



Schools as a System to Improve Nutrition

A new statement for school-based food and nutrition interventions



UNSCN

United Nations System Standing Committee on Nutrition

September 2017

All rights reserved. UNSCN encourages the use and dissemination of content in this product. Reproduction and dissemination thereof for educational or other non-commercial uses are authorized provided that appropriate acknowledgement of UNSCN as the source is given and that UNSCN's endorsement of users' views, products or services is not implied in any way.

All requests for translation and adaptation rights, and for resale and other commercial use rights should be addressed to the UNSCN secretariat at info@unscn.org.



Schools as a System to Improve Nutrition

A new statement for school-based food and nutrition interventions



UNSCN

United Nations System Standing Committee on Nutrition

September 2017

Acknowledgements

This paper came about thanks to a rich process of collaboration. The following people contributed to the drafting of the text: Danny Hunter (Bioversity), Boitshepo Giyose (FAO), Andrea PoloGalante (FAO), Florence Tartanac (FAO), Donald Bundy (Gates Foundation), Arlene Mitchell (GCNF), Thabisile Moleah (IAEA), Juliane Friedrich (IFAD), Harold Alderman (IFPRI), Lesley Drake (PCD), Roland Kupka (UNICEF), Quinn Marshall (WFP), Kaia Engesveen (WHO), and Stineke Oenema (UNSCN Secretariat).

In addition, we received valuable commentary from Anne Sellers (CRS), Andy Chi Tembon (World Bank), Fatiha Terki, David Ryckembusch and Mutinta Hambayi (WFP), and Chizuru Nishida (WHO).

We would also like to thank the technical staff of Bioversity International, FAO, PCD, UNICEF, WFP and WHO for their valuable case studies.

We are grateful to Christelle Edde and Marisa Tsai for their help in structuring and editing the various versions of this document. Thanks, too, to Poilin Breathnach for the final edit.

Stineke Oenema (UNSCN secretariat) led the management of the overall process.

The paper is available on the UNSCN website at www.unscn.org.

Table of contents

1. Introduction	3
2. Achieving human rights through school-based food and nutrition interventions	6
3. School meals	8
4. School meal programmes and their impact on institutional markets and food systems	9
5. Schools as part of a social-protection system	11
6. Food and nutrition education	12
7. Teachers and other agents of change in promoting positive nutrition behavior	13
8. Creating enabling school environments to promote healthy diets and nutrition	14
9. Providing supportive nutrition and health services	15
10. Costs and sustainability of school-based nutrition measures	16
11. Key messages and recommendations	18
12. Conclusion	21
References	22
Annex - Evidence-based case studies	25
List of abbreviations	57

1

Introduction

Improving child nutrition is critical to human development and to the realization of human rights, as stated by the Second International Conference on Nutrition (ICN2), the Sustainable Development Goals (SDGs), the Zero Hunger Challenge, and the UN Decade of Action on Nutrition 2016-2025. While there has typically been a focus on health and nutrition in the first 1,000 days, from pregnancy to a child's second birthday, the first two decades of life contain critical phases of development and rapid growth, such as the pubertal growth period, during which nutrient requirements increase (Victoria 2010; Das et al. 2017). According to the latest edition of Disease Control Priorities, the 7,000 days after a child's second birthday present continued opportunities to help children reach their developmental potential (Bundy 2017; Prentice et al. 2013).

The need to ensure a healthy diet and lifestyle among children persists, and it is clearly understood that optimum nutrition is essential to their health, wellbeing, and cognitive and social development, as well as to the economic growth of communities and countries, and the welfare of subsequent generations. The recognition that intervention in the first 1,000 days is essential, but insufficient underlines the need for significant investment in health and nutrition in middle childhood and adolescence (Bundy 2017). Schools can play an important role in delivering health and nutrition interventions and providing a supportive, health-enabling environment.



Many children around the world, especially those from low-income populations, start school already stunted, underweight and/or suffering from multiple micronutrient deficiencies. At the same time, nutrition and diet-related problems are also highly prevalent in middle- and high-income¹ countries. Indeed, all countries suffer from at least one form of malnutrition (International Food Policy Research Institute [IFPRI] 2016). Increasingly, children are suffering from several forms of malnutrition, ranging from undernourishment to excessive weight or obesity, with both extremes often occurring in combination with micronutrient deficiencies. Schools provide an opportunity to prevent and manage these various forms of malnutrition and contribute to improving educational outcomes (Caniello et al. 2016; Drake et al. 2016). Students who have participated in school nutrition activities can further act as influencers, with a particular impact on their families and younger siblings, potentially reducing the number of children starting school already malnourished.

It is critical to recognize the multiple benefits of school-based food and nutrition intervention, such as school meals. The potential returns on investment in school meals extend far beyond health and nutrition benefits, spanning greater access to education, social protection and rural agricultural development. Numerous studies have documented the contribution of school meals to higher enrolment and attendance. In some environments, school meal programs can play a crucial role in supporting the education of at-risk students, such as girls (Bundy et al. 2009). These benefits are often among the main reasons countries invest in school meal programs.

While providing school meals is the best-known school-based food and nutrition intervention, other school-based measures include the promotion of hand-washing with soap before meals, de-worming treatments, nutrition education, agricultural diversification, improved water and sanitation facilities, and micronutrient supplementation. A multisector package of intervention measures maximizes the impact of investment in schools and can further countries' efforts to achieve multiple Sustainable Development Goals (including SDGs 2, 3, 4, 5, 6, 10, and 12).

As schools, especially primary schools, are present in even the most rural areas, they offer a unique opportunity to reach children on a large scale. It is encouraging to note that certain countries, such as Nigeria, a lower middle-income country accounting for a little less than 20%² of all school-age children in Sub Saharan Africa, has decided to increase investment in school food and nutrition. During the UN Decade of Action on Nutrition, countries have been asked to make specific commitments with a view to achieving the globally agreed nutrition targets. This paper contends that looking at schools as a (food) system³ provides multiple entry points for improving nutrition among children in school and long after they have left, as well as far beyond the school environment. Thus, it aligns well with the Agenda 2030 call for systemic change, as well as the emphasis on food systems in the outcome documents of the ICN2.

In (largely) higher-income countries, the World Health Organization (WHO) has developed the Nutrition-friendly Schools Initiative (NFSI), providing an integrated framework for school-based programs that address the double

1 "For the current 2018 fiscal year, low-income economies are defined as those with a GNI per capita, calculated using the World Bank Atlas method, of USD 1,005 or less in 2016; lower middle-income economies are those with a GNI per capita between USD 1,006 and USD 3,955; upper middle-income economies are those with a GNI per capita between USD 3,956 and USD 12,235; high-income economies are those with a GNI per capita of USD 12,236 or more. The term 'country', used interchangeably with economy, does not imply political independence, but refers to any territory for which authorities report separate social or economic statistics." World Bank (2017), *World Bank Country and Lending Groups*, available online at: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519>.

2 Total number of school-age children in sub-Saharan Africa (SSA) (UNESCO 2013): 144,000,000. Total number of school-age children in Nigeria (Universal Basic Education Commission [UBEC] 2013): 24,185,027. Percentage of Nigerian school-age children in SSA: 17%.

3 A food system gathers all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, and the outputs of these activities, including socioeconomic and environmental outcomes (HLPE 2017).

burden of malnutrition-related ill health. The NFSI applies the concept and principles of the Baby-friendly Hospital Initiative (BFHI), where schools that meet a set of essential criteria will be accredited as “Nutrition Friendly Schools”.⁴

Amid shifts in the nutritional landscape, there is a need to reassess and reinforce the role of schools in improving the health and nutritional status of children. This paper asserts that schools offer a unique platform from which to realize multiple benefits for children and their communities, while helping to achieve the SDGs. Furthermore, schools can exert influence beyond the student population, serving as a foundation for the involvement of teachers, parents and other community members. Intervention can catalyze community development, bring about social protection and economic empowerment, influence agricultural production systems to deliver diverse and nutritious foods, promote lifelong healthy-eating habits, and address basic health, hygiene, and sanitation issues that affect wellbeing. By providing a better health and living environment, schools have the potential to not only support education, but also underpin mainstream nutrition activities in communities and advance child development (Patton et al. 2016).



⁴ Nutrition-friendly Schools Initiative (NFSI). http://www.who.int/nutrition/topics/nutrition_friendly_schools_initiative/en/.

2

Achieving human rights through school-based food and nutrition interventions

Schools can play an integral role in the promotion of human rights, in particular, the right to adequate food,⁵ the right to the highest attainable standard of health, and the right to education. These rights, among others, according to the UN Office of the High Commissioner for Human Rights (OHCHR), are universal and inalienable, indivisible, interdependent and interrelated. The Convention on the Rights of the Child (CRC), which has reached near universal adoption, highlights in Article 24 the importance of the provision of nutritious foods in combating disease and malnutrition.

The Committee on the Rights of the Child, in interpreting and operationalizing Article 24, states in General Comment 15 that, “School feeding is desirable to ensure all pupils have access to a full meal every day, which can also enhance children’s attention for learning and increase school enrolment. The Committee recommends that this be combined with nutrition and health education, including setting up school gardens and training teachers to improve children’s nutrition and healthy eating habits.”

Furthermore, the Committee emphasizes that, “States should also address obesity in children, as it is associated with hypertension, early markers of cardiovascular disease, insulin resistance, psychological effects, a higher likelihood of adult obesity, and premature death. Children’s exposure to ‘fast foods’ that are high in fat, sugar or salt, energy-dense and micronutrient-poor, and drinks containing high levels of caffeine or other potentially harmful substances, should be limited. The marketing of these substances – especially when such marketing is focused on children – should be regulated and their availability in schools and other places controlled (CRC 2013).”

The Committee on Economic, Social and Cultural Rights (CESCR) recommends the adoption of national strategies “to ensure food and nutrition security for all, based on human rights principles that define the objectives, and the formulation of policies and corresponding benchmarks” (CESCR 1999:21). The Committee identifies three levels of obligation on states to realize economic, social and cultural rights, namely, to “respect”, “protect” and “fulfil” (through facilitation or provision). In the school system, this means that the duty bearers, namely the government, teachers and other school personnel, must respect the rights of children to good nutrition, and respect local food cultures that are conducive to healthy diets. Second, protecting the right to adequate food and the highest attainable standard of health means ensuring that children are not confronted with an unhealthy or unsafe school food environment, or are subject to abuse by third parties, including private enterprises.

⁵ According to the Committee on Economic, Social and Cultural Rights (CESCR), the right to food is realized “when every man, woman and child, alone or in community with others, has physical and economic access at all times to adequate food or means for its procurement” (CESCR 1999: 6). The CESCR considers the core content of the right to food to imply “the availability of food in a quantity and quality sufficient to satisfy the dietary needs of individuals, free from adverse substances, and acceptable within a given culture; the accessibility of such food in ways that are sustainable and that do not interfere with the enjoyment of other human rights” (CESCR 1999: 8).

The influence of food and beverage companies should be afforded special attention, as more stringent measures are needed, for example, to protect children from the marketing of unhealthy foods and beverages. Countries should consider potential conflicts of interest when involving food and beverage companies in school activities and establish measures to identify and manage them appropriately, to avoid compromising their nutrition-related work and the greater public-health goals. For example, a company producing sugar-sweetened beverages that offers to sponsor school-based activities, but requires the display of their logos, would be a conflict of interest.

The third level of obligation, to “fulfil”, implies duty bearers should act to fulfil children’s rights through facilitation (e.g. school food standards, nutrition education, training of staff, parent involvement) or provision (e.g. school meals). The school curriculum, as set by ministries of education, should provide children with adequate information on healthy diets and nutrition, as well as a quality education.

Finally, specific attention should be paid to marginalized groups, including girls, indigenous peoples and ethnic minorities. In many communities, girls’ right to education is violated; they are often less likely to enter secondary education and more likely to drop out for economic and socio-cultural reasons. This has severe consequences for the realization of their other rights, including the right to adequate food. Health- and nutrition-related interventions have been shown to be effective in keeping girls at school. In addition, the importance of providing culturally appropriate food in school meals is paramount among indigenous communities, whose cultural concerns often go unaddressed by school administrations (CIMI, 2015).

In conclusion, making human rights central to school intervention and policies is critical to advancing nutritional goals. Schools, as a system, have the potential to make lasting improvements in nutrition and simultaneously contribute to the realization of human rights around the globe.



3

School meals

School meals have the potential to directly address nutrition by improving the quality of student diets, including those of pre-school, primary and secondary school-aged children. According to the WHO *Healthy Diets Factsheet*, a healthy diet contains an adequate intake of fruit, vegetables, and foods high in fiber, such as wholegrains, and limits the intake of fats, free sugars and sodium (WHO, 2015). School meals can contribute to multi-faceted improvement. In 2012, about a third of primary-school and lower-year secondary-school students worldwide received food or meals at school. However, only about 12% of children attending school in low-income countries received school meals, compared with 37% of students in upper-middle-income countries. Among the 154 countries that responded to the WHO's Second Global Nutrition Policy Review 2016-2017, 84 – largely in the African, American and South-East Asian regions – reported providing school meals, while about half also had school-meal standards. Twenty-two countries, mostly in Europe, reported having standards or guidance on packed lunches and on foods being sold in schools (WHO, forthcoming).

School meals should be based on national food-based dietary guidelines, which are, in turn, often based on international standards, to ensure they are diverse, likely to meet nutrient needs, and align with local food availability and preferences (e.g. local food cultures). In addition, many countries have national school-meal policies that provide guidance on limiting the consumption of highly processed foods, or guidelines that set out the percentage of total nutrient or caloric needs that school meals should contribute. In addressing nutrient needs, schools can help prevent and manage micronutrient deficiencies in school children, considering that many children already start school with a micronutrient deficiency. Among preschoolers, the global prevalence of vitamin A deficiency in low- and middle-income countries is estimated at 33% (though it is 45% in Africa and Southeast Asia) (WHO 2009), while the prevalence of anaemia is estimated at 47.4% (WHO 2008). Likewise, schools should ensure that nutrient requirements are informed by age, sex, and local food cultures, as well as the special needs of vulnerable groups, such as those impacted by infectious diseases or malnutrition.

Beyond their immediate benefits for children, school meals, when linked to local smallholder farming and agricultural development, can also shorten supply chains and ensure the diversification of food procurement, increasing the use of traditional, neglected and underutilized foods, while enhancing biodiversity conservation and environmental sustainability (please see Kenya, case study I, and Brazil, case study H, for more). They also have the potential to promote dietary diversification from local sources and local dietary habits, as well as local economic development and smallholder farmers' integration into markets (Bundy et al. 2009; Gelli et al. 2010; Espejo et al. 2009; Morgan et al. 2007). Strategies for diversifying diets using local procurement should still take care to identify situations in which local foods may not be sufficient to meet nutrient requirements (such as a scarcity of animal-source foods in areas where iron deficiency is prevalent). In such scenarios, school meals may need to incorporate fortified foods or other nutritional supplements to address these shortfalls. As illustrated in this paper, schools offer a key platform from which to launch nutrition intervention at scale. Furthermore, school meals can be complemented by food and nutrition education to reinforce healthy eating habits.

4

School meal programmes and their impact on institutional markets and food systems

School meal programs can bolster local economies and create job opportunities when they forge ties between the provision of safe, diverse and nutritious food and sourcing from local producers. By offering structured and predictable demand, they have the potential to improve the economic lives of local farmers. For smallholders, such programs can facilitate access to markets, as well as productive inputs and credit, increasing income and opportunities for growth (Drake et al. 2016). Shifts in purchasing to support small and medium-sized enterprises, such as small-scale food-processing businesses, can also have an impact on social equity, as many such businesses are managed by women, and foster other job opportunities. Programs linking local food production, purchasing, and delivery, such as school meal or feeding programs, are often referred to as home grown school feeding (HGSF) programs.

As institutional markets, schools can promote the sourcing of healthy food, the development of short supply chains and the creation of alternative retail infrastructures, as well as support sustainable agro-ecological approaches to agriculture (IPES-Food 2016). The 2016 Global Panel Foresight Report draws attention to the need to “institutionalize high-quality diets through public sector purchasing power”, including food provided in schools, which should be of the highest nutritional benefit (Global Panel 2016). This approach has the potential to shape the norms around foods that contribute to high-quality diets, which could incentivize those involved in the supply chain to align their value chains accordingly. Demand from schools for a diversified food basket can stimulate agricultural diversification and overall agricultural production, increase biodiversity and the use of traditional, neglected and/or underutilized foods.

Recent experiences in countries such as Brazil, Ghana and Nigeria suggest the potential for significant positive benefits from HGSF programs. In Brazil, family farming has benefited from the requirement that at least 30% of food used in school meals be bought from family farms and rural family entrepreneurs. Beltrame et al. (2016) note how these public food-procurement requirements in Brazil can be strategically targeted to increase the use of nutritious, native foods in schools and to diversify public food procurement for school meals. Biodiversity conservation and environmental sustainability are elements that should be explored further within a diversifying agriculture sector. Despite the lack of a nationwide impact evaluation, qualitative impact assessments conducted on the economic lives of local farmers found increased diversification, production and income and a strengthening of farmer organizations (IPC-IG and WFP 2013; FAO 2015).

In Ghana, women manage catering businesses that purchase, prepare, and serve school meals for nearly 2 million children, although the linkage between those actors and local smallholder farmers still presents challenges (Drake et al. 2016). Osun State, Nigeria reports that its home-grown O'Meals school meals program has created jobs for thousands of youths and women (Global Child Nutrition Foundation [GNCF] 2015). However, balancing cost-efficient procurement with sourcing from

smallholder farmers is a challenge often faced by countries implementing HGSF programs (Drake et al. 2016). There is considerable opportunity to further improve the understanding of the role of school meal programs on job creation for low-skilled and/or rural women, youths and farmers, as well as their impact on infrastructure and other economic benefits, which may inform the sustainability of the program and its benefits. Another element to be explored further is the potential to improve the nutritional sensitivity of the private sector.

Overall, when school meal programs are thoughtfully planned and supported by an appropriate institutional, political and legal environment, and implemented with strong cross-sectoral coordination, they can act as an investment, producing benefits across multiple sectors. They also provide the opportunity to involve a multitude of community actors, including civil society, farmer organizations and the private sector (Suberg and Sabates-Wheeler 2011; Morgan and Sonnino 2008; Espejo et al. 2009; Gelli et al. 2010; Drake et al. 2016). Consequently, schools, especially those with HGSF programs, have the potential to create a more sustainable, inclusive local food system in their community.



5

Schools as part of a social-protection system

School meals are well recognized as a social safety net (Alderman 2016), with an estimated 368 million children globally receiving a meal at school every day. However, schools' role in social protection is also tied to their ability to be a platform for other initiatives, often serving as a place where all students can access basic health services and support, including water, sanitation and hygiene (WASH) education and facilities, which are important for nutrition. If targeting is undertaken carefully, schools that provide meals can also provide safety nets for the most vulnerable and hard-to-reach children. These include orphans, children from indigenous communities, those with special needs and children who may be affected by HIV/AIDS and other infectious diseases, including tuberculosis (TB). Generally, these children, in addition to those from very poor households and those affected by emergency or crisis situations, are at a heightened risk of dropping out because of their inherent vulnerability. In these cases, schools can play a preventative social-protection role, reducing the risk of negative coping strategies that may threaten long-term livelihoods, food security and health (Wright and Epps 2015).

School meal programs can reduce household food needs, freeing up disposable income, thus reducing volatility in household finances (Drake et al. 2017). School meals can also be complemented by take-home rations, benefiting other members of the household. Finally, school meals – as a social-protection mechanism – can be tailored to respond to economic and environmental crises (e.g. when one part of the country experiences drought or in seasons when less food is available). We can confidentially state that investing in school meals to improve nutrition is a good strategy for improving human capital.

The potential benefits of school-based nutrition programs are maximized when they are designed as multi-sectoral interventions and integrated into broader national social-protection systems, leveraging existing and potential synergies with other social-protection and development programs. School meal programs are ideally placed to form part of any comprehensive government plan to address multiple social needs. They can be integrated into national strategies to fight hunger, poverty, and malnutrition, and improve health-seeking behavior and health outcomes.



6

Food and nutrition education

Food and nutrition education in the school setting can provide children, adolescents, school staff and communities with learning experiences designed to encourage healthy eating habits and other positive nutrition-related behaviors. It is important to use a combination of evidence-based and behaviorally focused educational strategies that involve the active participation of students, school staff and the wider community. Guidance on implementing a food and nutrition curriculum should be established at a national level to ensure a defined role for nutrition in the national education system. Governments can also help by providing clear directives in terms of nutritional concepts to be mastered at each stage of the educational system and within which subjects, e.g. natural sciences and health and social science. However, schools should be allowed to adapt and prioritize elements of the curriculum based on the local situation, i.e. resource availability and population needs.

Food and nutrition education can offer myriad benefits. It has been shown, though not yet on a large scale, to have positive impacts on the micronutrient status of children and to contribute to the prevention of obesity (Lobstein et al. 2015). In addition, by linking the curriculum to local food cultures and biodiversity, elements of cultural preservation and environmental sustainability can be incorporated into a more integrated approach (FAO 2010 and 2013). Connecting food and nutrition education to healthy school meals can also help students and their families to experience elements of the curriculum first hand: how to eat different, nutritious foods, honor local food cultures, and reap the rewards of using local foods.

School gardens can further help to improve the nutrition and education of children and their families in rural and urban areas. School gardens are a platform for learning and should not be regarded as bulk sources of food or income, but rather as path to better nutrition and education. Students can learn how to grow, tend, harvest, and prepare nutritious seasonal produce in the educational settings of the classroom, the garden, the kitchen, the school cafeteria, and the home. The experience promotes the environmental, social, and physical wellbeing of the school community and fosters a better understanding of how the natural world sustains us. Links with home gardens reinforce the concept and pave the way for an exchange of knowledge and experience between the school and the community (FAO, 2015 and [FAO 2010](#)).

In many communities, schools are the main place where children, adolescents, school staff and the community can learn about healthy eating and lifestyle habits (Psaki 2014; Lobstein et al. 2015). Implementing a food and nutrition education program allows students to gain lifelong knowledge and skills they can pass on to their own families, as well as future generations. It further allows school staff to access training on these important topics and help their own families have a better diet and can thus have a reverberating impact on the surrounding community.

7

Teachers and other agents of change in promoting positive nutrition behavior

Changing the school environment and implementing nutrition- and health-related intervention requires capable, trained agents of change. Teachers, school staff, students, parents, caterers, food vendors, and farmers all have an important role to play in helping promote positive nutritional behavior. Developing capacity for these actors and equipping them with the necessary knowledge and skills on nutrition, food hygiene, healthy diets, and lifestyle is paramount. Teachers, in particular, will require more formal training and capacity development, as they can be among the most important promoters of positive nutritional behavior among the youth. They have the opportunity not only to influence eating habits through food and nutrition education, but also to address other issues, including the nutritional needs of adolescent girls and pregnant women, and maternal and infant care. Other actors, such as parents, caterers, food vendors, and farmers, can benefit from educational sessions too. Capacity-building activities should be integrated into school-based strategies to improve nutrition outcomes.

The following table provides a non-exhaustive list of the main actors and their roles and required capacity in school-based nutrition intervention.

Group	Type of capacity building	Main content
Teacher	<ul style="list-style-type: none"> Formal training Expanded capacity for integrating nutrition concepts into the curriculum 	<ul style="list-style-type: none"> Nutrition and cognitive development Conceptual framework Nutrition across the lifecycle Multi-sectoral approach to nutrition Food systems and healthy diets
Pupils	<ul style="list-style-type: none"> Formalized school curricula Peer-to-peer approach Practical application (food production, meal preparation, use of hand-washing stations, etc.) 	<ul style="list-style-type: none"> Intergenerational cycle of malnutrition Healthy diets Lifestyle and nutrition
Parents and parent-teacher associations	<ul style="list-style-type: none"> Informal Sensitization to importance of nutrition, identification of challenges and opportunities to implementing nutrition-promoting behavior Collaborative efforts between schools and households 	<ul style="list-style-type: none"> Nutrition and cognitive development Healthy diets
Caterer	<ul style="list-style-type: none"> Formal training Certification and regular monitoring 	<ul style="list-style-type: none"> Safety in food handling, preparation, and storage Healthy diets
Food Vendors	<ul style="list-style-type: none"> Informal 	<ul style="list-style-type: none"> Food hygiene and safety Food handling and storage (Social) responsibility
Farmers (producers) for school meals	<ul style="list-style-type: none"> Informal Agricultural extension 	<ul style="list-style-type: none"> Food systems and healthy diets Production diversity to support dietary diversity

8

Creating enabling school environments to promote healthy diets and nutrition

The school environment needs to be conducive to promoting the health and nutritional wellbeing of children. It should promote healthy diets by ensuring the availability of a variety of foods, including plenty of fruits, vegetables and legumes, and regulate the promotion, marketing, and sale of foods and beverages that are high in fats, sodium/salt, and sugars (WHO 2015). One step being taken by several countries is to promote drinking water, as well as a ban on the sale or serving of sugar-sweetened beverages in cafeterias, kiosks, and/or vending machines, as well as in shops and stores around schools (WHO WPRO 2016). Having a school policy or guidelines on school meals or foods to be brought from home would also help to develop an enabling school environment for the promotion of healthy diets.

The school environment also presents an important opportunity to foster various health-promoting behaviors that can impact nutrition, by ensuring that clean drinking water, hand-washing facilities, appropriate sanitation infrastructure, such as sanitary latrines, and areas for physical activity are easily accessible to school children throughout the school day and regularly maintained.



9

Providing supportive nutrition and health services

Schools could provide an opportunity to deliver more nutrition and health services to children. Growth monitoring or other regular screening may facilitate detecting children with various forms of malnutrition (i.e. stunting, wasting, overweight and obesity, and micronutrient deficiencies, conditions that can arise separately or coexist) and/or health problems. Furthermore, screening could facilitate access for children to preventative and curative health services through referrals to health centers (FRESH, 2014).

Schools also offer an opportunity to deliver high-impact nutrition intervention to children and adolescents who might be otherwise hard to reach. Such measures can include micronutrient supplements (generally iron-folic acid or iron supplement)⁶, point-of-use fortification of school meals, the use of adequately iodized salt or fortified cereals, or deworming (Aguayo et al. 2013; De-Regil et al. 2016). Combined with the role they can play in the prevention of malnutrition and diet-related disease, schools cannot be ignored as useful platforms for simple, yet integrated, health-service delivery.



⁶ WHO e-Library for Evidence for Nutrition Actions (eLENA): <http://www.who.int/elena/en/>.

10

Costs and sustainability of school-based nutrition measures

Because of the multiple objectives of school meal programs, narrowly defined cost-effectiveness analyses, focusing on, say, the health and nutrition outcomes, will underestimate the full impact of school meals. For most countries, school meals are viewed as a non-cash, conditional (because the child has to be in school) income transfer, aimed at providing a safety net and acting as a social-protection mechanism for the poor. Other key outcomes are increasing regular school attendance and better health.

With the implementation of HGSF programs, local farmers and the larger community also benefit from a sustained and predictable investment in the local, smallholder farming economy. Multi-faceted school-based interventions that move beyond the provision of school meals alone seem to create a much higher rate of return when the multiple benefits are taken into account.

On average, in lower- to middle-income countries, school meal programs cost USD 41 per child per year and provide 401 kcal per meal. School meal programs have shown to be most effective means of boosting attendance, math performance and weight, and increases in height have been found among preschoolers. Furthermore, there is evidence that the effects of school meal programs are magnified in undernourished populations (Kristjansson et al. 2015). Compared with higher-income countries, the income transfer is larger as a share of household expenditure in low-income settings, reinforcing the role of meal programs in enhancing food security. The aforementioned iron-supplement and deworming programs that schools can offer are inexpensive. For example, medicines to combat soil-transmitted worms cost less than USD 0.50 per dose (Ahuja et al. 2015) and are often donated free to school-age children. The results have been mixed. Overall, however, the low cost, absence of side effects, and ability to limit morbidity support retaining current WHO recommendations for mass treatments in endemic areas.

Finding sustained sources of funding for school meal programs can present a challenge for many lower- to middle-income countries. Though meal costs normally only account for 10-15% of educational expenditure (and this tends to decrease as GDP increases), many countries rely on funding that is renewed annually (Drake et al. 2017). Thus, when designing exit strategies for moving programs away from direct donor support, stakeholders need to ensure that the transition is to a sustainable domestic budgetary arrangement to avoid program termination. Often, this transition includes operational and administrative support from donors, including the World Food Programme (WFP), as programs revert to national budgetary control. Such transitions are indicative of the evolution of school feeding from programs that merely incentivize school participation to programs that enhance the education and health of students throughout their school experience.

According to the International Food Policy Research Institute's (IFPRI) Global Nutrition Report 2016, economic losses due to malnutrition amount to 11% of GDP in Africa and Asia. Meanwhile, every USD 1 spent on malnutrition prevention yields an average return of USD 16 (IFPRI 2016). Governments are increasingly investing in school meals, HGSF programs, and other nutrition and health-related actions to advance education, health, nutrition, and environmental sustainability goals, as well as economic and agricultural productivity, and intergenerational wellbeing. However, government and communities must have the capacity to support and maintain actions in order to gain and sustain the variety of benefits. Hence, UN agencies and other partners, particularly when engaging in the direct implementation of school-based activities, should do so in close coordination with governments and local stakeholders, to ensure that changes become part of national long-term, sustainable social-protection strategies.



11

Key messages and recommendations



1. School-based food and nutrition interventions is part of a **lifestyle approach to achieving health and promoting healthy diets**. It recognizes not only the 1,000 days from pregnancy to a child's second birthday as an essential window of opportunity, but also the subsequent 7,000-day period as crucial to helping the child reach their development potential. Schools offer a unique platform for realizing multiple benefits for children and their communities, so school-based intervention should:

- Ensure, in particular, that children at risk (such as girls, children from indigenous communities, and marginalized ethnic groups) are targeted;
- Address all forms of malnutrition with tailored intervention including food and nutrition education; and
- Take a multi-sectoral approach, including health, hygiene, and sanitation aspects



2. School-based food and nutrition intervention can be instrumental in achieving **human rights**, such as the right to adequate food and the rights of the child, especially their right to enjoy the highest attainable standard of health. To realize these rights, school-based intervention should:

- Be part of the school curriculum;
- Ensure that government, teachers and other school personnel respect the right of children to good nutrition, including respect for local food systems;
- Protect children from unhealthy or unsafe food environments; and
- Ensure robust conflict-of-interest measures are in place.



3. School-based food and nutrition interventions have the potential to **directly improve nutrition** by promoting and improving the adequacy of student diets in terms of quality and quantity, from pre-school to primary school and secondary school. To improve dietary quality, school-based interventions should:

- Be based on national food-based dietary guidelines;
- Promote dietary diversity, including the utilization of traditional, neglected, and underutilized foods, while enhancing biodiversity conservation and environmental sustainability;
- Strategically use local procurement, engaging with female and male smallholder farmers, and incorporate fortified foods or nutrient supplements if the nutrient gap cannot be filled otherwise.



4. School-based food and nutrition intervention have the potential to build the **local economy and create job opportunities**. As institutional markets, schools can promote the sourcing of healthy food, the development of short supply chains and alternative retail infrastructures, plus support sustainable agro-ecological approaches to agriculture. Home Grown School Feeding Programs (HGSF) are linking local food production to the purchasing and delivery mechanisms for school meal provision. To have an impact on institutional markets and food systems, school-based measures should:

- Ensure thoughtful planning in an appropriate institutional, political and legal environment and be implemented with strong cross-sectoral coordination, involving a multitude of community actors, including civil society, farmer organizations, and the private sector;
- Support small and medium-sized enterprises, such as small-scale food-processing businesses, through structured and predictable purchasing; and
- Incentivize nutrition-sensitive value-chain actors to produce and process high-quality food for the highest nutritional benefits of pupils.



5. School-based food and nutrition intervention can significantly contribute to countries' social protection systems by acting as a social safety net and reducing the impact of economic and social risks on vulnerable families and communities. Schools can play a preventive social-protection role, reducing the risk of negative coping strategies (e.g. dropping out of school) that might threaten long-term livelihoods, food and nutrition security, and health, especially for girls. To bring about this protective mechanism, school-based intervention should:

- Be part of a comprehensive government plan to address multiple social needs;
- Be integrated into national strategies to fight hunger, poverty, and malnutrition, and to improve health-seeking behavior, and health and nutrition outcomes;
- Be carefully targeted at the most vulnerable and hard-to-reach children, including orphans, children from indigenous communities and marginalized ethnic groups, and children with special needs.



6. School-based food and nutrition intervention, in particular, **food and nutrition education**, can provide children, adolescents, school personnel, and communities with learning experiences designed to motivate healthy eating habits and other positive nutrition-related behaviors. School gardens, including small livestock raising, can help to improve nutrition and nutritional education. Students can learn how to grow, tend, harvest, preserve and reduce food waste when preparing nutritious meals. To achieve the full potential of food and nutritional education, school-based measures should:

- Be part of the school curriculum;
- Be carefully planned with clear objectives; and
- Approach food security and nutrition in a holistic way, and promote healthy diets and lifestyles.



7. School-based food and nutrition intervention requires **capacity development** across the board. Teachers and other school personnel need to gain knowledge and skills to become successful agents of change for positive nutritional behaviors. They have opportunity not only to influence eating habits through food and nutrition education, but also to address other issues, including the nutritional needs of adolescent girls and pregnant women, and mother and child care. Other actors, such as parents, caterers, food vendors, and farmers can benefit from educational sessions too. To successfully implement these programs, school-based intervention should:
- Ensure that teachers and other implementers have the capacity and competence to become change agents for healthy diets and health lifestyle;
 - Ensure that schools are well equipped to implement the intervention; and
 - Ensure that capacity development is tailored to the special roles the various actors play, including the promotion of education via crosscutting subject matter.



8. School-based food and nutrition intervention should create an **enabling school environment to promote healthy diets and nutrition**. In particular, it should:
- Ensure the availability of diverse food, including plenty of fruit, vegetables, and legumes;
 - Regulate the promotion, marketing, and sales of foods and beverages that are high in fats, sodium/salt and sugar; and
 - Put in place a school policy or guidelines for school meals or foods brought from home.



9. School-based food and nutrition intervention can underpin **nutrition and health services**. Growth monitoring and/or regular screening can help detect children with various forms of malnutrition and health problems. In this regard, school-based intervention should:
- Deliver high-impact nutrition intervention to children and adolescents that are hard to reach;
 - Consider micronutrient intervention, such as supplementation, point-of-use fortification of school meals, iodized salt, and fortified cereals; and
 - Foster other health-promoting behaviors and activities, such as the provision of clean drinking water, hand-washing facilities, appropriate sanitation infrastructure, and deworming.



10. School-based food and nutrition intervention comes at a **cost**, but because of the multiple objectives involved, any narrowly defined cost-benefit analysis will underestimate the full impact of school-based nutrition measures. One key outcome is to increase regular school attendance by both girls and boys. This serves as a basis for educational achievement, leading to better economic productivity and, consequently, a greater contribution to national GDP. Finding sustained sources of funding for school-based intervention can pose a challenge for many lower to middle-income countries. However, school-base intervention should:
- Be part of the national budget;
 - Plan a clear transition period from donor support to sustainable domestic budgetary support, rather than resort to abrupt program termination; and
 - Be supported by UN agencies and other partners, in close coordination with governments and local stakeholders, to ensure that programs become part of long-term, sustainable social-protection strategies led by countries.

12

Conclusion

This discussion paper shows that schools offer a unique opportunity to improve nutrition using a systemic, multi-sectoral approach. Social, health, economic and ethic arguments coalesce in and around schools. Looking at schools as a (food system) to improve nutrition offers insights into what interventions to implement and combine to ensure the best possible nutrition outcomes for children in schools, their families and their communities, both now and in future.

All nutrition interventions should be designed to be sustainable in the longer term. Stakeholders at all levels should be kept well informed and encouraged to participate, creating a system of support and interdependence, from the school and local level, to the intermediate levels of government and the private sector, to government ministries, national organizations, and international partners. Bringing the benefits of school-based intervention to scale requires leadership and ownership by national and regional governments, and while this should ultimately be the aim, donor involvement and support may be necessary at various stages.

The authors and contributors to this paper believe a taskforce group should be established to support governments in efforts to mainstream nutrition at school level. It could involve the multiple expert stakeholders who have cooperated on and contributed to this paper and/or have collaborated with governments on these types of activity to date.



References

- Aguayo VM, Paintal K, Singh G (2013). The Adolescent Girls' Anaemia Control Program: a decade of programming experience to break the inter-generational cycle of malnutrition in India. *Public Health Nutrition* 16, pp. 1667-1676.
- Ahuja A, Baird S, Hamory Hicks J, Kremer M, Miguel E, Powers S (2015). *When should governments subsidize health? The Case of Mass Deworming*. World Bank Economic Review 29 (1): 9-24.
- Alderman, H (2016). *Leveraging Social Protection Programs for Improved Nutrition: Summary of Evidence Prepared for the Global Forum on Nutrition-Sensitive Social Protection Programs*, 2015. World Bank: Washington, DC.
- Beltrame DM, Oliveira CNS, Borelli T, de Andrade Cardoso S, Monegro ET, de Rosso V, Cora din L, Hunter D (2016). Diversifying institutional food procurement – opportunities and barriers for integrating biodiversity for food and nutrition in Brazil. *Revista Raízes*, Vol. 36 (2), July-December 2016.
- Bundy D, Schultz L, Sarr B, Banham L, Colenso P, Drake L (2017). *The School as a Platform for Addressing Health in Middle Childhood and Adolescence*. In: Bundy D, de Silva N, Horton S, Jamison DT, Patton GC (Editors) (In press). *Disease Control Priorities in Developing Countries*. Third Edition, Volume 8: Child & Adolescent Health Development. World Bank: Washington, DC.
- 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*. World Bank: Washington, DC. http://documents.wfp.org/stellent/groups/public/documents/reports/wfp284207.pdf?_ga=2.200384551.824629473.1505987494-761085348.1498481801.
- Caniello M, Schneider S, Pauli R, Hunter D (2016). Revaluing institutional food procurement. *Revista Raízes*, Vol. 36 (2), July-December 2016.
- Conselho Indigenista Missionario [Indigenous Peoples' Missionary Council] (CIMI, 2015). *Violence against the indigenous peoples in Brazil*. http://www.cimi.org.br/pub/relatorio2015/Report-Violence-against-the-Indigenous-Peoples-in-Brazil_2015_Cimi.pdf.
- Das JK, Salam RA, Thornburg KL, Prentice AM, Campisi S, Lassi ZS (2017). *Nutrition in adolescents: physiology, metabolism, and nutritional needs*. *Annals of the New York Academy of Sciences*, 1393: 21-33.
- De-Regil LM, Harding KB, Roche ML (2016). Preconceptional Nutrition Interventions for Adolescent Girls and Adult Women: Global Guidelines and Gaps in Evidence and Policy with Emphasis on Micronutrients. *The Journal of Nutrition*, 146: 1461s-1470s. <http://jn.nutrition.org/content/146/7/1461S.full>.
- Drake L, Fernandes M, Aurino E, Kiamba J, Giyose B, Burbano C, Alderman H, Mai L, Mitchell A, Gelli A (2017). School Feeding Programs in Middle Childhood and Adolescence. *Disease Control Priorities*, Chapter 12, Third Edition (forthcoming).
- Drake L, Woolnough A, Burbano C, Bundy D (Editors) (2016). *Global School Feeding Sourcebook: Lessons from 14 Countries* (2016). Imperial College Press, ISBN 9781783269112: New Jersey. <https://openknowledge.worldbank.org/handle/10986/24418> License: CC BY-NC.
- Espejo F, Burbano C, Galliano E (2009). *Home Grown School Feeding: A framework to link school feeding with local agricultural production*. World Food Programme: Rome.

- Food and Agriculture Organization of the United Nations (FAO) (2010). *A new deal for school gardens*. FAO: Rome. <http://www.fao.org/docrep/013/i1689e/i1689e00.pdf>.
- Food and Agriculture Organization of the United Nations (FAO) (2013). *Promoting healthy diet through nutrition education and changes in the food environment: an international review of actions and their effectiveness*. FAO: Rome.
- Food and Agriculture Organization of the United Nations (FAO), Swensson LFJ (2015). *Institutional Procurement of Food from Smallholder Farmers: The Case of Brazil*. FAO: Rome. <http://www.fao.org/3/a-bc569e.pdf>.
- Focusing Resources on Effective School Health (FRESH). *Monitoring and evaluation guidance for school health programs: thematic indicators*. http://www.savethechildren.org/atf/cf/%7B9def2ebe-10ae-432c-9bd0-df91d2eba74a%7D/FRESH_THEMATIC_INDICATORS.PDF.
- Gelli A, Nesse K, Drake L (2010). *Home grown school feeding: Linking smallholder agriculture to school food provision*. Partnership for Child Development (PCD), working paper 212.
- Global Child Nutrition Foundation (GNCF), World Food Programme (WFP) (2015). Executive Summary, 2014 Global Child Nutrition Forum. http://hgsf-global.org/en/component/docman/doc_details/450-global-child-nutrition-forum-2014-executive-summary.
- Global Panel on Agriculture and Food Systems for Nutrition (2016). *Food systems and diets: Facing the challenges of the 21st century*. <https://www.glopan.org/foresight>.
- High Level Panel of Experts on Food Security and Nutrition (HLPE) (2017). *Nutrition and Food Systems: A Report by the High Level Panel of Experts on Food Security and Nutrition*, September 2017. Committee on World Food Security (CFS), FAO: Rome. http://www.fao.org/fileadmin/user_upload/hlpe/hlpe_documents/HLPE_Reports/HLPE-Report-12_EN.pdf.
- International Food Policy Research Institute (IFPRI) (2016). *Global Nutrition Report 2016: From Promise to Impact – Ending Malnutrition by 2030*. IFPRI: Washington, DC.
- International Policy Center for Inclusive Growth (IPC-IG), World Food Programme (WFP) (2013). *Structured demand and smallholder farmers in Brazil: the case of PAA and PNAE*. IPC-IG, WFP: Brasilia.
- International Panel of Experts on Sustainable Food Systems (IPES) 2016. *From Uniformity to Diversity: A paradigm shift from industrial agriculture to diversified agroecological systems*. http://www.ipes-food.org/images/Reports/UniformityToDiversity_FullReport.pdf.
- Kristjansson EA, Gelli A, Welch V, Greenhalgh T, Liberato S, Francis D and Espejo F (2016). Costs, and cost-outcome of school feeding programs and feeding programs for young children: Evidence and recommendations. *International Journal of Educational Development*, 48, pp. 79-83.
- Lobstein T, Jackson-Leach R, Moodie ML, Hall KD, Gortmaker SL, Swinburn BA, James WPT, Wang Y, McPherson K (2015). Child and Adolescent Obesity: Part of a Bigger Picture. *The Lancet* 385.9986: 2510-2520.
- Morgan K, Bastia T, Kanemasu Y (2007). *Home Grown: The New Era of School Feeding*. World Food Programme (WFP) project report. WFP: Rome.
- Morgan K, Sonnino R (2008). *The school food revolution: public food and the challenge of sustainable development*. Earthscan Publications: London, Washington DC.
- Patton GC, Sawyer SM, Santelli JS, Ross DA, Afifi R, Allen NB (2016). Our Future: A Lancet Commission on Adolescent Health and Wellbeing. *The Lancet* 387.10036: 2423-2478.
- Prentice AM, Ward KA, Goldberg GR, Jarjou LM, Moore SE, Fulford AJ (2013). Critical windows for nutrition interventions against stunting. *American Journal of Clinical Nutrition* 97: 911-918.

Psaki, SR (2014). *Addressing early marriage and adolescent pregnancy as a barrier to gender parity and equality in education*. Background Paper for the 2015 UNESCO Education for All Global Monitoring Report. Population Council: New York.

Suberg J, Sabates-Wheeler R (2011). Linking agricultural development to school feeding in sub-Saharan Africa: theoretical perspectives. *Food Policy*, Vol. 36, pp. 341-349.

United Nations Educational, Cultural and Scientific Organization (UNESCO) (2013). *Sub-Saharan Africa 2013 EFA Report*. Global Education for All Meeting: Muscat, Sultanate of Oman, May 12-14, 2014. http://www.unesco.org/fileadmin/MULTIMEDIA/HQ/ED/ED_new/pdf/AFR-ENG.pdf.

Universal Basic Education Commission (UBEC) (2013). <https://www.informationng.com/tag/universal-basic-education-commission>.

United Nations Convention on the Rights of the Child (CRC) (2013). General Comment 15. <http://ork.lu/files/Geneva/n15.pdf>.

United Nations Committee on Economic, Social and Cultural Rights (CESCR) 1999: 6, 8, 21. <http://www.refworld.org/publisher/CESCR/GENERAL/0.html>.

United Nations Human Rights Office of the High Commissioner (OHCHR) (accessed September 2017). *What are human rights?* <http://www.ohchr.org/EN/Issues/Pages/WhatareHumanRights.aspx>.

Victoria CG, de Onis M, Hallal PC, Blossner M, Shrimpton R (2010). Worldwide timing of growth faltering: revisiting implications for interventions. *Pediatrics* 125: 473-480.

World Bank (2017), *World Bank Country and Lending Groups*. <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519>.

World Health Organization (WHO) (2008). *Global anaemia prevalence and number of individuals affected*. http://www.who.int/vmnis/anaemia/prevalence/summary/anaemia_data_status_t2/en/.

World Health Organization (WHO) (2009). *Global prevalence of vitamin A deficiency in populations at risk 1995–2005*. WHO Global Database on Vitamin A Deficiency. WHO: Geneva.

World Health Organization (WHO) (2015). *Healthy Diets Factsheet No. 394 (updated September 2015)*. <http://www.who.int/mediacentre/factsheets/fs394/en/>.

World Health Organization (WHO) (2017). *Five Keys to a Healthy Diet*. http://www.who.int/nutrition/topics/5keys_healthydiet/en/.

World Health Organization (WHO) (2017). *Second Global Nutrition Policy Review* (forthcoming).

World Health Organization (WHO). e-Library of Evidence for Nutrition Actions (eLENA) (accessed September 2017). <http://www.who.int/elena/en/>.

World Health Organization Western Pacific Regional Office (WHO WPRO) (2016). *Be smart drink water: a guide for school principals in restricting the sale and marketing of sugaring drinks and around schools*.

Wright L, Epps J (2015). *Coping strategies, their relationship to weight status and food assistance food programs utilized by the food insecure in Belize*. Integrated Crop Pollination Project (IPCBE). <http://www.ipcbee.com/vol81/012-ICBET2015-Y0011.pdf>.

Annex - Evidence-based case studies

A.	Reaching adolescents in India with essential nutrition intervention at scale	26
B.	Emergency School Feeding (ESF)	28
C.	Purchase from Africans for Africa (PAA) in Malawi	30
D.	Home Grown School Feeding (HGSF) a win-win in Ghana	32
E.	The Brazilian National School Feeding Program (PNAE)	36
F.	School feeding program in Cabo Verde	37
G.	Pilot test of the nutrition-friendly school initiative (NFSI) in Benin and Burkina Faso	40
H.	Diversifying school feeding and institutional food procurement in Brazil	42
I.	Food and nutrition biodiversity in Busia County, Western Kenya	44
J.	Slovenia: Standards for nutritionally balanced school meals	46
K.	Philippines: Healthy food and beverage choices in schools	26
L.	The Botswana School Feeding Program (BSFP) - self-reliance and good governance	26

A. Reaching adolescents in India with essential nutrition intervention at scale

Case study submitted by UNICEF – India (2006-2017)

India is home to more than 253 million adolescents, or about 20% of the world's adolescent population (Census 2011). With every second adolescent girl and every third adolescent boy (aged 15-19) being anemic (International Institute of Population Sciences et al. 2006), addressing adolescent anaemia has been a national priority for the government of India. The national and state governments, with technical support from UNICEF and partners, have been implementing the Adolescent Anaemia Control Program for girls and boys aged 10 to 19 years of age through schools and community-based anganwadi centers.⁷ The program strategy takes a fixed-day, fixed-site approach and comprises four elements: (1) weekly iron and folic acid supplements (WIFS); (2) six-monthly deworming prophylaxis for the prevention of helminth infestation; (3) screening and referral for moderate/severe anaemia; and (4) nutrition and health education counselling and support to improve diet and prevent anaemia (Government of India, 2012).

The scaling up of India's Adolescent Anaemia Control Program, with technical support from UNICEF, has followed a knowledge-centered, five-phase program cycle: evidence generation, innovation, evaluation, replication and universalization. The program, which started with the evidence-generation phase in 1995 (reaching 8.8 million adolescent girls), focused primarily on addressing the high prevalence of anaemia in adolescent girls through in-school and out-of-school platforms (anganwadi centers) during the innovation, evaluation and replication phases. By the end of 2011, the program was being implemented in 13 states and had reached 27.6 million adolescent girls, of whom 16.3 million were school going and 11.3 million were out of school (Aguayo et al. 2013). Building on the promising results of and lessons learned from this program, in 2012, the Indian government scaled up the program and launched the national Adolescent Anaemia Control Program (also referred to as the WIFS Program), to extend the benefits of anaemia control to all adolescent girls and boys across the country. By the end of 2015, the national Adolescent Anaemia Control Program had reached more than 30 million adolescent girls and boys through schools or community-based platforms (Government of India, 2015-2016).

UNICEF recently reviewed the evidence provided by national surveys and research studies in South Asia (including India) on the nutritional status of and programs for adolescent girls. The review found that nutrition education and behavioral-change intervention, coupled with WIFS and deworming, had resulted in improved knowledge among adolescent girls about anaemia prevention and the benefits of dietary diversity, as well as an increase in hemoglobin concentration and a decrease in the prevalence of moderate and severe anaemia (Aguayo and Paintal 2017). The review also highlighted that with a growing number of adolescent girls and boys attending school and continuing to secondary education, schools can help to ensure regular nutritional screening, education and supplementation. In addition, school-going adolescent girls can become effective role models for out-of-school girls (WHO, 2006). India's national WIFS program, which aims to reach around 108 million adolescent boys and girls by 2021, is a good example of a large-scale nutrition program that brings together the ministries of Education, Health, and Women and Child Development with a view to providing all adolescents with essential nutrition services, counselling and support and end inter-generational nutritional deprivation (Aguayo and Paintal, 2017).

⁷ The village-based centres of India's Integrated Child Development Services (ICDS) program.

References

Aguayo, VM, Paintal K, Singh G (2013). The Adolescent Girls' Anaemia Control Program: a decade of programming experience to break the inter-generational cycle of malnutrition in India. *Public Health Nutrition* 2013, 16 (9): 1667-76.

Aguayo VM, Paintal K (2017). Nutrition in adolescent girls in South Asia. *The BMJ*, 357: p. j1309.

Government of India (2016). Annual Report of the Ministry of Health and Family Welfare, 2015-16. <http://mohfw.gov.in/documents/publications/annual-report-department-health-family-welfare-year-2015-16/annual-report-department-health-family-welfare-year-2015-16>.

Government of India, Ministry of Health and Family Welfare (2012). Operational framework: Weekly iron and folic acid supplementation program for adolescents.

International Institute of Population Sciences (2006). *National Family Health Survey (NFHS-3) (2005 06)*. International Institute of Population Sciences and Macro International: Mumbai and Calverton, Maryland. <http://dhsprogram.com/pubs/pdf/frind3/00frontmatter00.pdf>.

Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India (2011). Census 2011. <http://censusindia.gov.in/>.

World Health Organization (WHO) (2006). *Adolescent Nutrition: A Review of the Situation in Selected South-East Asian Countries*. <http://apps.who.int/iris/bitstream/10665/204764/1/B0239.pdf>.



B. Emergency School Feeding (ESF)

Case study submitted by the World Food Programme (WFP) – Syria (2016) and India (2014)

The World Food Programme's (WFP) emergency school feeding (ESF) program is an integral component of recovery operations and a safety net in emergency situations. In 2015, the WFP provided school meals to 6.5 million children in emergency and post-emergency areas in 24 countries.

The implementation of emergency school feeding programs must take numerous factors into consideration, but first and foremost the question of whether there is a functioning government. If so, the WFP will provide external support if required, but the government must take responsibility for emergency school feeding. With partially functioning governments, the WFP is often more involved, lending technical support as needed. Where a functioning government is lacking, the WFP takes an active role in implementing ESF programs.

Before an ESF is implemented, it is essential to evaluate the nature of the emergency and the potential threats to children attending school. Risks related to natural hazards, infection or conflict may pose risks to the safety of children leaving their homes to attend ESF programs. These risks can be barriers to children receiving education in emergencies.

The WFP's emergency school feeding programs aim to have an impact on both nutrition and education. While addressing food insecurity is the core objective of the WFP's emergency school feeding, supporting education in emergency situations is also a priority. Nutrition-related outcomes include improving access to nutritious and diversified food for school meal beneficiaries, as well as improving their nutrition and health status. Education-related outcomes include improving access to education for school meal beneficiaries in terms of enrolment and attendance rates, and reducing absenteeism due to sickness

High-intensity war, displacement and limited access: Syria

In November 2016, the Office for the Coordination of Humanitarian Affairs estimated that 13.5 million people were in need of assistance in Syria, many of them refugees or internally displaced persons (IDPs). More than half of the Syrian population has been forced out of their homes since the war began in 2011.

Syria's previously well-functioning education system has been greatly affected by the crisis. One in every three schools has been destroyed, leaving hundreds of thousands of teachers and school staff unable to work. Areas with an influx of IDPs have led to classroom overcrowding, often with 60 students per class, operating in two shifts. In 2015, it was estimated that more than 600,000 school-aged children were in besieged areas and that some 2.1 million were out of school. Displacement, poverty, safety and security were the main factors preventing children from attending school. Parents are averse to sending their children to school in areas of armed conflict.

In 2014, the WFP, in collaboration with UNICEF and Syria's Ministry of Education, began an emergency school feeding program in areas of relative stability, the majority of which were in IDP areas. Due to the acutely unstable crisis, it has been essential to design an ESF program where the food provided has an extended shelf life and reaches the greatest possible number of students. The ESF distributes locally produced vitamin- and mineral-fortified date bars to an estimated 375,000 children daily.

During relatively stable periods, it has been possible to distribute the date bars in besieged areas. The bars have a high nutrient content and energy density and are practical to transport and store. Date bars stored in schools can also be distributed during periods of instability and armed fighting.

Interview respondents reported that the emergency school feeding programs have not prompted parents to send their children to school during periods of heavy armed conflict. Despite the ESF program offering students in-school food, parents keep children out of school when safety and security require it.

An evaluation of school meals as a safety net: India

Among the few studies conducted on school feeding programs and their effect on outcome indicators of child health and nutrition is one carried out in the badly drought-stricken areas of Andhra Pradesh, India, which evaluated the health effects of school feeding during times of crisis. The Indian government launched the Mid-Day Meal-Scheme (MDMS) in the state of Andhra Pradesh in 2003, providing a mid-day meal to children in all public and private primary schools (Singh et al. 2014).

The aim of the study was to determine whether the mid-day school feeding program offset the negative effects of drought on children's health and whether it could counterbalance the early nutritional deprivation caused by drought in prior years. The study looked at two groups of primary-school children affected by periods of severe drought who received the mid-day school meal for an average of nine months (Singh et al. 2014).

The study identified that children in drought-stricken areas saw a decline in nutritional intake that negatively impacted their health, which was evident in their weight and height. In these situations, the MDMS provided a safety net that was targeted at children who may have experienced health and nutrition deprivations earlier in life due to the droughts. The MDMS was provided to help improve nutrient intake during the primary-school period, which is critical to nutrition, health and cognitive development. The study concluded that participation in the MDMS may have aided students by offsetting some of the earlier health and nutritional deprivation (Singh et al. 2014).

References

Singh A, Park A, Dercon S (2014). School Meals as a Safety Net: An Evaluation of the Midday Meal Scheme in India. *Economic Development and Cultural Change*, University of Chicago Press, 62(2): 275-306 (published online 2013).

C. Purchase from Africans for Africa (PAA Africa) program in Malawi

Case study submitted by the Food and Agriculture Organization of the United Nations (FAO) – Malawi (2012)

Purchase from Africans for Africa (PAA Africa) is an innovative development cooperation initiative of the Food and Agriculture Organization of the United Nations (FAO), the World Food Program (WFP), the Brazilian government and the United Kingdom's Department for International Development (DFID). This major social-protection initiative was implemented in five African countries (Ethiopia, Malawi, Mozambique, Niger, and Senegal) between 2012 and 2017, aimed at promoting synergies between agricultural intervention and school feeding as a major social protection initiative. By purchasing food locally, PAA Africa provides agricultural support and stable market access to farmers by linking them to existing school-meal initiatives. The program has a twofold objective: improve the income security of smallholder farmers and improve the nutritional status of children in food-insecure areas (FAO and WFP, 2014; Gyoei et al. 2016).

In 2012, PAA Africa activities were launched in two southern areas of Malawi, Mangochi and Phalombe. These districts were selected because of their strong potential for agricultural production and high incidence of poverty and food insecurity (FAO, WFP and International Policy Centre for Inclusive Growth [IPC-IG], 2016).

Production-support strategies have been provided to the farmer organizations responsible for supplying schools, including access to seeds, technical assistance for sustainable production, nutritional diversification, management and business skills, and the construction of warehouses. The production-support component also includes the introduction of school gardens, with a view to giving communities knowledge of and skills in nutrition and sustainable agricultural production (FAO and WFP, 2014; FAO, WFP and IPC-IG, 2016).

The program has generated various benefits and given insights into the development of sustainable and nutrition-sensitive school feeding initiatives tied to local and smallholder agriculture. These include:

Sustainable agriculture intensification: PAA Africa's production support has helped smallholders generate surpluses, adopt more sustainable agricultural practices and increase productivity. Schools participating in the program purchased 361 million tons of food from PAA-supported farmer organizations in 2014-2016, benefiting 10,065 students. This corresponds to a 284% increase in farmer-organization sales through PAA from 2014 to 2015. Farmers reported that the income derived from sales to schools has been invested in production and that many farmers have moved to higher-value commodities. Increases in income have allowed them to purchase more land, buy inputs and build houses (FAO, WFP and IPC, 2016; Gyoei et al. 2016).

These outcomes have had a positive effect on household food security, and the strategy has successfully included female farmers, who have become more active in the management of farmer organizations and cooperatives.

Nutrition-sensitive agricultural diversification: PAA Africa has contributed to community diet diversification and food security. Through the program's production support, smallholder output has become more diversified and producers have been able to meet schools' demand for wide range of commodities, including cereals, pulses,

vegetables, tubers, fruits, and meat. This has not only contributed to dietary diversification at school, but also to the regular consumption of diverse and nutritional foods at home. School committees have received training in nutrition and have begun to reproduce school menus at home, incorporating new foods into their diet (FAO, WFP and IPC-IG, 2016; Gyoeri et al. 2016).

Government ownership and enabling environment: PAA Africa production-support activities were also provided in partnership with the We Effect non-governmental organization (NGO) and implemented in close cooperation with Malawi's Agriculture and Extension Development Officers (AEDOs) and District Agriculture Development Office, so as to strengthen government ownership of the initiatives. PAA Africa stakeholders have participated in various consultative meetings, workshops and knowledge-exchange events with the implementing partners, members of civil society, and representatives of schools and government offices, both at the national and local levels. These events have helped in the sharing of knowledge and in attracting additional resources for the scaling up of Home Grown School Feeding (HGSF) from both the government of Malawi and international partners. These processes have, in turn, facilitated the development of an enabling environment for school meals and institutional procurement programs, leaving governments and local civil society with scope for cooperation and action in these fields (FAO and WFP, 2014; FAO, WFP and IPC, 2016).

Currently, the government is in the process of formulating its National School Health and Nutrition Policy, which prioritizes HGSF among its strategies. At the same time, the administration's Agricultural Sector Wide Approach (ASWAp) aims to strengthen smallholder farmers' participation in markets by supporting institutional food procurement for school meals.

References

Food and Agriculture Organization of the United Nations (FAO), World Food Program (WFP) (2014). *Promoting local food assistance in the African continent: Purchase from Africans for Africa*. FAO and WFP: Rome.

Food and Agriculture Organization of the United Nations (FAO), the World Food Programme (WFP), International Policy Centre for Inclusive Growth (IPC-IG) (2016). *PAA Africa program midterm monitoring report: Malawi*. FAO, WFP and IPC-IG: Rome and Brasilia.

Gyoeri M, Miranda AC, Soares F (2016). Linking vulnerable smallholder farmers to school feeding programs: The experience of PAA Africa. *Policy in Focus*, 13 (2). IPC-IG and the United Nations Development Program (UNDP): Brasilia.

D. Home Grown School Feeding (HGSF) a win-win in Ghana

Case study submitted by the Partnership for Child Development, Imperial College London – Ghana (2013-2016)

Preliminary findings suggest Ghana's Home Grown School Feeding (HGSF) program improves educational opportunities for children, especially girls, and boosts agricultural income for smallholder farmers.

The impact evaluation was jointly funded by the Dubai Cares organization, the Bill & Melinda Gates Foundation, the World Bank, and the government of Ghana. Designed as a randomized, controlled trial, the impact evaluation focused on an innovative pilot program implemented between 2013 and 2016. The study design built on evidence demonstrating the value of school feeding in supporting educational outcomes.

Key preliminary findings

1. A 12% increase in enrolment in early childhood and a 7% decrease in absenteeism in primary education in school feeding communities.
2. Improved literacy scores in 13.5% of girls in HGSF schools.
3. A third of households increased the value of their agricultural sales in HGSF districts.

A joint research team, comprising the Partnership for Child Development (PCD), the Noguchi Memorial Institute for Medical Research (NMIMR), the Institute of Statistical, Social and Economic Research (ISSER) and the International Food Policy Research Institute (IFPRI), focused on the design of, data collection from and preliminary analysis of the research findings. The pilot program, meanwhile, was carried out under the leadership of the Ghana School Feeding Program (GSFP) and the PCD in collaboration with other international and local partners. The study involved 116 schools in 58 districts across the 10 regions of the country. Of these schools, 58 received no health intervention (control), 29 received school meals only (standard) and 29 received school meals procured from local smallholder farmers along with micronutrient powders (MNPs), deworming and health education (enhanced) (Gelli et al. 2016).

Overall, the evaluation sample included more than 5,500 school children and 4,500 farmers from 360 farmer-based organizations. Qualitative and quantitative data were collected for key educational, health, nutritional, and agricultural indicators. The HGSF pilot program focused on two main components:

1. **Agricultural intervention**, aimed at facilitating stronger market linkages between smallholder farmers and the GSFP. The thinking behind the intervention was that it would lead to increased farmer production, sales and income and, consequently, improve smallholder farmer livelihoods and strengthen local economies.
2. **Nutrition intervention**, aimed at improving the education, health and nutrition of school children through: (1) the delivery of nutritious meals by the GSFP – the quality and quantity of school meals was improved by the use of the School Meals Planner tool, the development of Handy Measures utensils and the introduction of micronutrient powders (MNPs); (2) behavioral-change communication to improve nutrition, health and hygiene practices at the school, household and community levels; and (3) school-based deworming.

Preliminary findings

The preliminary analyses focused on the impact in terms of key outcomes in the educational, health and agricultural domains. Data collected from children and households in the enhanced and standard schools were compared with those of the control schools.

Education

Enrolment levels in kindergarten increased 12% in standard schools compared with the control schools. Only a slight increase of 2% was noted in the case of primary schools, which was to be expected, due to the near universal attendance rate in Ghana's primary schools. School absenteeism decreased 7% in schools receiving the standard program, while no such reduction was observed in the control schools.

In addition, the analysis suggested that Home Grown School Feeding improved test scores in math and literacy for girls, in particular, compared with the GSFP (to the order of about 10%). There was also an impact on cognition among girls (as measured by increased scores on visual processing tasks), with an effect of about 8%. This effect may be supported by the provision of the multiple micronutrient powders, which previous research had found to enhance cognitive capacity, particularly in populations with high levels of anaemia. Additional analysis is underway to further investigate these effects.



Health and nutrition

A key study outcome focused on dietary diversity – a proxy indicator of diet quality. Preliminary evidence suggests that individual dietary diversity improved among school feeding communities, particularly among younger children (5-10 years). Children receiving school feeding were more likely to consume nutritious foods like green leafy vegetables and other types of vegetables, roots, and, in the case of 5- to 10-year-olds, meat and fish.

The prevalence of worms was minimal in the study sample, thanks to the annual deworming program conducted in the project district and its surroundings by the Ghana Health Service. The US Agency for International Development's (USAID) Neglected Tropical Disease Program was also supported by the research project.

Seventy percent of children in the study were diagnosed with asymptomatic malaria. The high prevalence may have hampered the impact of the micronutrient supplementation in the pilot of the evaluation, as there were no differences between the traditional school feeding and homegrown groups in terms of anaemia or the anthropometric indicators. In addition, more research is needed to investigate the impact of the supplementation on groups at particular risk of anaemia (e.g. adolescent girls).

The data analysis underway is further investigating the impact of school feeding on nutrition by teasing out the influence of selected confounders, such as age, gender, health status and household characteristics. In addition, more investigation is needed into potential intra-household shifts in food allocation which may have occurred in response to the school feeding intervention, as has been documented in other studies, and their implications for the preliminary findings presented here.

Agriculture

Farming activity increased 15% in communities receiving school feeding in the Northern Region relative to communities without school feeding. An analysis of markets in school feeding communities showed that they experienced higher produce sales and a 33% rise in the value of agricultural produce sold. Farmers in Home Grown communities saw an increase of 5% in household income compared with traditional GSFP. Farmers that owned a business benefited particularly, with 10% growth in household income.

Next steps

The findings summarized in this brief have yet to be validated and must be interpreted with caution. However, some preliminary next steps were discussed with key stakeholders, including:

- The need to strengthen and adopt more holistic and integrated programs that will integrate WASH and malaria-prevention components into the national School Health and Nutrition (SHN) program. There is now a request for continued support to strengthen policy development in this area.
- The GSFP intends to upscale the use of the SMP, Handy Measures and continued behavioral-change communication activities for caterers, pupils and the wider community to all its schools in the national program. The government has requested ongoing technical assistance to enable this.

- The government has formally requested the continued assistance and support of PCD and Dubai Cares to work with other sectors and stakeholders to enhance the National School Health and School Feeding Program, to improve the lives of deprived families and offer children greater opportunities to reach their full potential.

The preliminary findings provide a snapshot of the spectrum of outcomes assessed as part of this evaluation. The results emphasized the protective role of school feeding (and HGSF, in particular) on household income, child education (especially girls) and diets. The findings of the impact evaluation will be disseminated in the coming months as the data continue to be analyzed by the joint research teams at the PCD, NMIMR, ISSER and IFPRI. There is already clear evidence, however, that HGSF is a win-win opportunity for Ghana and many other countries.

References

Gelli A, Masset E, Folson G, Kusi A, Arhinful DK, Asante F, Ayi I, Bosompem KM, Watkins K, Abdul-Rahman L, Agble R, Ananse-Baden G, Mumuni D, Aurino E, Fernandes M, Drake L (2016). *Evaluation of alternate school feeding models on nutrition, education, agriculture and other social outcomes in Ghana: Rationale, randomised design and baseline data*. 2016 Jan 20; 17:37. doi: 10.1186/s13063-015-1116-0.



E. The Brazilian National School Feeding Program (PNAE)

Case study submitted by the Food and Agriculture Organization of the United Nations (FAO) – Brazil (2013-2015)

The Brazilian National School Feeding Program (PNAE) is Brazil's oldest food program and one of the largest school-meal schemes in the world. The initial objective of PNAE, to meet students' nutritional needs during their time in the classroom, has developed and expanded over the years. In 2009, the program was revised significantly, both conceptually and programmatically, with the introduction of promoting student development, learning and academic achievement, healthy nutritional habits, and nutrition education, as well as support for sustainable development and the promotion of local food procurement. Currently, states, municipalities, and federal schools must purchase (through a decentralized operational system) at least 30% of food for school meals directly from family farming producers, which, according to Brazilian legislation, include family farmers and family rural entrepreneurs. Priority is given to local supply, producers' formal organizations, vulnerable social groups (including land-reform settlers and members of traditional communities), and agro-ecological and organic production (IPC-IG, WFP 2013; FAO 2015).

Community participation is also guaranteed through the Councils of Food and Nutrition Security and the School Feeding Councils (CAEs) formed by representatives of the government, teachers and professionals in the educational system, parents, and organized civil-society organizations (IPC-IG, WFP 2013).

Supported by a favorable policy and legal environment, in 2014, PNAE benefitted 42.2 million students, while resources used for the procurement of food from smallholder farmers reached more than BRL 711 million⁸ in the same period. Despite the lack of a nationwide impact evaluation, qualitative studies have assessed PNAE's impact on local smallholder farmers, finding increased and diversified production, higher income and stronger farmer organizations (IPC-IG, WFP 2013; FAO 2015).

References

Food and Agriculture Organization of the United Nations (FAO), Swensson LFJ (2015). *Institutional Procurement of Food from Smallholder Farmers: The Case of Brazil*. FAO: Rome. <http://www.fao.org/3/a-bc569e.pdf>.

International Policy Centre for Inclusive Growth (IPC-IG), World Food Program (WFP) (2013). *Structured Demand and Smallholder Farmers in Brazil: The Case of PAA and PNAE*. IPC-IG and WFP: Brasilia.

⁸ Preliminary data. Available at <http://www.fn-de.gov.br/programas/alimentacao-escolar/alimentacao-escolar-consultas/dados-da-agricultura-familiar>.

F. School feeding program in Cabo Verde

Case study submitted by the Food and Agriculture Organization of the United Nations (FAO) – Republic of Cabo Verde (2011)

After Cabo Verde gained independence in 1975, it started a school feeding program in 1979 with the assistance of the World Food Program (WFP), aimed at addressing food insecurity. Since then, the role of the program has changed. While combating food insecurity remains a key objective, since the 1990s, the program has incorporated educational goals and objectives aimed at enhancing social cohesion and solidarity. The steady improvement in the country's economic situation, formally marked by its official admission into the middle-income group of nations in 2008 and the departure of the WFP from the country in 2010, has catalyzed a series of additional changes in the program (Council of Ministers 2010).

After taking over the management of the national school feeding program in September 2010, the government of Cabo Verde requested technical support from various UN agencies to secure program continuity. In 2011, the FAO, World Health Organization (WHO), WFP and UNICEF launched a four-year United Nations Joint Program (UNJP), financed by the Luxembourg Development Cooperation, to assist the government in four key areas: enhancing institutional capacity, supplying school canteens, supplying food and nutrition education in schools, and managing school canteens (Mirabile 2012). With the assistance of the United Nations Joint Program on Food Security and Nutrition in Schools, the government passed a School Feeding Law (Law No.89/VIII/2015) in 2015.



The main provisions of the National School Feeding Program (NSFP) law involve:

- Defining the government's school-meal and health policy, via a joint proposal by ministries of health and education;
- Establishing the role of schools in the development of food and health education, with the support of competent institutions;
- Prohibiting the advertising of food and beverages of low nutritional value in schools, as well as the sale of such products in or within a 200m radius of schools;
- Applying national law on public procurement, security standards, quality and hygiene to the purchase of goods and services for the NSFP;
- Prioritizing national products when purchasing for school feeding (at least 25% of the budget assigned to buying food for the NSFP); and
- Centralizing the setting of school menus, with the participation of nutritionists and technicians at the local level, respecting the recommendations of the World Health Organization, and embracing the principle of introducing diversified national products according to local eating habits, with acceptability by children of more than 85%.

Funding

The NSFP is financed via the general state budget and bolstered by contributions from national and international patrons and partners, such as city councils and other public and private entities. It is worth noting that parents and guardians must donate to the cost of meals according to their income, with an annual financial contribution aimed at improving school-meal quality and health actions (Cape Verdean Student Welfare Foundation [FICASE] financial records, 2012).

Responsibilities and interdepartmental coordination

Implementing the NSFP is the joint responsibility of the ministries of health and education, with laws in place to create an interdepartmental structure to coordinate and carry out policy. Regional and local coordinating bodies can also be established, comprising representatives of the educational, agricultural and health sectors, municipal leadership, NGOs, and parents or guardians. If these structures agree, some services in the school meal and health arena can be outsourced to the private sector (e.g. food purchasing, storage and transport, meal preparation, and health treatments) (Semedo JDS 2012).

Every school has a council to manage the School Feeding and Health Unit (SFHU), made up of the school principal, a council coordinator, a parents and guardian representative, a cook, and a pupil. This council is responsible for overseeing canteen operations, mobilizing resources, purchasing local products, raising nutrition and health awareness, health education, promotional activities, and accounting.

Evidence of program impact

It is difficult to come to concrete conclusions about the effectiveness of the National School Feeding Program. In view of Cabo Verde's universal school attendance and reduced rates of poverty, however, one can say that the program's initial objectives (the prevention of severe food insecurity in the 1970s and 1980s, and improving school attendance and the social safety net in the 1990s and 2000s) have been met. While it can be assumed that the National School Feeding Program has been a contributing factor in this regard, no impact evaluation has been carried out to quantify its impact (Luxembourg Agency for Development Co-operation 2012; Republic of Cabo Verde 2012).

In Cabo Verde, the government and communities are clearly interested in diversifying school meals and developing ties to local production. The fact that food items and preparation account for 80% of program running costs suggests a good degree of managerial efficiency in limiting overheads. There are questions, however, in relation to coverage and cost recovery (*Global School Feeding Sourcebook: Lessons from 14 Countries* 2016).

References

Cape Verdean Student Welfare Foundation (FICASE) (2012). Financial Records. Internal documents consulted in November 2012 with M. Mirabile. FICASE: Praia, Cabo Verde.

Council of Ministers (2010). Lei de Bases do Sistema Educativo, Decreto-Legislativo No.2/2010 [Education System Basic Law, Legislative Decree No. 2/2010] (approved 7 May 2010).

Drake L, Woolnough A, Burbano C, Bundy D (Editors) (2016). *Global School Feeding Sourcebook: Lessons from 14 Countries* (2016). Imperial College Press, ISBN 9781783269112: New Jersey. <https://openknowledge.worldbank.org/handle/10986/24418> License: CC BY-NC.

Luxembourg Agency for Development Co-operation (LuxDev) (2012). *Relatorio de analise do impacto nutricional das cantinas escolares em Cabo Verde [An analysis of the nutritional impact of school canteens in Cabo Verde]*. FICASE: Praia, Cabo Verde.

Mirabile M (2012). *Cape Verde: The Transition to a National School Feeding Program*. WFP: Praia.

Republic of Cabo Verde (2012). *Estratégia de Crescimento e de Redução da Pobreza III [Strategy for Growth and the Reduction of Poverty III] (2012 2016)*. <http://www.mindbank.info/item/3807>.

Semedo JDS (2012). *Funcionamento do Programa Nacional de Alimentação escolar 2011/12; Ganhos e Desafios [Functioning of the National School Feeding Program 2011/12; Achievements and Challenges]*. Presentation at the "Reflectir sobre a Sustentabilidade da Alimentação e Saúde nas Escolas" [Reflecting on the Sustainability of Food and Health in Schools] conference, 24-26 October 2011, Cidade de Nova Sintra Ilha Brava. FICASE: Praia.

G. Pilot-testing the WHO Nutrition-Friendly School Initiative (NFSI) in Benin and Burkina Faso

Case study submitted by the World Health Organization – Benin and Burkina Faso (2006-2016)

The schools project

The World Health Organization and its partners launched the Nutrition-Friendly Schools Initiative in 2006 to combat the dual challenges of under- and overnutrition, the first pilot program of its kind in West African primary schools. It was introduced in cities, because in low-income countries, the nutritional transition is more likely to lead to the double burden of malnutrition in urban settings. A total of 12 schools were selected for intervention by the countries' ministries of education. In addition, Helen Keller International (HKI) was involved in the implementation of the initiative in Burkina Faso, while the Regional Institute of Public Health (IRSP) played a role in Benin.

Some 4,000 pupils were involved in the project in Cotonou, Benin, and another 2,500 in Ouagadougou, Burkina Faso. In the latter, a further six schools served as control units to assess the project's impact. Health and nutrition committees were created in the selected schools to undertake the initial assessment, decide on the necessary actions and implement them. The committees included teachers, parents, pupils, local administrators, health personnel and other community members.

In accordance with the empowering philosophy of health promotion, the pilot schools did not follow a pre-defined schedule of intervention and relied primarily on the local resources they could mobilize, except when it came to training teachers in nutrition education, with a focus on healthy school meals, and the nutritional (anthropometric) surveillance of schoolchildren. Yearly planning workshops were held for school committees, with the support of the WHO and the Double Fardeau Nutritionnel (DFN) project, a partnership program to combat the double burden of malnutrition in West Africa.

In both countries, street vendors received training to improve hygiene and the nutritional value of the food sold to schoolchildren. In addition to integrating nutrition into the school curriculum, activities included special school-based nutrition events and sanitation measures, gardening and the raising of poultry.

The results

In both cities, the NFSI showed promising results after 4-5 years in terms of school and community mobilization towards better nutrition and health, according to a process evaluation (Delisle et al. 2013). In Burkina Faso, the baseline study conducted among nearly 700 fifth-grade pupils revealed high rates of vitamin A deficiency and anaemia (40% and 38%, respectively). The presentation of the results to the government and other stakeholders (Daboné et al. 2011) resulted in a government policy to include urban schools, in addition to rural schools, in the school-lunch program.

Few students were overweight (4%) relative to incidents of stunting (8%) and thinness (9%), but eating behaviors suggested the potential for excessive weight and related diseases over the long term, due to the more frequent

consumption of unhealthy items, such as sweet drinks, rather than healthy fruit, vegetables and legumes (Daboné et al. 2012; Daboné et al. 2013). Five years on, the rate of thinness was lower in intervention than control schools, but rate of becoming overweight had tended to increase in the former (submitted: El Khouri Edde et al. 2017). Vitamin A deficiency and anaemia had declined more significantly in intervention than control schools, although rates remained high (>25%). Changes in eating behavior and hygiene practices are still being analyzed.

Conclusions

The NFSI experience was positive in Benin and Burkina Faso. The results suggested that Burkina Faso, in particular, was in the early stages of nutritional transition, but that the growing overweight trend, coupled with persistent micronutrient malnutrition, were of concern and required sustained efforts to improve the overall nutritional status of school-age children. Limited resources at the household and school levels appeared to be a major barrier to reaping the full benefits of NFSI in such low-income populations. Nevertheless, it was encouraging that the NFSI was sustained, at least in part, after the external funding came to an end and that it positively influenced school nutrition policy in both countries.



References

- Daboné C, Receveur O, Delisle H (2011). Poor nutritional status of schoolchildren in urban and peri-urban areas of Ouagadougou. *Nutrition Journal* 2011; Apr 19; 10:34. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3103411/>.
- Daboné C, Delisle H, Receveur O (2012). Cardiometabolic Risk Factors and Associated Features in 5th Grade Schoolchildren in Ouagadougou, Burkina Faso (West Africa). *International Journal of Child Health and Nutrition* 2012; doi: <http://dx.doi.org/10.6000/1929-4247.2012.01.02.3>.
- Daboné C, Delisle H, Receveur O (2013). Predisposing, facilitating and reinforcing factors of healthy and unhealthy food consumption in schoolchildren: a study in Ouagadougou, Burkina Faso (West Africa). *Global Health Promotion* 2013; 20: 68-77, International Union for Health Promotion and Education (IUHPE).
- Delisle H, Receveur O, Agueh V, Nishida C (2013). Pilot-testing of the Nutrition-Friendly School Initiative in West Africa in Ouagadougou (Burkina Faso) and Cotonou (Benin). *Global Health Promotion* 2013; 20: 39-49, International Union for Health Promotion and Education (IUHPE).
- Submitted: El Khouri Edde C, Delisle H, Dabone C, Batal M. *Impact of the Nutrition-Friendly School Initiative: Analysis of anthropometric and biochemical data among school-aged children in Ouagadougou.*

H. Diversifying school feeding and institutional food procurement in Brazil

Case Study submitted by Bioversity International – Brazil (2012-2017)

Despite being home to approximately 18% of the world's plant diversity, Brazil's agriculture and food security are, to a great extent, reliant on exotic or introduced crops and species. Little of this vast treasure of biodiversity ever makes it onto the school plate. Paradoxically, much of this neglected biodiversity is highly nutritious and could help provide sustainable solutions to diversifying school feeding, ensuring healthier diets and tackling nutritional deficiencies and other malnutrition problems. Many barriers and obstacles in Brazil, as elsewhere, limit the better integration of biodiversity for enhancing food and nutritional security, including in school feeding and institutional food procurement (Beltrame et al. 2016; Hunter et al. 2015 and 2016).

Biodiversity for Food and Nutrition (BFN, <http://www.b4fn.org/>) is working with the successful multi-sectorial institutional framework established in 2003 under Brazil's Zero Hunger Strategy to address some of these constraints by strategically targeting the Brazilian Food Procurement Program (PAA) and the National School Feeding Program (PNAE) as two key public-policy instruments with the greatest potential for diversifying institutional food procurement and improving diets, while supporting family farming and promoting biodiversity conservation and sustainable use. Both the PAA and PNAE offer useful entry points for improving nutrition or livelihoods with links to native biodiversity. At least 30% of the food purchased with federal funds through the PNAE must be bought directly from family farmers, while both the PNAE and the PAA pay a premium of up to 30% on the price of organic or agroecological produce, prioritizing purchase from settlers of the agrarian reform, quilombolas and indigenous communities. The PAA also supports the work carried out by family agriculture organizations to rescue, produce, store, and distribute seeds of local or traditional varieties by purchasing seeds produced by farmers, families and communities experiencing uncertain access to food. In doing so, these programs create unique opportunities for the use of natural resources from the various Brazilian ecosystems, promote the development of new institutional markets for biodiverse products, and provide incentives for the management and sustainable use of Brazilian food and agricultural biodiversity (MMA, 2006).

To improve the knowledge base of the PAA and PNAE, nutrient composition analysis of prioritized species is being carried out in partnership with public universities and research institutes across the country using methodologies developed by the FAO and the International Network of Food Data Systems, INFOODS. More than 100 students, professors and researchers are currently working in this area and preliminary results indicate that many of the prioritized native fruits are richer in nutrients than the more commonly consumed exotic fruits in Brazil.

Working through regional partners ensures capacities are being developed in different regions, facilitating the development of "regional centers for food composition data" and raising awareness among students, researchers and professors about the importance of food composition and biodiversity for food and nutrition. These groups act as multipliers within education and research institutions, building additional human capacity and operating as opinion leaders, champions and policy advisors. Some of the partner universities are Collaborating Centers on Food and Nutrition (CECANEs), linked to the PNAE, and provide research and technical support. By providing technical assistance and capacity building for the municipal managers, school managers, nutritionists and cooks responsible for implementing the PNAE, the partnership can orchestrate the inclusion of biodiverse products in school meals.

Additional activities to promote biodiverse, Brazilian foods in the PNAE and PAA include:

- The development of recipes using prioritized species to foster their inclusion in school meals.
- Sensitization workshops with technical staff directly involved in implementing relevant policies at the federal level, including the National Fund for the Development of Education (FNDE), responsible for the coordination of the PNAE.
- Partnership with the Educating Through School Gardens and Gastronomy (PEHEG) initiative to diversify school curriculums using school gardens and gastronomy as educational tools to promote healthy eating habits, an appreciation of regional ingredients and recipes, the learning of cooking techniques and the experience of flavors, food textures and aromas of native biodiversity.
- Collaboration with the Food and Nutrition National Policy (PNAN) to increase the opportunities for mainstreaming biodiversity into federal procurement programs, as well as the PNAN's Health in School Program (PSE).
- Contributions to the new version of the Dietary Guidelines for the Brazilian Population (MS, 2014), launched by PNAN, which take into account healthy diets derived from socially and environmentally sustainable food systems, highlighting the importance of biodiversity.
- Contributions to the new edition of Brazilian Regional Foods (MS, 2015) including a chapter on "biodiversity for food and nutrition" promoting native biodiversity and regional foods combining recipes and nutritional information.
- The revival of culinary skills using regional foods and native biodiversity.
- The development of a new policy, "Brazilian Sociobiodiversity: Native Food Species of Nutritional Value" (Ordinance No. 163, 2016), which officially defines and recognizes for the first time native, nutritious biodiversity. The ordinance is expected to facilitate the greater procurement of native biodiversity species and their integration into school feeding programs.

Though still in its early stages, the preliminary signs from this partnership are encouraging. Changes in behavior and attitudes are already evident within ministries and the federal institutional partners of the BFN project. Institutional spending on local biodiversity is increasing. In the PAA, for example, spending on biodiverse products had risen from 5.36% in 2012 to 10.99% in 2015.

While investment in native biodiverse products remains small compared with overall food purchases, targeted initiatives have been able to include native biodiversity in the diets of their beneficiaries, thus becoming strategic tools in promoting the conservation and sustainable use of diverse foods. This offers a glimpse of the market potential for expanding the number and amount of native food species and products in both policies and in other institutional markets.

References

Beltrame DM, Oliveira CNS, Borelli T, de Andrade Cardoso Santiago R, Monego ET, Vera de Rosso V, Coradin L, Hunter D (2016). Diversifying institutional food procurement – opportunities and barriers for integrating biodiversity for food and nutrition in Brazil. *Revista Raizes*, Vol. 36 (2), July-December 2016.

Brazilian Ministry of the Environment (MMA) (2006). *The Brazilian Government Cross-cutting Initiative on Biodiversity, Food and Nutrition*. http://www.mma.gov.br/estruturas/sbf_agrobio/_publicacao/89_publicacao13042009030729.pdf.

Hunter D, Burlingame B, Remans R (2015). Biodiversity and nutrition. *Connecting Global Priorities: Biodiversity and Human Health – a State of Knowledge Review*. Convention on Biological Diversity/World Health Organization (WHO).

Hunter D, Özkan I, Moura de Oliveira Beltrame D, Lokuge Gamini Samarasinghe W, Wafula Wasike V, Charrondiére UR, Borelli T, Sokolow J (2016). Enabled or disabled: Is the environment right for using biodiversity to improve nutrition. *Frontiers in Nutrition*, Vol. 3, pp. 1-6.

I. Food and nutrition biodiversity in Busia County, Western Kenya

Case study submitted by the Food and Agricultural Organization of the United Nations (FAO) – Western Kenya (2015-2017)

In Busia County, Western Kenya, the Biodiversity for Food and Nutrition (BFN) project, funded by the Global Environment Facility (GEF), with support from the Australian Centre for International Agricultural Research (ACIAR), is working with local authorities, service providers, farmers, schools, and hospitals to promote the conservation and utilization of local biodiversity to improve the nutritional status of the population, including vulnerable groups, such as schoolchildren (Hunter et al. 2017).

Malnutrition is widespread in Busia County. Alongside children under the age of five (26.6% of whom are stunted, 4% wasted and 11% underweight), schoolchildren are among the most vulnerable members of the population. Government-sponsored school feeding programs prioritize communities in the country's arid and semi-arid regions, so most primary schools in Busia are unable to offer lunch to their pupils. At best, they can provide simple, unvaried meals comprising maize-based gruel or maize-bean mixtures, supplemented by meat, kale or cabbage, depending on seasonality. Many traditional, highly nutritious and biodiverse foods are out of schools' price range, so cheaper, but often less nutritious, alternatives are prioritized, as they can be purchased in greater quantity. Meanwhile, policies, programs and incentives focused on few energy-rich staple grains – primarily maize – are gradually causing many highly nutritious species to disappear from farmers' fields and people's plates.

Aimed at promoting knowledge and the use of local biodiversity for dietary variety, improved nutrition and linking farmers to markets, the BFN project, supported by the ACIAR, has strengthened the capacity of farmer groups – with a special focus on women farmers – to supply nutrient-rich, traditional, African leafy vegetables (ALVs), such as amaranth, spider plant, slenderleaf, cowpeas, black nightshade, and pigweed, while developing pilot supply chains with institutional buyers to bridge the market gap (Wasike et al. 2016). A Farmer Business School (FBS) approach has been used to train 25 farmer groups to respond to market demand for ALVs, while market surveys have been conducted and institutions interested in consuming ALVs have been identified.

Since the rollout of the FBS, five farmer groups have entered into contractual agreements with 11 schools and one hospital for the provision of ALVs, and three youth groups have won tenders to supply three additional schools. Farmer groups have developed business plans, empowering them to plan their enterprises and keep track of supply and demand. Some farmer groups have devised innovative approaches to cutting down on transport costs and avoiding food losses, such as growing vegetables directly on school land. As a result, the schools in question have a reliable and constant source of quality ALVs, and farmers have reduced their costs and found a dependable buyer for their produce.

An additional, yet fundamental, component of the project is to raise awareness of the nutritional value of these indigenous crops, often dismissed as “food for the poor”. A training workshop on various topics, from nutrition to methods for setting up and sustainably maintaining a school garden, was held in Busia County, targeting various stakeholders, including school principals, who are then able to transfer the knowledge to children through hands-on activities. In this way, the BFN project, with assistance from the ACIAR, has helped establish school gardens as demonstration plots for a range of traditional foods, to make pupils, their families and the broader community aware of the importance of healthy, nutritionally balanced diets. The Farmer Business School has also

included sessions and activities on nutrition, food groups, and the healthy food plate alongside more traditional business-oriented sessions.

Finally, while schools are desirable markets for farmers to supply with ALVs, these institutions may be unable to absorb year-round production, meaning that alternative market outlets (such as antenatal clinics and community health centers) should be considered. However, it has become apparent that farming of ALVs as a business is slowly gaining ground in Busia County, with farmers increasingly willing to invest more resources in ALV production and marketing (Bioversity International, 2017). As farmers become able to produce adequate amounts of ALVs, they will be able to break into this growing market.

References

Hunter D, Beltrame D, Wasike V (2017). *Diversifying public food procurement and school feeding – a tale of two countries*. European Association for Research on Plant Breeding (EUCARPIA) Conference – Crop Diversity in a Changing World: Mobilizing the Green Gold of Plant Genetic Resources, 8-11 May 2017, Montpellier, France.

Wasike V, Manjella A, Buluma W, Borelli T, Hunter D (2016). *Linking farmers, indigenous vegetables and schools in Western Kenya for improved nutrition*. Australian Centre for International Agricultural Research (ACIAR) Food Security Meeting for Africa, Nairobi, Kenya, 6 October 2016.

Bioversity International (2017). *African leafy vegetables go back to school in Kenya*. Annual report 2016. <https://www.bioversityinternational.org/ar2016/african-leafy-vegetables-go-back-to-school-in-kenya/>.



J. Slovenia: Standards for nutritionally balanced school meals

Case study submitted by the World Health Organization (WHO) – Slovenia (2010-2016)

School health and nutrition programs, including school meals, have long been implemented in European countries through national and regional initiatives, such as the World Health Organization's (WHO) Nutrition-Friendly Schools Initiative (WHO, 2017).

Slovenia has a well-established tradition of providing school meals. The first law on school nutrition was adopted in 1953 and, since then, Slovenia has been investing in children's health by providing meals to all children in primary and secondary schools. Just after World War II, all Slovene primary schools were equipped with school kitchens and dining halls.

The Slovenian School Meals Act of 2010, amended in 2013 (Uradni, 2010), and the National Dietary Guidelines for Healthy Nutrition in Kindergartens (Gabrijelčič et al. 2005), defined in the Act, set the standards for the National School Meals Program (NSMP) through which schools must provide at least one nutritionally balanced meal a day for all pupils. The meal, typically consisting of a mid-morning snack or lunch, must comply with requirements for energy and nutrient content, as well as a specific list of recommended and non-recommended food groups. The national guidelines also provide a list of foods that are not recommended for school meals and which can only be included in school meals at low frequency and in low amounts. School kitchens are provided with a list of alternative healthier food options.

The Act requires schools to determine the content, amount, education, and training activities related to meals and encourage a healthy food culture in their annual operational plan. Thus, the school plays a significant role in developing knowledge about healthy food, healthy eating habits, food culture and in teaching students how to take a responsible attitude towards themselves and their health. In preparing food, kindergartens, schools and other institutions must follow professional guidelines set by the National Council of Experts for General Education and determine the educational and health aspects of school meals. A total ban on vending machines for foods and beverages in school environments was introduced in 2010, following the recommendations of the World Health Assembly (WHA) resolution (WHA 63.14, 2010), and has remained in place, despite substantial industry resistance (the ban was challenged unsuccessfully, in Slovenia's Constitutional Court in 2010).

The organization of school meals follows the country's comprehensive dietary guidelines (Gabrijelčič et al. 2005) governing educational activities related to school meals, expert policies and instructions. These include criteria for the selection of food items and diet plans developed by health-sector experts, prepared by an interdisciplinary working group under the leadership of the National Education Institute.

The program is implemented by the Ministry of Education, Science and Sport in collaboration with the Ministry of Health, the National Education Institute and the National Institute of Public Health. The NSMP, according to routine data, currently provides a light snack to 98.6% and lunch to 78.3% of all children enrolled in basic education, and either lunch or a light snack to 65.8% of students in upper secondary. All students are eligible for the program and for low-income students, mid-morning snacks are fully subsidized (Uradni, 2010). In addition

to ensuring nutritionally balanced meals, the program is also linked to complementary initiatives, such as a weekly fruit and vegetable scheme, which currently covers 90.5% of students in basic education. The scheme largely offers fresh fruits and vegetables; dried or canned products are only included occasionally (<10%). Other complementary activities include nutritional education, cooking-skills classes, tasting sessions, school gardening, visits to farms, and the promotion of local food procurement (Uradni 2010).

Recent comprehensive evaluations by the National Institute of Public Health (Gregorič et al. 2015; Food and Nutrition Action Plan [FNAP] 2016) showed that school lunches met the requirements for protein, sugar, total fat and saturated fat, but were significantly deficient in energy, carbohydrates and dietary fiber, partly due to the low inclusion of dairy products and vegetables. High levels of sodium were also documented and attributed to the use of highly processed foods. Compliance with dietary guidelines and meal quality varied between schools across regions in a pattern that mirrored availability of resources and capacity: schools with more students and in areas of higher socioeconomic status more often complied with dietary guidelines. The evaluation recommended measures to support a healthier food selection and preparation by food-service managers, through actions such as nutrition education and training.

References

Gabrijelčič Blenkuš M, Pograjc L, Gregorič M, Adamič M, Čampa A (2005). *Smernice zdravega prehranjevanja v vzgojno izobraževalnih samovar: od prvega leta starosti naprej* [National dietary guidelines for healthy nutrition in kindergartens and schools]. Slovenian Ministry of Health: Ljubljana.

Gregorič M, Pograjc L, Pavlovec A, Simčič M, Gabrijelčič Blenkuš M (2015). School nutrition guidelines: overview of the implementation and evaluation. *Public Health Nutrition*, 18 (09), pp. 1582-1592.

Republic of Slovenia, Ministry of Education, Science and Sport (2010). Smernice za prehranjevanje v vzgojno-izobraževalnih zapodid [Dietary guidelines for childcare and educational institutions]. http://www.mizs.gov.si/fileadmin/mizs.gov.si/pageuploads/podrocje/Prehrana/Smernice_prehrana_2010.pdf.

Republic of Slovenia, National Institute of Public Health (2016). Evaluation of the Food and Nutrition Action Plan. http://www.euro.who.int/_data/assets/pdf_file/0012/320520/FNAP-Slovenia-upgraded-2016.pdf?ua=1.

Uradni list RS [Official Gazette of the Republic of Slovenia] (2010). Zakon o šolski prehrani [Law on school nutrition] (ZŠolPre). Uradni list 43: Ljubljana. <https://www.uradni-list.si/glasilo-uradni-list-rs/vsebina/111596>.

World Health Organization (WHO). Nutrition-Friendly Schools Initiative (accessed July 2017). http://www.who.int/nutrition/topics/nutrition_friendly_schools_initiative/en/.

World Health Organization (WHO). Recommendations on the marketing of foods and non-alcoholic beverages to children (resolution WHA 63.14). <http://www.who.int/dietphysicalactivity/marketing-food-to-children/en/>.

K. Philippines: Healthy food and beverage choices in schools

Case study submitted by the World Health Organization (WHO) – Philippines (2017)

In March 2017, the Philippines Department of Education (DepEd) set out new regulatory standards for foods served, sold and marketed in schools. Through its Policy and Guidelines on Healthy Food and Beverage Choices in Schools and in DepEd Offices, the government hopes to increase the availability of healthy, nutritious foods and encourage healthy diets among students, teachers, and other personnel (DepEd, 2017). DepEd defines a healthy diet as one that achieves a good energy balance and a healthy weight, limits the intake of saturated fats, sugars, and salt, eliminates the intake of trans fats, and increases the consumption of fruit, vegetables, legumes, whole grains, and nuts.

The policy was developed in response to the World Health Organization's (WHO) 2017 announcement that malnutrition in all its forms presents a significant threat to human health. The policy is also in line with the Philippines' Plan of Action for Nutrition (PPAN) 2017-2022, approved in February 2017 by the National Nutrition Council Governing Board. The PPAN includes programs to promote nutrition in schools by fostering a healthier food environment.

The Philippines faces a double burden of malnutrition, namely, undernutrition and excessive weight and obesity in the same population. The Food and Nutrition Research Institute's (FNRI) survey on the 2015 Updating of the Nutritional Status of Filipino Children and Other Population Groups suggested that among children aged 5-10 years, 31.1% were stunted, 31.2% were underweight, 8.4% were wasted, and 8.6% were overweight or obese. Among children aged 10-19 years, 31.9% were stunted, 12.5% wasted, and 9.2% were overweight or obese (Department of Science and Technology Food and Nutrition Research Institute 2015). The Nutritional Status Report of Students aged 5 to 12 years for the 2016-17 school year showed that 3.64% were severely wasted, 9.34% were wasted, 2.10% were overweight, and 0.65% were obese (DepEd, unpublished). In contrast, the 2015 Global School Health Survey of high-school students aged 13-15 years revealed 10.7% were underweight, 10.1% were overweight, and 2.4% were obese (WHO 2015).

The policy outlines the regulations governing the types of food and beverages that can be served in schools. Using a specially designed national nutrient profile model, school food is placed into three categories: green, yellow, and red, which indicate how often a food item can be served. "Green" foods are to be served frequently and contain a wide range of nutrients and are generally low in fats, sugars, and salt. This category includes foods such as fruits and vegetables with little to no processing and lean meats. "Yellow" foods should be served only occasionally and should be avoided in large quantities and include items such as juice and biscuits. Finally, "red" foods containing high amounts of saturated fats, sugars, or salt and are not recommended to be served at all.

In addition, the order regulates the marketing of foods and non-alcoholic beverages to children. Advertising of foods and beverages that do not meet nutrition standards through branded vending machines and refrigerators, signs, sponsorship and promotions are among the marketing tools that will no longer be allowed in schools and DepEd offices. The order also encourages school officials to advocate and work with local government units in issuing local legislations to limit marketing of unhealthy foods and beverages within at least 100-meter radius of the school.

The policy references other tools for a healthier eating, including the Pinggang Pinoy food guide, which features visual representations of well-portioned, nutritious meals, and encourages schools to provide more opportunities for physical activity during school (Department of Science and Technology Food and Nutrition Research Institute, 2014). It is also complementary to the Nutritional Guidelines for Filipinos (NGF), the “10 Kumainments”.

The DepEd order follows a series of activities in the region led by the WHO Western Pacific Regional Office (WPRO) including a regional workshop on Regulating the Marketing and Sales of Food and Non-alcoholic Beverages at Schools and recent publications, including *Be smart drink water: a guide for school principals in restricting the sale and marketing of sugary drinks in and around schools*, calling on countries to restrict the sale and marketing of foods high in sugars, salt or fats, set school food standards, and increase the availability and accessibility of healthy options (WPRO, 2016a and 2016b).

References

Philippines Department of Education (2017). *Policy and Guidelines on Healthy Food and Beverage Choices in Schools and in DepEd Offices*. <http://www.deped.gov.ph/orders/do-13-s-2017>.

Philippines Department of Education (2017). *Nutritional Status Report of Students for School Year 2016-2017*. Unpublished.

Philippines Department of Science and Technology, Food and Nutrition Research Institute (2015). *The Double Burden of Malnutrition in the Philippines: Updating of the Nutritional Status of Filipino Children and Other Population Groups*. <http://www.fnri.dost.gov.ph/images/sources/Dissemination/ARMM.pdf>.

Philippines Department of Science and Technology Food and Nutrition Research Institute (2014). *Pinggang Pinoy*. <http://www.fnri.dost.gov.ph/index.php/116-pinggang-pinoy>.

World Health Organization (WHO) (2015). Global school-based student health survey (GSHS) in the Philippines. <http://www.who.int/chp/gshs/philippines/en/>.

World Health Organization (WHO) (accessed July 2017). *Double burden of malnutrition*. <http://www.who.int/nutrition/double-burden-malnutrition/en/>.

World Health Organization Western Pacific Regional Office (WHO WPRO) (2016a). *Be smart drink water: a guide for school principals in restricting the sale and marketing of sugary drinks in and around schools*. <http://iris.wpro.who.int/handle/10665.1/13218>. WHR WPRO: Manila.

World Health Organization Western Pacific Regional Office (WHO WPRO) (2016b). *Regional Workshop on Regulating the Marketing and Sale of Foods and Non-alcoholic Beverages at Schools, Manila, Philippines, 1-3 June 2016: meeting report*. <http://iris.wpro.who.int/handle/10665.1/13419>. WHR WPRO: Manila.

L. The Botswana School Feeding Program (BSFP) – Self-reliance and good governance

Case study submitted by the Food and Agriculture Organization of the United Nations (FAO) – Botswana (2013)

Overview and historical context

The Botswana School Feeding Program (BSFP) is one of the world's oldest school-meal projects. It started as a 1965 initiative of the first President of Botswana, Sir Seretse Khama, after years of famine and malnutrition due to protracted periods of drought from 1960. Even prior to independence in 1966, Botswana was one of the poorest low-income countries in the world, with most children walking long distances to school, without food. With the support of the World Food Program (WFP), after independence, the feeding initiative was expanded to provide a daily school meal to children across the country.

The World Food Program assisted the Botswanan government by providing food commodities – mainly a corn-soy blend (malutu) - to schools and health facilities from April 1966 to December 1997. In 1998, the government took over the school-feeding program, fully funding it, with 100% national coverage, and introducing a menu designed to incorporate local foods. Every primary- and secondary-school pupil continues to receive a hot school meal every day.

Program objectives

Because of Botswana's challenging history of prolonged drought, hunger, food insecurity and child malnutrition, the government program sought to address the following:

1. Prevent schoolchildren from feeling hungry during school;
2. Provide schoolchildren with a balanced diet/meal;
3. Keep children in school for the entire day; and
4. Improve school attendance.

These objectives still hold, but were recently bolstered by the adoption of a Home Grown School Feeding (HGSF) approach to deliver multiple benefits for children and the wider community.

Political commitment, policy and governance

Every year, the responsible ministry presents a budget proposal to the Ministry of Finance and Economic Development Planning. This is debated and negotiated, and funds are then set aside to cover infrastructure, equipment, food commodities, staff payments and related overhead costs. In 2012-2013, for example, the government set aside USD 39.4mn per year for primary-school feeding, equivalent to USD 104.02 per child per year (185 school days), or USD 0.56 per child per day, excluding items such as community contributions or in-kind goods. As there are good checks and balances in place, there is very little room for abuse. If any funds remain at year end, they are carried over to the following year.

The government is attempting to transition to Home Grown School Feeding (HGSF), which links school feeding to local agriculture. In 2008, a presidential directive decreed that schools should purchase excess seasonal produce to support farmers. The school menu consequently shifted from serving mostly staples to also serving seasonal agricultural produce. Small-scale farming improved considerably as a result, as smallholders diversified production to include a variety of crops, including pulses and cowpeas, groundnuts, melons, squashes, pumpkins and sunflowers.



Transition to regional and local procurement

When the school feeding program started with the assistance of the WFP, most of the food was imported. The food basket for primary schools comprised corn, soya milk, vegetable oil, dried skim milk and occasionally dates or raisins. When the government took over in 1998, the menu was modified to include sorghum, local beans and samp (de-hulled cracked maize or hominy). Now, although Botswana often faces unfavorable climatic conditions, it manages to produce some of the commodities it needs for the school-feeding program, such as beef, beans and sorghum.

Primary-school children receive a meal equivalent to one-third of the child's daily nutritional needs. The meals consist of sorghum porridge, maize, stewed beef, pilchards, beans, peanut butter, jam, bread, vegetable, fruit and UHT milk in different combinations to ensure provision of the basic food groups. The daily menu varies to create more diversity and avoid monotony and boredom. During harvest period, the menu can include locally produced and procured seasonal fruits and vegetables, such as melons, fresh beans, and sweet red and green mealies.

The school feeding program is still largely centralized, with procurement handled at the national level. However, in recent years, there has been a move towards more decentralization, taking into account the country's various agro-ecological zones, production systems and local dietary patterns. Suppliers distribute commodities to four regional and 20 district food depots, from where it is distributed to schools. Food is prepared at schools by cooks from the community, who are paid by the government

The School Feeding Program as a social safety net – beyond the school

Botswana is a good example of a country that has transitioned from an externally funded school feeding program to one that now relies on its own government for funding and implementation, and targets all children in public primary schools. On average, it provides one meal per day to more than 330,000 children. In addition, through the Remote Area Dwellers (RADs) Program, children in boarding schools receive a second meal. What's more, take-home ration baskets are distributed to the RADs for days off school, ensuring 365-day coverage for the most vulnerable children. The RADs program is one of the country's vulnerable feeding programs, which provide geographically, physically and economically vulnerable individuals and households with a food basket, healthcare and other amenities.



Partnerships for coordination, development and sustainability

The Ministry of Local Government and Rural Development (MLGRD) manages the feeding program through the Department of Local Government Finance and Procurement and the Division of Food Relief Services (DFRS). The MLGRD partners with local actors and government sectors, including the Ministry of Finance and Development Planning, Ministry of Education and Skills Development, Ministry of Health, and the Ministry of Agriculture for support and delivery assistance.

Although Botswana has long recognized the need for self-reliance and development, it also recognizes the need for good relations and technical partnerships to build its social and economic base. Hence, some of the partners that have lent technical support to the government in its HGSF endeavor since 2010 include the World Food Program, the Partnership for Child Development (PCD), the New Partnership for Africa's Development (NEPAD), the World Bank and the Global Child Nutrition Foundation (GCNF).

Self-help (Boipelego), community involvement and support – innovation and impact

Local communities continue to be involved in several activities, such as the hand stamping of sorghum grain and its processing into flour in rural areas, as well as in food preparation. In some communities, the bread is baked by local women and not purchased from shops. This provides additional income and a livelihood for local women and their families.

Through parent-teacher associations (PTAs), the community provides cleaning materials, feeding utensils and buys salt. The PTAs also provide a link to other services, such as the Ministry of Health for school inspections, child health and hygiene checks, etc., while also identifying needs for training and capacity building for cooks and school caretakers.

Challenges

Despite the strides made by the Botswana School Feeding Program, challenges remain. For instance, meals could include more fruit and vegetables, which are important for micronutrients. There are also concerns about the supply chain and logistics, including transport shortages, late deliveries by suppliers, and irregular supply of some food commodities. In addition, there are challenges surrounding the delivery of some food commodities that do not comply with the set quality standards, and the spoilage of food commodities due to inappropriate warehousing conditions.

Crucially, there is no official, national school feeding policy, merely guidelines that need revision. What's more, with the growing problem of overweight and obesity among young children, the BSFP needs to provide more targeted and robust nutrition education in the school setting.

A recipe for success

Some of the key ingredients for success and the lessons we can learn from Botswana are that:

- Political will and commitment are an imperative, along with the investment of real resources for action and delivery.
- Good governance, transparency and accountability are crucial to running any system, no matter how small, big or complex.
- Coordination across key sectors is key, as is learning at every opportunity, and the ability to re-shape the program as needed.
- Community engagement, ownership and volunteerism are crucial.
- There needs to be recognition across the board that social safety nets are an opportunity to invest in livelihoods.



References

- Bornay O, Chengeta J, Chotani H, Magole M, Rambukwelle N, York C (1993). *Suggested Guidelines on the Management of Primary School Feeding Programs in Botswana*. Government Printer: Gaborone.
- Botswana Institute of Development Policy Analysis (2011). *Report on the Botswana National School Feeding Stakeholder Workshop*. http://hgsf-global.org/en/bank/downloads/doc_download/232-report-on-the-botswana-national-school-feeding-stakeholder-workshop.
- Central Statistics Office, Republic of Botswana. Education Statistics. <http://www.gov.bw/en/citizens/topics/statistics/>.
- Central Statistics Office, Republic of Botswana (2005). Education Enrollment Projections 2004-2016. <http://www.gov.bw/en/citizens/topics/statistics/>.
- Drake L, Woolnough A, Burbano C, Bundy D (Editors) (2016). *Global School Feeding Sourcebook: Lessons from 14 Countries* (2016). Imperial College Press, ISBN 9781783269112: New Jersey. <https://openknowledge.worldbank.org/handle/10986/24418>
License: CC BY-NC.
- GADM Database of Global Administrative Areas (2013). <http://www.gadm.org/>.
- Home Grown School Feeding (hgsf-global.org) (2012). *The Botswana School Feeding Program: A Case Study*. http://www.hgsf-global.org/en/bank/downloads/doc_details/290-botswana-nsfp-final-report.
- Home Grown School Feeding (hgsf-global.org). School Meals Planner. <http://www.hgsf-global.org/en/bank/menu-planner>.
- Isler A (2012a). *Botswana: The Transition to a National School Feeding Program*. World Food Programme (WFP) and Ministry of Local Government and Rural Development: Botswana, Rome.
- Isler A (2012b). *School Feeding in Botswana: A Case Study of Transition*. Government Printer: Gaborone.
- Masilo D (2009). *Purchase of Watermelons for Botswana Producers*. Presidential Directive PPO1/1/IV (69) of 29 April. Office of the President: Gaborone.
- Republic of Botswana, Department of Local Government Finance and Procurement, Ministry of Local Government and Rural Development (2011). Internal reports.
- Republic of Botswana, Ministry of Agriculture, Ministry of Local Government and Rural Development, Ministry of Education and Skills Development (2009). *Guidelines for Procurement of Agricultural Products for School Feeding*. Government printer: Gaborone.
- Republic of Botswana, Ministry of Health, Family Health Division (1999). *Botswana National School Health Policy and Procedures Manual*. Government printer: Gaborone.
- Republic of Botswana, Ministry of Finance and Development Planning (2000). *The Revised National Food Strategy*. Government printer: Gaborone.
- Republic of Botswana, Ministry of Finance and Development Planning (2003). *National Strategy for Poverty Reduction of 2003*. Government printer: Gaborone.
- Republic of Botswana, Ministry of Finance and Development Planning (2010). Financial Statements, Tables and Estimates of the Consolidated Funds Revenues 2010-2011. Government printer: Gaborone.

Republic of Botswana, Ministry of Local Government and Rural Development (2001). *Inter-Ministerial Taskforce: Internal Report on the Review of the Primary School Menu*. Government printer: Gaborone.

Republic of Botswana, Ministry of Local Government and Rural Development (2012). *The Botswana School Feeding Program: A Case Study*. Government Printer: Gaborone.

UNICEF (2013). *The State of the World's Children 2013: Children with Disabilities*. Statistical Tables: Table 1, Nutrition. UNICEF: New York. <http://www.unicef.org/sowc2013/statistics.html>.

World Bank (2013). World DataBank: World Development Indicators – Botswana. http://databank.worldbank.org/data/reports.aspx?Report_Name=Botswana&Id=623b3f51.

List of abbreviations

BFHI	Baby-friendly Hospital Initiative
BFN	Biodiversity for food and nutrition
CESCR	Committee on Economic, Social and Cultural Rights
CFS	Committee on World Food Security
CRC	Convention on the Rights of the Child
FAO	Food and Agricultural Organization
FFA	Framework for Action (of the ICN2)
GCNF	Global Child Nutrition Foundation
GDP	Gross domestic product
GEF	Global Environmental Facility
GNR	Global Nutrition Report
HGSF	Home Grown School Feeding programmes
HLPE	High Level Panel of Experts on Food Security and Nutrition
ICN2	Second International Conference on Nutrition
IDPs	Internally displaced peoples
IFAD	International Fund for Agricultural Development
LMICs	Low- and Middle-Income Countries
NCDs	Non Communicable Diseases
NEPAD	New Partnership for Africa's Development
NFSI	Nutrition-Friendly Schools Initiative
NGOs	Non-government organizations
PCD	Partnership for Child Development

SDGs	Sustainable Development Goals
SUN	Scaling Up Nutrition Movement
TB	Tuberculosis
UN	United Nations
UNSCN	United Nations System Standing Committee on Nutrition
WASH	Water, Sanitation and Hygiene
WBG	World Bank Group
WFP	World Food Programme
WHA	World Health Assembly
WHO	World Health Organization

Photo credits

Cover: FAO/Riccardo Gangale

Page 3: Ubirajara Machado

Page 5: FAO/Rubí López

Page 7: FAO/Riccardo Gangale

Page 10: A. Manjella

Page 11: FAO/Jim Holmes

Page 14: FAO/J. Koelen

Page 15: FAO/Giuseppe Bizzarri

Page 17: FAO/Riccardo Gangale

Page 21: FAO/Rubí López

Page 27: FAO/P. Morin

Page 33: S. Boylan

Page 35: FAO/Christena Dowsett

Page 37: FAO/Masakazu Shibata

Page 41: Delisle Hélène

Page 45: A. Manjella

Page 51: N. Chitembwe

Page 52: FAO/Riccardo Gangale

Page 54: A. Manjella



UNSCN vision

A world free from hunger and all forms of malnutrition is attainable in this generation

UNSCN Secretariat

info@unscn.org • www.unscn.org • c/o FAO • Viale delle Terme di Caracalla • 00153 Rome, Italy

