme or school nutrition programme.

After selecting the countries that complied with the set criteria (see Annex I), FAO focal points and representatives were asked to identify relevant stakeholders in each country who could provide quality information through the questionnaire. These stakeholders included programme directors, programme officers and nutrition officers of relevant ministries (Education, Health, Rural Development, Social Protection and/or Agriculture).

Survey instrument

A systematic process for constructing the school meal NGS survey was followed including a scoping literature review (n =47), developing new items or adapting existing tools, constructing the survey, conducting an expert review and pilot-testing the draft tool.

Most of the survey items were adapted from the School Nutrition Index of Programme Effectiveness, developed by the Public Health Nutrition Research Ltd, UK (Storcksdieck *et al.*, 2014). Expert reviews were conducted with 12 professionals working in the area of school food and nutrition to establish the survey's content validity and the field-testing was done with government representatives from Cabo Verde and Costa Rica to ensure the overall relevance, comprehensibility and appropriate length of the survey. The revised version of the survey consisted of a 38-item questionnaire organized in the following domains: School feeding programmes and school meals in primary schools; NGS for school food; Implementation; School meals and/or snacks; Competitive foods; Local foods; Enabling environment; Monitoring and evaluation; Strengths and lessons learned; and Future plans.

² As of 1 July 2016, low-income economies are defined as those with a gross national income (GNI) per capita of US\$1,025 or less in 2015, calculated using the World Bank Atlas method; lower middle-income economies are those with a GNI per capita between US\$1,026 and US\$4,035; upper middle-income economies are those with a GNI per capita between US\$4,036 and US\$12,475 (World Bank Data Team, 2016)



The survey was developed in English and translated into Spanish, French and Russian. It was administered via Survey Monkey® or by e-mail to those whose Internet connection was limited.

Data collection

Contacts representing 48 countries were obtained and approached through official FAO channels. Regular follow-ups were conducted over 4 months in 2015–16 to ensure adequate completion of the survey. When completing the survey, respondents were asked to provide official documents to complement the information provided in the survey.

Information was received for a total of 34 countries (71% response rate). However, one survey was incomplete and was therefore discarded. Among the remaining countries (Table 1), two different sets of responses were received from three countries, and these had to be harmonized. General information regarding affiliation, professional area of focus and years of relevant experience of the survey respondents are presented in Annex II.

Key issues and aspects that needed further information and clarification were identified during extraction and analysis of the survey data. Survey results were compiled, compared and complemented with additional sources, including: publicly available official laws, regulations and policies related to the NGS (as provided by survey respondents and a literature search); documents from ministerial websites; peer-reviewed articles; relevant studies; grey literature; and direct follow-up with survey respondents.

Sample of countries

A total of 33 low and middle-income countries with school meal programmes were included in the survey, as shown in Table 1.

Table 1. Countries included in the mapping of nutrition guidelines and standards relevant to school meal programmes

Country	FAO Region	Country	FAO Region
Benin	Africa	Brazil	Latin America and the Caribbean
Botswana	Africa	Colombia	Latin America and the Caribbean
Cabo Verde	Africa	Costa Rica	Latin America and the Caribbean
Ghana	Africa	Dominican Republic	Latin America and the Caribbean
Lesotho	Africa	Ecuador	Latin America and the Caribbean
Malawi	Africa	El Salvador	Latin America and the Caribbean
Namibia	Africa	Grenada	Latin America and the Caribbean
Senegal	Africa	Guatemala	Latin America and the Caribbean
South Africa	Africa	Guyana	Latin America and the Caribbean
Swaziland ^a	Africa	Honduras	Latin America and the Caribbean
Mongolia	Asia and the Pacific	Jamaica	Latin America and the Caribbean
Sri Lanka	Asia and the Pacific	Mexico	Latin America and the Caribbean
Viet Nam	Asia and the Pacific	Panama	Latin America and the Caribbean
Kyrgyzstan	Europe and Central Asia	Paraguay	Latin America and the Caribbean
Republic of Moldova	Europe and Central Asia	Peru	Latin America and the Caribbean
Tajikistan	Europe and Central Asia	Jordan	Near East and North Africa
Bolivia (Plurinational State of)	Latin America and the Caribbean		

^a Currently the Kingdom of Eswatini.



The geographical distribution is in accordance with the survey response rate of countries from respective regions. Higher response rates were observed for the Americas and the African region.

Limitations

- The information obtained through the survey was complemented with published literature and official documents. This risks overlooking the most up-to-date information, which may not yet be publicly available.
- The survey structure did not allow for obtaining explicit information about NGS development processes.
- Survey respondents were unfamiliar with the terms 'nutrition guidelines' and 'nutrition standards,' misunderstood them or rarely use them. There were also issues when making the distinction between official NGS and general recommendations or menus to be followed for the preparation of school meals. This could have resulted in the omission of valuable information.
- The survey was designed to be completed by one respondent. This arrangement may have limited the depth of information provided because responses on all aspects of the NGS from one country would likely require expertise and experience from several different actors.
- The information collected focused on government-owned or transitioning programmes. This may have resulted in the exclusion of good practices and lesson from pilot projects or scalable projects led by non-governmental organizations.





The report: aims and structure

This report builds on the outcomes of the survey to provide a descriptive overview of NGS relevant to school meal programmes in a set of low and middle-income countries from different geographical regions, and to identify potential aspects to consider for those who are developing or updating their own NGS, in the context of existing programmes. These aspects have been reviewed with a group of experts in school food and nutrition.

The report is organized in three sections:

- **Section I:** 'Setting the scene for school meal programmes' identifies main programme characteristics that are important to consider when establishing, strengthening and/or implementing school meal NGS, making use of examples and information obtained through the survey and additional sources consulted.
- **Section II:** 'Nutrition guidelines and standards' describes the official NGS identified by survey respondents, their scope, the complementary efforts that aid their implementation, the main monitoring and evaluation actions taken and key challenges reported. It also presents important aspects to consider for those who plan to develop or update their NGS.
- **Section III:** 'Recommendations' presents broad recommendations for actors aiming to develop or revise NGS relevant to school meal programmes in low and middle-income countries.

The findings of this report will therefore contribute to: a) informing policy-makers, legislators, programme planners and implementers about the current situation in NGS, and b) identifying some key aspects that can support the design and implementation of more effective NGS, within holistic policies and comprehensive school meal programmes.

A note on terminology

It is worth noting there is misinterpretation and confusion around the terms 'nutrition guidelines' and 'nutrition standards' (in the various languages) among survey participants and in reference documents consulted. There was a tendency to refer to NGS as general guidelines for school meal programmes (procurement, cooking-facility specifications, distribution, etc.) or exclusively as food safety and hygiene guidelines.

Terminology issues are important considerations because a high level of awareness and common understanding of NGS-related terms among all stakeholders involved in school food (including programme local authorities, directors/managers, suppliers, cooks, nutritionists, officials) is a prerequisite for effective implementation, monitoring and accountability.

For the purposes of this report, NGS is defined as:

A set of rules, principles and recommendations, based on sound nutrition science and the national/local situation, designed to improve the nutritional quality and quantity and/or adequacy of foods and meals available/provided in schools.

It is important to note that NGS usually deal only with food provision. As a consequence, other, complementary interventions are needed that promote consumption of healthy foods and the development of healthy food-related skills and practices.





Another important distinction to make is between nutrition guidelines and nutrition standards:

- **Nutrition guidelines:** recommendations to improve the quality and adequacy of the food provided/available at schools.
- **Nutrition standards:** specific values/quantities, levels or frequencies that should determine food/meal composition.

Furthermore, there is a clear difference between nutrient-based and food-based standards:

- **Nutrient-based standards:** specific minimum and/or maximum quantities or ranges of energy and nutrients that an average meal/snack should provide. These are mainly based on estimated individual dietary requirements.
- **Food-based standards:** specific quantities, portions or ranges of foods/food groups that should be included/excluded in a meal/snack. These may also stipulate frequency of provision and/or restriction or prohibition of certain foods. They may be in line with national food-based dietary guidelines or other food/meal recommendations.

The definitions of other common terms mentioned throughout the report are summarized below:

Term	Definition
School meal programmes	Programmes that provide meals regularly to schoolchildren. These programmes make use of various operation models (including procurement and preparation). They can be implemented in tandem with complementary interventions, such as nutrition education, deworming, supplementation, etc. Also referred to traditionally as school feeding programmes.
Home-grown school meal programmes	School feeding models that are designed to provide children in schools with safe, diverse and nutritious food, sourced locally from smallholders. A school feeding programme can be considered as 'home-grown' even if only a proportion of food is purchased locally from smallholder farmers, provided that local purchases are designed to support and foster local agricultural and food markets, and that these objectives are taken into consideration during programme design and implementation, and institutionalized in related policies and regulations.
Food-based dietary guidelines	Context-specific advice and principles on healthy diets and lifestyles that are rooted in sound evidence, and respond to a country's public health and nutrition priorities, food production and consumption patterns, sociocultural influences, food composition data and accessibility, among other factors.
School-based food and nutrition education	A variety of educational strategies and learning activities that, accompanied by supporting environments, aim to help schoolchildren and their communities improve their diets and food choices, and build their capacity to adapt to change and act as agents of change.

Sources: FAO, 2018a; FAO and WFP, 2018; FAO, in press.



SECTION I

Setting the scene for school meal programmes





Setting the scene for school meal programmes

The current global interest in and commitment to improving nutrition has encouraged governments to step up their efforts towards achieving agreed goals. Among the recommendations promoted by international organizations, experts and practitioners is the development of NGS, within broader strategies, to improve and ensure the quality of food provided and available in public institutions such as workplaces, hospitals and schools.

The near universal access of children to the school setting makes it highly relevant to global efforts for combating all forms of child malnutrition through broader, multicomponent approaches. Schools reach children at an age when food and health habits are being formed; they also reach families and the wider school community; and deal with food through many opportunities (e.g. sale of foods, provision of meals, foods brought from home, fundraisers, etc.).

As countries are moving towards these broader approaches, the need for development and/or revision of NGS that improve meal quality and coherently link with other components (food and nutrition education, food safety, procurement) is evident (Aliyar, Gelli and Hadjivayanis Hamdani, 2015). Development or revision of NGS requires a stepwise process that includes careful consideration of, among other important aspects, what is currently being done, the scope for improvement and what is possible. Understanding the current situation of school meal programmes, which are responsible for feeding a substantial number of children in low and middle-income countries, is thus a priority in the process to develop NGS that are realistic and feasible.

This section provides a broad overview of the main school meal programmes and their characteristics in the 33 countries covered. It highlights their relevance and some aspects that should be considered when developing or improving NGS. It is not an exhaustive review of school meals programmes; this has been done elsewhere (WFP, 2013; Drake, Woolnough and Burbano, 2016).

Broad nutritional and dietary issues in schoolchildren

Systematic collection of data on the nutritional status of schoolchildren is generally limited in low-income and lower middle-income countries because investment in child nutrition is usually centred on the first 1000 days of life (Best *et al.*, 2010; Fiorentino *et al.*, 2013; Galicia *et al.*, 2016; Costas Teixeira *et al.*, 2017). However, schoolchildren are vulnerable to malnutrition in all its forms, with detrimental and long-lasting consequences to their development, performance and health (Best *et al.*, 2010).

The studies available show a complex national malnutrition picture that is context-specific, with high in-country variations. Chronic and acute undernutrition and micronutrient deficiencies (iron, iodine, zinc and vitamin A) continue to be persistent critical issues, especially in Africa and Asia. Overweight and obesity are increasingly epidemic in most countries (Best *et al.*, 2010; Gupta *et al.*, 2013; Muthuri *et al.*, 2014).

The spectrum of malnutrition is complex. Often, undernutrition and overnutrition cannot be addressed separately or as conflicting opposites, as both commonly occur simultaneously in the same region, household and even individual. Additionally, an undernourished child is more likely to become overweight later in life (Adair *et al.*, 2013). This is an important consideration for school meal programmes, as they need to provide food and complementary actions that target the most important nutritional issue(s) but must not promote development of other nutritional issues; this is particularly true of programmes designed to address undernutrition. The integration



of effective monitoring systems, policies that promote healthy diets, food and nutrition education, community empowerment and health and lifestyle strategies is key to the effectiveness of these programmes (Uauy and Kain, 2002; Uauy and Diaz, 2005; Rivera *et al.*, 2014; Eze *et al.*, 2017).

Inadequate availability of and limited accessibility to nutritious foods are common issues in schoolchildren in low and middle-income countries. Other main dietary problems reported in the literature include the increasing consumption of products of poor nutritional quality and the prevalence of monotonous meals (Ochola and Masibo, 2014).

In this context, developing and maintaining cost-effective school meal programmes requires that the main nutritional and dietary problems of schoolchildren are identified and studied and that data on the socio-economic and educational situation of this age group, disaggregated by region and sex, are collected.

In particular, conducting regular and high-quality analyses of the nutrition situation in schoolchildren can help set priorities in terms of food and nutrition, and efficiently guide programme components (composition, regularity and quantity of meals; nutrition education) and pathways to address these priorities (Srivastava *et al.*, 2012). Assessment of schoolchildren's food consumption at the individual level in particular is necessary, to better estimate the dietary targets for school meals and snacks.

School meal programmes are already widespread, account for a high financial investment in low and middle-income countries (WFP, 2013), and have a recognized potential to address nutrition issues in schoolchildren. As such, they present an opportunity to integrate the systematic collection of data on nutritional status in this age group.

Overview of school meal programmes and their potential implications for nutrition guidelines and standards

1. Types of school meal programmes in place within the sample countries

Identifying and mapping the main school meal programmes that are operative in a country can serve as a first step to understanding the situation and the generalities of food provision within school systems. This step is essential for setting feasible and practical NGS that respond to the actual beneficiaries, and to determine the scope for their application.

Main findings

Table 2 summarizes the main entities responsible for managing and implementing school meal programmes in the 33 countries reviewed, as well as the modalities of food provision.



Table 2. General characteristics of the main school meals programmes present in the respondent countries

Country	Programme name	Main coordinating entity	Main implementer(s)	Modality
Benin	Cantines Scolaires	Government (Directorate of School Feeding, under the Ministry of Early Childhood and Primary Education)	Directorate of School Feeding School committees Schools	In-school feeding
	Cantines Scolaires	WFP	National Directorate of WFP Projects School committees	In-school feeding
	Cantines Scolaires Fast Track	Government	Parents Providers: caterers, cooks NGOs	In-school feeding
Bolivia (Plurinational State of)	Programa Nacional de Alimentación Complementaria Escolar (PNACE)	Government (National Directorate for the School Feeding Programme, under the Ministry of Education)	Departmental and municipal governments School councils School cooks and families	In-school feeding
Botswana	Botswana School Feeding Programme (BSFP)	Government (Ministry of Local Government, under the Department of Local Government Finance and Procurement Services)	District councils and district administration School administration	In-school feeding
Brazil	Programa Nacional de Alimentação Escolar (PNAE)	Government (National Fund for Educational Development [FNDE], under the Ministry of Education)	States, federal districts, municipalities School feeding council (monitoring)	In-school feeding
Cabo Verde	Programa Nacional de Alimentação Escolar	Government (Foundation for Social and Education Action [FICASE])	Municipalities School unit on diet and health (Unidade de Alimentação e Saúde Escolar UASE)	In-school feeding
Colombia	Programa de Alimentación Escolar	Government (Ministry of Education)	Certified territorial entities Municipal committee (monitoring) School-level operators School committees	In-school feeding
Costa Rica	Programa de Alimentación y Nutrición del Escolar y del Adolescente (PANEA)	Government (Directorate of Equity Programmes under the Ministry of Education)	Directorate of Equity Programmes School-level education/administrative boards (director, parents, pupil, canteen staff) School-level Health and Nutrition Committee	In-school feeding
Dominican Republic	Programa de Alimentación Escolar (PAE) Urbano PAE REAL (Ración Escolar con Alimentos Locales) PAE Fronterizo PAE Jornada Escolar Extendida	Government (National Institute of Student Wellbeing, under the Ministry of Education)	National Institute of Student Wellbeing Schools (mostly parents)	In-school feeding
Ecuador	Programa de Alimentación Escolar	Government (Ministry of Education)	Food Provision Program under Ministry of Agriculture (procurement and logistics) Provincial committees Schools (families, teachers or cooks) School-level committees	In-school feeding
El Salvador	Programa de Alimentación y Salud Escolar (PASE)	Government (Ministry of Education)	Ministry of Education Departmental directorates of education Schools (teachers, parents, community)	In-school feeding
Ghana	Ghana School Feeding Programme	Government (Ministry of Gender, Children and Social Protection)	Metropolitan, municipal and district assemblies Caterers or school cooks School implementation committee, parents	In-school feeding
Grenada	School Feeding Programme	Government (Ministry of Education) School feeding unit	No information	In-school feeding

Country	Programme name	Main coordinating entity	Main implementer(s)	Modality
Guatemala	Programa Nacional de Alimentación Escolar (PNAE)	Government (General Directorate of Community Participation and Support Services [DIGEPSA] and General Directorate for Strengthening the School Community [DIGEFOCE], under Ministry of Education)	DIGEFOCE Schools: parent organizations, teachers, and/or cooks hired Education councils	In-school feeding
Guyana	National School Feeding Programme	Government (Ministry of Education and Ministry of Local Government)	Private sector Schools (mainly teachers)	In-school feeding
	Hinterland Community-Based School Feeding Program	Government (Ministry of Education)	Community	In-school feeding
Honduras	Programa de Alimentación Escolar	Government (Social Inclusion and Development Secretariat)	Municipalities Local committees Schools (parents or hired cooks)	In-school feeding
Jamaica	School Feeding Programme	Government (Ministry of Education, Youth and Information)	No information	In-school feeding
Jordan	School Feeding Programme	Government (School Feeding Unit, under the Ministry of Education) and WFP	School feeding committees and subcommittees regional, district school level	In-school feeding
Kyrgyzstan	School Feeding Programme	Government (Ministry of Education and Science) and WFP	WFP and Social and Industrial Food Service Institute (SIFI) Community	In-school feeding
Lesotho	National School Feeding Programme	Government (Ministry of Education and Training)	Caterers National management agencies (private)	In-school feeding
	School Meal Programme	Government and WFP (full handover planned for 2018–2020)	WFP	In-school feeding
Malawi	School Meal Programme	Government (Ministry of Education) and WFP and Foundation for Irrigation and Sustainable Development	WFP District councils Schools (receive food or buy from farmers) Parent-teacher associations (PTAs)	In-school feeding
Mexico	Programa de Desayunos Escolares	Government (National System for Integral Family Development [DIF] Direction of School Breakfast)	State-level DIF (SEDIF) and municipal administrations School feeding committees Schools (parents, teachers)	In-school feeding
Republic of Moldova	School Lunches	Government (Ministry of Education)	No information	In-school feeding
Mongolia	School Lunch Programme	Government (Ministry of Education, Culture and Science)	No information	In-school feeding
Namibia	Namibian School Feeding Programme (NSFP)	Government (Directorate of Programmes and Quality Assurance, under the Ministry of Education)	Directorate of Programmes and Quality Assurance Schools (community volunteers and cooks)	In-school feeding
Panama	Programa de Alimentación Complementaria Escolar	Government (Ministry of Education)	National Directorate of Nutrition and School Health School committee	In-school feeding
Paraguay	Programa de Alimentación Escolar del Paraguay (PAEP)	Government (Directorate of School Feeding, under Ministry of Education and Culture)	Departmental and municipal governments Schools (institutional management team: director, teaching staff, PTA, student representative) Caterers	In-school feeding
Peru	Programa Nacional de Alimentación Escolar Qali Warma	Government (Ministry of Development and Social Inclusion)	Procurement committees (civil society representatives and public entities, municipality representatives) School feeding committees (director, parents and teachers)	In-school feeding

Country	Programme name	Main coordinating entity	Main implementer(s)	Modality
Senegal	Cantines Scolaires	Government (Division of School Canteens, under the Ministry of Education) and WFP (in transition)	School management committees	In-school feeding
			Community WFP	In-school feeding
South Africa	National School Nutrition Programme	Government (National School Nutrition Programme Unit, under the Department of Basic Education)	Varies by department (provincial authorities of the National School Nutrition Programme) Schools (teachers, volunteer cook)	In-school feeding
Sri Lanka	School Nutrition Programme (School meals programme/Food for education programmes/Milk programme)	Government (School Nutrition and Health Services, under the Ministry of Educational Services) and WFP	Caterers Various school committees (principal, parents, community)	In-school feeding
			Ministry of Economic Affairs and WFP District secretariats School committees	In-school feeding
Swaziland	School Feeding Programme	Government (Ministry of Education and Training)	No information	In-school feeding
Tajikistan	School Feeding Programme	WFP and Government (Ministry of Health and Social Protection and Ministry of Education) in transition	WFP and SIFI Schools	In-school feeding
Viet Nam	School Meal Programme	Government (Department of Education and Training)	Provincial governments Schools (vice principal, parents, teachers)	In-school feeding

The majority of respondent countries implement programmes coordinated by the Ministry of Education and provide in-school feeding, comprising hot meals or snacks, to beneficiary children.

Programmes covering the whole country are the most prevalent, yet there are cases where more than one programmatic form is in place. For instance, Guyana implements its National School Feeding Programme in most regions of the country, and the Hinterland Community-Based School Feeding Program in the hinterland regions, each using a different modality. In the case of Dominican Republic, there are four variations of the same programme, each with its own objectives, targets and modalities.

Other countries, including Benin, Jordan, Kyrgyzstan, Malawi and Sri Lanka, implement programmes managed and/or funded by the World Food Programme (WFP) and the government. Each entity usually, but not always, covers different geographical regions of the countries. These programmes either follow the same modality or use different procurement and targeting approaches. Lesotho, Senegal and Tajikistan, on the other hand, are in the process of transitioning to full national management and funding (i.e. taking over from an externally supported programme), in the short or medium term.

Most countries reported that dedicated governmental institutions, local governments, school-level committees and groups are directly involved in the preparation of the meals.

Non-governmental organizations, private-sector caterers and food companies were also mentioned by the respondent countries as being responsible for supporting localized school feeding initiatives, particularly those targeting vulnerable groups, in crises, remote areas or regions not covered by government programmes.

Relevance and aspects to consider

The findings of the survey show that there is considerable variation between and within countries in coordination, management, funding, objectives and modalities of school meal programmes.



The focus on government-owned programmes or programmes in transition in the present report is because of the ability of state entities to develop and enforce NGS and due to sustainability and accountability considerations of these type of efforts. Many countries have developed national programmes by building on small-scale pilots or taking over efforts initially implemented by an external entity. These experiences provide important lessons, and illustrate challenges that can feed into the development or improvement of NGS.

If there is more than one programme (whether government-owned or external), it is critical to define during the design process of NGS which programme or programmes will adopt the standards and guidelines, and what accountability mechanism they will follow.

Clear understanding of implementation responsibilities by relevant authorities, institutions and groups at the different levels is also important to appreciate the legal, administrative and practical implications of the NGS implementation and monitoring.

Aspects to consider/Key questions to explore:

The quantity, modalities, funding and management of school meal programmes in a country should be well known and understood prior to developing and implementing NGS. Which programmes would need to implement NGS? Will the same NGS be applicable to all running programmes? How would these be adapted to serve each programme? How will NGS support common goals?

Multistakeholder mapping exercises and discussions that include representatives from all existing school meal programmes in a country can provide valuable insights and perspectives on the universality and scope of planned NGS, as well as a shared understanding on the need for them. Who are the main actors responsible for school meals? What lessons have they learned when implementing diversified school meals? What do they consider would need to happen to implement NGS in their programmes?

It is essential to define potential responsibilities and institutional arrangements for implementing NGS to have a solid starting point for improved effectiveness, efficiency and accountability. Which actors and institutions would be responsible for implementing the NGS? On which levels?

Future accountability mechanisms for compliance with NGS can also be discussed based on the programmes and models that will adhere to them. What level of application of the NGS would the programmes be expected to demonstrate? How could the application be monitored? What tools could be effective to ensure compliance? How would the institutions and actors be held accountable?

2. Main programme objectives

The objectives of school meal programmes typically conform to the country's situation, needs and priorities of schoolchildren, available resources and long-term aims (Bundy *et al.*, 2009; Buhl, 2010; Aliyar, Gelli and Hadjivayanis Hamdani, 2012).

Once set, these objectives should be supported by the modalities, general characteristics and activities of the programmes. Specifically, they help to define the type of food that should be provided, how it is provided and what ensues around it; they thus have important implications for NGS (Bundy *et al.*, 2009; Aliyar, Gelli and Hadjivayanis Hamdani, 2012). For instance, the composition of the food basket in a programme meant to address short-term hunger (usually energy-dense meals and/or fortified snacks) will differ significantly from that of one that aims to encourage healthy eating habits (e.g. diversified meals composed of different food groups, plenty of fresh produce and, usually, no highly processed products and that respect local food habits). The same applies for programmes that are created as a safety net during a crisis and those that arise as a means to support childhood and local community development.



Main findings

The majority of the objectives for the programmes mapped are broadly related to access to education and performance, diet and nutrition, and economic/local development. (See Table 3).

Aims related to access to education and school performance are the most commonly reported in the sample. The majority of programmes mention objectives “to improve school performance” and “to improve attendance”. Related objectives mentioned include “to raise enrolment rates”, “to lower school desertion” and “to reduce/eliminate gender disparities in education”.

The most commonly reported nutrition and diet-related objectives were “contributing to the development of healthy eating habits”, “raising nutritional status” and “improving the quality of meals/diets provided”. Objectives related to local agriculture and economic development (i.e the HGSM approach) are mentioned by 12 and 10 countries, respectively.

Some countries reported making significant changes to programme objectives to adapt to evolving contexts. These included the School Breakfast Programme in Mexico (primarily due to the growing challenges of children obesity rates) and programmes in Ecuador, El Salvador and Viet Nam.

Relevance and aspects to consider

The benefits of school meals for access to education in low-income countries and countries with significant economic disparities, typically within a social protection context, have been widely discussed and demonstrated (Ahmed, 2004; Kristjansson *et al.*, 2007; Bundy *et al.*, 2009). However, the impact of school meals on educational attainment (i.e. improved performance and learning ability) is less conclusive. This is because it depends heavily on the baseline health and nutritional status of the children, quality of teaching, learning approach, conduciveness of the learning environment and programmatic considerations and modalities (WFP, 2013).

Improvements in nutrition during early infancy can support cognitive development, and should be maintained during the pre-primary and primary school years. Conversely, malnutrition in all its forms negatively affects the ability of children to stay in school and to learn throughout childhood (Bryan *et al.*, 2004; Crookston *et al.*, 2013; Nyaradi *et al.*, 2013).

Thus, even when increased attendance and performance are the main aims, school meal programmes “must also be designed to support nutrition issues” (WFP, 2013). Prioritizing objectives related only to access to education can lead to missed opportunities to address nutrition, as both are intrinsically related.

Furthermore, provision of meals alone does not automatically translate into improvements in nutrition, and therefore complementary actions, especially food and nutrition education and health measures, need to be in place. Most importantly, the quality, quantity and composition of the meals and snacks provided, and thus the NGS, must be coherent with the intended objectives, target audience nutrition priorities and context of the programmes.

Objectives related to local agricultural and economic development have been increasingly adopted by school meal programmes around the globe, particularly in Africa and Latin America.³ The integration of these types of objectives, also known as the HGSM approach, is generally a bid to improve local food systems and to create supplementary benefits for community and smallholder farmer livelihoods, as well as increasing dietary diversity and supporting local eating patterns and traditions of schoolchildren.

These programmes tend to require a higher degree of coordination and planning, as they have additional dimensions (e.g. value-chain development, market linkages, food safety) that involve the creation or strengthening of capacities and institutions, resource management and linkages with agriculture and other policies (World Bank, WFP and PCD, 2016; FAO, 2017).

³ WFP, FAO, the Global Child Nutrition Foundation (GCNF), the Partnership for Child Development (PCD), the International Fund for Agricultural Development (IFAD) and the New Partnership for Africa’s Development (NEPAD) have been actively providing technical support, resources and capacity development in this area.



Table 3. Main objectives of school meal programmes in the respondent countries

Country	Improve child nutrition	Learn healthy eating habits	Improve quality of meals	Support local agriculture	Support local economy	Support parents and community	Improve school performance	Improve attendance
Benin				✓	✓	✓	✓	✓
Bolivia (Plurinational State of)	✓	✓	✓	✓	✓		✓	
Botswana			✓					✓
Brazil		✓	✓	✓	✓		✓	
Cabo Verde	✓	✓	✓	✓	✓		✓	✓
Colombia		✓					✓	✓
Costa Rica		✓	✓				✓	✓
Dominican Republic	✓	✓	✓		✓		✓	✓
Ecuador	✓						✓	✓
El Salvador	✓	✓					✓	✓
Ghana	✓			✓				✓
Grenada				✓			✓	✓
Guatemala		✓			✓		✓	✓
Guyana - National School Feeding Programme							✓	✓
Guyana - Hinterland Community-Based School Feeding Program	✓					✓	✓	✓
Honduras		✓			✓		✓	✓
Jamaica		✓	✓	✓			✓	✓
Jordan	✓	✓					✓	
Kyrgyzstan	✓		✓				✓	
Lesotho			✓	✓	✓		✓	✓
Malawi	✓	✓					✓	✓
Mexico	✓	✓	✓					
Republic of Moldova	✓		✓	✓	✓	✓	✓	
Mongolia	✓	✓			✓			
Namibia	✓						✓	✓
Panama		✓	✓				✓	
Paraguay		✓		✓			✓	✓
Peru		✓	✓				✓	✓
Senegal	✓		✓	✓		✓	✓	✓
South Africa		✓	✓				✓	✓
Sri Lanka	✓	✓						✓
Swaziland	✓	✓					✓	✓
Tajikistan			✓	✓		✓	✓	
Viet Nam	✓	✓						
TOTAL	18	21	16	12	10	5	28	24

The implementation of nutrition standards will have an impact on school procurement activities because they broadly define the type, quality and quantity of foods that should be acquired for the preparation of school meals. The impact of NGS on local agricultural and economic development depends significantly on: a) the active participation of procurement and value-chain development entities during the development stage of the NGS to define what is possible from the supply-chain perspective; and b) the development or strengthening of capacities, particularly of local smallholders, to be able to meet the NGS.

Cases such as Mexico, where the objectives and focus of the school meal programme had to be adapted to respond to the growing childhood obesity epidemic, highlight the need for flexibility and adaptation to evaluation results and changing conditions in order to maintain programme relevance, improve cost-effectiveness and ensure overall efficiency (Drake, Woolnough and Burbano, 2016). This also applies to NGS, which ought to be regularly reviewed and revised, and to monitoring and evaluation mechanisms to ensure that these are in fact responding to the evolving needs.

Aspects to consider/Key questions to explore:

Key questions about how food provision and other components contribute towards the general objectives of the school meal programme and their proposed pathways should be raised and discussed prior to defining NGS. What are the nutrition objectives? What are the educational objectives? How do we achieve them? Which are the pathways? What will be the exact contribution of meals to these pathways?

NGS should ensure that the quantity and composition of the meal(s) or snack(s) provided to beneficiaries respond to the main programme objectives. Different objectives require different standards. What would constitute the NGS and meals for different objectives (e.g. promote enrolment and attendance, promote a diversified diet, etc.)? Would the objectives need to be recalibrated and/or aligned?

When local agriculture and economic development objectives are embedded in school meal programmes:

- Procurement and value-chain development entities should actively participate in the development of NGS to define possibilities and ensure that NGS are in line with the production capacities of local smallholder farmers. What are the most important linkages? What is feasible in terms of local production and value-chain participation of smallholders? What changes would need to happen to meet the optimal NGS? What are the main priorities: adapt procurement to the ideal NGS and meals or adapt the NGS to the supply possibilities of smallholders as much as possible?
- Local capacities and resources need to be assessed and strengthened, as they will affect the ability to adhere to proposed NGS. What additional capacities would be required to meet the NGS? How would these be strengthened? What would be the cost relative to the potential benefits?

As with objectives, school meal NGS should be adaptable to emerging needs and changing contexts. This requires regular revisions and updates, based on quality monitoring and evaluation data. How often would the NGS need to be revised? Which information would be used to define revisions and updates? From which sources?

For more information on the home-grown school meals approach:

FAO and WFP. 2018. Home-grown school feeding resource framework. Rome, Italy. Available at: www.fao.org/documents/card/en/c/CA0957EN

Siobhan and Swensson. 2017. Leveraging institutional food procurement for linking small farmers to markets: Findings from WFP's Purchase for Progress initiative and Brazil's food procurement programmes. FAO Agricultural Development Economics Technical Study 1. Rome, FAO. Available at: www.fao.org/3/a-17636E.pdf



3. Policy and legal frameworks supportive of school meal programmes

A solid policy and legal framework is key for achieving food and nutrition goals in schools. The success of school meal programmes depends on a wide variety of factors, including political will, human and financial resources and an adequate framework of implementation. The Global Panel on Agriculture and Food Systems for Nutrition has recommended that policy-makers “define a national policy goal to revise and update the nutritional standards for school meals” (GLOPAN, 2015). For countries with programmes transitioning to national ownership or that have experimented with different modalities, the process of developing technical policies supportive of school feeding can be indicative of political will, commitment and vision (Drake, Woolnough and Burbano, 2016).

While policies and programmes set the ultimate goals that they wish to attain, “legislation plays a vital role by: a) recognizing access to food at school as a legal right with specific entitlements, b) defining clear institutional responsibilities, c) establishing coordination mechanisms among the different stakeholders involved, d) giving a concrete basis for budget allocation, and e) providing a framework for enforcement, monitoring, transparency, and accountability” (FAO, forthcoming). Such frameworks are essential for implementing harmonized NGS, existing or planned.

NGS can be voluntary or mandatory depending on the desired objectives and the legal framework of the country. Very often, they are established through specific regulations, which are legal instruments that implement broader laws on a wide variety of sectors such as food security and nutrition, education and health. Countries might opt to follow different legislative options, but legally binding guidelines can have positive impacts on the uptake of adequate and quality school meals and other school food.

Main findings

Three of the 33 respondent countries had policies specific to school feeding (Table 4), while eight of the countries had laws or resolutions relating to school feeding (Table 5).

Table 4. Respondent countries that had policies specific to school feeding

Country	Policy	Date of approval	Aims/objectives	Main components
Benin	Politique Nationale de L’Alimentation Scolaire	Not yet adopted	Contribute to the achievement of universal primary education, through the progressive coverage of all schools with functioning canteens; creating a framework and conditions conducive to healthy and sustainable school feeding; strengthening the school feeding monitoring and evaluation (M&E) system	Diagnosis of current state of school feeding Political and legal basis Vision, objectives and guiding principles Strategic axes M&E at different levels Action plan
Ghana	Ghana School Feeding Policy	2016	Deliver a well-organized, decentralized intervention providing disadvantaged school children with nutritionally adequate, locally produced food, thereby reducing poverty through improved household incomes and effective local economic development	Conceptual framework Guiding principles Goals and objectives of the policy Funding measures Intersectoral coordination mechanisms M&E Strengthening local procurement, catering and local ownership mechanisms Cross-cutting themes Implementation framework
Lesotho	National School Feeding Policy	2015	Provide a mechanism for the National School Feeding Programme’s effective, efficient and transparent implementation, and a framework for cross-sector cooperation among actors, ensuring the meaningful involvement and participation of communities	Regulatory framework Vision, goal and objectives of the policy Lesotho models of school feeding Sectoral responsibilities Resource mobilization M&E Transition arrangements



Table 5. Respondent countries with laws/resolutions specific to school feeding

Country	Law/decree	Date of approval	Aims/objectives of the policy/ law/decree	Main components
Bolivia (Plurinational State of)	Ley n°622 de Alimentación Escolar en el marco de la Soberanía Alimentaria y la Economía Plural	December 2014	Regulate school feeding, by distributing the responsibilities to the different government sectors, and by fostering the local economy through the procurement of foods from local producers. Progressively guarantee school feeding in the units of the education systems, with foods produced locally Contribute to school performance and promote the retention of students in school through a healthy, timely and culturally appropriate diet Foster the procurement of products destined for school feeding, incentivizing and prioritizing local consumption and production	Objectives of the law Definitions and guiding principles Provider and procurement requirements Sectoral responsibilities (including the design of nutrition guidelines and nutrition education) Budget allocation and financing
Brazil	Lei n°11.947 (Atendimento da alimentação escolar e do Programa Dinheiro Direto na Escola aos alunos da educação básica)	June 2009	Regulate and guarantee school feeding as a right for schoolchildren	Definitions Guiding principles Objectives of the school feeding programme Financing, budget allocation and management Menu design generalities Procurement requirements and processes Sectoral responsibilities
	Resolução n°26 (Dispõe sobre o atendimento da alimentação escolar aos alunos da educação básica no âmbito do Programa Nacional de Alimentação Escolar)	June 2013	Establish the norms for the technical, administrative and financial implementation of the school feeding programme	Beneficiaries and participants of the programme Modalities and management Nutrition education actions Nutritional standards and guidelines Local procurement requirements Quality-control aspects School committee responsibilities Fund management Accountability mechanisms Monitoring and evaluation (M&E)
Cabo Verde	Lei n°89/VIII/2015 (regime jurídico de alimentação e saúde escolar e institui, o Programa Nacional de Alimentação e Saúde Escolar)	May 2015	Establish the legal regime of the National School Feeding Programme	Objective of the law Scope, definitions and guiding principles Nutrition education activities Sale and marketing of food products in school surroundings Food safety generalities
Colombia	Decreto Presidencial n°1852 (en lo referente al Programa de Alimentación Escolar)	September 2015	Regulate the school feeding programme	Definitions of school feeding and other terms Main coordinating entity's responsibilities Sectoral responsibilities Monitoring and follow-up of the programme
	Resolución n°16432 "por la cual se expiden los lineamientos Técnicos - Administrativos, los estándares y las condiciones mínimas del PAE"	October 2015	Establish the technical and administrative guidelines and standards of the school feeding programme	Objectives, financing, actors and responsibilities and phases of the school feeding programme Nutrition aspects guidelines for school meals Quality and food safety considerations Follow-up and monitoring of the programme Social participation and community involvement



Honduras	Ley de Alimentación Escolar	2016	Create the legal framework for the government to adequately provide meals to children in all public education institutions in the framework of the right to food, which includes the right of children to not be hungry and the development of conditions that contribute to physical and mental health, under conditions of liberty and dignity to favour educational indicators	Objectives of the programme Scope of application Principles Institutional framework and roles Local and community participation Complementary actions Local procurement School feeding as a national priority
Panama	Ley n°35 (por la cual se establece el programa de distribución del vaso de leche y la galleta nutricional o cremas nutritivas enriquecidas, en todos los centros oficiales de educación preescolar y primaria del país)	July 1995	Guarantee that schoolchildren have access to a daily snack complementary to their household diet, for improved well-being and better school performance	Objective of the law Nutritional characteristics of the snack Sectoral responsibilities Supplier requirements
	Resuelto n°387 (por el cual se dictan algunas medidas para el Programa de Alimentación Complementaria Escolar en todos los centros oficiales de Educación Preescolar y Primaria del país...)	March 2007	Regulate the school feeding programme	Creation of a commission at school level Responsibilities at school level Reception and storage of snacks Responsibilities in the delivery of snacks Monitoring and inspection at different levels Time of consumption in schools Scope of the programme Reporting of allergies and intolerances
Paraguay	Ley n°5210/2014 De la Alimentación Escolar y Control Sanitario	June 2014	Guarantee students' rights to adequate food and health during the school period	Definition of school feeding Health control and monitoring Budget allocation Sectoral responsibilities Guiding principles General characteristics of adequate school feeding
	Resolución Ministerio de Educación y Cultura n°15866 (por el cual se aprueban los lineamientos programa de alimentación escolar, en instituciones educativas de gestión oficial y privada subvencionada, dependientes de este Ministerio)	June 2015	Establish the basic guidelines to implement the school feeding programme	Normative framework Objectives, components (management, logistics and service, nutrition education and M&E and social participation), beneficiaries, scope and access of the school feeding programme Administrative procedures Nutrition guidelines for school meals (including food-based dietary guidelines) Food safety considerations Human resources
Peru	Decreto Supremo n°008-2012-MIDIS que crea el Programa Nacional de Alimentación Escolar Qali Warma	May 2012	Create and regulate the school feeding programme	Objectives of the school feeding programme Functions of the programme Scope and beneficiaries Management modalities Organization and financing

Out of these 12 countries, two had yet to approve or adopt their policies at the time of the survey. Others, including Botswana, Costa Rica, the Dominican Republic, El Salvador, Grenada, Guatemala, Kyrgyzstan, Sri Lanka and Tajikistan, are reportedly planning to develop their own school feeding policies and/or laws in the medium term, or have laws in the pipeline.

Most of the Latin American countries included in Table 5 (Bolivia (Plurinational State of), Brazil, Honduras and Paraguay) had laws driven by a rights-based approach to adequate food and education, to ensure that quality school feeding reaches its intended beneficiaries.



Generally, the majority of the laws identified provide a legal framework to regulate the operation of the school meal programmes, specifying their objectives, main components, resource allocation and financing sources, sector responsibilities, supplier and procurement requirements, broad meal/snack requirements and/or nutrition standards.

Regarding this last point, existing nutrition standards for school meals were either broadly mentioned in the law, included within the responsibilities of the different entities (development and implementation), and/or referred to in another normative document, as in the cases of Brazil and Paraguay. A more detailed exploration of these cases is presented in Section II.

Adaptations to standard public procurement regulations and practices may be needed where school meal programmes have objectives of supporting local agriculture through the purchase of food from local smallholder producers (FAO, 2017); this was done in Brazil by integrating it in the law and in Paraguay by reference to another normative document.

Other less-common but relevant elements integrated in the school feeding policies and laws are the regulation of the sale and marketing of food within and outside school premises, such as in the case of Cabo Verde, and the integration of SFNE, for example in Brazil and Bolivia (Plurinational State of). Respondents also identified separate normative documents related to canteen functioning, food safety and hygiene and food and nutrition education in schools, among others.

In countries where specific school feeding policies and/or laws are not yet in place, the majority of the programmes are considered education and/or social protection interventions, although they are not always explicitly embedded in national strategies for the development of the education sector, to achieve universal education and/or social protection.

Other informants also noted the inclusion of school feeding in their food security, nutrition and school health policies. World Bank, WFP and PCD (2016) identify the inclusion and alignment of these type of programmes in national poverty reduction and development strategies as an indicator for established school meal programmes, but this was less frequently reported/identified in the countries reviewed.

Relevance and aspects to consider

Most of the countries reviewed have identified specific roles for school meal programmes in their legal and policy agendas. Even though these programmes are articulated in different ways within national policies and legal frameworks, overall coherence, complementarity and integration in relevant multisectoral plans is key for commitment, resources and accountability. This is especially important when school meal programmes are multicomponent, such as the case of HGSM, and require the coordinated work of different sectors.

It should be noted, however, that specific laws, policies and/or strategies relating to school meal programmes may not necessarily provide the legal framework needed to address nutritional challenges effectively. In the context of school food and nutrition, the legal and regulatory framework encompasses a broader ecosystem of international obligations and constitutional provisions as well as laws and regulations relating to many sectors that influence the school food environment (health, education, nutrition, social protection, agriculture, food safety, trade, finance and public procurement).

Coherence and explicit linkages with these other domains of laws and policies that influence the school food environment, such as the cases reported by the respondents (school canteens, food safety, public procurement, etc.) can deliver additional benefits and enhance the impact of school meal programmes.



As with the overall programmes, the successful implementation and enforcement of nutrition standards for school meals also depends on a solid and coherent policy and legal basis. This, however, will not come about automatically. Resource allocation and establishment of the implementation mechanism requires clear involvement of key ministries and inclusion of a specific mandate on nutrition. Systems for participatory monitoring and mutual accountability are also required to ensure that legal and policy frameworks translate into actions.

Countries that are developing or revising their NGS should conduct a preliminary review to identify policies and laws that relate to the nutrition sector. They should then determine the best way in which these can be coherently integrated, allowing for smooth and coordinated implementation, and avoiding fragmentation and overlap.

In addition, it is important to identify agricultural development regulations, strategies and policies that support the production of and development of value chains for nutritious foods as these influence the application of food-based standards for school meals. Agricultural policies can even be designed specifically on the basis of nutrition standards to support value chains of priority foods (WFP and FAO, 2018).



Aspects to consider/Key questions to explore:

NGS should have a strong legal and policy basis to support their implementation. Countries should review existing policy and legal frameworks relevant to school meals to understand the needs and opportunities for NGS, as well as how these can be integrated in the existing framework once developed. What are the main entry points? In which specific policy or policies or law(s) would NGS be best integrated? Would they be used as a normative instrument of their own? Would they serve as a normative instrument to which specific regulations make reference, endowing legal enforceability?

Mandatory NGS are proven to increase the uptake of adequate and quality school meals and school food in general. In the development of legal regulatory instruments, there is a need to embed adaptability for revisions and amendments of NGS. What measures would be needed to enable flexibility in the application of NGS in different circumstances?

Legislation should establish clear mandates and responsibilities for the implementation, monitoring and review of NGS. How would the main responsibilities be assigned and coordinated? How would the mandates of the relevant institutions regarding NGS be defined?

It is recommended that countries implement specific legal procedures including monitoring and accountability mechanisms to track progress and to address potential challenges related to the effective implementation of NGS.

Countries should consider reviewing the existence and operations of relevant policies and legal instruments that regulate other components such as food and nutrition education, promotion and sale of food, public procurement, school environment and canteen management (public or private) in order to improve congruence with developed or proposed NGS for the food provided by school meal programmes. What regulation and/or policies should be reviewed and harmonized? What would be needed to ensure coherence and complementarity among the various policies and laws?

NGS can support the revision or strengthening of agricultural development laws and policies with respect to particular food value chains. Would implementation of NGS represent a significant change to existing supply chains? Would NGS favour the development of specific food value chains over others? How can this be reflected in relevant development regulations and policy documents?

For more information, refer to:

FAO. 2018b. Legal guide on School Food and Nutrition. Rome. (in press)

4. Main targeting approaches for selecting beneficiaries

“Given a finite budget, targeting is essential to ensure that [school meal programmes] provide the most benefits to the intended beneficiaries” (Bundy *et al.*, 2009).

Targeting approaches must respond to the main programme objectives, cost and available resources, and play a direct role in defining the modalities and food basket most appropriate for the beneficiaries. Therefore, they serve as significant consideration for setting NGS (Buhl, 2010; World Bank, WFP and PCD, 2016).

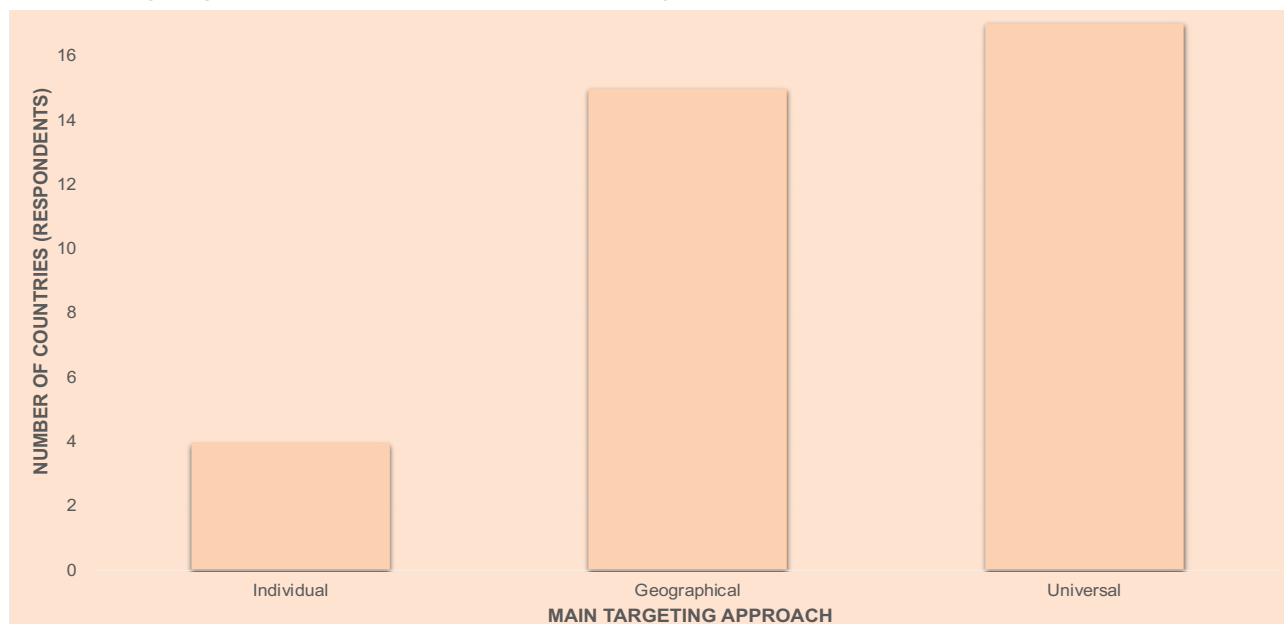
The main objectives, needs and resources available also define the scope of school meal programmes in terms of the stages of formal education covered (i.e. pre-primary, primary or secondary). This, in turn, defines the target age ranges and the children’s physiological needs and nutritional vulnerabilities.

Main findings

Figure 1 shows the targeting approaches, as defined by WFP (Bundy *et al.*, 2009), that are being used by school meal programmes in the respondent countries. Figure 2 displays the stages of formal education that these programmes cover.

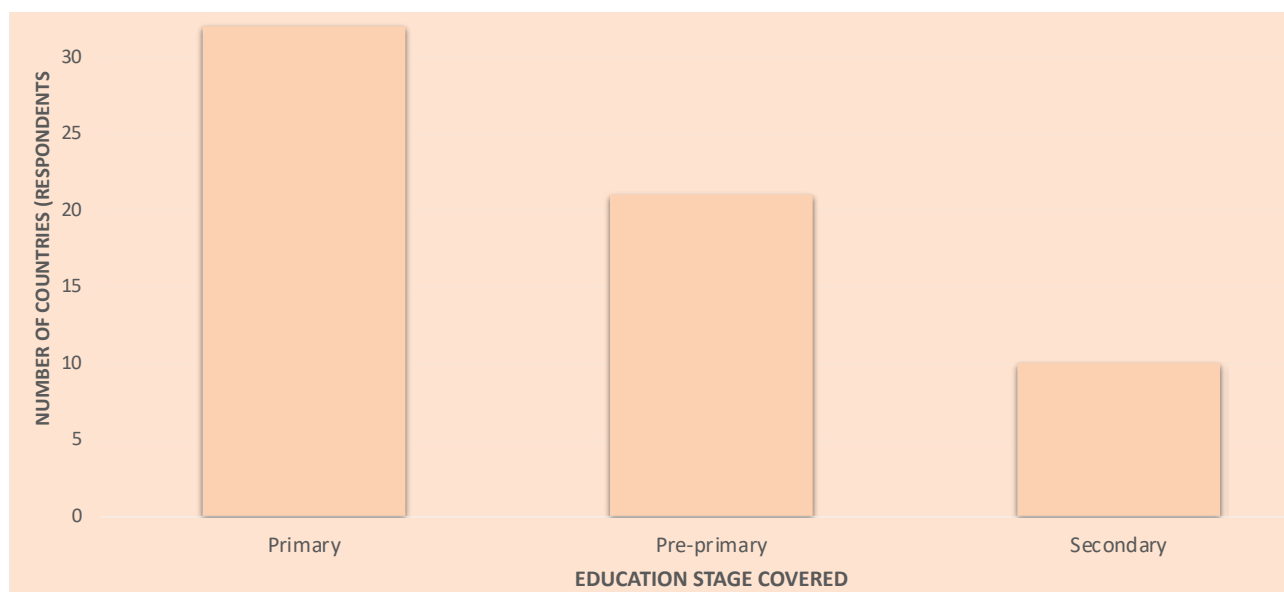


Figure 1. Targeting approaches used by the school meal programmes in the respondent countries



Note: Colombia, Mexico and Namibia use a mixed targeting approach combining individual and geographical criteria.

Figure 2. Scope of school meal programmes regarding stage of formal education in the respondent countries



Seventeen of the programmes utilize a universal targeting approach, i.e. all children are eligible to participate in the programme. All of these programmes were in middle-income countries.

Fifteen programmes reported using a geographical approach to select schools in vulnerable areas. Targeting criteria used included: high rates of poverty, food insecure regions, high prevalence of chronic malnutrition, below average enrolment rates, low retention rates, marginalized population groups, conflict zones and rural and remote locations.

Only four programmes used individual targeting. This approach identifies individual vulnerable pupils according to criteria such as poverty, ethnicity, malnutrition and/or food insecurity.



Thirty-two of the 33 respondent countries had programmes for primary-school children (the focus of this study). In addition, 21 countries also provide food and other benefits to children in pre-primary school, while ten cover children in secondary school.

Relevance and aspects to consider

By nature, a programme's scope and targeting approach define the profiles of the intended beneficiaries, including their broad needs and priorities. This thus helps determine the composition of the meals required as well as possibilities and reach of NGS. These profiles can include age ranges, nutrition issues and local dietary problems, among other factors. At the same time, once established, the profiles of the beneficiaries can also help to conduct baseline assessments to support the decisions about the most adequate meal composition.

For example, programmes with a universal coverage could consider meal patterns that are acceptable in different regions and are nutritionally adequate for the majority of children. Programmes that target individual vulnerable children at school level or schools in vulnerable areas would plan for meals or snacks that cover a significant amount of priority nutrients that are known to be deficient.

Mechanisms for individual and regional targeting are not only useful to better direct resources to the most vulnerable or intended beneficiaries, but they can also provide key information (e.g. nutritional status, conditions of marginalized groups, priority nutritional issues) to help assess and estimate the nutritional needs and requirements of target beneficiaries. This information is the basis for setting NGS. Individual targeting yields the most detailed information about the intended beneficiaries, but it is rarely used in low and middle-income countries because of its complexity and resource intensiveness (Drake, Woolnough and Burbano, 2016). This is in line with the findings in the respondent countries.

In programmes in which targeting approaches evolve or change, most commonly from regional or individual to universal, the main profile of the beneficiaries shifts and it is important to consider the timely update of the food basket, menus and, certainly, the NGS.

Although beyond the subject of the present report, it is important to consider preschool-age children as a group with high nutritional vulnerability, even in adequate socio-economic conditions, and to consider the effects of school meals and NGS on their dietary patterns and nutrition status (Adelman, Gilligan and Lehrer, 2008).



©FAO/V. Oseledko



Aspects to consider/Key questions to explore:

A programme's targeting approach and scope defines the intended beneficiaries and their characteristics, including age ranges and broad nutrition needs and priorities. It thus provides key information to be considered when setting adequate NGS. The data used for geographical and individual targeting (particularly rates of undernutrition, micronutrient deficiencies, overweight and obesity and food insecurity measures) can be further used to help determine minimum and maximum nutrient requirements and specific food groups to be provided, limited or restricted. Who are the target groups? What are their nutrient requirements? What are the priority nutrients? Which should be limited? What are their dietary needs? What are their food consumption patterns? What is the food security situation? What are the patterns of consumption of nutrient-rich foods and foods of low nutrient value?

In the case of universal targeting, national data on nutritional status, food consumption and dietary issues of schoolchildren that is disaggregated according to region should be prioritized, when available. Geographical targeting approaches can be useful to understand regional dietary patterns, habits and local foods to be considered for the contextualization of NGS. What are the priority nutrition issues of schoolchildren by region? How do the consumption patterns differ? How would NGS address these in the different regions where the programme operates? What foods and traditional recipes ought to be considered to ensure adequate contextualization of the NGS?

NGS and menus should be updated in response to major changes in the targeting approach of school meal programmes. Has the programme changed its targeting approach in the last 5 years? Has the composition of the meals been adapted following this change?

5. Broad modalities of food procurement, distribution and preparation

For the purpose of this report, modality refers to the procurement, distribution and/or preparation processes implemented within the school meal programmes.

Procurement, distribution and preparation modalities are a result of programme objectives, available resources, local food systems (including production possibilities and trends, and value chains of interest), government structure, infrastructure, access to public services and geographical location. In turn, these considerations determine what is available for the food basket, how it reaches the schools and how meals and snacks are prepared and presented to children (Gelli *et al.*, 2012).

At the same time, procurement modalities can have a significant impact on agricultural and community development, and in defining food products that are in line with children's needs and the region's consumption patterns and traditions.

Main findings

Table 6 presents the main procurement, distribution and preparation modalities used by the programmes within the respondent countries.



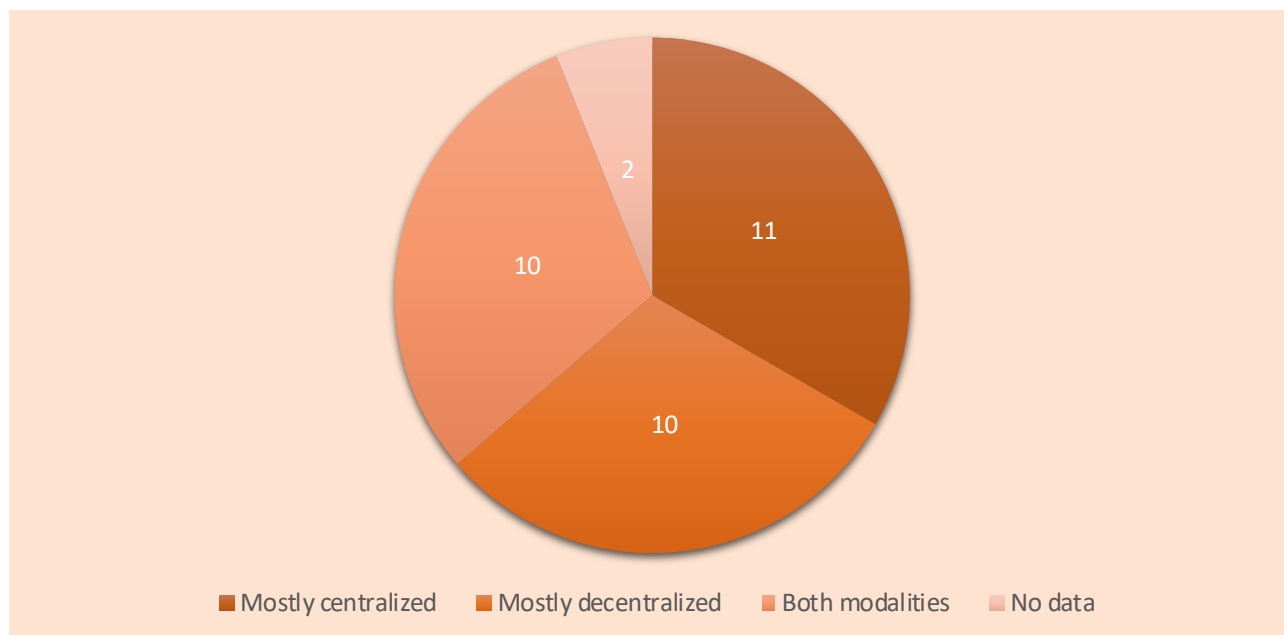
Table 6. Main procurement, distribution and preparation modalities used by the school meal programmes within the respondent countries

Country	Programme (s)	Main food procurement modalities	Food preparation
Benin	Cantines Scolaires	Mostly centralized (in-kind food commodities distributed to schools) plus parent contributions. Some canteens function under a decentralized model (fund transfers to caterers or other meal providers)	<i>In situ</i> preparation (cooks hired by community) Catering
Bolivia (Plurinational State of)	Programa Nacional de Alimentación Complementaria Escolar (PNACE)	Decentralized (fund transfers to municipal authorities for procurement) and some financial and in-kind contribution from parents	<i>In situ</i> preparation or industrialized (ready-to-eat) modality
Botswana	Botswana School Feeding Programme (BSFP)	Mostly centralized (in-kind commodities distributed to districts and then schools) with decentralized modalities (fund transfers to districts for sourcing fresh produce, which are distributed to schools; or fund transfers directly to schools)	<i>In situ</i> preparation (community cooks)
Brazil	Programa Nacional de Alimentação Escolar (PNAE)	Decentralized at different levels: municipality level (fund transfers to municipalities for procurement and distribution to schools) or school level (municipalities transfer funds to schools for procurement)	<i>In situ</i> preparation (cooks hired by the government)
Cabo Verde	Programa Nacional de Alimentação Escolar	Centralized (in-kind commodities distributed to schools, for the main commodities) and some decentralized models (local procurement to diversify the meals), plus contributions from parents and community gardens in some areas Several pilots of local sourcing from smallholders	<i>In situ</i> preparation (community cooks)
Colombia	Programa de Alimentación Escolar	Decentralized (fund transfers to territorial operators for procurement)	<i>In situ</i> preparation or industrialized modality (transitory until school can improve infrastructure)
Costa Rica	Programa de Alimentación y Nutrición del Escolar y del Adolescente (PANEA)	Decentralized (fund transfers to schools for procurement)	<i>In situ</i> preparation or catering
Dominican Republic	PAE Urbano PAE REAL (Ración Escolar con Alimentos Locales) PAE Fronterizo PAE Jornada Escolar Extendida	Mostly centralized (in-kind commodities delivered to schools or industrialized snacks) with some decentralized components for local procurement Pilots of local sourcing from smallholders	<i>In situ</i> preparation (by cooks or parents) or catering or industrialized
Ecuador	Programa de Alimentación Escolar	Centralized (products delivered to schools) Some initiatives for decentralized local procurement (for cooked lunches)	Industrialized <i>In situ</i> preparation (by hired cooks, family member or teachers)
El Salvador	Programa de Alimentación y Salud Escolar (PASE)	Mostly centralized (in-kind commodities distributed to municipalities and schools) plus donations from the community Pilots of local sourcing from smallholders	<i>In situ</i> preparation (by mothers or hired cooks)
Ghana	Ghana School Feeding Programme	Decentralized (fund transfers to caterers for procurement, including some local procurement) Pilot of strengthening local sourcing from smallholders	Catering (hot meals delivered to schools) The preparation can also be done in school premises
Grenada	School Feeding Programme	Decentralized	<i>In situ</i> preparation
Guatemala	Programa de Alimentación Escolar	Decentralized (fund transfers to family organizations for procurement from community-based food stores) Pilots of local sourcing from smallholders	<i>In situ</i> preparation (by families or hired cooks) or in family kitchens
Guyana	National School Feeding Programme	Centralized (snacks distributed to schools)	Industrialized
	Hinterland Community-Based School Feeding Program	Decentralized (fund transfers to community organizations for local procurement)	<i>In situ</i> preparation (community cooks)
Honduras	Programa de Alimentación Escolar	Both centralized (in-kind commodities distributed to schools) and decentralized (fund transfers to local committees for procurement, including sourcing from local smallholders)	<i>In situ</i> preparation (by parents, teachers or community members)
Jamaica	School Feeding Programme	Centralized (snacks distributed to schools) Pilots of local sourcing from smallholders	Industrialized or <i>in situ</i> preparation



Country	Programme (s)	Main food procurement modalities	Food preparation
Jordan	School Feeding Programme	Centralized (snacks distributed to schools)	Industrialized
Kyrgyzstan	School Feeding Programme	Centralized (snacks and fortified flour distributed to schools) Pilot of decentralized local procurement + school gardens produce + donations from community	Industrialized Pilot for cooked meals prepared <i>in situ</i>
Lesotho	National School Feeding Programme	Decentralized (fund transfers to caterers for procurement)	Catering
	School Meals Programme	Centralized (in-kind commodities distributed to schools) Pilot of local purchases for HGSM model	<i>In situ</i> preparation
Malawi	School Meal Programme	Both centralized (in-kind commodities distributed to schools) and decentralized (fund transfers to schools for local procurement from smallholders) plus inputs from community/school gardens	<i>In situ</i> preparation (by parents and community members)
Mexico	Programa de Desayunos Escolares	Decentralized to the states (in-kind commodities or industrialized foods distributed to schools) and donations from parents	<i>In situ</i> preparation or industrialized
Republic of Moldova		No information	No information
Mongolia	School Lunch Programme	No information	In-school food (either ready to consume or prepared <i>in situ</i>)
Namibia	Namibian School Feeding Programme (NSFP)	Centralized (in-kind commodities distributed to schools) and donations from community	<i>In situ</i> preparation (cooks are volunteers from the community)
Panama	Programa de Alimentación Escolar	Centralized (ready-to-eat products delivered to schools)	Industrialized Some schools provide <i>in situ</i> preparation of meals
Paraguay	Programa de Alimentación Escolar del Paraguay (PAEP)	Both centralized (in-kind commodities distributed to schools) and decentralized Pilots of local sourcing from smallholders	<i>In situ</i> preparation or catering or industrialized
Peru	Programa Nacional de Alimentación Escolar Qali Warma	Decentralized (fund transfers to school committees to select providers and modalities)	<i>In situ</i> preparation or catering
Senegal	Cantines Scolaires	Both decentralized (using funds and vouchers transferred to schools) and centralized models, plus donations from community and inputs from gardens Pilots of local sourcing from smallholders	<i>In situ</i> preparation
South Africa	National School Nutrition Programme	Both centralized (in-kind commodities delivered to schools at provincial level) and decentralized (fund transfers to schools for procurement) models	<i>In situ</i> preparation (cooks hired from the community)
Sri Lanka	School Nutrition Programme	Both centralized (in-kind commodities distributed to schools) and decentralized (fund transfers to providers for procurement)	<i>In situ</i> preparation or catering (from the community)
Swaziland	School Feeding Programme	Mostly centralized (in-kind commodities distributed to schools) plus inputs from gardens Some initiatives where schools procure locally	<i>In situ</i> preparation
Tajikistan	School Feeding Programme	Centralized (in-kind commodities distributed to schools) plus parent contributions Pilots of local sourcing from smallholders to be expanded	<i>In situ</i> preparation
Viet Nam	School Meal Programme	Decentralized (parent or government financial contributions for procurement and preparation of meals in the schools or by caterers)	<i>In situ</i> preparation or catering



Figure 3. Main procurement modalities used by the school meal programmes in the respondent countries

About one third of the programmes make use of a (mostly) centralized procurement modality (Figure 3), where commodities are purchased at the central government level, commonly through public tenders, and subsequently distributed to the schools in different ways.

In some cases, such as Panama and partially in Ecuador, ready-to-eat or industrialized snacks (e.g. fortified cookies, fortified milk-based beverages and creams) are usually transported to regional collection points and then delivered to schools for direct consumption.

Other countries, such as El Salvador and Namibia, also implement a centralized model of food procurement, mainly of raw materials (typically cereals, flour and legumes) that are delivered to schools and used for the preparation of meals. In some cases, the main commodities received are complemented with fresh produce donated by the community.

In contrast, programmes in Bolivia (Plurinational State of), Brazil, Colombia, Costa Rica, Ghana, Grenada, Guatemala, Mexico, Peru and Viet Nam use a mostly decentralized procurement modality, in which funds are transferred to, and managed at, the regional, municipality or school level ('fully decentralized') to select providers and source foods. In many cases, a significant proportion of the food is procured from local smallholder farmers. This responds to local agricultural and economy development objectives.

A further ten countries (Botswana, Cabo Verde, Guyana, Honduras, Lesotho, Malawi, Paraguay, Senegal, South Africa and Sri Lanka) implement both modalities. In some cases, different regions use different models depending on the programme-coordinating entity (including those in transition) and/or production capacities of the areas. In other cases, different commodities are procured in different ways (e.g. staples and dry ingredients are procured centrally, while fresh produce and animal-source foods are acquired in a decentralized manner).

Cabo Verde, the Dominican Republic, Ecuador, El Salvador, Guatemala, Jamaica, Paraguay, Senegal and Tajikistan are implementing pilots within existing programmes that introduce more diversity to the meals, sourced partly from local smallholder producers. The majority of these pilots in the Latin American countries are part of a regional project that aims to scale up a model called "Sustainable schools."⁴

⁴ "The Sustainable Schools experience was designed to establish a reference point for the implementation of sustainable school feeding programs, based particularly on actions such as the involvement of the educational community; the adoption of healthy and adequate school meals; the implementation of educational school gardens; improvements made to kitchens, dining halls and storage rooms; and the direct purchase of local family farming products for school feeding." (FAO, 2013)



In the majority of programmes the food is received and prepared on the school premises or at community level (e.g. community kitchens), either by hired cooks or community/parent volunteers. In some cases, systemic efforts have been directed to improve schools' infrastructure and provide equipment to support on-site preparation of diversified meals.

Programmes in Bolivia (Plurinational State of), Colombia and Mexico implement a variety of preparation modalities within the same programme, under which the food provided can be industrialized (usually ready-to-eat snacks) or prepared *in situ*, according to schools' infrastructure and capacities. Programmes in Benin, the Dominican Republic, Ghana, Lesotho, Paraguay and Sri Lanka use catering modalities under which entities or individuals are employed to deliver ready-made meals to the schools.

Centralized and decentralized systems: some considerations

Centralized and decentralized systems both have potential advantages and disadvantages for public food procurement. Decentralized procurement systems may not benefit from the economies of scale of large food purchases made by central procurement. Weak administrative or technical capacity at local levels may mean that services are delivered less efficiently in some areas of the country. Local levels may not have adequate financial resources, making equitable distribution or provision of services more difficult. The coordination of national policies may be made more complex in a decentralized system and may allow functions to be captured by local elites.

On the other hand, decentralization means more flexibility for customizing procurement systems to suit the needs of local small-scale farmers and farm enterprises.

Local authorities can also act as platforms for more efficient information interface between the needs of end users, such as local schools, and small-scale suppliers. Awarding contracts closer to the end user means that delays can be avoided and food will be fresher and therefore higher in nutritional value when consumed. Local dietary preferences are also more likely to be satisfied under decentralized systems, and the potential to promote local-to-local linkages benefiting local farmers and enterprises is greater, with spillover effects on the local community.

Ultimately, however, centralization and decentralization are not 'either/or' conditions and an appropriate balance of systems is essential for the efficient functioning of government procurement. Even within a decentralized system there are different procurement strategies that can be adopted. Decentralized procurement can take place at the level of the institution, district government or municipality. It can also include some elements of centralization, forming mixed models that combine some of the advantages of a more-centralized approach. For instance, a combined approach will be needed when food is not available locally, or needs to be fortified in bulk, or when local institutions do not have the capacity to procure food cost effectively (excerpt from Siobhan and Kelly, 2017).

Relevance and aspects to consider

A deep understanding of existing modalities is essential to identify what strategies are feasible to improve and ensure the quality of the food provided, including the development and update of NGS. For instance, centralized modalities allow for detailed standards on the composition and quality of the commodities or snacks to be monitored closely and processes can have greater standardization. However, they offer little flexibility, have difficulty in supplying fresh foods and risk low compatibility of foods with regional habits. There may also be other issues with centralized modalities, such as delays in public tenders or in delivery to schools.

Decentralized modalities are usually region-dependant and require greater flexibility in NGS to allow for possible differences in local conditions, particularly in food availability (seasonality, production capacities, post-harvest losses, etc.) and opportunities. The more decentralized the procurement, the greater the number of people whose capacities need to be developed and the less possibility for control and standardization. In addition, the costs of providing meals in line with the set standards may not be identical in all areas of the country.



As previously mentioned, linking with local smallholder producers (which can be done independently of the procurement modality) can increase diversity in the meals and support local development. However, for best results, programmes must address issues such as the capacity of farmers to deliver produce in line with nutrition, quality and food safety standards, and the flexibility of menus to adapt to changing availability and regional agricultural differences.

Regardless of the modality used for procurement, the aim should be to provide the highest nutritional quality within the possibilities and resources. The pilots that some countries reported represent a good opportunity to test new ways of improving food baskets and menus, and to develop NGS that could be expanded nationwide. In addition, some projects also provide direct support and capacity development to improve the production, diversification and organization of smallholder farmers, which, if appropriately linked to NGS, can help ensure that the foods recommended are actually being produced and procured.

In the case of Honduras, for example, the piloting of sustainable schools led to the development and approval of a school feeding policy. This will support the expansion of a more holistic model of school feeding and a more nutritious food basket throughout the whole country.

In Cabo Verde, the United Nations Joint Programme on Food Security and Nutrition in Schools supported the piloting of several models to improve the quality and diversity of meals with fresh produce from local smallholders. This resulted in the Government exploring ways to maintain and scale up the most viable options.

Another factor to consider is the direct contributions of communities to the programmes, as reported in several respondent countries. These can significantly enhance the food basket's diversity and quality. When consistent, such contributions should be monitored and potentially accounted for in the nutrition guidelines.

Preparation modalities outline the possibilities for recipes and preparations, in addition to defining who the front-line implementers of the menus and possible NGS are, and thus their capacity needs. Preparation modalities are often dependant on the infrastructure, equipment and resources available in the schools.

For meals prepared *in situ*, in community kitchens or through catering, NGS can put emphasis on the quality of ingredients, minimum/maximum quantities of specific food groups to include in the meal and details of the preparation and recipes. Defining what is feasible for the NGS and identifying training needs require an understanding of common receipt and preparation processes; these include: cooking methods, food safety considerations and adherence to menus and recipes (IOM, 2010).

In the cases where beneficiaries are mainly provided with an industrialized snack (e.g. fortified cookies, fortified milk beverage or creams), potential standards will centre around the nutrient composition of these snacks. Since preparation is usually not needed, awareness-raising or capacity development efforts would be directed at production, storage and distribution.

Some organizations have recommended to start the development of NGS from the 'ideal' required meals, and then adapt the infrastructure, equipment and human resources to deliver these. However, this may be unfeasible for countries with limited or irregular funding (Center for Ecoliteracy, 2010). Some examples of this approach were reported in the mapping exercise through projects focusing on improving school kitchen infrastructure and eating facilities in order to provide diversified meals prepared on-site.



Aspects to consider/Key questions to explore:

Development of NGS must take into consideration the advantages and possible challenges of different food procurement modalities, particularly the use of centralized, mixed and decentralized models. What is desirable from a nutritional point of view and feasible with the current procurement mechanisms? If a desirable modality is not currently feasible, what needs to change to make it feasible?

When developing NGS, factors that may affect regular provision of commodities (seasonality, local production capacities, post-harvest losses, delays in the public tender processes, etc.) should also be identified and accounted for, for example by identifying/providing suitable food alternatives. What could be the main risks in meeting the NGS in terms of food availability? How can these risks be minimized when developing the NGS? What suitable replacements or modifications can be expected?

Additional inputs from the community can be monitored to determine their contribution to children's diets and their potential for increasing dietary diversity and supplying nutrient-dense, traditional foodstuff. Are contributions from the community sufficiently significant to be considered when developing the NGS? Can these contributions support efforts towards achieving the NGS?

Assessing schools' infrastructure, equipment and human resources is key to determining the possibilities for different preparation modalities and NGS. What is possible with current infrastructure and equipment? What is the cost of adapting and/or improving infrastructure to meet the NGS? What human resources and capacities are needed?

Monitoring food preparation processes can provide important information to decide on recommended preparations, food safety standards and capacity development needs. What meals are currently being prepared inside and outside schools? What are the preparation processes? What would need to change to meet the NGS? What is feasible? Who would need to be trained? Are there food safety guidelines in place? Would these need to be adapted?

Projects or programmes that support linkages with local sourcing from smallholders should be involved in the development of NGS so as to determine the feasibility of regular supply and identify potential challenges to be faced. These initiatives can also promote enforcement of NGS through capacity development, development of manuals and guidance materials, and direct support to farmers. How can existing programmes support the enforcement of NGS? How can NGS help to better tailor these programmes to meet the nutritional needs of schoolchildren?

The process of setting guidelines and/or standards should also consider additional food safety and nutritional factors from programmes that make use of caterers and community kitchens. Will the implementation of NGS differ for meals prepared by caterers and those prepared outside the school? How can these differences be considered during the development of the NGS?

6. Some examples of meals/snacks provided

School meal programmes should ideally provide a steady supply of certain foods to prepare meals and/or to be served to the beneficiaries, in line with the main programme objectives, modalities and the school system organization (i.e. length of school days, shifts, break times). However, in practice, the actual supply can vary significantly due to irregular resource availability and other issues. The amount and quality of actual foods that reach the children depend on funding, prices, capacity of suppliers, quality of supplies, availability and capacities of regular staff and other factors. Development and/or updating of robust and realistic NGS requires that these factors and information on current meal times, snack specifications, cyclic menus and implementation of recipes are taken into consideration.

Main findings

A description of sample meals or snacks provided to children within the school meal programmes studied is shown in Table 7.



Table 7. Broad description of meals or snack provided through the school programmes in the respondent countries

Country	Meal time	Main components of the meal/ snack	Example of recipes and preparations	Observations
Benin	Lunch	Hot meals made usually with corn or rice, beans, oil and salt. Additionally, pasta, cassava flour and canned fish		
Bolivia (Plurinational State of)	Lunch, snacks	<i>In situ</i> modality Morning snack: hot or cold beverage, cereal, eggs and seasonal fruit Lunch: main dish composed of cereal, legumes, tubers, vegetables, meat, eggs and oil. Water or beverage and/or seasonal fruit Afternoon snack: hot or cold beverage, cereal and seasonal fruit Industrialized modality Beverage (milk, yoghurt, juice, oatmeal, cereal-based) and cereal-based product (granola, cereal bars, bread)		
Botswana	Lunch	Meals composed of sorghum porridge with beans or canned meat, or maize and beans, or bread and milk	Samp (boiled corn kernels) and beans with oil Porridge with stewed beef	
Brazil	Breakfast, lunch and/or snacks	Varied hot meals and preparations	Lunch: Nutritious rice cake; legume cake; vegetable omelettes	
Cabo Verde	A meal mid-morning or mid-afternoon and snack	Hot meals made with cereals (rice or pasta), legumes (mostly beans) and oil, and diversified with vegetables and fish. In some schools a glass of milk is provided	<i>Cachupa</i> (traditional dish made with beans, maize, fish) and enriched with vegetables and meat	
Colombia	Lunch and/or snack	<i>In situ</i> modality Lunch: meals made with an animal-source food (beef or chicken or egg) or legumes; a cereal (rice, pasta or quinoa), tubers (potato, cassava, yam), or a derived product (<i>arepa</i> [made from maize flour], bread or plantain) and/or with vegetables. Fruit. Juice or milk; sugar or panela. A soup or cream is optional Snack: milk or cereal-based drink; animal-source food (cheese, egg or meat) or legumes; cereal (bread, <i>arepa</i> or rice) or tuber; and fruit. Chocolate or added sugar Industrialized modality Snack: milk, cereal-based product, fruit and/or dessert		4-week menu cycles
Costa Rica	Lunch. breakfast or snack can be offered with resources from each institution	Hot and traditional dishes prepared with cereals, legumes, vegetables, and/or animal-source foods. Fruit and beverage	Rice with chicken, beans and green salad. Fresh fruit and fruit-based beverage	4-week menu cycles
Dominican Republic	Breakfast, lunch and/or snack	PAE Urbano Snack: fortified cookies or bread, milk or juice		
		PAE REAL Lunch: hot meals prepared with tubers, bread or maize-based products, animal-source food (egg, cheese, cured meats, fish) and/or vegetables. Milk-based beverage	Lunch: boiled plantain and eggs with carrots	
		PAE Fronterizo Breakfast: milk-based beverage and crackers Lunch: varied traditional hot meals with rice, legumes, canned fish and/or cured meats	Lunch: <i>Moro</i> (dish made with rice, beans and condiments) of beans and cod with onions and tomato	
		PAE Jornada Escolar Extendida Lunch: varied traditional hot meals including a cereal or tuber, animal-source food, vegetables and/or legumes Snack: fruit juice or milk-based beverage	Lunch: <i>Locrio</i> (traditional dish made with rice and an animal-source food, usually fish) with herring, sardines or cod; salad with tomato and cucumber	4-5-week menu cycles
Ecuador	Breakfast and/or snack	Breakfast: <i>Colada</i> (fortified flavoured beverage) and granola/cereal bar, cookies or filled cookies Snack: milk or flavoured milk		

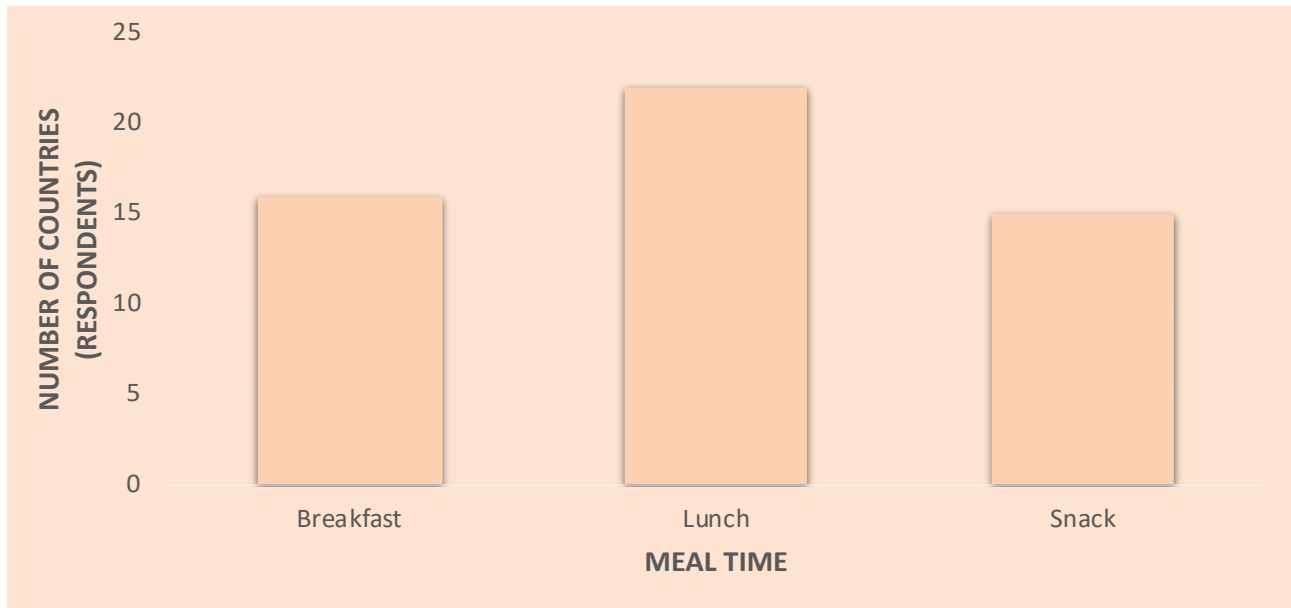


Country	Meal time	Main components of the meal/ snack	Example of recipes and preparations	Observations
El Salvador	Snack	Meals made with combinations of rice, beans, milk, sugar and oil. These can be diversified with parent and community donations (e.g. vegetables, condiments, herbs) Fortified drinks	Rice with milk (typical dessert) Fried beans, rice and fortified beverage Rice and beans <i>empanada</i> (savory pastry with different possible fillings), and milk with vanilla	
Ghana	Lunch	Hot traditional meals prepared with cereals (rice or maize), tubers, legumes (beans, cow-peas, soy) and oil. These may be diversified with stews made with vegetables and animal-source foods (meat, fish)	Fish stew with rice	
Grenada	Lunch	Varied hot meals prepared with cereals (rice, maize, pasta) or tubers (cassava, plantain, yams, sweet potatoes), animal-source foods or legumes and vegetables. Fruits	Stewed fish with coo-coo, vegetables and fruit juice Chicken pealu, carrots and fruit juice	4-week menu cycles
Guatemala	Breakfast	Beverages: Fortified cereal-based drinks, milk or fortified porridge Hot meals prepared with cereals (rice, pasta), legumes, vegetables and/or eggs. Fruit	Maize <i>atole</i> ; oatmeal porridge Potato or cassava tortillas; vegetable and vegetable meat <i>picadillo</i> ; scrambled eggs with tomato and tortillas	
Guyana	Snack	Juice and biscuits		
Honduras	Breakfast	Hot meals prepared with cereals (corn, rice) or fortified flour, legumes and oil. Milk is provided in some schools In some schools: fruit, fresh vegetables and other foods are also incorporated in the meals		
Jamaica	Breakfast, lunch or snack	Snack: bakery products and milk Lunch: meals prepared with cereals (rice, maize flour), canned meats and oil; cash grants provided to purchase meat and other foods		
Jordan	Snack	High-energy biscuits and fruit		
Kyrgyzstan	Snack or lunch	Bun and tea In pilot schools: fresh pastries from enriched flour, milk porridge or soup and fruit, pastas, soups		
Lesotho	Breakfast and/or lunch	Breakfast: maize-meal porridge Lunch: cooked meal with staples (maize), vegetables and legumes	<i>Papa</i> (maize meal) and <i>moroho</i> (vegetables) Bread and bean soup Samp (boiled corn kernels) and beans	
Malawi	Breakfast	Fortified corn and soy-blend porridge In some schools: hot meals with cereals (maize, rice) or tubers, legumes and nuts (beans, peas, soybeans, groundnuts), vegetables and meat (goat or beef)		
Mexico	Breakfast	Cold breakfast (ready-to-eat): skimmed milk, cereal-based product (cookies, cereal bar) and fresh or dehydrated fruit Hot breakfast: skimmed milk or water; fruit; and a main dish with vegetables, wholemeal cereal and legumes or animal-source food	Chicken tacos with tomato. Milk and fruit	4-week menu cycles (20 menus)
Republic of Moldova	Breakfast	No information		
Mongolia	Lunch	No information		
Namibia	Lunch	Meals made with maize, soy protein blend, sugar and iodized salt. Meals can be diversified with vegetables, meat or fish donated by parents and community		
Panama	Snack	Milk, fortified cookies or fortified cream		



Country	Meal time	Main components of the meal/ snack	Example of recipes and preparations	Observations
Paraguay	Breakfast/snack or lunch	Breakfast: fortified or plain whole milk; and cereal-based product (cookies, bread, crackers, <i>rosquilla</i> [cookie], muffin) or fruit Lunch: meals with main dish, side dish or salad and/or dessert (mainly fruit)		4-week cycle (2-week cycle for local projects)
Peru	Breakfast and/or lunch	Catered Breakfast: fortified milk or milk with cereals, and bread-type product with cheese, egg or butter <i>In situ</i> Breakfast: milk-based or cereal-based beverage (oatmeal, quinoa, wheat flour) and cookies or cereal-based product with animal-source food Lunch: hot meal prepared with cereals or tu- bers, legumes and animal-source foods	Milk with oatmeal, bread with <i>dulce de leche</i> (dessert with milk and sugar); rice with milk and crackers Rice with chicken; pasta with fish and tomato sauce	
Senegal	Breakfast and/or lunch	Hot meals prepared with rice, legumes and oil. Other canteens can provide diversified meals with vegetables and animal-source foods		
South Africa	Lunch and break- fast (only in one province)	Hot meals composed of cereals (maize, rice), animal-source food or legume and vegetables. Milk and fruit can be included as an option	Soy mince stew, maize <i>pap</i> (por- ridge) and pumpkin or butternut; milk, maize pap and whole fruit; cooked beans, samp and green vegetables	
Sri Lanka	Breakfast and/or snack	Milk Hot meals prepared with rice (different va- rieties), legumes, oil, vegetables and/or ani- mal-source foods (egg or fish). Local fruit	Rice with dried fish; potato curry; mixed vegetables in coconut bread with onion <i>Sambol</i> (garnish/condiment)	2-week menu cycles
Swaziland	Lunch	Hot meal composed of cereals (maize or rice), beans and oil		
Tajikistan	Lunch	Hot meal, typically a soup made from cereal, legumes, oil and iodized salt. Meals may be diversified with vegetables provided by parents In some schools, bread prepared with fortified flour has been introduced		
Viet Nam	Lunch and snack	Hot meal consisting of staple foods (boiled rice, noodles), animal-source food (pork, chick- en, beef) or tofu, soup (including vegetable) and fruit. In addition, pupils also receive milk or dairy products after lunch		



Figure 4. Meals provided by the school meal programmes in the respondent countries

Lunch is the most frequently provided meal, followed by breakfast and snacks (Figure 4). Some of the mapped country programmes, including those in Botswana, Colombia and the Dominican Republic, provide additional meals for critically vulnerable children and/or remote schools. Others, such as Brazil, have different mechanisms to determine the number of meals offered and their serving time. The factors used to determine the amount and schedule of meals to be provided vary among the countries and include school scheduling system, age range and grade of children, region, classification of vulnerable group and/or nutrition status.

The majority of the programmes that provide lunch offer cooked meals that range from single dishes based on staples with added vegetables, legumes and/or animal-source foods to menus with a main dish and a side dish. Fruit is provided as part of lunch in some programmes. Traditional recipes and preparations are provided in many of the countries that serve hot meals.

Breakfasts supplied include hot meals based on staples, legumes, vegetables and/or animal-source foods, cereal-based, ready-to-eat products and milk-based beverages, porridge-type preparations, fruits and fortified beverages or cereal products. Snacks provided include hot meals, fruit and/or milk and fortified, cereal-based products or beverages. Among the programmes that employ menu cycles, most have a 4-week cycle, while Sri Lanka uses a 2-week cycle.

The programmes from the Latin American region appear to provide the most variety in terms of food groups. Staples, mostly rice and maize, and legumes are the most commonly reported foods used in hot meals, while milk, milk-based beverages and cereal-based products are the most common for breakfast and snacks. There was limited information regarding variety of foods within each food group.

Relevance and aspects to consider

The number of meals provided and the timing of those meals should be related to the main objectives of the programmes (both educational and nutritional) and to the priority issues of the beneficiary children (Florence, Asbridge and Veugelers, 2008). For instance, if one of the main challenges is that of children coming to school without breakfast, then providing a meal in the first hours of the morning is the most obvious option. However, the processes around setting and implementing school meals are not straightforward and depend on various factors. Identifying these factors and understanding the evidence for the most appropriate meals and meal times is key for setting applicable NGS.



Analysing meals provided and menus is of particular interest, as it provides an array of information on the nutritional composition, variety of foods offered and their quality, combination of foods, preparation details, recipes, potential substitutions, cost and equipment needed.

Assessing the frequency of the menu cycles, if known, is also important because this determines variety, repetition and potential to include seasonal variations. The use of a cyclic menu system can provide benefits for the smooth application of potential NGS, as it reduces time for menu planning, controls costs, systematizes procedures and facilitates operations (IOM, 2010). Longer menu cycles, such as the 4-week cycles reported by respondent countries, can reduce monotony, improve consumption and promote dietary diversity.

The variety of food groups provided in the meals and variation within those food groups that should be implemented also depend on the programme's objectives, targeting mechanisms, procurement processes, availability and cost of foods, suppliers' and producers' offer, local and regional habits and traditions. School meals are an important part of daily food consumption for many children and can also account for a significant proportion of variety in their diets (Thompson and Amoroso, 2011). However, as shown in Table 7, some of the programmes reviewed seem to provide little variety day-to-day, particularly when referring to the ready-to-eat options.

It is also useful to monitor what is actually served to children (including portion sizes) and consumed, as opposed to what is reported in documents and published menus. This can provide important data on discrepancies and identify challenges (from procurement to serving) to achieving the intended outcomes.

A key area to consider, although beyond the scope of this report, is the identification of the competencies and capacity development needs of the staff or volunteers in charge of preparing and distributing the meals (IOM, 2010). These front-line personnel are the ultimate implementers of NGS. Depending on the mechanisms available to 'translate' nutrition targets into meals, these people will need basic food composition knowledge, cooking skills, basic math skills, food safety and other related competences.

Aspects to consider/Key questions to explore:

The number of meals to be provided and the criteria for their provision are essential aspects to be addressed by NGS. Other possible aspects to consider are recommended time frames for preparing and serving the meals, and the amount of time allocated for consuming food. Which meal times would the NGS cover? Are these consistent with the needs? Aside from the standards on composition, are guidelines on preparation, serving and consumption times required? How would these be defined?

A detailed analysis of meals and menus can serve as a basis for identifying actual nutrient composition, the extent to which these address children's current nutritional needs, and what is needed to meet potential NGS. How does the composition of current meals and menus actually differ from ideal meals?

Regularly monitoring the composition and portions served of each meal/snack provided to children at the school level will identify irregularities and implementation problems. The findings can help in setting guidelines for frequency of specific foods and preparations, and in selecting possible substitutions with similar nutritional value. What foods or preparations are posing problems? Are there problems with serving specific recommended preparations? How could NGS address these issues? Are there suitable substitutes?

The cyclic menu system is a good way to optimize resources and promote dietary diversity. Longer cycles increase variety and acceptance and repetition, and are preferred to shorter cycles. Are cyclic menus used? What adjustments are required to meet NGS? How would NGS translate into menu cycles?

For more information on the state of school meal programmes by region, refer to:

FAO. 2018c. Regional Study on the State of the Art of National School Food and Nutrition Programmes in Africa. Rome. Available at: www.fao.org/3/I8063EN/i8063en.PDF

Government of Brazil and FAO. 2013. School feeding and the possibilities of procurement from family farming in Latin America [in Portuguese]. Rome. Available at: www.fao.org/3/a-i3413s.pdf



Other programme characteristics, including cost, scale and coverage go beyond the scope of this report and have been considered elsewhere (WFP, 2013; Drake, Woolnough and Burbano, 2016).

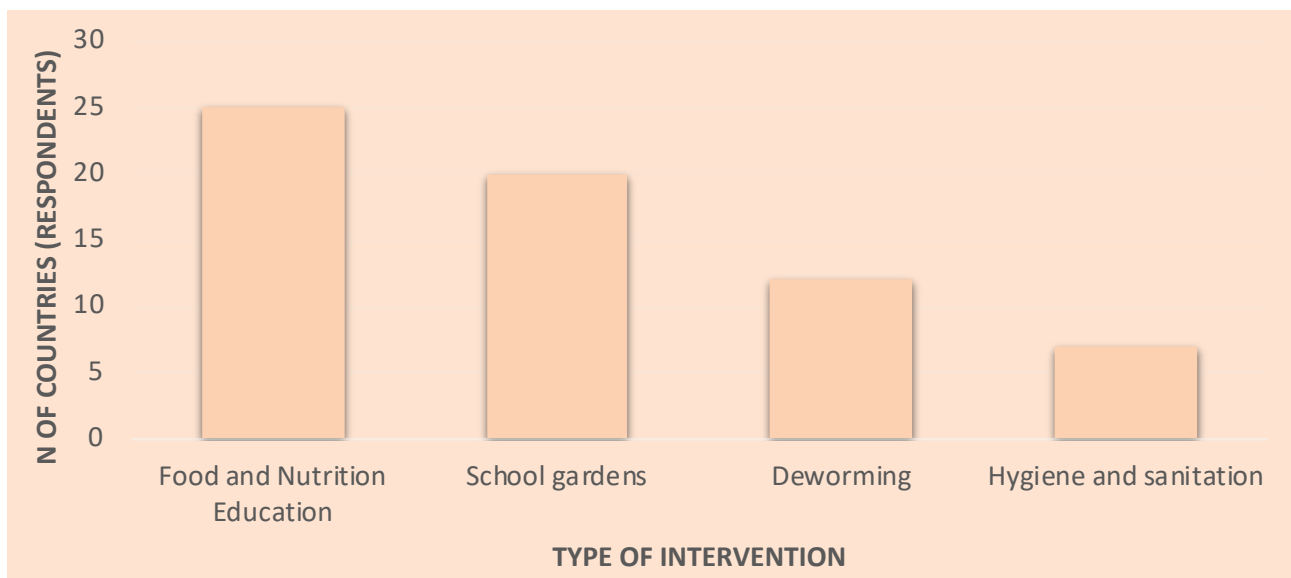
7. Complementary interventions

School meal programmes are best designed and implemented as part of an integrated package of interventions that address the nutrition and health needs of children. Food and nutrition education, deworming and other health interventions can all have an impact on children's nutrition levels through distinct pathways. Most of these interventions can also play an important role in supporting the implementation of NGS. Opportunities to leverage such interventions should thus be taken full advantage of.

Main findings

Figure 5 shows the most commonly reported interventions that are part of or linked to school meal programmes in the respondent countries. Food and nutrition education and the implementation of school gardens (both for production and learning purposes) are the most commonly mentioned interventions. Deworming, hygiene and sanitation initiatives were reported by less than half of the programmes. Due to the limitations of the survey, it is not certain if these initiatives are formally integrated in the programmes or are implemented independently. Additionally, it is not certain if these are applied at national level or as part of specific localized initiatives.

Figure 5. Common complementary interventions of school meal programmes in respondent countries



Relevance and aspects to consider

SFNE has been identified as an important strategy to develop and foster children's outlooks and capacities to engage in food practices that support human and environmental health (Pérez-Rodrigo and Aranceta, 2001; Bevans *et al.*, 2011; FAO, in press). Furthermore, it has a broad range of actions that support the impact of policies and interventions, such as restriction of sale and marketing of products with low nutritional value on school premises, hygiene initiatives and NGS (IOM, 2010). Quality SFNE that actively involves teachers, school officials, parents and foodservice staff in determining the need to improve the nutritional quality and adequacy of school food and how best to do so can enhance the adherence to and results of NGS (Holte, Larsen and Samdal, 2011; GLOPAN, 2015).

In contexts where children have choices, meal times and diversified school meals have also been proposed for their learning potential, as an opportunity for learning about food, practising what is learned in the classroom, modelling healthy preparations and providing positive experiences (Pérez-Rodrigo and Aranceta, 2001; Benn and Carlsson, 2014).



Unfortunately, even though SFNE is commonly mentioned as part of school meal programmes, many approaches are based on information and message dissemination, which very seldom translates into improved practices. Another common issue is that SFNE is traditionally limited to the classroom, which misses the opportunity to link it with the school meals and food environment and to promote specific practices and behaviours from complementary angles. Additionally, SFNE has not received as much policy recognition and funding as other school-based initiatives, even though it is key for programmatic sustainability and coherence (Verstraeten *et al.*, 2012).

School gardens are also commonly included within meal programmes. However, they are used for a variety of purposes, ranging from exclusive food production to learning platforms (food and nutrition education, agriculture training, etc.). Some countries use the garden produce to supplement school meals, but this depends on regular inputs and maintenance from the school and should not take away from the learning time of children and time of school staff. Using school gardens as a learning platform, with clear objectives and regular resources, has been demonstrated to improve willingness of schoolchildren to consume fruits and vegetables, set an example for how to grow nutritious foods at home and change perceptions on ecosystems and nutrition.

School gardens should be linked to the meals provided in the school, including the nutrition guidelines, especially if these contribute to the diversity of the preparations. As stated by FAO (2010), "The educational potential is paramount: learners, families, cooks, school staff and the community must make the connection between growing food and good eating, and the school garden must show this connection."

Further details about the linkages of NGS with these components and the food environment are described in Section II of this report.

School-based deworming and hygiene initiatives also can support nutrition outcomes by various pathways, including improved absorption of key nutrients and reduced incidence of illness.

Other components, including distribution of micronutrient supplements, integration of physical activity, monitoring of health status and community outreach projects have a role to play in improving the nutritional status of schoolchildren; these should be identified for potential linkages. These are not addressed here because they are beyond the scope of the present report.

International recommendations support a multicomponent approach to school-based programmes, where all the initiatives, particularly school meals, the food environment and SFNE, should be explicitly linked and can work to complement and enhance each other (GLOPAN, 2015). Setting coherent and achievable guidelines for all components plays an important role in supporting these approaches.

Aspects to consider/Key questions to explore:

Identifying and addressing all interventions that have a potential to impede or enhance adherence to and effectiveness of NGS can support implementation plans. Which existing school-based interventions can support the implementation of NGS? Which interventions would need to be in place to improve adherence to NGS?

When possible, guidelines for relevant components should be in line with NGS or reference each other for increased coherence.

Food and nutrition education within and beyond the classroom is an instrumental platform to support NGS implementation and enhance their impacts. A coherent and action-based approach that involves different actors who each have a role in implementing NGS, and obtaining the buy-in of those actors, is crucial for effectiveness. How can food and nutrition education best support the implementation of NGS? To whom ought food and nutrition education be directed (children, parents, school staff, foodservice staff, etc.)? Which are the best educational strategies? How can educators be better engaged?

School gardens have a valuable learning potential and can be used as an instrument to support the connection between growing food and healthy meals. Direct pedagogical linkages with NGS can encourage positive attitudes to healthier meals. How could NGS be directly linked to pedagogical school gardens?



SECTION II

Nutrition guidelines and standards





Nutrition guidelines and standards

Designing and implementing NGS is an increasingly widely recognized measure to raise and ensure the quality and adequacy of the meals provided and food available in schools. When coherently linked with other school-based food and nutrition interventions, they provide an opportunity to improve the diets of schoolchildren.

Some high-income countries, such as Finland, the United Kingdom and the United States, have already significantly improved the quality of their school meals and children's in-school consumption patterns by enforcing NGS (Hawkes, 2013; Spence *et al.*, 2013; Cohen *et al.*, 2014). However, the context of school meal programmes can be very different from one country or region to another, especially from high-income economies to low and middle-income ones.

The most basic function of NGS is to ensure that foods provided in schools are of quality and in line with the nutritional needs of the targeted children. However, NGS have been interpreted in different ways around the world due to a variety of factors, including: the complexity of modern nutritional and educational issues; the varying contexts and beneficiaries; the different programmatic, resource and cost considerations; and the influence of many factors on children's diets and habits.

For instance, their reach can be national or regional; they can be based on nutrient and energy recommendations or food-based dietary guidelines; they can provide specifications for menu design or indicate categories of foods to encourage and discourage; and they can apply exclusively to meals and snacks provided or include food sold on school premises and brought from home. They can also include or refer to other components that are directly related and can improve their impact, such as capacity development of implementers.

Because of the relatively small number of respondent countries that reported on official NGS for their school meal programmes (Figure 6), this section provides a descriptive overview of the contents of their NGS, and highlights aspects to be considered by others who are in the process of developing or updating NGS. It also touches on some of the elements that can affect the effective operationalization of NGS for school meals.

State of nutrition guidelines and standards in the respondent countries

1. Countries with official nutrition guidelines and standards

The existence of NGS shows commitment from relevant authorities towards ensuring the nutritional quality of food provided at schools. Most of these NGS are developed in the context of school meal programmes, while there are some that have a broader scope.

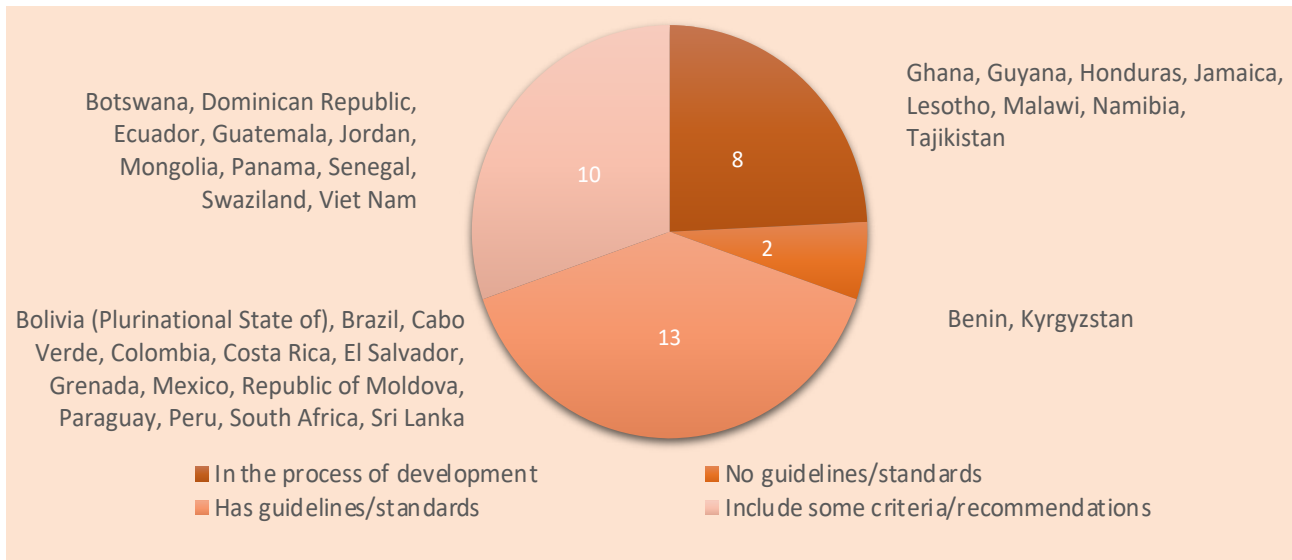
Mapping what countries are doing in the area of NGS for school food is important for tracking international progress of actions to address malnutrition, comparing different approaches and identifying needs and areas for improvement.

Main findings

Figure 6 shows the status of the respondent countries in terms of NGS for school meals.



Figure 6. Status of respondent countries according to school meal nutrition guidelines and standards



The majority of the countries identified some general recommendations available to guide the composition of meals and/or snacks provided by school meal programmes; however, only 13 reported on NGS *per se*⁵, as defined by this report. Among these 13 countries, Brazil, Colombia, Costa Rica, El Salvador, Mexico, Peru and South Africa reported that they are currently revising their NGS. The NGS in Grenada were on the final steps of being validated and approved at the time of the survey. Some countries reported the use of standardized menus, but these were not considered as NGS without an explicit reference to nutrient or food-based standards or guidelines.

Ghana, Guyana, Honduras, Jamaica, Lesotho, Malawi, Namibia and Tajikistan were in the process of developing their NGS for school meals at the time of data collection. Only Benin and Kyrgyzstan had no reported nutrition guidelines or standards for school meals.

Due to the nature of the survey, limited information was obtained on the approaches that were followed by the countries with regards to their reported NGS. However, it was mentioned that comprehensive processes were not always possible, especially when resources are limited and the conditions (in terms of infrastructure, location, availability of foodstuff, human resources, etc.) differ markedly from school to school. Approaches used to develop NGS included adaptation of NGS from other countries with similar context, adaptation of criteria used by externally supported programmes and use of general international recommendations to set target nutrient values.

Relevance and aspects to consider

The majority of respondent countries have not yet established official NGS. The findings reveal a possible gap in ensuring nutritional quality and adequacy of school meals, especially for programmes that aim to improve nutrition of the beneficiaries: having general recommendations for the food provided is of value but not enough to guarantee a certain level of quality and adequacy throughout schools and regions. This is in line with what other published studies have found in low and middle-income countries (Buhl, 2010; Aliyar, Gelli and Hadjivayanis Hamdani, 2015).

Nonetheless, the fact that eight countries reported that they were in the process of developing NGS reflects increased awareness and willingness to act on the need for NGS for school meals. Lesotho, for example is in the process of determining the most appropriate food basket for their school feeding needs, and development of NGS is to follow. Likewise, Ghana has been redesigning its school meal menus in particular intervention schools, using a menu planning tool that was developed as part of a project to improve the nutritional quality of school meals.

⁵ There may be additional official NGS that could not be identified by the present mapping.



Developing official NGS (ideally) entails an approach of evaluating nutritional needs and requirements of the beneficiary schoolchildren and determining what should be covered by the meals or snacks. This should be in the context of policy priorities, existing legislation, available resources and conditions.

The processes followed are also relevant. High-income countries such as the United Kingdom and the United States usually employ comprehensive, rigorous and iterative processes with appointed expert panels and consultations to develop, update and test their NGS (IOM, 2010). These involve: identifying energy and nutrient requirements of children according to age; setting targets and/or limits to be met by the meals (including information on food consumption by target beneficiaries, nutrition needs and priorities and programmatic considerations); and developing patterns or food group combinations (including food composition considerations) that serve as a basis for menu planning and that are consistent with the agreed targets. The resulting NGS should also be in line with national food-based dietary guidelines.

In other cases, the processes used to develop NGS are limited to setting nutrient targets, which are then used by implementers to devise menu plans or preparations to meet these targets; or setting food standards based on food-based dietary guidelines (FBDGs). Implementation is generally focused on distribution of responsibilities, knowledge dissemination, capacity development at different levels and establishment of coordination and monitoring mechanisms from national to school level.

However, not all countries have the possibility to undergo such comprehensive processes to develop their NGS. Apart from lack of resources, the approaches possible may be constrained by lack of capacities, absence of information on individual food consumption of schoolchildren, lack of data on optimal food composition and/or absence of national FBDGs.

Therefore, there is a clear need for providing evidence-based guidance and technical support to countries developing NGS (Aliyar, Gelli and Hadjivayanis Hamdani, 2015; FAO, forthcoming). Technical cooperation (including south–south cooperation), national or regional project proposals funded by external donors and partnerships with academia have all been proposed as options for developing adequate NGS. The involvement of academia may be especially useful in conducting individual consumption studies for targeted schoolchildren.

Aspects to consider/Key questions to explore:

There are various approaches to developing NGS for school meals. Whichever one is chosen, it is imperative that the processes followed are strategic, based on evidence and actual needs and fully address all identified priorities. Does the approach for developing NGS consider all elements from the analysis of school meal programmes and related interventions (i.e. objectives, targeting, modalities, etc.)? Are all contextual aspects accounted for? Which dietary requirements are being used as a basis? Is the process structured and well documented?

Opportunities to develop quality NGS when faced with resource constraints include technical cooperation between countries, partnerships with academia, development of project proposals and technical support and capacity development from UN agencies. Which universities, research institutions or professional bodies could support the development of NGS? Which countries with similar contexts could share lessons learned on developing NGS? What is the best mechanism to design a project to develop NGS?

Implementation and monitoring mechanisms should be planned as an integral part the NGS. What are feasible monitoring mechanisms for adherence to NGS? What would be the main aims of the evaluation? Who would be responsible? How would the results be used?

Developing school meal NGS can be a key opportunity to create linkages with universities and research institutions and to advocate for collection of data on individual food consumption of schoolchildren. Are there important gaps in data on food consumption by schoolchildren? How can the process of NGS development be used to advocate for more and better research and surveillance in this age group?



2. Types and focuses of the NGS identified

The complexity, focus and scope of NGS have a direct impact on their implementation and on their effects. Some of the main aspects to consider include: legal status⁶ and the entity that developed them; scope of application; target implementers; foods or nutrients and meals covered; additional recommendations (preparation techniques, meal and menu design); inclusion or reference to complementary interventions; and flexibility, complexity and applicability.

Main findings

Table 8 shows the broad characteristics of the NGS identified, covering the first four aspects mentioned. The other aspects are discussed in the following pages.

Seven of the respondent countries integrate their school meal NGS with normative documents, mostly through Ministerial Resolutions, while the rest are included in non-legal documents and/or incorporated into general school meal programme guidelines. In the case of Costa Rica, Peru and South Africa,⁷ additional materials have been developed to be used as practical guides to apply the NGS; these include regionalized menus and/or recipes.

Regarding the scope of the NGS, in all cases except that of the Republic of Moldova the NGS apply exclusively to the meals/snacks provided by the school meal programmes, not more broadly. In most instances, the Ministry of Education has a lead responsibility for development of the NGS, in some cases in collaboration with the Ministry of Health or a related institution. Usually, the entities developing the NGS are the same as those that coordinate the school meal programmes.

Nutritionists and other technical professionals at regional or local level are explicitly involved in 'translating' the NGS to menus in five countries. In the case of El Salvador, the menu is defined by a non-specialist at the school level. In Mexico and South Africa, the menus are developed at provincial or district level, usually by institutions rather than by individuals.

Most NGS were developed based on nutrient- and food-based criteria. These are described in detail in Tables 9 and 10. The most common focus of the guidelines and standards are lunch and breakfast, followed by snacks.

⁶ A standard is not, of itself, mandatory or legally required; it has to be incorporated by reference in an Act or delegated legislation in order to be mandatory. Once referenced it becomes part of the technical regulation framework, deriving legal bindingness, enforceability and other legal effects from the Act or legislation or regulation in which it referred to.

Generally, guidelines are not rules of law and are not legally binding in and of themselves. They are more rules of practice. However, they can be considered part of the broader normative framework, and entail some legal effects. Sometimes, guidelines intend to specify how to fulfil a legal obligation. Authorities can use these as a point of reference when applying and enforcing the law. Guidelines can reinforce an existing legal obligation or provide practical steps and examples in complying with the law.

⁷ Other countries may have these materials, but could not be identified through the mapping.



Table 8. Broad characteristics of the nutrition guidelines and standards identified in the mapped countries

Country	Name of document referencing NGS	Legal status	Developing body	Year/period	Scope of application	Implementers of the NGS	Basis		Meals covered by the NGS		
							Nutrient-based	Food-based	Breakfast	Lunch	Snack
Bolivia (Pluri-national State of)	Resolución Bi-ministerial (Educación -Salud) 05/2015 "Lineamientos técnico administrativos y estándares de calidad de la alimentación complementaria escolar"	Mandatory	Ministry of Health and Ministry of Education	2015	School meal programme	Varies: Schools establish the menus, evaluated by technicians in the municipal governments Menus to be followed by kitchen personnel Service providers follow NGS for the industrialized modality	✓	✓		✓	✓
Brazil	Resolution 26 "Dispõe sobre o atendimento da alimentação escolar aos alunos da educação básica no âmbito do Programa Nacional de Alimentação Escolar - PNAE"	Mandatory	Ministry of Education (National Development Fund for Education)	2013	School meal programme	Nutritionists design the menus (according to the standards) to be followed by the schools	✓	✓	✓	✓	✓
Cabo Verde	No information	No information	National Programme for School Feeding and Health (PNASE)	No information	School meal programme	Nutritionists and other technical professionals develop the menu at central level					
Colombia	Resolución 16432 "Lineamientos técnicos-administrativos, los estándares y las condiciones mínimas del Programa de Alimentación Escolar"	Mandatory	Ministry of Education	2015	School meal programme	Nutritionists (either hired by the operator or from the certified territorial entities) design the menus* (according to the standards and guidelines) to be followed by the schools Service providers follow NGS for industrialized modality	✓	✓		✓	✓
Costa Rica	"Lineamientos dirección de programas de equidad / Manual de menús regionalizados"	Not mandatory (Practical guide)	Ministry of Education and Ministry of Health	2012	School meal programme	Education/Administrative Board, Patronato Escolar and Director with the support of the Health and Nutrition Committee choose the menu based on the manual Cooks follow the menus selected		✓	✓	✓	
El Salvador	Programa de Alimentación y Salud Escolar	Not mandatory (General guidelines)	Ministry of Education	2009	School meal programme	School director or equivalent at school level defines the menu (according to the guidelines). Cooks or family members follow the menu		✓			✓
Grenada	Nutrient and meal standards	No information	Ministry of Education	2015	School meal programme	No information	✓	✓			
Mexico	"Lineamientos de la Estrategia Integral de Asistencia Social Alimentaria"	Mandatory	Health Secretariat, National System for Integral Family Development (DIF)	2016	School meal programme	State-level DIF develops the menus, which need to be approved at national level. PTA committees follow the menus	✓	✓	✓		
Republic of Moldova	"Recomandări Pentru un Regim Alimentar Sănătos și Activitate Fizică Adecvată în Instituțiile de Învățământ din Republica Moldova"	Mandatory	Ministry of Health: National Centre for Public Health	2016	All schools	No information	✓	✓	✓	✓	
Paraguay	Resolución 15866 "Lineamientos técnicos y administrativos para la implementación del programa de alimentación escolar, en instituciones educativas de gestión oficial y parvulario subvencionada"	Mandatory	National Institute of Food and Nutrition Ministry of Education and Culture	2015	School meal programme	Nutritionists design the menus (according to the standards) to be followed by the school cooks		✓	✓	✓	
Peru	Resolución 001-2015-MIDIS/PNAEQW-UP "Lineamientos para la planificación del menú escolar del Programa Nacional de Alimentación Escolar Quali Warma"	Mandatory	Ministry of Development and Social Inclusion, National Centre for Food and Nutrition	2016	School meal programme	Menus developed at central level by technicians, to be followed by the school feeding committees and cooks	✓	✓	✓	✓	
South Africa	National School Nutrition Programme guidelines and regional menus	Not mandatory (General guidelines)	Department of Education, Department of Health		School meal programme	Provinces devise their own menus (according to guidelines) to be followed by cooks	✓	✓		✓	
Sri Lanka	Circular: Suggested recommendations of the nutrition programme for school-children	Not mandatory (Guidelines)	Ministry of Education	2016	School meal programmes	Menus developed at central level, to be followed by caterers and cooks The school health development committee can adapt the recipes according to needs	✓	✓	✓		

* In Indigenous territories, the menu cycles should include native foods and preparations, according to their use and traditions.



Relevance and aspects to consider

As noted in Section I, the legal status of the NGS defines the level of commitment and most likely the degree of implementation. The difference between voluntary guidance and mandatory standards is evident for enforcement and monitoring.

The fundamental involvement of the Ministry of Education or the coordinating body of school meal programmes in developing the NGS is essential for their adequacy, feasibility and applicability in the different contexts and with the available resources. These bodies have a good overview of the school systems, the main programmatic objectives and needs and processes (procurement, preparation, serving, etc.) and can integrate NGS compliance into regular programme monitoring activities.

An important finding is the collaboration with the Ministry of Health or related institutes to develop NGS. These bodies usually deal with dietary recommendations and FBDGs for the public, and thus bring critical technical expertise to the process (Holte, Larsen and Samdal, 2011).

Other entities that were not explicitly mentioned as participants in the development of NGS but that are important to the feasibility of their implementation are those dealing with suppliers, local procurement and farmer support, which need to respond to the NGS. A lack of alignment between NGS and the local production availability and/or potential can constitute an important hindrance to the achievement of objectives related to local agricultural and economic development.

Identifying the intended implementers of the NGS is important to determine the level of capacities and skills required. NGS that are meant to be 'translated' into menu cycles by nutritionists or other technical specialists are usually more complex than those that will be used directly at school level. The degree to which schools are engaged and confident in their capacity to implement NGS is also an important aspect to consider as it relates to assessing and identifying needs for training and materials (IOM, 2010; Holte, Larsen and Samdal, 2011).

Regarding the focus and basis of the NGS, the emphasis on foods has increased recently due to the widespread presence of national FBDGs that can serve as a foundation (when objectives are towards healthy diets), as well as the simplification of using food-based standards for menu planning. Countries and regions with high prevalence of child overweight and obesity are also seeking to restrict the availability of specific foods with low nutritional value in and near schools. Aspects of bioavailability and dietary diversity are also considerations for the preferred food-based approach.

However, some organizations have suggested that nutrient-based standards are still needed, as meals based exclusively on food standards may not meet recommended levels of key nutrients if there is insufficient variety. This presents its own difficulties, because the nutrient-based approach is more complex for meal planning and may also result in meals that are not consistent with FBDGs, sufficiently varied or over dependant on fortified products (IOM, 2010).

Involving nutritionists and other professionals with the technical expertise needed to translate the NGS into specific menus may be advisable to ensure adherence to the NGS and reduce strain on non-technical staff. However, this approach is possible only if budget allows and sufficient technical specialists in each region or group of schools. Moreover, development of menus must take into consideration the region's dietary habits, the school system and procedures for the procurement and management of raw ingredients, food preparation and serving.

The use of regional menus depends less on the availability of professionals, but can risk reducing the flexibility at school level. Any decision to adopt this approach should take into consideration the possibility to adapt menus and substitute foods based on knowledge of local food composition, without jeopardizing the nutritional value. Furthermore, the capacity of staff at school level also needs to be nurtured and assessed for effective implementation of the NGS. In cases where school staff are directly responsible for applying the NGS and for meal planning, important concerns of complexity and lack of time and capacities have been raised (IOM, 2010).



Aspects to consider/Key questions to explore:

Various sectors should be involved when developing NGS for improved adequacy and applicability, particularly entities coordinating school meal programmes, the Ministry of Health and the Ministry of Agriculture. Ideally, a technical committee comprising representatives from various sectors should lead the process to ensure that there is shared vision and commitment and to establish formal coordination mechanisms at all levels. Who are the stakeholders that should be part of the development process? Which institutions would be directly involved? How would a committee function? Which institution would serve as the secretariat?

The decision whether to have NGS based on nutrients or foods should consider the aims of the school meal programmes (general healthy diet promotion, filling critical micronutrient gaps, etc.), level of implementation (direct use at school level or by technicians), technical skills available at different levels, and availability of national dietary intake requirements and FB DGs.

The approach through which NGS are 'translated' to preparations and menus depends on the availability of technicians, understanding of the region's dietary habits, the school system, and on the procurement and management of raw ingredients and food preparation and serving procedures. What would be the best way to ensure that NGS are adequately translated into meals?

Identification of the implementers of the NGS will determine the usability and complexity of related materials and the needs for capacity development. What are the necessary materials for front-line implementers? What learning materials and methods are they familiar with? What capacities do they already have? What are the capacities needed?

3. Energy and nutrient-based standards

As previously mentioned, developing nutrient-based standards involves identifying the energy and nutrient requirements of children in specific age groups, followed by setting targets or limits to be achieved by specific meals. Target setting may be influenced by many factors, including nutrition priorities and deficiencies in the beneficiaries, food consumption patterns and programme objectives and resources, among others.

It is essential to set context-specific and realistic energy and nutrient targets as a starting point, either to guide (partly) food-based menu planning or to directly set nutrient-based standards.

Main findings

The reported nutrient-based standards for school meals in the respondent countries are displayed in Table 9. The age groups displayed have been limited to primary school, as this is the focus the present report. However, many countries have nutrient-based standards for other age groups.



Table 9. Summary of nutrient-based standards for school meals in respondent countries (concerning primary schoolchildren)*

	Energy	Protein	Fat	Sat fat	Carbohydrates
Bolivia (Plurinational State of) ^a	Lunch/snack = 30% of total requirement (6-12 y = approx. 455 kcal)	Lunch/snack = 30% of total requirement (6-12 y = approx. 8 g)	Lunch/snack = 30% of total requirement (6-12 y = approx. 16 g)	-	Lunch/snack=30% of total requirement (6-12 y = approx. 69 g)
Brazil ^b	1 meal = 20% of total requirement (6-10 y = approx. 300 kcal 11-15 y = approx. 435 kcal) 2 meals = 30% of total requirement (6-10 y = approx. 450 kcal 11-15 y = approx. 650 kcal) 3 meals = 70% of total requirement (6-10 y = approx. 1000 kcal 11-15 y = approx. 1500 kcal)	1 meal = 20% of total requirement (6-10 y = approx. 9.4 g 11-15 y = approx. 13.6 g) 2 meals = 30% of total requirement (6-10 y = approx. 14 g 11-15 y = approx. 20.3 g) 3 meals = 70% of total requirement (6-10 y = approx. 31.2 g 11-15 y = approx. 46.9 g)	1 meal = 20% of total requirement (6-10 y = approx. 7.5 g 11-15 y = approx. 10.9 g) 2 meals = 30% of total requirement (6-10 y = approx. 11.3 g 11-15 y = approx. 16.3 g) 3 meals = 70% of total requirement (6-10 y = approx. 25 g 11-15 y = approx. 37.5 g) 15-30% of total calories	<10% of total energy	1 meal = 20% of total requirement (6-10 y = approx. 48.8 g 11-15 y = approx. 70.7 g) 2 meals = 30% of total requirement (6-10 y = approx. 73.1 g 11-15 y = approx. 105.6 g) 3 meals = 70% of total requirement (6-10 y = approx. 162.5 g 11-15 y = approx. 243.8 g)
Cabo Verde ^c	20% of total requirement	20% of total requirement	No information	No information	No information
Colombia ^d	Snack =20% of total requirement (7-12 y = approx. 397 kcal) Lunch =30% of total requirement (7-12 y = approx. 596 kcal)	Snack =20% of total requirement (7-12 y = approx. 13.9 g) Lunch =30% of total requirement (7-12 y = approx. 20.8 g) Per meal: 12-14% of calories	Snack =20% of total requirement (7-12 y = approx. 13.2 g) Lunch =30% of total requirement (7-12 y = approx. 19.8 g) Per meal: 28-32% of calories		Snack =20% of total requirement (7-12 y = approx. 55.6 g) Lunch =30% of total requirement (7-12 y = approx. 83.4 g) Per meal: 55-65% of calories
Costa Rica	-	-	-	-	-
El Salvador	-	-	-	-	-
Grenada ^e	Lunch = 1/3 of total requirement (7-9 y: M = approx. 690 kcal; F = approx. 608 kcal) 10-14y M = approx. 817kcal F = approx. 688kcal)	Lunch = 1/3 of total requirement (7-9 y = approx. 9 g 10-14 y = approx. 15 g)	Lunch = 8-10% of total calories	<10% of total calories	-
Mexico ^f	Breakfast (BF) = 25% of total requirement (approx. 395 kcal)	BF = 15% of calories	BF = 25% of calories	BF = <10% of calories	BF = 60% of calories
Republic of Moldova ^g	BF = 20% (7-10 y = approx. 470 kcal 11-17 y = approx. 550 kcal) Lunch = 35% (7-10 y = approx. 823 kcal 11-17 y = approx. 976 kcal)	BF = 20% (7-10y = approx. 15.4 g 11-17 y = approx. 18 g) Lunch = 35% (7-10 y = approx. 27 g 11-17 y = approx. 32 g)	BF = 20% (7-10 y = approx. 15.8 g 11-17 y = approx. 18.4 g) Lunch = 35% (7-10 y = approx. 28 g 11-17 y = approx. 32.2 g)	-	BF = 20% (7-10 y = approx. 67 g 11-17 y = approx. 78 g) Lunch = 35% (7-10 y = approx. 117 g 11-17 y = approx. 137 g)
Paraguay ^h	BF = 20% of total requirement (6-9 y = approx. 290 kcal 10-13 y = approx. 400 kcal) Lunch = 25-30% of total requirement (6-9 y = 360-435 kcal) 10-13y = 500-600 kcal)	Lunch = >10-15% of total meal calories	Lunch = <25-30% of total meal calories	-	Lunch = 50-55% of total meal calories
Peru ⁱ	BF = 20-25% of total requirement (368-460 kcal) Lunch = 35-40% of total requirement (644-736 kcal)	BF = 20-25% of total requirement (11-14 g) Lunch = 50-60% of total requirement (28-33 g)	BF = 15-30% of calories per meal (6-15 g) Lunch = 15-30% of calories per meal (11-25 g)	-	-
South Africa ^j	Lunch = 30% of total requirement	Lunch = 30% of total requirement			
Sri Lanka ^k	1/3 of total requirement (500-700 kcal)	1/3 of total requirement	-	-	-

a When processed foods are included in the school meals, they should be fortified as to cover 50% of the recommendations for these nutrients.

b Reference to age and sex is made only when explicitly indicated within the reviewed documents.

c Reported reference: Recommendations for energy and nutrients for the Bolivian population (2007). Ministry of Health.

d Reported references: Energy-FAO (2001); Carbohydrates, protein and fat-WHO (2003); Fibre, vitamins and minerals- IOM (1997-2000-2001). The values are given respectively if 1, 2 or 3 meals are provided.

e No reported reference.

f Reported reference: Recommendations of Energy and Nutrients for the Colombian Population. Ministry of Health.

g Reported reference: Recommended Daily Allowance for use in the Caribbean 1993.

h No information.

i Reported reference (for energy): Food-Based Dietary Guidelines of Paraguay 2015, based on Human Requirements FAO/OMS/UNU 2004.

j Reported references: Energy requirements for the Peruvian population (2012); Energy requirements and nutrient recommendations for the population 3-14 years, based on FAO/WHO/UNU.

k Reported reference: Recommended dietary allowance table for Sri Lankans 2007-MRI.



Sugars	Fibre	Iron	Vitamin A	Zinc	Sodium
		Lunch/snack=30% of total requirement' (6-12 y= approx. 3. 3mg)	Lunch/snack=30% of total requirement' (6-12 y = approx.150 µg)	Lunch/snack=30% of total requirement' (6-12 y= approx. 3.5 mg)	-
<10% of total energy	1 meal = 20% of total requirement (6-10 y = approx. 5.4 g 11-15 y = approx. 6.1 g) 2 meals = 30% of total requirement (6-10 y = approx. 8 g 11-15 y = approx. 9 g) 3 meals = 70% of total requirement (6-10 y = approx. 18.7 g 11-15 y = approx. 21.1 g)	1 meal = 20% of total requirement (6-10 y = approx. 1.8 mg 11-15 y = approx. 2.1 mg) 2 meals = 30% of total requirement (6-10 y = approx. 2.7 mg 11-15 y = approx. 3.2 mg) 3 meals = 70% of total requirement (6-10 y = approx. 6.3 mg 11-15 y = approx. 7.5 mg)	1 meal = 20% of total requirement (6-10 y = approx. 100 µg 11-15 y = approx. 140 µg) 2 meals = 30% of total requirement (6-10 y = approx. 150 µg 11-15 y = approx. 210 µg) 3 meals = 70% of total requirement (6-10 y = approx. 350 µg 11-15 y = approx. 490 µg)	1 meal = 20% of total requirement (6-10 y = approx. 1.3 mg 11-15 y = approx. 1.8 mg) 2 meals = 30% of total requirement (6-10y = approx. 2 mg 11-15 y = approx. 2.7 mg) 3 meals = 70% of total requirement (6-10 y = approx. 4.7 mg 11-15 y = approx. 6.3 mg)	1 meal = <400 mg 2 meals = <600 mg 3 meals = <1400 mg
No information	No information	No information	No information	No information	No information
		Snack =20% of total requirement (7-12 y = approx.. 3 g) Lunch =30% of total requirement (7-12 y = approx. 4.5 g)			
-	-	-	-	-	-
-	-	-	-	-	-
Lunch (added sugar) (7-9 y = <6 g 10-14 y= <8-10 g)	-	Lunch = 1/3 of total requirement (7-9 y: M = approx. 3 mg; F = approx. 3 mg 10-14 y: M = 4 mg; F = 5 mg)	Lunch = 1/3 of total requirement (7-9 y = approx. 133 µg 10-14 y = approx. 200 µg)		Lunch (7-9 y = approx. 400 mg 10-14 y = approx. 500 mg)
BF = <5 g	BF = >5.4 g	-	-	-	BF = <360 mg or <400 mg in 100 g of food
-	-	-	-	-	-
-	-	-	-	-	-
BF = <10% of calories per meal (<12 g) Lunch = <10% of calories per meal (<18 g)	-	BF = 10-25% of total requirement (1.4-3.5 mg) Lunch = 35% of total requirement (approx. 4.9 mg)	-	-	-
		Lunch = 30% of total requirement	Lunch = 30% of total requirement	Lunch = 30% of total requirement	
-	-	1/3 of total requirement	1/3 of total requirement	-	-



The number of age groups used to establish the nutrient-based standards differed among the countries, ranging from no age distinction, to two age groups for primary level. All countries that consider age groups, including Bolivia (Plurinational State of), Brazil, Grenada, Republic of Moldova and Paraguay, provide further standards for the different school levels (i.e. preschool and secondary). The age ranges within the groups also vary between 3 and 6 years, not always corresponding to the age groups from the referred nutrient requirements.

Energy-based standards are the most frequent, followed by those detailing target protein, fat and carbohydrate content of meals. Iron and vitamin A were the most common micronutrients with existing standards. Variations in the reference values for energy and nutrient requirements used by the different countries are considerable and the references are not always explicitly cited. Bolivia (Plurinational State of), Colombia and Sri Lanka use national reference values, while Brazil and Paraguay make reference to international ones, from FAO and WHO. The rest of the countries had no explicit reported references.

The majority of the (daily) energy standards for lunch were set at 30% of the total requirement, except for Republic of Moldova, which goes up to 35%. For snacks and breakfast, the range of the energy requirements to be provided varied from 20 to 25%.

For protein, the standards for lunch are either expressed in proportion to total protein requirement, ranging from 20% to 35%, or as a proportion of the total energy to be provided by a specific meal, in which case the range is from 10% to 15%. Colombia provides both options.

Similarly, carbohydrate and fat standards are set in relation to the total nutrient requirement or as a proportion of the total meal energy content. Values for carbohydrates range from 20% to 35% of total requirement and from 55% to 65% of meal energy content, while those for fat range from 20% to 35% of total requirement and from 25% to 32% of meal calories. Brazil provides an additional value of 15–30% of total calories from fat.

Only Brazil, Grenada and Mexico provide upper limits for saturated fat, sugar and sodium. All three countries set target values of less than 10% of total energy from saturated fat. Brazil sets a value of less than 10% of total calories from sugar, while Mexico sets a maximum of 5 g of sugar for breakfast, and Grenada sets two maximum values according to age. All three countries vary their standards depending on the number of meals provided and/or specific food, with values ranging from 360 to 500 mg per meal.

Iron, vitamin A and zinc values are commonly set at 30% of the requirements for lunch and 20% for snacks.

A few countries are explicit in specifying acceptable variations from proposed standards; for instance, Colombia and Paraguay allow for variation of plus or minus 10% on stipulated standards.

Relevance and aspects to consider

None of the documents reviewed explicitly described the process whereby the targets were set nor the assumptions that underpin them. However, this is important information for understanding the adequacy of the standards. For instance, many of the standards set a target of 30% of the daily requirement for a given nutrient for a meal (particularly lunch), but this may not be suitable to all contexts, especially when targeting groups with particular nutrient deficiencies. In other cases, no upper limits are set and the meals may be providing an excess of energy, fat or sugar to children's diets.

Similarly, the age ranges considered for setting nutrient-based standards have several implications for adequacy. One such implication is the use of the highest value to cover all age groups. This is part of the decisions that need to be taken when developing NGS, which depend on many factors (cost, target children's needs, consumption of other foods inside the school, vulnerability). The contexts will differ, and thus the decisions will also change. Setting standards for key micronutrients (particularly iron) also need to take into account differences in requirements between boys and girls, especially for programmes that target nutritionally vulnerable girls.

The use of different reference values for energy and nutrient requirements can result in significant variation in the actual set standards. For instance, both Bolivia (Plurinational State of) and Colombia use similar age groups



and set a standard for energy of 30% (of the requirement); however, by using different references the actual values vary by almost 150 kcal. This is also the case for the protein standards. Similarly, setting standards for key micronutrients will directly impact what is considered when planning meals, and what is monitored. The standards reviewed place less emphasis on micronutrient standards than on energy and protein.

Interestingly only three countries report upper limit standards for sugar, fat and saturated fat. Mexico has responded to the growing childhood obesity levels and modified its standards to address this. Other countries, such as Costa Rica⁸ and Peru, have started to adapt and revise their standards specifically for this reason.

It was not possible to determine with certainty (due to survey limitations) whether the nutrient-based standards are used directly to design meals and menus and to determine meal adequacy, or as targets to set food-based standards. Similarly, the acceptable variations from the standards were not usually explicit within the NGS documents.

Aspects to consider/Key questions to explore:

Setting nutrient-based standards should be an iterative process, in which the ideal set values (according to the target children's needs and priorities) can be translated into meals. How should the programme determine what is feasible, including in terms of cost? Is there a formal process to test or model feasibility of standards? How would the results of this process be used?

There are internationally recommended values for different meals, but these may not be suitable for all contexts or even to achieve the specific objectives of any given school meal programme. Are internationally recommended nutrient-based standards appropriate for the target beneficiaries (e.g. including groups with widespread micronutrient deficiencies)? Will implementing these international values help to achieve the programme objectives?

Having reference values (particularly for protein and key micronutrients) disaggregated by age and sex is critical in contexts of high socio-economic and nutritional vulnerability. Are standards adequate for all ages targeted by the programme? Which are the gaps? How should these standards be applied to make sure they are adequate in practice?

More emphasis should be placed in setting upper limits for saturated fat, sugar and sodium, especially in contexts where overweight and obesity is very prevalent among schoolchildren, or when modalities make use of industrially-produced snacks. Are upper limits needed, considering the nutrition priorities of the target audience and nature of food supply? Which are the most critical nutrients to limit?

Clearly identifying the acceptable variations from proposed standards is critical for allowing flexibility during design of meals and menus, and for monitoring the adequacy of application of nutrient-based standards. How will the acceptable variations from the nutrient-based standards be defined?

Ideally, the process followed to set targets and determine nutrient-based standards, including the nutrient requirement data and contextual information used, should be documented as the basis for evidence generation, evaluation purposes and future revisions, and as a way to share experiences. What was the process followed? Has it been recorded appropriately? Were minimum recommended steps followed?

4. Food-based standards and guidelines

Food-based standards and guidelines focus mostly on recommended food groups and patterns for each meal, usually stipulating minimum and, less often, maximum amounts of foods from each group (IOM, 2010). Where national FBDGs are in place, great emphasis has been placed on ensuring that food-based standards for school meals are consistent with their main messages, as these are usually evidence- and context-based (GLOPAN, 2015).

⁸ At the time of publication, Costa Rica launched its new standards and guidelines.



Main findings

The food-based standards and guidelines identified are shown in Tables 10 and 11. Age groups displayed have been limited to primary level. Most of the countries also set food-based standards and guidelines for other age groups.

Table 10. Summary of main food-based standards and guidelines for school meals for primary-school children in respondent countries*

	Provision of fruits	Provision of vegetables	Meat and eggs	Dairy
Bolivia (Plurinational State of)	6–12 y Snack = 1 medium portion (100–120 g) every day or 1 glass of juice using fruit pulp at 15% (140 ml) Lunch = 1 medium portion (100–120 g)	6–12 y Lunch = 1 portion cooked or raw vegetables (40–60 g), every day	6–12 y Lunch = 1 portion red meat (70 g) or chicken (100 g) or fish (80 g) or 1 egg, 1–3 times a week	6–12 y Snack = 1 cup (140–200 ml) pasteurized milk or yoghurt or 30 g of cheese, 3–5 times per week Lunch (as ingredients) = 2 tablespoons (30 ml) pasteurized milk or 1 teaspoon (5 g) powder milk or 1 small portion (15 g) cheese
Brazil	Meals should include at least 3 portions (200 g) of fruit and vegetables per week. Fresh fruit should not be substituted by beverages	-	-	-
Cabo Verde	No information			
Colombia	7–12 y Snack = 1 portion (80–100 g), 2 times a week Industrialized modality snack = 100 g, 3 times a week	7–12 y Lunch = 1 portion (80 g) raw or cooked vegetables, every day	7–12 y Snack = 1 portion (32 g) red or white meat, 2 times a week Lunch = 1 portion red meat (45 g) or white meat (56 g), 2 times a week (optional: liver 1/week) or 1 egg a week	7–12 y Snack = 1 portion (200 ml) (half milk, half water) whole pasteurized milk or powder milk, every day 1 portion (40 g) cheese as an alternative to meat Industrialized modality snack = 1 portion (200 ml) whole milk or flavoured milk, every day 20 g cheese, 2 times a week Lunch = 1 portion whole pasteurized milk (150 ml) or 19.5 g powder milk or (18 g) cheese, every day as a drink or as ingredients to the meal
Costa Rica^a	10–11 y Breakfast (BF) or snack = 1 portion Lunch = 1 portion Fruits with syrup are prohibited	10–11 y Lunch = 2 portions Canned and pickled vegetables are prohibited	10–11 y Lunch = 2 portions Cured meats, and pre-formed meat products (croquettes, nuggets, patties) are prohibited	10–11 y BF or snack = 1 portion Cheeses with high fat content, condensed and evaporated milk are prohibited
El Salvador	-	-	-	30 g milk, 2 times a week
Grenada^b	1 portion fresh fruit, minimum 2 times a week. Fruit juice should not be included more than 3 times a week Other forms of fruit must be fresh, whole and local and served a minimum of 2/5 per week	1–2 portions varied vegetables (green leafy and low-calorie, red/orange/yellow, starchy, others) every day	1–2 portions (1–2 oz) varied animal-source foods (fish, chicken, turkey, cheese, beef) every day	
Mexico	Hot BF = 1 portion fresh or dehydrated fruit, without added sugar, fat or salt Cold BF = 1 portion fresh or dehydrated fruit without added sugar, fat or salt. If dehydrated it should be minimum 20 g weight; may be combined with nuts. Pulp, canned, fried and candied fruits are prohibited	Hot BF = 70 g of vegetables available in the region Cold BF = candied vegetables are prohibited	Hot BF = include animal-source foods in the main dish or legume. Cured and processed meats are prohibited	Hot BF = 240–250 ml skimmed milk (30 g powdered milk) or dairy product, except cream Cold BF = 250 ml skimmed milk or 30 g powdered milk in 240 ml water. Flavoured and sweetened milks are prohibited



Legumes	Cereals, grains, tubers	Fats and oils	Salt	Sugar
6–12 y Lunch = 1 portion (40 g), 1–2 times a week	6–12 y Snack = 1 portion (20–30 g) oat- meal, rice, quinoa or flour or 50 g bread or fortified cookies Lunch = 1 small portion (40 g) rice, quinoa, pasta or (40–100 g) potato or cassava, 1–3 times a week	6–12 y Lunch = 1 teaspoon (5 ml) oil. Reheated oils are pro- hibited	6–12 y Lunch = use of iodized salt	6–12 y Snack = 2 teaspoons
-	-	-	-	-
7–12 y Snack = 1 portion (45 g) as an alternative to meat and eggs Lunch = 1 portion (49 g), 2 times a week	7–12 y Snack = 1 portion cookies (35–40 g) or (45–80 g) bread or arepa or (90 g) rice or (70 g) tubers, every day. Quinoa can be used as an alternative Industrialized modality snack = 1 portion (70 g) baked goods (e.g. cheese stick, brownie, croissant, muffin, cassava bread or pastry), every day Lunch = 1 portion (90 g) rice, every day. Pasta and quinoa can be used as alternatives 1 portion (80 g) tubers, every day. Bread and arepa can be used as alternatives	7–12 y Snack = 30–35 g oil or but- ter, total per week. Lunch = 30–35 g oil or butter, total per week	-	7–12 y Snack = 65–80 g sugar or unrefined cane sugar, total per week Lunch = 70–90 g sugar or unrefined cane sugar
-	10–11 y BF or snack = 2 portions Lunch = 3 portions	10–11 y BF or snack = 1 portion Lunch = 2 portions	-	10–11 y BF or snack = 2 portions Lunch = 2 portions
30 g beans, 2 times a week	40 g rice, every day	8 g oil, every day	-	25 g sugar, 2 times a week
1 portion (2–6 oz) varied legumes (lentils, split peas, black-eyed peas, dried pigeon peas) every day, in addition to, or as a substitute of ani- mal-source foods	1–2 portions staple every day	-	-	-
Hot BF = include legumes in the main dish. At least 2 varieties in the menu cycle. Promote the com- bination of legumes and cereals	Hot BF = include 2 different wholemeal cereals in the menu cycle. In case of choosing rice or potato, it should be accompanied by a portion of vegetables Cold BF = 1 portion (30 g) of cereal made with whole grains or whole meal flour (minimum 1.8 g fibre; max 20% of total kcal from sugar; max 35% of total kcal from fat; max 10% from sat fat; max 0.5 g of trans; max 120 mg of sodium). White bread, corn starch, breakfast cereals, refined flour and pasta and cereal bars are prohibited	Hot BF = In case of need, corn, sunflower or saf- flower oils are preferred. Margarine, mayonnaise and butter are prohibited	Salt should not be added to meals	Added sugar, honey and syrops are prohibited



	Provision of fruits	Provision of vegetables	Meat and eggs	Dairy
Republic of Moldova	Preference for fresh, local and seasonal fruit. 100% fruit juice with less than 5 g of sugars per 100 ml	Preference for fresh, local and seasonal vegetables	Only to be served in BF and lunch. Prohibited ingredients include: meat of wild animals and birds; poultry raw material containing collagen; meat categories II, III and IV; drums, dishes made from offal, diaphragm, rolls of soft tissues end; dishes that have not undergone thermal processing, except herrings, salmon, trout; smoked fish	Include dairy products, especially milk <2% fat; yoghurt or other kinds of fermented milk <2% fat, with no sugar or artificial sweeteners; cheese <45% fat. Prohibited items include: home-made milk and milk products, unpasteurized milk; cheese prepared with vegetable fats; ice cream; unpasteurized cheese; unpackaged butter without heat treatment; dairy products with added sugar, such as yoghurt sweetened condensed milk; and cheese with added fats
Paraguay^a	BF = fruit is only mentioned as an option to cereals Lunch = 1 medium fruit or 150 g fruit compote or 150 g fruit salad every day. Desserts made with fruit should be offered no more than 1-2 times a week	Lunch = fresh vegetables, cut in small pieces. 1 portion of salad (1/2 plate). They should be varied and composed of at least 2 different vegetables, and seasoned with vegetable oil, lemon, vinegar, salt and/or aromatic herbs	Lunch = meats provided should be offered without visible fat and skin, and in small pieces	BF = whole or enriched whole milk with zinc, iron and vitamin C
Peru	-	-	BF product modality = animal-source foods (canned fish in oil, conserved chicken or meat, dehydrated egg) should be offered every day, when milk is not provided BF rations modality = cheese or eggs are offered as additions to the bread Lunch = should include an animal-source food every day Menus have between 30 g and 80 g portion depending if it includes legumes or not	BF product modality = beverages offered can be prepared with or without milk. BF rations modality = beverages offered are enriched milk or milk with cereals, every day
South Africa	Fresh vegetables or fruits should be served daily. At least one green and one red or yellow or orange vegetable should be offered per meal. 40–70 g		A variety of protein-source foods should be offered daily depending on affordability: soy, fish, eggs, meat, milk, sour milk, beans or lentils. 30–100 g	
Sri Lanka	-	-	2 eggs per week must be provided	-

* Estimated or recommended portion sizes are given in parenthesis, only when explicitly indicated within the reviewed documents.

- a The calculations of the portions were based on the requirements of energy and nutrients for children age 10–11, which are sufficient to cover the ones for children age 7–9 (average of males and females). Portion quantities are based on the USA American Dietetic Association.
- b Meal patterns for each age group with portion quantities are also specified.
- c Portion sizes are given for each age group, with differences according to sex.



Legumes	Cereals, grains, tubers	Fats and oils	Salt	Sugar
Included in lunch and dinner	Preference for whole grains. Various types of whole-grain bread with a little salt	Preference for unrefined sunflower oil for seasoning in limited amounts. Prohibited items include: pork or mutton fat, margarine, butter with vegetable fats and refined oils		
Lunch = should be offered 2 times a week, combined with cereals	BF = at least 3 different options during the week (cookies, cupcakes, breakfast cereals, crackers) Lunch = offered as a complement of meats or legumes	-	Lunch = only iodized salt in small quantities for salads and main dishes is allowed	-
Lunch = legumes should be offered minimum 2 times a week (beans, lentil, peas)	BF product modality = depends on the beverage prepared and includes crackers or cereals with animal-source foods. BF ration modality = cereals should be offered every day, varying between bread (wheat, quinoa, plantain); empanada with cheese, egg, or butter; or sweet bread. Lunch = cereals should be offered every day, varying between rice, pasta, wheat, dry potato and/or quinoa (80-130 g)	-	-	General mention to progressively reduce the amount of added sugar
	1 staple food should be offered every day: maize meal, samp, mealie rice, bread or potatoes. Maize meal, bread or flour and flour products should be fortified with essential nutrients	Oil should be used in moderation	Iodized salt should be used in moderation	
-	-	-	-	-



Table 11. Other food-based standards and recommendations for school meals for primary-school children in respondent countries

	Processed foods	Fried foods	Sweets/desserts
Bolivia (Plurinational State of)	-	Recommendation to avoid fried side dishes	Simple desserts (yoghurt, jelly, pudding or cereals with milk) once a week
Brazil	The provision of canned foods, cured meats, pastries, semi-prepared or ready-to-eat products, dehydrated soups and dried powders is restricted	-	Desserts and sweets limited to 2 times a week, with no more than 110 kcal per portion
Cabo Verde	No information		
Colombia	-	-	Industrialized modality snack = granola bar, chocolate bar, condensed milk, peanuts with raisins, candied peanuts, marshmallow, or others, maximum 2 times a week. Should be offered on the days that bakery products do not have a sweet filling
Costa Rica	Chips, fried tortillas, plantains and cassava are prohibited	Pizzas, hamburgers, hot dogs, tacos and fried chicken are prohibited	Bakery products, filled cookies, puddings, flans, syrup and jellies are prohibited
El Salvador	-	-	-
Grenada	The meal service of the school feeding programme must promote the consumption of indigenous foods and aim to incrementally minimize the use of highly processed, energy-dense, nutrient-poor foods	Frying should be minimal (2 times per cycle) while steaming, baking, sautéing, roasting should be the more commonly practised methods	-
Mexico	Industrialized beverages, ketchup, crisps, broth cubes, artificial sweeteners and any cereal-based product with less than 1.8 g of fibre per 30 g portion are prohibited	Hot Breakfast (BF) = fried and breaded dishes should be offered no more than 2 times a week	Marmalades, jams, jelly, flan, pastries, pancakes, powdered chocolate, marzipan, covered cookies and any product that lists sugars in its 3 first ingredients are prohibited
Republic of Moldova	Snacks and crisps are prohibited	Fried foods and snacks, and partially hydrogenated vegetable fats (palm, spreads, etc.) are prohibited	Cookies and breakfast cereals should not be offered often. Pastries, marshmallows, chocolate containing less than 80% cocoa, waffles, biscuits with hydrogenated oils and candy are prohibited
Paraguay	-	-	-
Peru	-	-	-
South Africa			
Sri Lanka	Monosodium glutamate and other flavourings or dehydrated condiments are not allowed for cooking	-	-



Beverages	Water	Balanced, varied	Others
-	Should be the only beverage served with the meals	The quality of food	The use of GMO-based foods is prohibited General criteria to define quality school meals
Beverages with low nutritional value (e.g. sodas, artificial beverages, energy drinks) are prohibited	-	The meal plan should respect children's food habits and culture, seasonality and regional agricultural diversification	The meal plan should consider students with specific nutritional needs (coeliac disease, diabetes, anaemia, allergies and others)
Snack = 8-12 g cereal in beverage as option to milk. Lunch = 180 ml fruit juice every day	-	-	-
Sodas and artificial beverages are prohibited	-	Menu cycles should be of 3-4 weeks to achieve variety	Create a pleasant eating environment
15 g fortified drink, 3 times a week	-	-	-
-	Water must be offered daily with the meal	Meal preparation methods must promote a healthy diet, emphasizing the principle of moderation	Menus must take into account the diverse dietary needs of the population and must be culturally appropriate Appropriate menu substitutions should be made for programme beneficiaries with a verified need, including food allergies, intolerances and sensitivities as determined by the school policies
Hot BF = fruit beverages should be prepared from natural fruit, with a maximum 20 g of sugar per litre Cereal-based drinks should be prepared from whole grains (amaranth, oats, barley or corn), with a maximum 20 g of sugar per litre Both should be offered no more than 2 times a week	-	-	-
Sodas are prohibited	Drinking water should be accessible to children during the day between meals, including during lessons. Teachers and educational institutions will encourage children to drink water at regular intervals	-	Recommendations on the composition of the different meals
-	-	-	-
-	-	-	-
	Learners must drink at least 8 cups or glasses of water daily		Selected menus should be socially acceptable Use of indigenous foods in menus is encouraged Specifications of new menu options and inclusions are obtainable from the District/Circuit National School Nutrition Programme officer
-	-	-	Local fruit varieties should be preferred



Five countries reported age-specific recommendations and quantities. All the other respondent countries report standards and recommendations applicable to all ages, with only Mexico and South Africa specifying portion sizes.

Minimum portion sizes and specific food preferences and/or restrictions regarding cereals, grains and tubers are the most commonly featured among the countries, followed by provision and frequency of fruits and meat. Nine countries reported details about provision of vegetables, legumes, milk and dairy, and seven countries specify the use of oils. Restrictions on sugars, sweets, processed and fried foods, restriction on salt content and indications on the provision of water are less common.

Most of the fruit- and vegetable-related standards focus on minimum provision, portion sizes and frequency, putting emphasis on fresh produce and, less frequently, on local produce. Recommended portion sizes for fruit range from 100 g to 150 g, and desired frequency varies from twice a week to daily. Some countries allow fruit juices as infrequent substitutes for fresh fruit, while others, such as Brazil, restrict their consumption. Common restrictions include fruits with syrup, canned and candied fruits and fruits with added sugar.

Recommended quantities for vegetables for lunch range from one to two portions. Portion sizes vary from 40 g to 80 g, while frequency ranges from three times a week to daily. Emphasis is placed on variety of vegetables and use of fresh produce. Restrictions are mostly for canned, pickled and/or candied vegetables.

Standards and guidelines related to animal-source foods (ASF) focus on portion sizes and frequency. Portions range from one to two and sizes vary depending on the type of ASF. When mentioned, red meat is limited to one to three times per week, while weekly variety of ASF is promoted. Restrictions include processed, cured, canned, preformed and fatty meats except in the case of Peru, where canned meats are common in the meals.

Some countries, such as Bolivia (Plurinational State of), have developed model preparations and recipes that meet their food-based standards.

Relevance and aspects to consider

As with the nutrient-based standards, there was little information gathered on the process of setting food-based standards and subsequent recommended meal and menu planning methods.

The level of stringency of the food-based standards, including portion sizes, varies widely between the mapped countries. As noted in Section I, setting standards and guidelines should take into account the capacities of those who should abide by them. Even if food-based standards are generally simpler for a non-technician to follow than are nutrient-based standards, they can still be difficult to follow, given the number of standards and their details. However, the way in which the guidelines and standards are presented and the availability of model preparations, recipes and of user-friendly materials and aids can positively influence their implementation.

There is considerable variation between respondent countries in the scope of coverage of food groups on their standards and guidelines. For instance, Brazil provides a food-based standard only for fruits and vegetables, while Bolivia (Plurinational State of) and Colombia provide standards for almost all food groups. This can also illustrate the food groups that are of most importance for the school meal programmes and target beneficiaries.

The type of food standards can be constrained by local and regional food habits and by the availability of certain foods and crops, illustrating the many aspects that should be considered in the process of defining NGS.

Another aspect worth noting is the way in which the standards are framed. In some countries, the focus is more on limiting consumption of foods of low nutritional value, while in others it is on minimum portions or quantities of food groups, while in still others the standards aim at increasing variety within food groups.



Aspects to consider/Key questions to explore:

The way food-based standards and guidelines are framed in terms of food groups, limitations on foods and quantities, restrictions, promotion of inter- and intragroup variety should respond to initial set school meal programme objectives, local foods available and other contextual factors. Are food-based standards and guidelines consistent with initial programme objectives or have they deviated? Which food groups are most critical? Are critical food groups framed in terms of minimum portions and frequency, or limits and restrictions? How is dietary diversity promoted?

The level of stringency in food-based standards and the total number of standards and guidelines can enhance the nutritional adequacy of the meals. It may, however, constrain implementation, because of both the need for greater capacities and the requirement for regular availability of foods and preparations that meet these standards. It is thus essential to maintain a good balance between comprehensiveness/integrity and flexibility. How complex are the food-based standards? What are the core necessary standards? Are they achievable? Can they be adapted or adjusted in response to practical and contextual constraints?

Having standards and portions tailored to different age groups is critical in contexts of high socio-economic and nutritional vulnerability. Are standards adequate for all ages targeted by the programme? What are the gaps? How can they be made adequate in practice?

Inclusion of general principles on variety and nutritional quality and development of simple and practical materials breaking down food-based standards can support implementation. What additional guidelines and recommendations are needed to facilitate implementation of food-based standards?

5. Relevance of food-based dietary guidelines

FBDGs provide context-specific advice and principles on healthy diets and lifestyles that are rooted in sound evidence. They respond to public health and nutrition priorities, food production and consumption patterns, sociocultural influences, food composition data and accessibility, among other factors. Currently, the role of FBDGs is being re-focused to guide policies and programmes throughout the food system for improved diets. In many cases, school meal NGS are developed in line with FBDGs, particularly when programmes have healthy diet objectives.

Main findings

Out of the 13 countries with school meal NGS (see Figure 7), nine reported the use of FBDGs as a basis and four made explicit mention of FBDGs in NGS-related documents (Table 12).

Table 12. Countries with school meal nutrition guidelines and standards that have an explicit documented mention of food-based dietary guidelines (FBDGs).

Mention of FBDGs	
Bolivia (Plurinational State of)	The food groups established in the menu cycle should be in line with those identified in the FBDGs. The guidelines include a chapter on important aspects for the practice of healthy eating habits, which is based on the FBDGs for Bolivians. It emphasizes the role of health personnel in the promotion of healthy habits through community extension services within the school feeding programme. The guidelines for recommended composition of school meals for different age groups are organized according to FBDGs food groups
Costa Rica	The manual of menus has a chapter to promote healthy eating and refers to the FBDGs
Grenada	All food and drink items offered as part of the school meal programme must emphasize and encourage healthy eating and be aligned with the FBDGs
Paraguay	The school feeding programme should include the provision of varied and safe foods, using the food groups established in the FBDGs for Paraguay and reflected in the 'nutritional pot,' respecting the nutritional preferences, food habits, culture and food traditions of the students' region



Relevance and aspects to consider

Even though the majority of the countries make reference to the national FBDGs, not all of them are explicitly linked to the actual NGS for the composition of the meals. Rather, many countries include a description of their importance for healthy diet promotion. However, there is little guidance on how to carry out these promotion activities or who is meant to do so. This can present a missed opportunity to not only use the FBDGs as a basis for planning healthy meals or achieve consistency among the food groups used, but to also explicitly use meal times as a space to promote the messages and recommended actions of the FBDGs.

Another potential use of FBDGs in the context of NGS would be to guide meal planning when there are only nutrient-based standards available. However, this requires key technical capacities, such as calculating the average nutrient composition of each food group.

From another point of view, it may be difficult for some school meal programmes to be strictly in line with FBDGs, as they are often very general and usually refer to a whole diet, rather than individual meals. Additionally, FBDGs are developed for healthy people, while many school meal programmes deal primarily with nutritionally vulnerable children or crisis situations.

Aspects to consider/Key questions to explore:

FBDGs are relevant to NGS in various ways, including in guiding meal design, supporting SFNE intervention, and as an educational tool for end implementers of NGS. What is the anticipated link between national FBDGs and school meal NGS?

In cases where the promotion of healthy diets is the main objective of school meal programmes, NGS should be in line with messages, food groups and portions recommended by the FBDGs. The degree of alignment depends on the nature of FBDGs (e.g. whether FBDGs account for meals, schoolchildren in particular, level of detail in recommendations, etc.). Are the reference food groups used for NGS in line with FBDGs? How would the explicit linkages be made in practice? Who would be involved in making these linkages (including the FBDGs development team)?

In other cases, such as when school meal programmes target nutritionally vulnerable children or aim to ameliorate emergency situations, the use of FBDGs as a basis for NGS may not be possible.

For more information, refer to:

FAO. 2018a. Food-based dietary guidelines [online]. Available at: www.fao.org/nutrition/education/food-dietary-guidelines/home

6. Food safety linkages to nutrition guidelines and standards

Food quality, food safety and nutrition are intrinsically linked. The consumption of unsafe foods and subsequent food-borne illness or food poisoning pose significant threats to nutrition and health status, especially for vulnerable populations such as schoolchildren. At the same time, poor food safety issues can result in considerable economic losses to communities and institutions.

As with the majority of institutional settings, a risk- and context-based approach that is in line with national standards is recommended to address food safety concerns in school meal programmes. Generally, it is recommended that national food safety standards be harmonized with internationally agreed standards developed by CODEX Alimentarius (FAO, 2018d).

In the context of school meals, food safety has focused on food reception and storage, and on preparation of meals, which is why it is often related to NGS. Moreover, the responsibility for ensuring the adherence of meals to NGS and food safety standards frequently lies with the same actors at school level. At the same time, the management of food safety should be fit for purpose and appropriate to the circumstances. For instance, the provision of nutritious and fresh foods can increase the need for safe food handling (e.g. the use of fish or meat requires a functioning cold chain and good hygiene practices to prevent food-borne illness caused by bacterial growth, cross-contamination, etc.).



Ensuring safe school meals is still a challenge in many LMICs because of insufficient allocation of resources, inadequate legal frameworks, lack of appropriate infrastructure and equipment, insufficient control of processes, and inadequate capacity development of relevant actors at different levels (food service staff, volunteer cooks, parents, directors, etc.), among others (Buhl, 2010; Sibanyoni, Tshabalala and Tabit, 2017).

Main findings

Table 13 shows the main food safety aspects mentioned in the NGS reference documents.

Table 13. Most common food safety and quality-related aspects mentioned in nutrition guidelines and standards reference documents

Food safety and quality aspect	Number of countries with explicit mentions in NGS documents
Food handler requirements (profiles, certifications, training, personal hygiene guidelines, etc.)	7
Safe reception and storage of commodities (general recommendation and specific guidelines)	7
Overall legislation (explicit reference to a legislation specific to food safety)	6
Food handling and preparation (5 keys to safer foods, tips for food preparation, preparation of different foods, avoidance of cross-contamination)	6
Facility, equipment and utensil sanitation (norms, requisites and guidelines)	5
Food-quality standards for procurement	3
Others (description of food safety related tasks for operator, food packaging requirements, measures to purify and store water)	2

All 13 countries with school meal NGS (see Figure 6) reported explicit linkages to food safety, usually by referring to relevant aspects in their NGS documents and/or by integrating food safety-specific norms and guidelines. The most common areas are related to food handlers' requirements, safe reception and storage of commodities, references to national legislation on food safety, and food handling and preparation guidelines. The nature of the recommendations varied, ranging from very general statements, such as the importance of keeping food safe, to detailed standards.

Relevance and aspects to consider

The survey showed that explicit linkages between nutrition standards and food safety standards for school meals are not uncommon, although the degree to which food safety is addressed in NGS ranges widely among respondent countries.

As reflected in the findings, the majority of the linkages occur inside the school or place of reception, storage and preparation. Nonetheless, the extent of these linkages cannot be determined by the references to food safety in published NGS documents, mainly because some of the references are superficial and overly general.

Further exploration is needed to define the pathways and opportunities for the complementarity between food safety standards and NGS. Additional actions are required to define key responsibilities at local level, implement capacity development strategies and design of learning materials.

With the focus on home-grown programmes, there have been increased opportunity and need for consideration of food safety in a coherent and reinforcing manner throughout the whole school food chain (including policy frameworks) from risk management during production and processing to handling and hygiene during food reception, storage, preparation and consumption. Recent recommendations include assessing the responsibilities and processes related to food safety and risk management in school meal programmes, with emphasis on identifying roles, responsibilities and capacity gaps all along the school food chain (FAO, 2017).



Potential concerns about the safety of school meals should not deter incorporation of fresh and nutrient-rich foods, such as ASF, particularly in contexts with high rates of micronutrient deficiencies. This, of course, requires appropriate controls (including cold-chain maintenance, avoidance of cross-contamination, etc.) to manage the inherent food safety risks.

Aspects to consider/Key questions to explore:

Food safety considerations are important to school meal programmes, as nutrition outcomes will be compromised if food-borne illness occurs. A risk-based approach is recommended, whereby each school meal programme should analyse the food safety risks and develop an appropriate response to manage the risks. This should be documented and re-assessed if supply-chain factors change.

Assistance from appropriate food safety authorities (national, provincial, municipal) should be sought in assessing and managing food safety risks, and incorporating them into NGS and/or other tools relevant to school meals. Who are the main authorities in food safety? Have they been involved in the development process of NGS? How can they be involved to ensure the most efficient linkages?

Identifying the pathways, responsibilities, relationships and capacity development opportunities between the implementation of food safety and nutrition standards at local level can represent a good entry point to enhance the linkages and the cost-effectiveness of training and development of learning materials, particularly for food handlers and cooks. These efforts should draw on existing food safety resources and training materials, such as good hygiene practices, five keys to safe food, etc. Which are the most explicit linkages between food safety and NGS? What other linkages can be made? Which are the main actors responsible at all levels? Which training opportunities and learning materials are already available that could be capitalized on? Do they need to be adapted to local circumstances?

In the context of home-grown school meals, there is an opportunity to assess and address food safety in a more comprehensive way, with considerations and controls along the school food chain (farm to fork).

For more information, refer to:

FAO. 2017. Food safety risk management - Evidence-informed policies and decisions, considering multiple factors. Rome. Available at: www.fao.org/3/i8240en/i8240EN.pdf

7. References to the food environment and other available foods

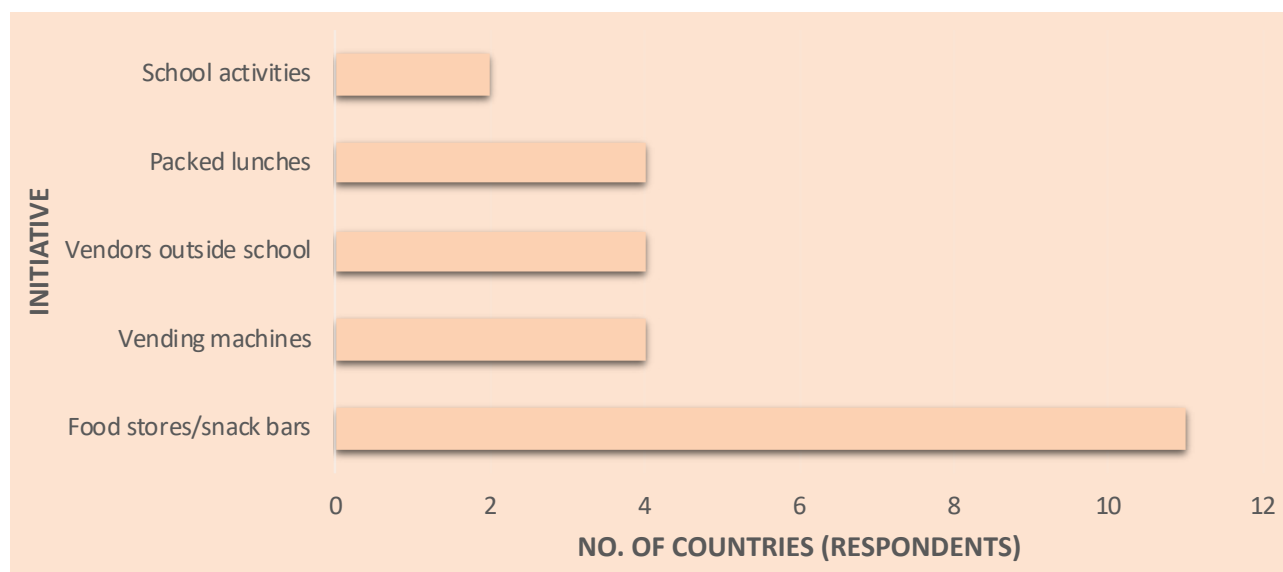
Initiatives to improve the quality of food sold within school premises (e.g. canteens, school shops, vending machines, etc.), and the food that schoolchildren bring from their homes can complement or affect the overall impact of NGS and school meal programmes, particularly when they include objectives to promote healthy eating (De Bourdeaudhuij *et al.*, 2011, Faber *et al.*, 2013; UNSCN, 2017).

Other aspects of the food environment and the information environment at school level can directly support the effective implementation of NGS for school meals and promote their importance to the parents and wider school community. Like other initiatives, the NGS for school meals “must compete for attention” (Center for Ecoliteracy, 2010).

Main findings

Figure 7 shows the most common school food environment initiatives related to NGS, while Table 14 displays the specific aspects reported.



Figure 7. Reported initiatives related to the school food environment and food offer related to nutrition guidelines and standards**Table 14.** Specific aspects of school food environment initiatives related to nutrition guidelines and standards, as reported by respondent countries

	Aspects identified	Nature
Bolivia (Plurinational State of)	Description and characteristics of a healthy tuck shop (snack shops) Recommendations for foods to be sold in tuck shops (snack shops)	In the same document as NGS
Colombia	Guidelines for the functioning of school food stores (only for one region) Gradual restrictions on sugary drinks	Separate document
Costa Rica	Regulation for the functioning of school food shops (including restrictions on the food offer, marketing)	Separate document
El Salvador	Promotion of sale of varied and nutritious foods, restriction of products with high salt, fat and sugar contents Food and nutrition education	Pilot experience
Mexico	Nutrient-based and food-based recommendations (based on FBDGs) for foods and meals sold and distributed at schools (separate from school meal programme)	Separate document
Republic of Moldova	No information	No information
Paraguay	Requisites for school canteen with a general section on foods to offer, and restriction on the quantity of highly processed foods sold and available during occasional events	Separate document
Peru	Healthy lunch guide	Separate document
South Africa	Guidelines for tuck shop operators and recommendations on the food to be offered General recommendations for a healthy lunchbox	Separate documents
Sri Lanka	Guidelines and prohibitions on food sold in canteens	Separate document

The respondents made reference to national initiatives to improve the food environment and available school foods, as well as recommendations within the scope of NGS, such as in the cases of Bolivia (Plurinational State of) and the Republic of Moldova. The regulation of food sold at stores and bars on school premises was the most commonly present initiative in the respondent countries, particularly in the forms of voluntary guidance documents or legislation that restrict highly processed products with high contents of sugar, fat and/or salt. Marketing and promotion of these type of products in the canteens, stores and school premises were also usually regulated.

Other countries, such as El Salvador, are piloting efforts to not only restrict the sale of highly processed products, but also to promote the sale of minimally processed, high-nutritional-value preparations and meals in school



food stores. Some of these initiatives were reported to be accompanied by food and nutrition education aimed at various audiences (vendors, parents, school officials) and food safety capacity development.

Efforts to improve the quality of foods available in vending machines and to support the sale of healthier options from vendors outside the schools were each identified by four respondent countries. Recommendations that cover packed lunches and food available for school activities (bake sales, traditional celebrations, class demonstrations, etc.) are less common and usually part of food and nutrition education interventions.

Relevance and aspects to consider

The school food environment and available foods have a marked influence on schoolchildren's food choices and practices. It is thus important to understand their linkages with NGS, particularly in the context of rising levels of child obesity.

The majority of the countries with NGS related to school meal programmes reported initiatives towards improving the food environment within and around schools and quality of foods sold and available at school. Some of these initiatives were directly linked with or included within NGS reference documents, while others did not have explicit linkages.

At the same time, the nature of these initiatives has a direct relation with their implementation, ranging from a set of general recommendations to normative standards.

Coherence and coordination among these types of effort, NGS and food and nutrition education within and beyond the classroom can enhance the promotion of healthy eating practices at school level. Particular emphasis can be placed on finding common ground, avoiding contradictory recommendations and supporting adherence to the recommendations by the different actors and groups.

Two further recommendations are proposed. First, efforts should be made to ensure that standards for foods sold and available at school are consistent with those of the school meal programme, if the objectives are to promote healthy meals. Second, plans should be made for the integration of NGS into food environment and for information efforts at school level (low cost with active involvement of children) to promote the relevance of NGS.

Aspects to consider/Key questions to explore:

All school-based initiatives and regulations to improve the school food offer and food environment should be identified and studied for potential linkages with NGS. The NGS for school meals should not be detached from broader efforts to improve nutrition for schoolchildren. Which food environment initiatives are already in place? What are the most explicit linkages? How can they be capitalized on?

When school meal programmes have strong objectives aimed at promotion of healthy diet, there should be consistency between guidelines and standards for school meals provided by the programme and those to improve the food available in schools (including canteens, food vendors, vending machines, etc.). Are there separate NGS regulating the food available in schools apart from the ones for school meal programmes? Do they correspond to the NGS for school meals? How can they be made more consistent?

Low-cost, school-level awareness-raising efforts (as part of the food environment and information environment) should be considered to promote the implementation of NGS and its importance to the wider school community. Which opportunities can be used to promote the implementation of NGS with the wider community? Which methodologies are recommended in terms of cost and reach?



8. Mechanisms in place/recommended to aid the implementation of NGS

“The effectiveness of recommended (NGS) will be determined in large part by the extent to which the children consume appropriate amounts of the foods that are offered and the manner in which the targets and requirements are implemented, monitored, and evaluated” (IOM, 2010).

Effective implementation of NGS requires a coherent approach across the school meal programme. It thus depends on many aspects and on the involvement of a wide array of actors at different levels. There is no one-size-fits-all approach for this, but rather a set of common mechanisms that have been recommended to facilitate and enable the process. Capacity development of key groups, the integration of quality food and nutrition education and the active involvement of various influencers are often mentioned.

Main findings

Figure 8 presents the most common strategies recommended by the respondent governments to support the implementation of NGS. Figure 9 presents the most commonly reported training initiatives that support the implementation of NGS.

Figure 8. Most common strategies recommended by respondent countries to support the implementation of nutrition guidelines and standards for school meals

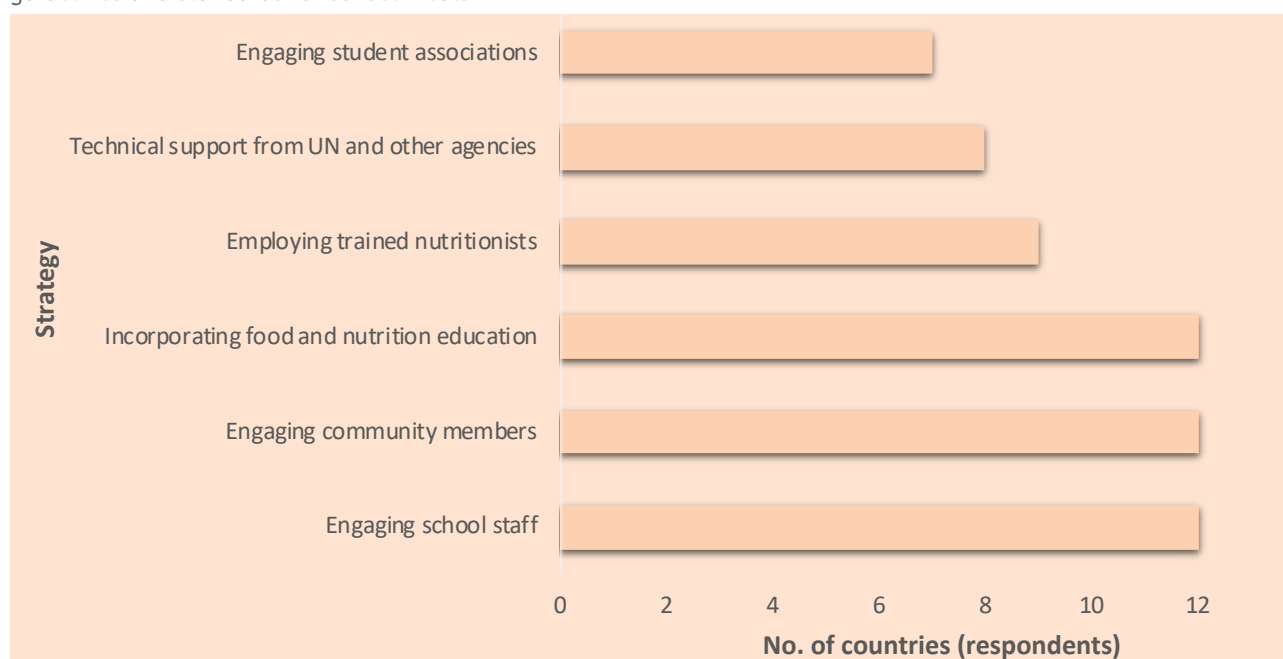
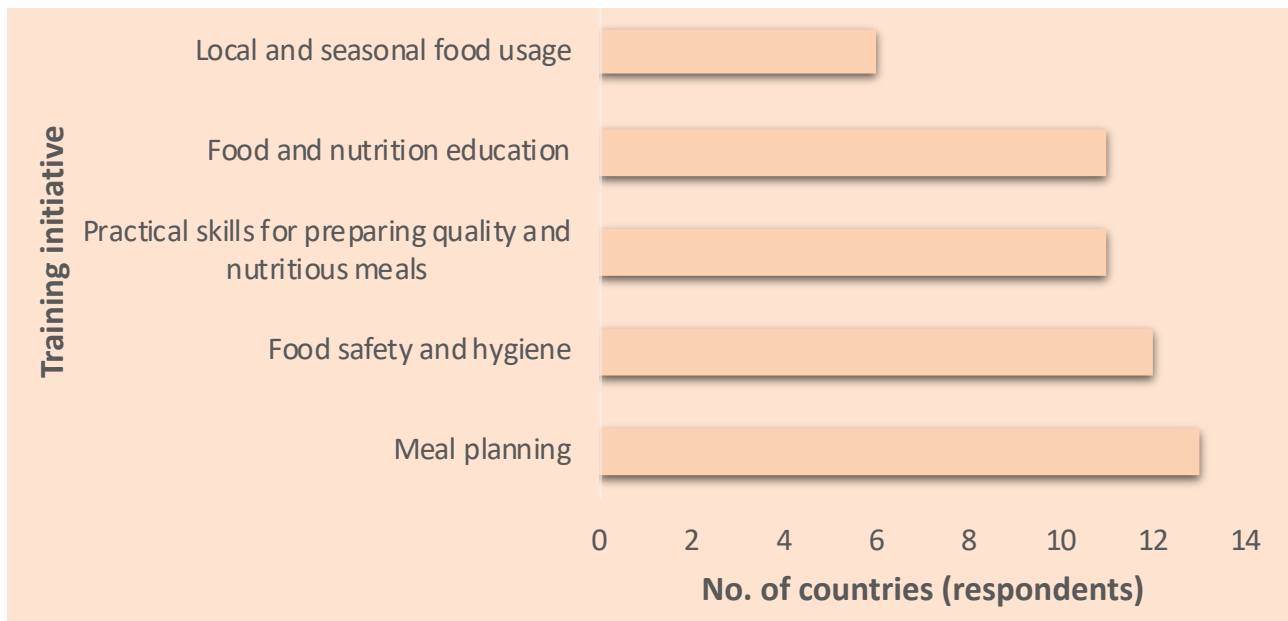


Figure 8 refers to strategies recommended, but there was not enough information to determine if they were actually executed. Training initiatives presented in Figure 9 are actually carried out, although with different degrees of reach (i.e. national level, small groups, part of projects, etc.).

Engagement with school staff and community members and integrating food and nutrition education are the most often mentioned are the most commonly recommended strategies, while meal planning, food safety and hygiene, practical skills for preparing nutritious meals and food and nutrition education were the most common subjects of training initiatives. The training models used were variable, including institutionalized schemes (in-service), pilot interventions, project-based trainings and regional trainings.



Figure 9. Most common types of training initiatives (thematic area) reported by respondent countries to support the implementation of NGS for school meals



Relevance and aspects to consider

The successful implementation of NGS needs a whole-school approach. The engagement with key groups, including school staff (teachers, officials), community members and particularly students (only mentioned by half of the respondents), can be done in a number of ways, including awareness-raising, participating in formal/informal monitoring mechanisms, forming discussion groups about meal quality, and developing contests or projects around NGS, among others. Independent of the strategy, the conduct of simple formative analyses is recommended to understand the best strategies to engage the different groups (IOM, 2010; Faber *et al.*, 2013)

Women's groups, nutrition clubs, school meal councils, parent-teacher associations and school management committees are some examples of groups that can assist in mapping and supporting the quality of school meals.

As mentioned in Section I, the role of SFNE in supporting the implementation and enhancing the impact of NGS is increasingly recognized (IOM, 2010; De Bourdeaudhuij *et al.*, 2011; GLOPAN, 2015). SFNE can be linked directly with school meal NGS in various ways. For instance, children can participate in monitoring to make sure that the school meal served is in line with the NGS and report back to their class. More traditional methods include linking classroom learning with analysing the composition of the meals, understanding the need for nutritious school meals and discussing it with parents or caregivers. Goals to use the school meals as models for home meals can also be set, depending on the context and household resources. Information, education and communication materials can aid this process, but will not be successful unless they are taken up and actively used by the children. The same is true with the use of local media as a communication channel.

At the same time, providing quality SFNE, particularly to implementers of NGS, can improve motivation and create a common sense of responsibility for their success.

As documented previously, some countries involve trained nutritionists or other professionals with similar expertise to translate their NGS into menus and menu cycles, as well as to train cooks and volunteers. However, this strategy depends greatly on national capacities, existing professional cadres and programme financial resources. Formal agreements with professional associations and academia are also possibilities when resources are limited.



In addition, a number of countries seek support to develop and implement their NGS from UN agencies, NGOs and other international organizations. This can be a good strategy, as long as there are national buy-in and development of capacities from the beginning.

One of the main determinants of successful implementation of NGS is the access to capacity development opportunities. Capacity development strategies should be based on needs assessments to prioritize the most urgent gaps at appropriate levels (individual, organizational and enabling environment⁹).

Similarly, a good assessment of the learning needs of key groups will help determine the areas to be addressed and the best training models to use. In the main findings of the survey, areas of meal planning, food safety, practical preparation skills and monitoring are prioritized.

Aspects to consider/Key questions to explore:

The success of NGS depends on accurate implementation. There are many strategies that can support this process, including engaging key players, integrating SFNE, seeking technical support and devising capacity development strategies. Which mechanisms can be used to enhance adherence to the NGS?

The level and method of engaging key actors can be determined using simple formative analyses, with emphasis on motivation and interests. How can the different actors be engaged for adequate implementation?

Capacity development strategies and training initiatives should be based on actual assessment of needs. This will make sure that the investment is based on real needs and priorities and that these are adapted to available resources. Which methodologies can be used to best determine the learning needs of different actors?

9. Monitoring of NGS

Strong monitoring and evaluation (M&E) schemes are a key part of successful and sustainable school meal programmes. The assessment of NGS should be integrated within these schemes, but they should have their own processes and indicators to track their implementation, accountability, progress and outcomes (Gelli and Espejo, 2013; World Bank, WFP and PCD, 2016).

Due to budget constraints, M&E is often overlooked, limiting opportunities to capitalize on what works and to carry out the necessary modifications for maximum impact and minimum costs.

Main findings

Eleven countries with identified NGS reported having some form of monitoring of the NGS within their meal programmes' M&E systems, although only a few explicitly mentioned the use of indicators to assess meal compliance with NGS.

The most common methods for monitoring mentioned involved bottom-up reporting (paper reports or computerized systems), *in situ* visits (observation, interviews), and collection of information from filed complaints (Table 15).

⁹ Each of these three dimensions- individual, organizational and enabling environment, works interdependently with the others and influences the overall impact of a capacity development intervention. Capacities are developed at the individual dimension to lead to changes in skills, behaviours and attitudes among a wide range of actors. Organizational capacity refers to the collective capability of members to achieve their organization's goals. The enabling environment is the context in which individuals and organizations put their capabilities into action, and where capacity development processes take place.



Table 15. Aspects of monitoring relevant to school meal nutrition guidelines and standards reported by respondent countries

Country	Monitoring of NGS	Indicator(s) used to monitor NGS	Observations
Bolivia (Plurinational State of)	Yes	Degree of acceptability, tolerance and satisfaction (85% degree of acceptability of the students who participated in the test)	Monitoring done at municipal level, in coordination with health and education services and community education councils
Brazil	Yes	Percentage of menus that meet nutritional guidelines Acceptability	Monitoring done by technical staff from the National Fund for Educational Development (FNDE), the school feeding councils and nutritionists
Cabo Verde	Currently setting up M&E system	-	-
Colombia	Yes	Only initial control of menus	Initial control of menus Number of meals delivered
Costa Rica	Yes	No specific mention of an indicator	Monitoring done at central level
El Salvador	Yes	Percentage of children that receive the meal	-
Grenada	Yes	No specific mention of an indicator	-
Mexico	Yes	Number of meals in compliance with nutritional standards	-
Republic of Moldova	Yes	Variety of foods provided in school meals	-
Paraguay	Yes	Acceptability	Monitoring changes according to region
Peru	No monitoring of NGS	-	-
South Africa	Yes	No specific mention of an indicator	Mention that schools should make sure to comply with nutritional standards
Sri Lanka	Currently setting up M&E system	-	-

It was not possible to obtain information on how the results are used.

Relevance and aspects to consider

Monitoring depends on the nature of the NGS (nutrient-based or food-based), on the process of the translation of the standards to the meals served (planning of menus, implementation of menu plan, serving), and on the intended use of the monitoring results. In general, it is difficult to obtain detailed data on the actual composition of the meals.

When present, monitoring is usually not specific to the NGS, but integrated within the school meal programme's system. Often, the only indicator used is the number of children that participated/received the meal; even in these cases, there is no assessment of whether the meals comply with the standards or whether the beneficiaries are actually consuming the meal. Acceptability of the meals was mentioned by two countries, although each measured it differently, but this is also an indicator that does not assess the consistency of the meals with the set NGS.

The only explicit indicators dealing with NGS were the number or percentage of meals that comply with the standards. Due to survey limitations, it was not possible to obtain much information on how these indicators are measured, except in the case of Brazil, where nutritionists use a computerized system to input monitoring data.

Integrating studies of effective consumption into school meal programmes requires an additional investment, both financially and in terms of human resources. This presents additional training needs, but also offers potential benefits for adapting school meals and their NGS.

Involvement of academia and research institutions is essential to determine the impact of NGS on dietary diversity, overall diet and nutritional status.



Aspects to consider/Key questions to explore:

More emphasis and resources should be directed to adequate monitoring of NGS, with well-thought-out indicators, to determine compliance and potential for improvements. Was an M&E plan designed during the development of the NGS? Does it have adequate resources? If not, how can M&E be integrated in a simple and effective way?

Monitoring actual consumption of school meals can be resource intensive, but is critical to understand the real effects of NGS.

There are significant research gaps in determining the impact of NGS in LMICs. Recommendations to address these gaps include partnership agreements with academia and research institutions to build the evidence base on the impact of NGS particularly on dietary diversity, overall diet and nutritional status of target populations.

10. Some challenges identified to successful implementation of NGS

The implementation of NGS can be supported by SFNE and nutrition education, capacity development and engagement with various stakeholders. Despite this, a variety of circumstances and issues can hamper the process and affect the quality of the implementation of NGS. Identifying the potential challenges is the first step towards finding and piloting potential solutions.

Main findings

Table 16 shows the main challenges reported to successfully implementing NGS for school meals.

Table 16. Main challenges and barriers reported to the implementation of nutrition guidelines and standards

Thematic area	Main challenges reported
Inherent to the school meal programme (mainly procurement and quality of commodities)	Food procurement not covering every day of school Problems with tenders Discrepancies between what is procured and what is delivered Delays in procurement Problems with quality ingredients Lack of budget
Related to the infrastructure and equipment at school level	Inadequate infrastructure and equipment to follow the NGS Insufficient storage for fresh foods
Preparation and serving processes	Food is not enough or portions not adequate Teachers are not accounted for
Related to capacities and human resources	Lack of staff posts for qualified nutritionists at different levels Inadequate monitoring and evaluation skills at different levels Inadequate training of foodservice staff, cooks and/or volunteers Lack of capacity development at all levels, including awareness-raising for top-level decision-makers
Translation of standards	Lack of standards specific to or adapted to the local context (habits, consumption patterns, availability, etc.) Lack of user-friendly guidance and/or learning materials for end implementers (cooks, foodservice staff, community volunteers, mothers, etc.)
Attitudes and perceptions	Lack of interest from school officials for improving nutritional quality of school meals Competitive foods (sold in tuck shops, vending machines and from street vendors) are more attractive to schoolchildren
Monitoring and evaluation	Lack of monitoring and evaluation systems specific to the NGS Limited corrective actions for non-conformance Limited use of monitoring and evaluation results





The main challenges broadly relate to issues inherent in the school meal programmes, equipment, infrastructure and processes at the school level, lack of capacities at different levels, complications in the translation and application of NGS, attitudes and perceptions, and finally monitoring and evaluation.

Relevance and aspects to consider

The reported challenges reflect that NGS implementation needs should be considered at all levels, from national to school level. These can be identified through various methods depending on the representativeness sought, cost and level of actors. The methods can include focus groups, key informant interviews, observations and/or surveys.

Some of the main challenges identified by this study have also been recognized by other countries (Holte, Larsen and Samdal, 2011; Downs *et al.*, 2012).

Many of the challenges, particularly those referring to the school meal programme, have been discussed in the first section of the present report. These reinforce the need to conduct an analysis of the situation and determine priorities before developing the NGS, or alternatively to adapt NGS to the present situation, or to employ a combination of both.

Investment in the development of capacities of end implementers and the availability of user-friendly learning materials and guidance on translating the NGS into menus and recipes have also been identified as essential aspects to consider to ensure adherence to NGS.

To address school-level challenges and barriers to implementation, strategies and interventions employed should take into account the importance of buy-in from various actors and groups. In addition, NGS must clearly delineate expectations for the various actors who influence the process.

Aspects to consider/Key questions to explore:

Identifying the main challenges that the various actors face in implementing and monitoring NGS is critical to their effectiveness. Adapting to the main challenges can also support the cost-effectiveness of NGS. Many methods that are available to understand these challenges do not necessarily require a costly process. Informal methodologies can also provide quality information. What are the most cost-effective methods to identify and record implementation challenges? How can information on the challenges be used to improve the process?

Some challenges may highlight important changes necessary for the school meal programmes. This once again reinforces the need to conduct a situation analysis prior to developing NGS.



SECTION III

Recommendations





Recommendations

Despite the widespread prevalence of school meal programmes and the international recommendations for strengthening their nutrition objectives, many LMICs have yet to develop official NGS for their school meals or are only now in the process of doing so.

The following is a series of **broad recommendations** extracted from the previous sections of this report, to be considered by the various actors that are involved in the process of advocating for, developing or updating NGS for school meal programmes.

1. A solid understanding of the current situation of the school meal programme(s) within the country and the context in which they operate is key to devise NGS that are feasible, responsive to actual needs and appropriate in scope. This requires the active involvement of all sectors and stakeholders relevant to school meals including: ministries of education, health, agriculture and social protection, NGOs, professional associations, civil society and academia.
2. School meal programme objectives, policy and legal frameworks, targeting approaches and modalities for procurement and meal preparation all have important implications for the development of NGS. Conversely, the implementation of NGS will also affect various aspects of school meal programmes. These interactions need to be clearly identified and understood at the development stage to support policy integration and adequate implementation.
3. School meal NGS should be well integrated or complementarily aligned with policy and legal frameworks related to school feeding, school health and other relevant areas.
4. NGS should be a central part of school meal programmes, as these have critical linkages to aspects and processes of the whole school, including: food procurement; meal planning and food preparation; capacity development of foodservice staff; the food environment; community involvement; and food and nutrition education. There are opportunities in these linkages that, if strategically exploited, can aid the enforcement of NGS and expand their positive effects.
5. Factors that may influence regular provision of commodities (seasonality, local production capacities, post-harvest losses, delays in the public tender processes, etc.) should also be identified and addressed, for example by considering suitable alternatives, when developing NGS.
6. The development of NGS for school meals requires information on a number of topics, including: recommended nutrient intakes; individual food consumption, health and nutrition issues and priorities of target population; food composition; local agriculture production; and the results of school meal programme situation analyses. These requirements may represent an important constraint in many LMICs. The approach and processes followed to develop NGS will therefore depend on the quality of data and the time, resources and capacities available at national level. Technical cooperation between countries, partnerships with academia, development of project proposals, and technical support and capacity development from UN agencies can support quality NGS development when faced with resource constraints.
7. There are no one-size-fits-all model of nutrition standards for school meals, given that different countries and programmes have different objectives, target groups and possibilities. Internationally recommended nutrient-based standards may not be suitable in all contexts.



8. More emphasis should be placed on setting upper limits for saturated fat, sugar and sodium, especially where overweight and obesity are prevalent among schoolchildren or when school meal programme modalities make use of industrialized snacks.
9. The focus of the food-based standards and the way these are framed in terms of food groups, limited foods and quantities, restrictions and promotion of inter and intragroup variety need to be in line with programme objectives and context. An appropriate number of food-based standards and balance between the level of detail and flexibility of implementation are recommended.
10. In cases where the promotion of healthy diets is the main objective of school meal programmes, NGS should be aligned as much as possible with principles, messages and food groups of Food-Based Dietary Guidelines.
11. Inclusion of general recommendations on dietary diversity and nutritional quality and development of simple and practical materials breaking down the technicality of food-based standards can enhance their adherence and effectiveness in practice.
12. Food safety is critical to achieve the aims of school meal NGS. The extent of the linkages and complementarity between standards in both areas should be well defined and supported by a strong legal framework, development of the capacity of key actors and coherence among all relevant materials (normative, informational, educational).
13. NGS for school meals should not be detached from broader efforts to improve nutrition for schoolchildren (including interventions to improve the food environment and food offered on the school premises). When there are strong objectives aimed at promotion of healthy diet among schoolchildren, there should be consistency between guidelines and standards for meals provided by school meal programmes and those aimed at improving the food available (sold and offered) at schools. The school information environment can also raise awareness of the importance of NGS and support their implementation.
14. There are various strategies that can support the implementation of NGS, including engagement with key school players, integration of school-based food and nutrition education and capacity development strategies at different levels.
15. Integrating food and nutrition education with school meal NGS is important to establish meal times as learning opportunities and to enhance their effects on children's food practices.
16. Investing in monitoring and evaluation, including adopting adequate indicators specific to school meal NGS, is essential to determine whether intended changes are occurring, as well as compliance with NGS and short-, medium- and long-term impacts. Monitoring systems should also account for periodic revision of NGS, which should occur to address emerging needs and changing contexts of nutritional and other relevant issues.



References

- Adair, L.S., Fall, C., Osmond, C., Stein, A.D., Martorell, R., Ramirez-Zea, M., Sachdev, H.S., Dahly, D.L., Bas, I., Norris, S., Micklesfield, L., Hallal, P. & Victora, C.G. 2013. Associations of linear growth and relative weight gain during early life with adult health and human capital in countries of low and middle income: Findings from five birth cohort studies. *The Lancet*, 382(9891):525–534.
- Adelman, S., Gilligan, D.O. & Lehrer, K. 2008. *How effective are food for education programmes? A critical assessment of the evidence from developing countries*. Food Policy Review 9. Washington, DC, International Food Policy Research Institute.
- Ahmed, A. U. 2004. *Impact of feeding children in school: Evidence from Bangladesh*. Washington, DC, International Food Policy Research Institute, and Rome, World Food Programme.
- Aliyar, R., Gelli, A. & Hadjivayanis Hamdani, S. 2015. A review of nutrition guidelines and menu compositions for school feeding programs in 12 countries. *Front. Public Heal.*, 3:148.
- Benn, J. & Carlsson, M. 2014. Learning through school meals? *Appetite*, 78: 23–31.
- Best, C., Neufingerl, N., van Geel, L., van den Briel, T. & Osendarp, S. 2010. The nutritional status of school-aged children: Why should we care? *Food Nutr. Bull.*, 31(3): 400–417.
- Bevans, K.B., Sanchez, B., Teneralli, R. & Forrest, C.B. 2011. Eating behavior: The importance of nutrition standards for foods in schools. *J. School Health*, 81(7):424–429.
- Bhutta, Z.A., Das, J.K., Rizvi, A., Gaffey, M.F., Walker, N., Horton, S., Webb, P., Lartey, A. & Black, R.E. 2013. Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? *The Lancet*, 382(9890):452–477.
- Black, R.E., Victora, C.G., Walker, S.P., Bhutta, Z.A., Christian, P., de Onis, M., Ezzati, M., Grantham-McGregor, S., Katz, J., Martorell, R. & Uauy, R. 2013. Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*, 382(9890): 427–451.
- BIDPA. 2013. *The Botswana school feeding programme: a case study*. Gaborone, Botswana Institute for Development of Policy Analysis.
- Bryan, J., Osendarp, S., Hughes, D., Calvaresi, E., Baghurst, K. & van Klinken, J.W. 2004. Nutrients for cognitive development in school-aged children. *Nutr. Rev.*, 62(8): 295–306.
- Buhl, A. 2010. *Meeting nutritional needs through school feeding: a snapshot of four African nations*. Seattle, WA, USA, Global Child Nutrition Foundation.
- Bundy, D., Burbano, C., Grosh, M., Gelli, A., Jukes, M. & Drake, L. 2009. *Rethinking school feeding: social safety nets, child development, and the education sector*. Washington, DC, The International Bank for Reconstruction and Development/The World Bank.
- Cardoso da Silveira, J.J., de Aguiar Carrazedo Taddei, J.A., Guerra, P.H. & Cuce Nobre, M.R. 2013. The effect of participation in school-based nutrition education interventions on body mass index: A meta-analysis of randomized controlled community trials. *Prev. Med.*, 56(3–4):237–243.
- Center for Ecoliteracy. 2010. *Rethinking school lunch: a planning framework*. Berkeley, CA, USA.
- Cohen, J.F., Richardson, S., Parker, E., Catalano, P.J. & Rimm, E.B. 2014. Impact of the new U.S. Department of Agriculture school meal standards on food selection, consumption, and waste. *Am. J. Prev. Med.*, 46(4): 388–394.
- Constante, P. & Lock, K. 2009. Do school based food and nutrition policies improve diet and reduce obesity? *Prev. Med.*, 48(1): 45–53.
- Costa Teixeira, F., Felix Pereira, F.E., Fernandes Pereira, A. & Gonçalves Ribeiri, B. 2017. Metabolic syndrome's risk factors and its association with nutritional status in schoolchildren. *Prev. Med. Rep.*, 6: 27–32.
- Crookston, B.T., Schott, W., Cueto, S., Dearden, K.A., Engle, P., Georgiadis, A., Lundeen, E.A., Penny, M.E., Stein, A.D. & Behrman, J.R. 2013. Postinfancy growth, schooling, and cognitive achievement: Young Lives. *Am. J. Clin. Nutr.*, 98(6): 1555–1563.
- De Bourdeaudhuij, E., Van Cauwenberghe, E., Spittaels, H., Oppert, J.M., Rostami, C., Brug, J., Van Lenthe, F., Lobstein, T. & Maes, L. 2011. School-based interventions promoting both physical activity and healthy eating in Europe: a systematic review within the HOPE project. *Obes. Rev.*, 12(3): 205–216.



- Degarege, D., Degarege, A. & Animut, A. 2015. Undernutrition and associated risk factors among school age children in Addis Ababa, Ethiopia. *BMC Public Health*, 15: 375.
- Downs, S.M., Farmer, A., Quintanilha, M., Berry, T.R., Mager, D.R., Willows, N.D. & McCargar, L.J. 2012. From paper to practice: barriers to adopting nutrition guidelines in schools. *J. Nutr. Educ. Behav.*, 44(2): 114–122.
- Drake, L., Woolnough, A. & Burbano, C. 2016. *Global school feeding sourcebook: lessons from 14 countries*. New Jersey, USA, Imperial College Press.
- Ensaif, H., Russell, J. & Barker, M.E. 2013. Meeting school food standards – students' food choice and free school meals. *Public Health Nutr.*, 16(12): 2162–2168.
- Eze, J.N., Ogonu, T., Ojinnaka, N.C. & Ibe, B.C. 2017. Physical growth and nutritional status assessment of school children in Enugu, Nigeria. *Niger. J. Clin. Pract.*, 20(1).
- Faber, M., Laurie, S., Maduna, M., Magudulela, T. & Muehlhoff, E. 2013. Is the school food environment conducive to healthy eating in poorly resourced South African schools? *Public Health Nutr.*, 17(6): 1214–1223.
- FAO. 2010. *A new deal for school gardens*. Rome.
- FAO. 2013. *Sustainable schools*. [online] Available at: www.fao.org/in-action/program-brazil-fao/projects/school-feeding/sustainable-schools.
- FAO. 2017. *Food safety risk management - Evidence-informed policies and decisions, considering multiple factors*. Rome, Italy. Available at: www.fao.org/3/i8240en/i8240EN.pdf
- FAO. 2018a. *Food-based dietary guidelines*. [online] Available at: www.fao.org/nutrition/education/food-dietary-guidelines/home.
- FAO. 2018b. *Legal guide on school food and nutrition* (in press). Rome.
- FAO. 2018c. *Regional study on the state of the art of national school food and nutrition programmes in Africa*. Rome, Italy. Available at: www.fao.org/3/I8063EN/i8063en.PDF
- FAO. 2018d. *Codex Alimentarius – International Food Standards*. [online] Available at: www.fao.org/fao-who-codexalimentarius.
- FAO. (in press). *Stepping up school-based food and nutrition education. Exploring challenges, finding solutions and building partnerships - International Expert Consultation report*. FAO. Rome, Italy.
- FAO & WFP. 2018. *Home-grown school feeding resource framework*. Rome, Italy. Available at: www.fao.org/documents/card/en/c/CA0957EN.
- FAO & WHO. 2014. *Conference outcome document: Framework for action*. Second International Conference on Nutrition, Rome, 19–21 November 2014. Rome, Italy. Available at: www.fao.org/3/a-mm215e.pdf.
- Fernandes, M., Galloway, R., Gelli, A., Mumuni, D., Hamdani, S., Kiamba, J., Quarshie, K., Bhatia, R., Aurino, E., Peel, F. & Drake, L. 2016. Enhancing linkages between healthy diets, local agriculture, and sustainable food systems: the school meals planner package in Ghana. *Food Nutr. Bull.*, 37(4): 571–584.
- Fink, G. & Rockers, P.C. 2014. Childhood growth, schooling, and cognitive development: further evidence from the Young Lives study. *Am. J. Clin. Nutr.*, 100(1): 182–188.
- Fiorentino, M., Bastard, G., Sembène, M., Fortin, S., Traissac, P., Landais, E., Icard-Vernière, C., Wieringa, F.T. & Berger, J. 2013. Anthropometric and micronutrient status of school children in an urban West Africa setting: A cross-sectional study in Dakar (Senegal). *PLoS ONE*, 8(12): e84328.
- Florence, M.D., Asbridge, M. & Veugelers, P.J. 2008. Diet quality and academic performance. *J. School Heal.*, 78(4): 209–215.
- Galicia, L., Grajeda, R. & López de Romaña, D. 2016. Nutrition situation in Latin America and the Caribbean: current scenario, past trends, and data gaps. *Rev. Panam. Salud. Publ.*, 40(2): 104–113.
- Gelli, A. & Espejo, F. 2013. School feeding, moving from practice to policy: reflections on building sustainable monitoring and evaluation systems. *Public Health Nutr*, 16(6).
- Gelli, A., Kretschmer, A., Molinas, L. & Regnault de la Mothe, M. 2012. *A comparison of supply chains for school food: exploring operational trade-offs across implementation models*. HGSF Working Paper Series #7. London, The Partnership for Child Development. Available at: <http://hgsf-global.org/en/rpublications/388-hgsf-working-paper-series-7-a-comparison-of-supply-chains-for-school-food-exploring-operational-trade-offs-across-implementation-models>.



- GLOPAN. 2015. *Healthy meals in schools: policy innovations linking agriculture, food systems and nutrition*. Policy Brief No. 3. Global Panel on Agriculture and Food Systems for Nutrition. London.
- Government of Brazil and FAO. 2013. *School feeding and the possibilities of procurement from family farming in Latin America* [in Portuguese]. Rome. Available at: www.fao.org/3/a-i3413s.pdf.
- Greenhalgh, T., Kristjansson, E. & Robinson, V. 2007. Realist review to understand the efficacy of school feeding programmes. *BMJ*, 335: 858.
- Gupta, N., Shah, P., Nayyar, S. & Misra, A. 2013. Childhood obesity and the metabolic syndrome in developing countries. *Indian J. Pediatr.*, 80(Suppl. 1): S28–37.
- Hawkes, C. 2013. *Promoting healthy diets through nutrition education and changes in the food environment: an international review of actions and their effectiveness*. Background paper for the International Conference on Nutrition (ICN2). Rome, FAO. Available at: www.fao.org/docrep/017/i3235e/i3235e.pdf.
- Holte, A., Larsen, T. & Samdal, O. 2011. Implementation of national guidelines for healthy school meals: the relationship between process and outcome. *Scand. J. Educ. Res.*, 55(4): 357–378.
- IOM. 2010. *School meals: building blocks for healthy children*. Washington, DC, The National Academies Press. <https://doi.org/10.17226/12751>.
- Jomaa, L.H., McDonnell, E. & Probart, C. 2011. School feeding programs in developing countries: impacts on children's health and educational outcomes. *Nutr. Rev.*, 69(2): 83–98.
- Kim, M., Abe, S., Zhang, C., Kim, S., Choi, J., Hernandez, M., Nozue, M. & Yoon, J. 2017. Comparison of the nutrient-based standards for school lunches among South Korea, Japan, and Taiwan. *Asia Pac. J. Clin. Nutr.*, 26(1): 160–168.
- Kristjansson, E.A., Robinson, V., Petticrew, M., MacDonald, B., Krasevec, J., Janzen, L., Greenhalgh, T., Wells, G., MacGowan, J., Farmer, A., Shea, B.J., Mayhew, A. & Tugwell, P. 2007. School feeding for improving the physical and psychosocial health of disadvantaged elementary school children. *Cochrane DB Syst. Rev.*, 24 (1): CD004676.
- Kristjansson, E.A., Gelli, A., Welch, V., Greenhalgh, T., Liberato, S., Francis, D. & Espejo, F. 2016. Costs, and cost-outcome of school feeding programmes and feeding programmes for young children. Evidence and recommendations. *Int. J. Educ. Dev.*, 48: 79–83.
- Lobelo, F., Garcia de Quevedo, I., Holub, C.K., Nagle, B.J., Arredondo, E.M., Barquera, S. & Elder, J.P. 2013. School-based programs aimed at the prevention and treatment of obesity: evidence-based interventions for youth in Latin America. *J School Heal.*, 83(9): 668–677.
- Lucas, P.J., Patterson, E., Sacks, G., Billich, N. & Evans, C.E.L. 2017. Preschool and school meal policies: an overview of what we know about regulation, implementation, and impact on diet in the UK, Sweden, and Australia. *Nutrients*, 9 (7). pii: E736.
- Meiklejohn, S., Ryan, L. & Palermo, C. 2016. A systematic review of the impact of multi-strategy nutrition education programs on health and nutrition of adolescents. *J. Nutr. Educ. Behav.*, 48(9): 631–646.
- Mispireta, M.L. 2012. Determining factors of overweight and obesity in children at school age in Peru [in Spanish]. *Rev. Peru. Med. Exp. Salud Publica*, 29(3): 361–365.
- Muthuri, S.K., Francis, C.E., Wachira, L.J., LeBlanc, A.G., Sampson, M., Onywera, V.O. & Tremblay, M.S. 2014. Evidence of an overweight/obesity transition among school-aged children and youth in sub-Saharan Africa: a systematic review. *PLoS ONE*, 9(3): e92846.
- Mwaniki, E.W. & Makokha, A.N. 2013. Nutrition status and associated factors among children in public primary schools in Dagoretti, Nairobi, Kenya. *Afr Health Sci*, 13(1): 39–46.
- Nyaradi, A., Li, J., Hickling, S., Foster, J. & Oddy, W.H. 2013. The role of nutrition in children's neurocognitive development, from pregnancy through childhood. *Front. Hum. Neurosci.*, 7: 97.
- Ochola, S. & Masibo, P.K. 2014. Dietary intake of schoolchildren and adolescents in developing countries. *Ann. Nutr. Metab.*, 64(Suppl. 2): 24–40.
- Pérez-Rodrigo, C. & Aranceta, J. 2001. School-based nutrition education: lessons learned and new perspectives. *Public Health Nutr.*, 4(1A): 131–139.
- Ramachandran, A. & Snehalatha, C. 2010. Rising burden of obesity in Asia. *J. Obes.*, 2010. pii: 868573.
- Rivera, J.A., González, T., Pedraza, L.S., Cony, T., Sánchez, T.G. & Martorell, R. 2014. Childhood and adolescent overweight and obesity in Latin America: a systematic review. *Lancet Diabetes Endo.*, 2(4): 321–332.



- Sibanyoni, J.J., Tshabalala, P.A. & Tabit, F.T. 2017. Food safety knowledge and awareness of food handlers in school feeding programmes in Mpumalanga, South Africa. *Food Control*, 73.
- Silveira, J.A.C., Taddei, J.A.A., Guerra, P.H. & Nobre, M.R.C. 2011. Effectiveness of school-based nutrition education interventions to prevent and reduce excessive weight gain in children and adolescents: a systematic review. *J. Pediatr. (Rio J.)*, 87(5): 382–392.
- Siobhan, K. & Swensson, L.F.J. 2017. Leveraging institutional food procurement for linking small farmers to markets: Findings from WFP's Purchase for Progress initiative and Brazil's food procurement programmes, FAO Agricultural Development Economics Technical Study 1. FAO. Rome, Italy.
- Spence, S., Delve, J., Stamp, E., Matthews, J.N.S., White, M. & Adamson, A.J. 2013. The impact of food and nutrient-based standards on primary school children's lunch and total dietary intake: a natural experimental evaluation of government policy in England. *PLoS ONE*, 8(10): e78298.
- Srivastava, A., Mahmood, S.E., Srivastava, P.M., Shrotriya, V.P. & Kumar, B. 2012. Nutritional status of school-age children - A scenario of urban slums in India. *Arch. Public Health*, 70(1): 8.
- Storcksdieck, S., Kardakis, T., Wollgast, J., Nelson, M. & Caldeira, S. 2014. *Mapping of national school food policies across the EU28 plus Norway and Switzerland*. JRC Science and Policy Reports. Ispra, VA, Italy, European Commission, Joint Research Centre, Institute for Health and Consumer Protection (IHCP). Available at: <http://publications.jrc.ec.europa.eu/repository/bitstream/JRC90452/lbna26651enn.pdf>.
- Thompson, B. & Amoroso, L. 2011. *Combating micronutrient deficiencies: food-based approaches*. Wallingford, UK, CABI, and Rome, FAO. Available at: www.fao.org/docrep/013/am027e/am027e.pdf.
- Uauy, R. & Diaz, E. 2005. Consequences of food energy excess and positive energy balance. *Public Health Nutr.*, 8(7A): 1077–1099.
- Uauy, R. & Kain, J. 2002. The epidemiological transition: need to incorporate obesity prevention into nutrition programmes. *Public Health Nutr.*, 5(1A): 223–229.
- UNSCN. 2017. *Schools as a system to improve nutrition: a new statement for school-based food and nutrition interventions*. Discussion Paper. Rome, United Nations System Standing Committee on Nutrition.
- United Nations General Assembly. 2015. Transforming our world: The 2030 Agenda for Sustainable Development. Resolution adopted by the General Assembly on 25 September 2015. A/RES/70/1. Available at: www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E.
- Upton, D., Upton, P. & Taylor, C. 2012. Fruit and vegetable intake of primary schoolchildren: a study of school meals. *J. Hum. Nutr. Diet.*, 25(6): 557–562.
- Verstraeten, R., Dominique, R., Lachat, C., Leroy, J.L., Holdsworth, M., Maes, L. & Kolsteren, P.W. 2012. Effectiveness of preventive school-based obesity interventions in low-and middle-income countries: a systematic review. *Am. J. Clin. Nutr.*, 96(2): 415–438.
- Victora, C.G., Adair, L., Fall, C., Hallal, P.C., Martorell, R., Richter, L. & Singh, H. 2008. Maternal and child undernutrition: consequences for adult health and human capital. *The Lancet*, 371(9609): 340–357.
- Vidgen, H.A. & Gallegos, D. 2014. Defining food literacy and its components. *Appetite*, 76: 50–59.
- Walker, S.P., Wachs, T.D., Meeks Gardner, J., Lozoff, B., Wasserman, G.A., Pollitt, E. & Carter, J.A. 2007. Child development: risk factors for adverse outcomes in developing countries. *The Lancet*, 369(9556): 145–157.
- WFP. 2013. *The state of school feeding worldwide*. Rome.
- WFP & FAO. 2018. *Home-grown school feeding resource framework*. Technical document. Rome.
- WHO. 2006. *Food and nutrition policy for schools. A tool for the development of school nutrition programmes in the European Region*. Copenhagen, Programme for Nutrition and Food Security, WHO Regional Office for Europe.
- WHO. 2013. *Global action plan for the prevention and control of noncommunicable diseases 2013–2020*. WHO, Geneva, Switzerland.
- World Bank Data Team. 2016. New country classifications by income level: 2016–2017. [online] *The Data Blog*. <http://blogs.worldbank.org/opendata/new-country-classifications-2016>.
- World Bank, WFP & PCD. 2016. *SABER–School feeding: Manual for SABER-SF Exercise*. Washington, DC, World Bank. Available at: <https://openknowledge.worldbank.org/bitstream/handle/10986/26517/114317-WP-PUBLIC-SABER-SchoolFeeding-Manual.pdf?sequence=1&isAllowed=y>.



Annexes



Annex I

Low and middle-income countries considered for the survey

Note: Colored background indicates that the country has a government-owned school food programme or is transitioning from relying on external support.

Low-income economies (US\$1,025 or less)

Afghanistan	Guinea	Rwanda
Benin	Guinea-Bissau	Senegal
Burkina Faso	Haiti	Sierra Leone
Burundi	Democratic People's Republic of Korea	Somalia
Central African Republic	Liberia	South Sudan
Chad	Madagascar	United Republic of Tanzania
Comoros	Malawi	Togo
Democratic Republic of the Congo	Mali	Uganda
Eritrea	Mozambique	Zimbabwe
Ethiopia	Nepal	
Gambia	Niger	

Lower-middle-income economies (US\$1,026 to US\$4,035)

Armenia	Kiribati	Solomon Islands
Bangladesh	Kosovo	Sri Lanka
Bhutan	Kyrgyzstan	Sudan
Bolivia (Plurinational State of)	Lao People's Democratic Republic	Swaziland
Cabo Verde	Lesotho	Syrian Arab Republic
Cambodia	Mauritania	Tajikistan
Cameroon	Micronesia (Federated States of)	Timor-Leste
Congo	Republic of Moldova	Tonga
Côte d'Ivoire	Mongolia	Tunisia
Djibouti	Morocco	Ukraine
Egypt	Myanmar	Uzbekistan
El Salvador	Nicaragua	Vanuatu
Ghana	Nigeria	Viet Nam
Guatemala	Pakistan	West Bank and Gaza Strip
Honduras	Papua New Guinea	Yemen
India	Philippines	Zambia
Indonesia	Samoa	
Kenya	Sao Tome and Principe	



Upper-middle-income economies (US\$4,036 to US\$12,475)

Albania	Ecuador	Montenegro
Algeria	Fiji	Namibia
American Samoa	Gabon	Palau
Angola	Georgia	Panama
Argentina	Grenada	Paraguay
Azerbaijan	Guyana	Peru
Belarus	Iran (Islamic Republic of)	Romania
Belize	Iraq	Russian Federation
Bosnia and Herzegovina	Jamaica	Serbia
Botswana	Jordan	South Africa
Brazil	Kazakhstan	Saint Lucia
Bulgaria	Lebanon	Saint Vincent and the Grenadines
China	Libya	Suriname
Colombia	The former Yugoslav Republic of Macedonia	Thailand
Costa Rica	Malaysia	Turkey
Cuba	Maldives	Turkmenistan
Dominica	Marshall Islands	Tuvalu
Dominican Republic	Mauritius	Venezuela (Bolivarian Republic of)
Equatorial Guinea	Mexico	



Annex II

General information about survey respondents

Table AII-1. Country, professional title and affiliation of survey respondents

Country	Professional title	Affiliation
Benin	School Feeding Director	Ministry of Maternal and Primary Education
Bolivia (Plurinational State of)	Professional IV in School Food and Nutrition	Ministry of Education
Botswana	Assistant Director	Ministry of Local Government & Rural Development
Brazil	General Coordinator - National School Feeding Programme	National Education Development Fund (FNDE in Portuguese)
Cabo Verde	Nutritionist - National School Meals Program	Cabo Verdean Foundation for School Social Action
Colombia	Advisor	Ministry of Education
Costa Rica	Nutritionist	Ministry of Education
Costa Rica	Nutritionist	Ministry of Education
Dominican Republic	Director of the Nutrition Department	National Institute for Student Wellbeing
Ecuador	Economist	Ministry of Education
El Salvador	Officer	Ministry of Education
Ghana	Programme Officer – Operations	Ghana School Feeding Programme
Grenada	Community Nutrition Supervisor	Grenada Food and Nutrition Council
Guatemala	Coordinator of Regional Initiatives / Nutrition Officer	FAO Guatemala
Guyana	Director Food Policy Division (currently retired)	Ministry of Health
Honduras	Food and Nutrition Education representative	Secretary of Development and Social Inclusion
Jamaica	Director – School Feeding Programme	Ministry of Education, Youth and Information
Jordan	Head of Nutrition and School Health Department	Ministry of Education
Lesotho	Chief Nutrition Officer	Ministry of Education and Training
Malawi	Chief School Health, Nutrition and HIV and AIDS Officer	Ministry of Education
Mexico	General Director	National System for Family Integral Development
Mexico	Director – Community Development and Diet	National System for Family Integral Development
Republic of Moldova	Consultant	Ministry of Education
Mongolia	Assistant FAO Representative	FAO Mongolia
Namibia	Chief Inspector of Education	Ministry of Education, Arts and Culture
Panama	National Director – School Health and Nutrition	Ministry of Education
Paraguay	National Strategy planner	Municipality
Peru	Multisectorial coordinator	Ministry of Education
Peru	National coordinator	Ministry of Health
Samoa	Principal Nutritionist	Ministry of Health
Senegal	Former Director of Education Planning and Reform	
South Africa		Department of Basic Education
Sri Lanka	Director of Education	Secretary of Education
Sri Lanka	Project Manager	FAO
Swaziland	Senior Inspector Nutrition	Ministry of Education and Training
Viet Nam	Program Coordinator	FAO Viet Nam



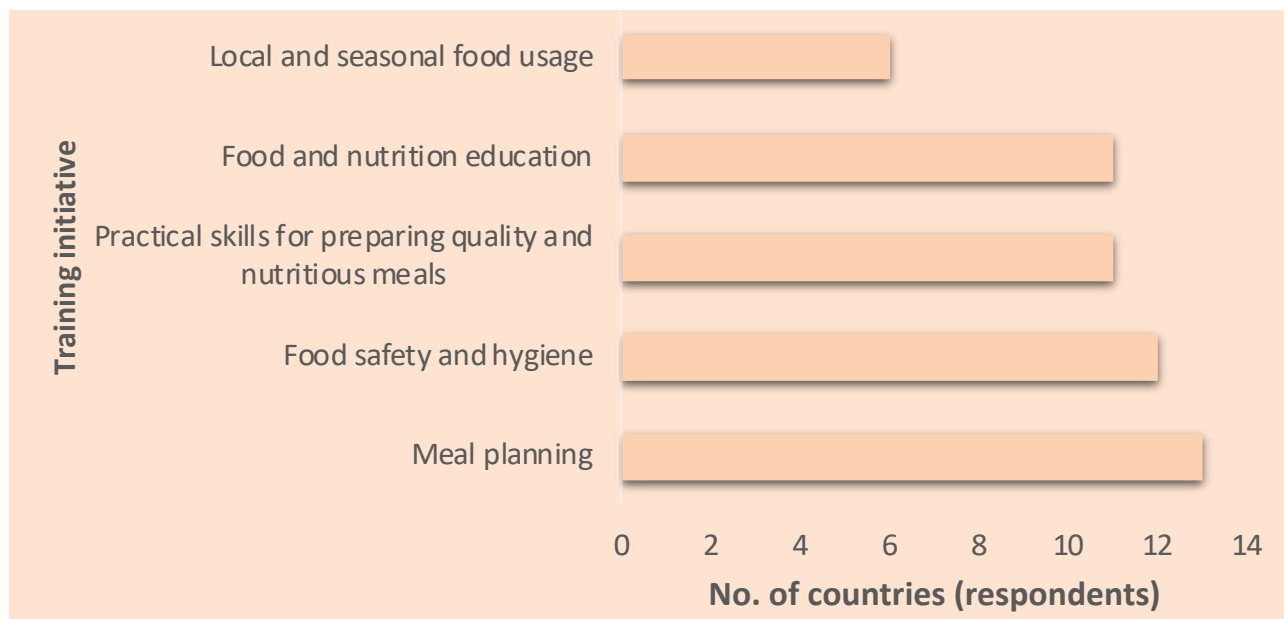
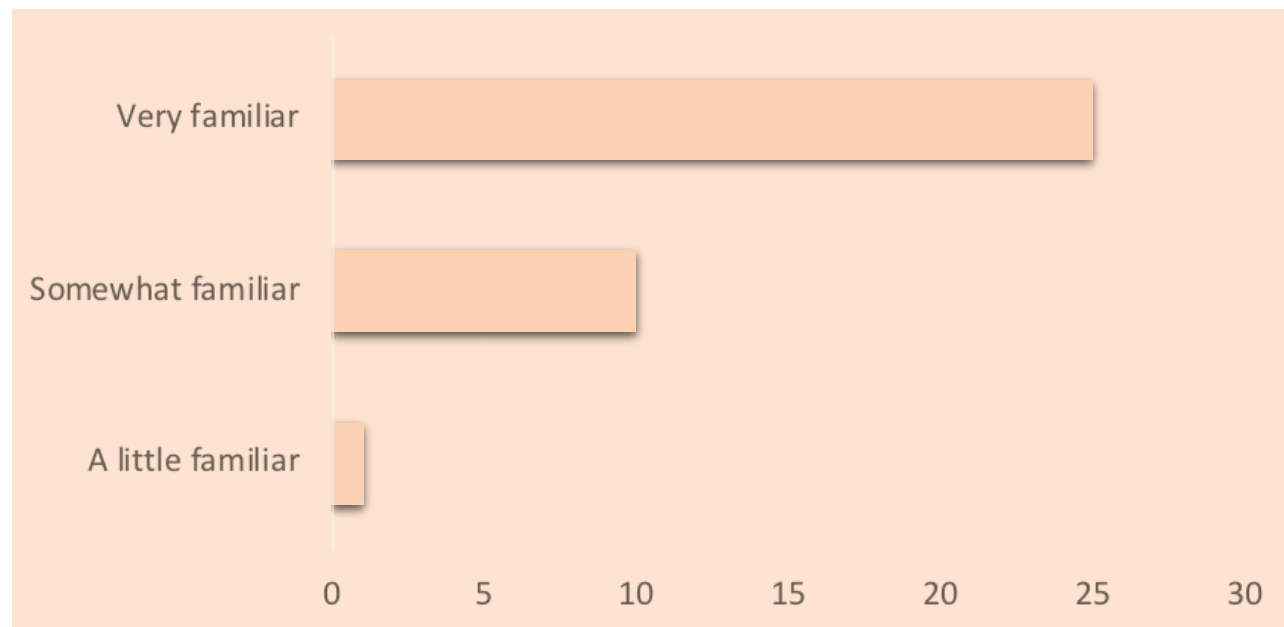
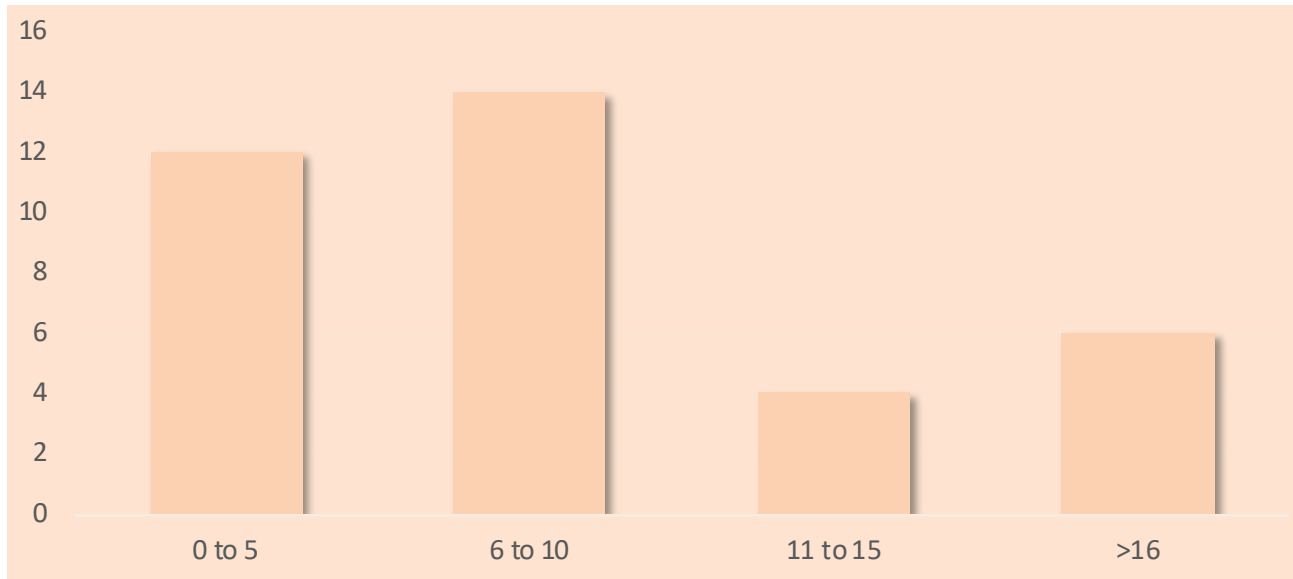
Figure All-1. Survey respondent's professional area of focus**Figure All-2.** Survey respondent's familiarity with government-owned school meal programme(s)

Figure AII-3. Respondent's years of work relevant to school meal programme



Setting nutrition guidelines and standards has been recommended internationally to ensure that school meals are in line with children's nutrition needs and are adequate for their context.

This report provides a descriptive overview of the situation of school meal nutrition guidelines and standards in 33 low and middle-income countries as reported through a global survey. The report identifies key aspects to consider for stakeholders who are planning to develop or update their guidelines and standards in the context of school meal programmes.

This document is in line with the Framework for Action of the Second International Conference on Nutrition (ICN2), and the work plan of the United Nations Decade of Action on Nutrition.



ISBN 978-92-5-131183-7



9 789251 311837

CA2773EN/1/01.19