

Prologue

Re-Imagining School Feeding: A High-Return Investment in Human Capital and Local Economies was developed by the World Food Programme and the editorial team of *Disease Control Priorities* and published by the World Bank. This book seeks to share the latest child-centered evidence showing how well-designed school feeding programs can promote human capital development in low- and middle-income countries, especially as part of a cost-effective essential package of interventions for school children and adolescents.

This book has its origins in a 30-year effort by the global health sector, initiated at the World Bank, to identify the highest return investments in health in low- and middle-income countries (LMICs), informing the publication of the *Disease Control Priorities* series. The third edition (*DCP3*), published in 2015–18 (Jamison and others 2015–18) and supported by the Bill & Melinda Gates Foundation, includes a specific focus on human development as well as health in volume 8, *Child and Adolescent Health and Development* (Bundy and others 2017a). It provides for the first time an expanded analysis of how health status affects the development of school-age children and adolescents; how an essential package of interventions targeting school-age children and adolescents, including school feeding programs, can promote human capital; and how the impact of these interventions might manifest differently for girls and boys at different ages.

A key message from volume 8 is that the realization of human potential for development requires age-specific investment throughout the 8,000 days of childhood and adolescence (Bundy and others 2017b). The current focus on the first 1,000 days is an essential but insufficient investment. Intervention is also required in

three later phases: the middle childhood growth and consolidation phase (5–9 years), when infection and malnutrition constrain growth, and mortality is higher than previously recognised; the adolescent growth spurt (10–14 years), when substantial changes require good diet and health; and the adolescent phase of growth and consolidation (15–19 years), when new responses are needed to support brain maturation, intense social engagement, and emotional control. Volume 8 proposes two cost-efficient health intervention packages, one delivered through schools and one focusing on later adolescence, which combined, provide phase-specific support across the life cycle, securing the gains of investment in the first 1,000 days, enabling substantial catch-up from early growth failure, and leveraging improved learning from concomitant education investments. School feeding is recognized as a cost-effective intervention and a necessary component of the essential package.

Re-Imagining School Feeding brings together the key chapters of volume 8 that are of particular relevance to global efforts to provide effective school feeding programs. As can be seen in the list of contents, some of the chapters are specifically focused on school feeding (especially chapters 8, 12, 20), while others provide the necessary context or evidence for the essential package for school health (chapters 11, 13, 19, 24, 25), or provide the latest evidence to inform financing decisions for better outcomes across multiple sectors (chapters 6, 22, 23, 24, 28). Together, these 22 chapters cover early child development, school-age children, and adolescence, and show that school feeding, as part of the essential package, has a key role to play for each of these stages of human development.

INVESTING STRATEGICALLY IN SCHOOL FEEDING

The World Food Programme (WFP) has led international efforts on school feeding since launching its first program with the Government of Togo in 1963 and is currently developing a new initiative to promote and support school feeding as part of the essential package of support for child and adolescent development in LMICs. WFP is supporting the creation and distribution of this version of volume 8 to increase policy makers, planners, and practitioners' access to the latest information on the roles of school feeding in human capital development and local economies. The book also aims to support rational and informed choices about these high-return investments to optimize outcomes during the era of the Sustainable Development Goals (SDGs) through 2030 and beyond.

Children entering school today will become adults by 2030. The investments made between now and then in education, health, and nutrition will do much to determine how well-prepared these young women and men are to fulfill their potential in life, for the betterment of themselves, their families, and, through human capital, their nations. For them to achieve the best possible outcomes, financing from all sources, including domestic resources and official development assistance, must increase. Of current spending in LMICs, only about US\$2 billion addresses the health needs of children ages 5 to 19 years, whereas some US\$29 billion is invested in children under age 5. It is therefore clear that financial resources for the health and development of school-age children and adolescents must increase substantially. The evidence presented in this book indicates that this must include investment in the essential intervention packages that include school feeding (see especially chapters 12, 20, and 25).

During the early part of the 20th century, the development community mainly viewed school feeding as a simple way to deliver food-aid, but new strategic thinking by countries during the 1990s and 2000s brought in different sectoral perspectives. The timeline for the evolution of school feeding is illustrated in figure P.1. In several countries, social change drove the creation of national school feeding programs that targeted social protection. In South Africa, postapartheid changes in 1991 led eventually to the "Care and Support for Teaching and Learning Programme," which today feeds more than 9 million school children daily. In India, a 2001 order from the Supreme Court, responding to a lawsuit brought by the People's Union Civil Liberties, led to a national Mid-Day Meal program reaching some 113 million children (Afridi 2010; Singh, Park,

and Dercon 2014). While in Brazil, the Zero Hunger program established in 2003 by the national government led to more than 50 million children receiving home-grown school meals.

The education sector also drove change, most notably with the launch of the FRESH framework (Focusing Resources on Effective School Health) as part of the Global Education Forum held in Dakar, Senegal in 2000 (World Education Forum 2000). FRESH provided a policy context for including health interventions, including school feeding, in countries' efforts to achieve Education for All. Finally, the role of the agricultural sector became more prominent in school feeding in Africa in 2003 when nine African governments decided to include school feeding programs that source food locally from smallholders in the Comprehensive Africa Agriculture Development Programme (CAADP).

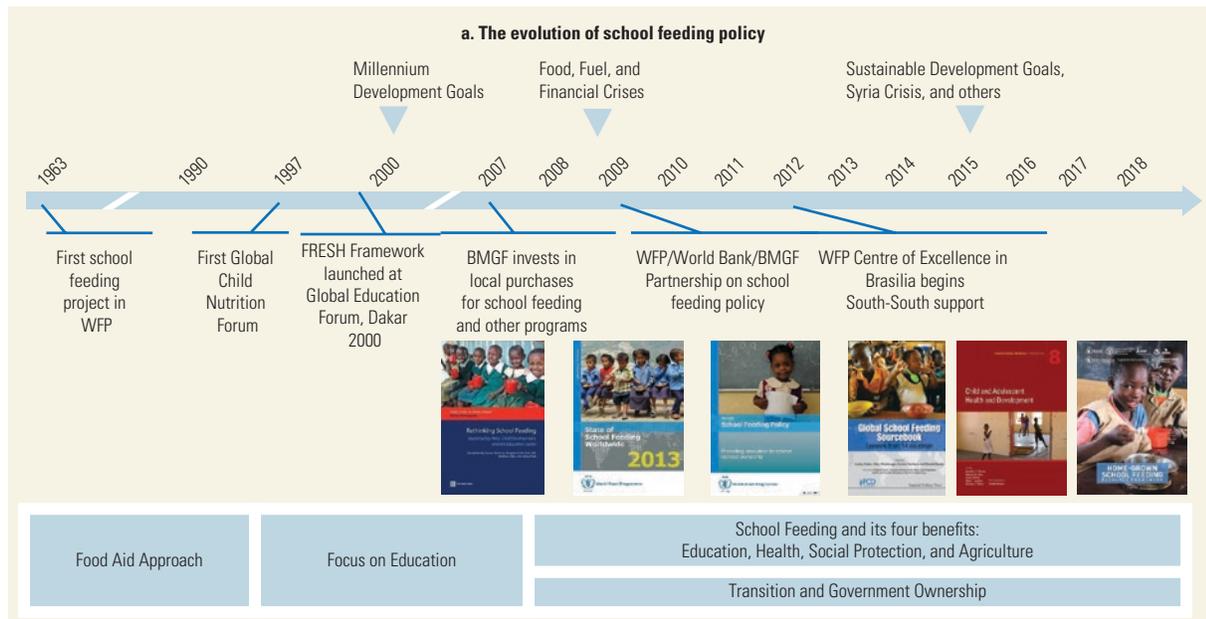
During the 1990s and early 2000s, there was growing interest among countries in school feeding but some uncertainty and fragmentation of strategic thinking around the goals and objectives of these national programs. As the 21st century advanced, school feeding programming became more strategic and purposeful under the growing pressures of the global fuel, food, and financial crises.

A NEW VISION OF SCHOOL FEEDING SINCE THE GLOBAL FINANCIAL CRISIS

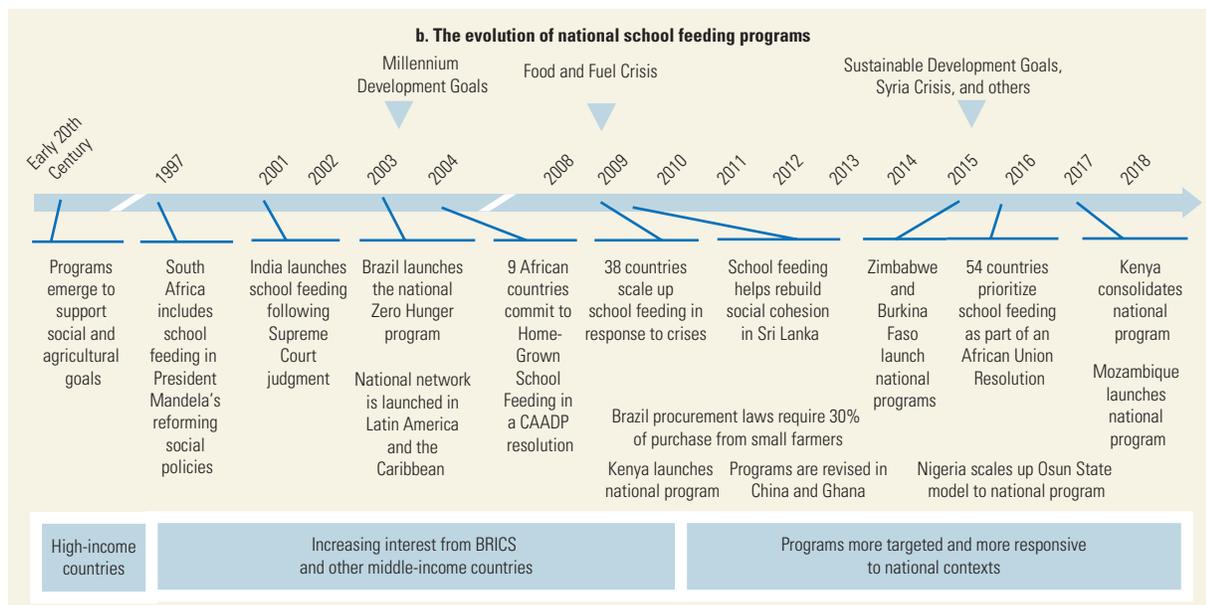
The food, fuel, and finance crises starting in 2008 led to a change in the way that the role of school feeding was viewed within the development community. In particular, there was greater recognition that school feeding programs had multiple outcomes benefitting at least four major sectors: health, education, social protection, and agriculture. Figure P.1 illustrates the key milestones in this paradigm shift.

Earlier experience had shown that financial crises often had large-scale consequences for children. The 1997 economic crisis in Indonesia was associated with a doubling of the number of children not in school (Frankenberg and others 1998), while droughts in Sub-Saharan Africa had been associated with declines in both schooling and child nutrition (Bundy and others 2009). As the effects of the 2008 crisis intensified, about half the households surveyed in Bangladesh had reduced spending on education to cope with rising food prices, with girls particularly at risk (Grosh, del Ninno, and Tesliuc 2008). As a consequence, the World Bank Group made school feeding eligible for support from the US\$1.2 billion Global Food Crisis Response Facility established in 2008, and 38 countries decided

Figure P.1 A Timeline for the Evolution of School Feeding Policy and Programs in the 20th and 21st Centuries



Note: The documents illustrated include the key milestones: *Rethinking School Feeding* (Bundy and others 2009), *The State of School Feeding Worldwide* (WFP 2013), and *Global School Feeding Sourcebook* (Drake and others 2016). BMGF = Bill & Melinda Gates Foundation; FRESH = Focusing Resources on Effective School Health; WFP = World Food Programme.



Note: Early school feeding programs were viewed as a mechanism for providing food aid, usually with a focus on feeding in emergencies, and as part of the social safety net in poor communities and communities in crisis. During the 1990s, the returns to education became more widely recognized, especially as part of a structured school health program, exemplified by the framework to Focusing Resources on School Health (FRESH) launched at the Global Education Forum in Senegal 2000 by a consortium of agencies that included the United Nations Educational, Scientific and Cultural Organization; United Nations Children's Fund; World Health Organization; World Bank; and World Food Programme. The food, fuel, and financial crises of 2008 forced policy makers to take a harder look at the role of school feeding and to recognize that benefits could be identified in terms of outcomes in many areas, especially health, education, social protection, and agriculture. This wider appreciation of the multiple returns to school feeding led to greater interest on the part of governments and increasing precision and targeting of national school feeding programs. BRICS = Brazil, the Russian Federation, India, China, and South Africa; CAADP = Comprehensive Africa Agriculture Development Programme.

to step up their school feeding programs as an emergency response.

In 2009, the World Food Programme, the World Bank, and the Partnership for Child Development (PCD) jointly published an in-depth analysis of why so many countries had opted to use their scarce emergency resources to expand school feeding rather than, for example, expanding food subsidies or starting strategic production methods around improved seeds and fertilizers. This report, entitled “Rethinking School Feeding,” concluded that countries recognized that there were multiple returns to school feeding, and that this was an intervention that could be used strategically (Bundy and others 2009). In times of stability, school feeding could be viewed as promoting health and education: contributing to the diet of poor children and promoting their school attendance while at the same time addressing short-term hunger. In hard times, in the relative absence of social protection infrastructure in LMICs, school feeding programs could rapidly expand their role as a social safety net, taking food rapidly and directly into the communities that needed help most. Expanding school feeding programs, in terms of both the number of students fed and the quantity of food distributed, was a smart response by LMICs, using the safety net option that was most immediately available to them. The countries added to the value of this approach by complementary actions, such as carrying out deworming and providing micronutrients.

This analysis helped define a new, and more effective, way forward for school feeding, which in 2013 led to the endorsement by United Nations (UN) member states of what was to become the WFP Global School Feeding Policy. The policy was announced in the *State of School Feeding Worldwide* (WFP 2013), published by the WFP with the World Bank and PCD. The report presents evidence that school meal programs are sustainable and support substantial agricultural markets worldwide, with approximately 400 million schoolchildren, about one out of every five, receiving a school meal every day, representing a global investment of the order of US\$80 billion a year. The analysis shows there were few countries that did not support school feeding to some extent, although the investments were typically greatest where the need was least. It was also apparent that school meals programs continued to play both a development role, by supporting health and education, and a crisis response role, by providing a rapidly deployable safety net.

To explore the detailed realities of school feeding programs, 14 case studies of “at-scale” national school feeding programs were undertaken, including analyses of the programs in Brazil, India, and South Africa. The *Global School Feeding Sourcebook: Lessons from*

14 Countries (Drake and others 2016) showed the many different ways that countries had achieved cost-effective programs at scale and, while no “one size fits all,” there are some general programmatic good practice lessons to be learned.

TEN YEARS OF POLICY EVOLUTION AROUND SCHOOL FEEDING

As shown in figure P.1, between the publication of *Rethinking School Feeding* in 2009 and the *Global School Feeding Sourcebook* in 2016, there was a sea change in the way that countries, development agencies, and policy makers viewed the role of school feeding. The steady accumulation of evidence in the intervening 10 years resulted in major policy changes around school feeding. This change was evident in all four main sectors that show benefits from school feeding.

Health and Nutrition

A major reason for publishing this book is the health sector’s recent reassessment of the role of school feeding versus other potential investments in terms of the impact on the development of school-age children and adolescents. Volume 8, *Child and Adolescent Health and Development*, of the third edition of *Disease Control Priorities*, upon which this book is based, concluded that the essential packages, which include school feeding, are a particularly good value for money, and that while the first 1,000 days of life are critical for development, much greater investment is also needed in the next 7,000 days of middle childhood and adolescence. These concepts are explored in this book in more detail in chapters 1 and 8. The major message is that school feeding is a cost-effective intervention because of the multiple benefits it offers, especially when combined with the overall essential package (see chapters 20 and 25).

The UN Systems Standing Committee on Nutrition has echoed many of these findings in a new statement on “Schools as a System to Improve Nutrition.” (UNSCN 2017). In line with the Zero Hunger Challenge and the UN Decade of Action on Nutrition, the report recognizes that improving child nutrition remains imperative for human development and sustainable development. The report recognizes the focus on health and nutrition during the critical first 1,000 days of a child’s life, and that young children, school children, and adolescents represent a continued opportunity for productive intervention in development through the subsequent 7,000 days (Bundy and others 2017a),

during which there are sequential developmental phases addressing different needs for optimal growth (Prentice and others 2013). The UN committee recognized that interventions during the first 1,000 days are not enough for well-rounded development. This suggests the need for significant investment in health and nutrition in middle childhood and adolescence in the form of a multisector “essential package” that maximizes the value of the investment through schools and addresses multiple Sustainable Development Goals in a more coherent way.

The statement concludes that given new evidence and changing circumstances, there is a need to reassess the role of the school environment in improving the health and nutritional status of children, which is essential for the realization of basic human rights and can stimulate community development, create jobs, and influence agriculture production systems to deliver healthy and nutritious foods. Schools can offer basic health services and address hygiene and sanitation, while supporting education and helping mainstream nutrition and promote lifelong healthy eating habits (Patton and others 2016).

An additional key point is the role of school feeding in addressing the “double burden” of not only avoiding undernutrition, but also helping limit the obesity epidemic that often accompanies economic growth (UNSCN 2014). In this context, school feeding has the potential for harm as well as good: poorly designed school feeding menus can set children on a trajectory toward obesity, whereas careful attention to healthy diet in designing school meals can help establish life-long healthy dietary behaviors (Fernandes and others 2016). Similarly, school feeding can help address the “hidden hunger” or “triple burden” of micronutrient deficiency, by adding micronutrient supplements to food, carefully balancing diet menus, or providing bio-fortified foods (von Grebmer 2014).

In 2016, the *Lancet* Commission on Adolescent Health and Wellbeing made the case that the importance of development during adolescence had been grossly underrecognized and underfunded (Patton and others 2016). In considering the limited potential platforms available to reach adolescents, the report notes the centrality of secondary education as a social support for adolescents, especially girls, and as a point of entry for appropriate health services. This echoes the call in SDG4 for universal secondary education, mirroring the very successful call for universal primary education in the Millennium Development Goals (MDGs). In many countries, ensuring that adolescent girls attend secondary school is especially sensitive to the availability of school meals.

The Education Sector

The Global Partnership for Education (GPE) has recently made its commitment to school health even clearer through publishing its own version of DCP3 volume 8, entitled *Optimizing Education Outcomes: High-Return Investments in School Health for Increased Participation and Learning* (Bundy and others 2018). As is stated in the prologue, the edition was developed by GPE and Disease Control Priorities and published by the World Bank to increase access within the education sector to “the latest child-centered evidence about how health affects education outcomes in poor countries—and what to do about it.” This call for more attention to the health of schoolchildren also specifically includes school feeding.

Former Prime Minister of Australia and GPE Board Chair Julia Gillard says in her preface to the education version of volume 8, “The time is right to work together, across sectors, in a collaborative effort to ensure all girls and boys are healthy and able to complete a free, equitable, and quality primary and secondary education” (Bundy and others 2017a). The authors of this prologue echo those sentiments.

In 2016, GPE launched a US\$3 million program with the World Bank to bring together representatives from ministries of education and health from GPE member countries in Africa and Asia to explore the synergies between learning and good health for school-age girls and boys.

In 2018, GPE held a global conference on education, the first of its kind to be cohosted by a Group of Seven leader, President Emmanuel Macron of France, and the leader of a developing country, President Macky Sall of Senegal, which attracted more than 10 heads of state; 1,200 participants; and 100 government ministers. Over 50 developing countries announced increases in their domestic financing for education, bringing their combined spending to US\$110 billion (2018–2020), up from US\$80 billion in the previous triennium. For a sector that has seen its share of global aid in steady decline since 2010, this is a remarkable outcome. This step-up in resources provides an exceptional opportunity to make a difference and holds us all to a higher standard of program design to find new ways of leveraging opportunities that make an impact. From a development perspective, the education and health of children are two sides of the same coin. Putting it simply, healthy children learn better. We have before us now an opportunity to maximize human capital potential by delivering quality education and health to the children most in need.

The importance of health for education was also emphasised in the report of the International Commission on Financing Global Education

Opportunity (2016), led by Gordon Brown, which listed health interventions as key to optimizing learning outcomes. The report points out that about 300 million school children have iron-deficiency anemia, causing them to lose some six IQ points per child; that 66 million school children in low-income countries go to school hungry; and that these conditions translate into the equivalent of between 200 million and 500 million schooldays lost owing to ill health each year. The report recommends that schools and school systems be used as a platform for health interventions.

The commission recommends increasing investments in six key health interventions that are recognized as the most cost-effective ways to increase school attendance and learning. These include malaria prevention, school-based water and sanitation, deworming, early childhood development, reproductive health and sexuality education, and school feeding at the primary school level, which is cited as having a strong impact on enrollment and learning.

An additional economic perspective on the value of health for education is found in the recent World Bank World Development Report 2018 *Learning to Realize Education's Promise*, which highlights the importance of collaboration between the health and education sectors to accelerate human capital development.

Agriculture

In the 2017 Africa Agriculture Status Report (AGRA 2017), Home Grown School Feeding (HGSF) is cited as a key intervention for enabling the development of resilient value chains for smallholder farmers. HGSF as a concept that specifically seeks to link school feeding to local agriculture was initiated by the African Union's New Partnership for Africa's Development (NEPAD) in 2003 and since then has been implemented by national governments and international organizations, including WFP and the Food and Agriculture Organization of the United Nations (FAO). This engagement between agriculture and school feeding has also been established elsewhere, for example in the United States where the U. S. Department of Agriculture has been the designated school feeding lead agency since the beginning of the school lunch program in 1946.

Although the interface between school feeding and agriculture is not new, HGSF, as proposed by the African Union's Comprehensive African Agriculture Development Programme in the context of low- and middle-income countries, marked a significant policy shift from food-aid dependency to local food and nutrition security development. Through the HGSF lens, school feeding is seen as presenting an unique opportunity for creating mediated

markets to help address some of the many challenges of agriculture systems in developing countries, such as segmented markets, small farm sizes, dispersed settlements, and high postharvest loss. The African Union's revised Africa Regional Nutrition Strategy 2015–2025 has also endorsed homegrown school feeding as a continental strategy to address some of these challenges (African Union 2016).

HGSF procurement is shaped by considerations of geographic location and a diversified commodity basket based on menus designed according to local availability and agro-ecology (Gelli and others 2016). This makes food networks more resilient and increases the participation of small farmers and women in food production. HGSF enables nutrition-sensitive agriculture through two main pathways. The first is through the focus on a nutritionally diverse commodity basket, with a particular focus on micronutrient rich foods, and the second is through links with small farms, which make a particularly important contribution in providing essential micronutrients (Ruel and others 2013). According to a recent study, farms smaller than two hectares produce more than 25 percent of nutrients for South Asia, Southeast Asia, Sub-Saharan Africa, and East Asia Pacific (Herrero and others 2017).

Recent analysis from Ghana shows the substantial demand for agricultural commodities from homegrown school feeding across food groups, which is key to promoting production diversity (Singh and Fernandes 2018). For example, the upper bound estimates for legumes is over 25,000 tons, which constitutes about 2.85 percent of national legume production (blackeye peas and peanut). Direct links with school feeding, whether through farmer cooperative or institutionalized procurement such as national food reserves, also support local varieties through commodity-specific supply chains. According to a 2012 estimate, school feeding procured approximately 3.3 percent of paddy rice (rice grains with the husks) available for consumption from domestic production in Ghana, typically milled by women's cooperatives.

In 2009, Brazil became the first country to explicitly mandate linking agriculture through legislation. The school feeding law incorporated the mandatory purchase from smallholder farmers of at least 30 percent of the total amount of food required for school feeding. This was a significant measure to strengthen family farming and encourage rural and urban income generation as well as improve social mobilization. Law No. 11 947 of 2009 mandates a local approach in terms of the food culture and agriculture, with incentives for purchasing of diversified food produced locally, preferably by family farmers and rural family entrepreneurs. The legislation made significant progress

in connecting school feeding procurement to small farms, or “family farms.”

An evidence-led approach was used to develop the HGSE agenda, based on the experiences of two programs in Africa supported by the Bill & Melinda Gates Foundation. The first was the Purchase for Progress (P4P) program led by WFP, launched in 2008 as a five-year, 20-country pilot program to explore how WFP’s program design and procurement could better assist smallholder farmers in developing countries. Building on the lessons learned, WFP leverages its demand-side agricultural market support across the entire value chain, from production to postharvest, to over 2 million smallholders in 47 countries. Governments may also purchase food from smallholders to meet the needs of schools, as well as other public institutions, including hospitals. This stable demand encourages farmers to invest in production and catalyzes broad capacity development and policy support from a variety of partners.

The second program on HGSE, led by the Partnership for Child Development, worked with national HGSE programs in Ethiopia, Ghana, Kenya, Mali, and Nigeria. The PCD analysis, launched in 2009, undertook analysis to generate evidence on the value of these investments for human capital development and the local agricultural economy. The evidence was used by the governments of these countries to guide policy and led to sustained scale-up of their national school feeding programs. Most notably, the national program developed in Osun State in Nigeria, which fed some 1.2 million children, became the model for a still-expanding national program now active in 22 states that feeds more than 7.5 million children daily (Federal Government of Nigeria 2018a).

The links between school feeding and agriculture go beyond the mediated market paradigm. Such programs can also be used as a platform to address issues such as access to credit for small farmers by providing direct links with agriculture banks and collateralizing forward contracts.

Social Protection

Some of the earliest school feeding programs were introduced with social protection as their primary goal (The Parliament of the United Kingdom 1906). The programs provided an explicit or implicit income transfer to households of the value of the food distributed, with the value of the transfer varying considerably from in-school snacks to large take-home rations. Estimates of the adequacy of school feeding as a social safety net suggest that it compares well with other types of social protection measures, providing an income equivalent of about 10 percent. School feeding also

compares favorably with other kinds of safety nets in terms of reaching the poor, especially when targeted geographically, at a lower cost but with less efficiency than household-targeted safety nets. Analysis suggests that targeted in-school meal programs are progressive and pro-poor, in contrast with scholarships, and provide benefits similar to those of other cash and food interventions. For many countries, social protection is the main goal of school feeding (Alderman and Bundy 2011) and many policy makers prefer food over cash as a means to ensure that the recipients benefit directly. For example, the Nigeria National Home Grown School Feeding Programme is viewed as a cornerstone of the country’s National Social Investment Programme (Federal Government of Nigeria 2018b).

In 2014, the World Bank launched an annual global review of “The State of Safety Nets,” which specifically recognizes the safety net role of school feeding (Gentilini 2014).

SCHOOL FEEDING AS PART OF THE ESSENTIAL PACKAGE FOR CHILD AND ADOLESCENT DEVELOPMENT; THE IMPLICATIONS OF BENEFIT-COST ANALYSIS

The analyses presented in this book support the economic and developmental case that school feeding programs result in benefits across multiple sectors that together substantially exceed the cost of the intervention, and thus should be part of the package of interventions delivered to school-age children. These returns are progressive: they disproportionately benefit the poor and malnourished, and so are especially relevant to poor and fragile communities.

There are three major types of economic analyses presented: cost-effectiveness analyses; extended cost-effectiveness analyses, which include out-of-pocket costs; and benefit-cost analyses. The latter are particularly relevant to measuring developmental outcomes as they provide a way of estimating benefits across sectors by quantifying benefit in terms of cost.

The benefit-cost analyses suggest that the essential package for school-age children should include school feeding alongside the more familiar school-based interventions that have been shown to be cost-effective in this age group, such as malaria prevention, deworming, vision screening, and human papillomavirus and tetanus toxoid vaccination. These other interventions are discussed in more detail in chapters 13, 14, 15, and 25.

The analysis shows that school meals are the most expensive of the interventions included in the essential package, representing some 80 percent of the cost of the

package for low-income countries and about 70 percent for lower-middle-income countries (see chapter 25). The higher cost is the result of the need to provide food on a daily basis, whereas other interventions, such as deworming, require only annual delivery, or, in the case of vaccines, a single one-time delivery. Despite the relatively higher cost of intervention, school feeding is cost-effective and is a recommended component of the essential package. It is cost-effective because of the scale of the benefits and because they are delivered across multiple sectors, with some evidence that the returns are additive or even multiplicative. These issues are discussed in more detail in chapters 12 and 25.

In the next three sections, we explore the impact of school feeding on human capital development, focusing on health and education outcomes; investment in local economies, through social protection and agriculture; and the benefits when these two streams are considered together.

Investment in Human Capital: Education and Health

The impacts of school feeding on human capital development stem from the benefits in terms of education and health. These benefits are closely linked and together promote the attendance of children in school and the potential for them to learn while they are there. With respect to education, the research literature clearly demonstrates that school feeding increases attendance and years of schooling, especially for girls (Snilstveit and others 2016). A higher attendance rate promotes the completion of an additional year of schooling, which can boost the earnings of the child once she or he enters the labor market as an adult. These earnings may increase by an estimated 9 percent for each additional year of schooling (Psacharopoulos and Patrinos 2018). In addition, well designed, nutrition-sensitive school meals can help children meet their nutritional needs, promoting healthy development. Better-nourished children can focus on learning in school and are at lower risk for developing poor health conditions. One of these health conditions is iron-deficiency anemia, which is endemic among school-age children in low- and middle-income countries. Anemia is associated with poor cognition and learning as reflected on standardized tests scores (Sunghong, Mo-suwan, and Chongsuvivatwong 2002; McCann and Ames 2007). School meals that include micronutrient-rich foods or supplementation can reduce the risk of anemia (Jomaa, McDonnell, and Probart 2011). Nutrition-sensitive school meals can therefore not only increase the amount of time children spend in schools, but also improve the quality of this time by helping them improve their ability to learn and make the most of their education.

From an economic perspective, these benefits from school feeding translate into an increase in the quantity and quality of education, leading to greater human capital development and productivity in the labor force. The extent to which benefits are realized may also hinge on the design and implementation of the school feeding intervention. In particular, school feeding that is well-targeted to the children in greatest need and that helps address key micronutrient deficiencies in the population can generate greater returns.

Investment in Local Communities and Economies: Social Protection and Agriculture

School feeding has a long history of use as a social safety net, providing a mechanism to target investments through schools, one of the most ubiquitous platforms even in LMICs, directly to children. For poor communities, the value of the income transfer is likely in the range of 10 to 15 percent of daily family income, which, for families with several children in school, can add up to a substantial benefit. Although this income transfer may appear as a zero sum transaction from the implementer's point of view, recipient families will pass the additional income on to the local economy with a multiplier effect that will stimulate the local economy. An analogy can be drawn from the analyses done in the United States, which showed that every U.S. dollar invested in the Supplemental Nutrition Assistance Program (SNAP) translates into a US\$1.79 value generated in the local economy, through the multiplier lever.

Home Grown School Feeding offers similar benefits to the community, in this case through the returns to the local farmers. By purchasing food locally, the school feeding program is simultaneously a cash injection into the local farming economy; this can be particularly important to small-scale farming systems. This benefit is reflected at the simplest level in terms of an expanded food market, but it also leads to enhanced profitability through the effects of forward contracting, mediated by reduced transaction costs and shorter supply chains (Drake and others 2017). Well-designed programs can also provide more nuanced returns to the investment, such as the more than 75,000 women who are now employed as local caterers by the Nigeria National Home Grown School Feeding Programme (Federal Government of Nigeria 2018a). From this perspective, public sector investment in purchasing food for school feeding can be viewed as a substantial, no-regret investment in the local economy.

Both of these investments have strong feedback loops since strengthening the local economy will in turn benefit local families and further support the local schoolchildren.

Bringing the story together

Figure P.2 illustrates these relationships, showing that the single intervention of school meals has consequences for at least four different sectors. These effects often operate across sectors. This is particularly well demonstrated by the strong gender dimension of school feeding. The effect of school feeding on ensuring that girls are in school has returns to education, especially where girls face greater barriers to attend school; social protection, since girls out of school are vulnerable to early marriage and other forms of exploitation; and health, because human immunodeficiency virus vulnerability is inversely proportional to educational achievement.

Figure P.2 also illustrates the interconnectedness between the two streams of benefits: the returns to human capital development, through health and education, and the returns to investment in the community, through social protection and local agriculture. For example, social protection helps promote social stability, and a stable community potentiates the effects on education outcomes and opportunities for employment.

The outputs shown in the figure are inherently additive, and evidence indicates that they can be multiplicative. Demand for Home Grown School Feeding can drive and modify agricultural supply. For example, the diagonal arrow between agriculture and health illustrates how demand for bio-fortified foods, such as orange-flesh sweet potato and iron-fortified beans as a replacement for other vegetables, can multiply health returns while sustaining agricultural demand. Similarly, the diagonal arrow between social protection and education could be exemplified by the way in which keeping children in school benefits learning and also provides a social safety net. Since these effects are strongest for those who are most disadvantaged, they are specifically pro-poor and gender sensitive.

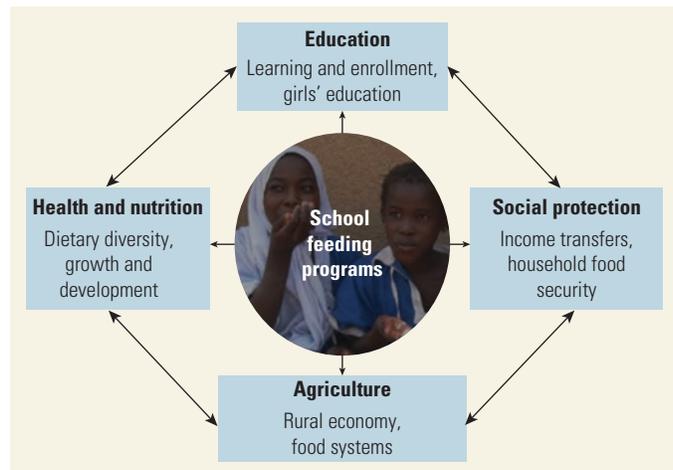
Overall, investment in school feeding offers the potential for substantial returns to human capital development while at the same time growing the local economy. These two streams of benefits are potentially in a feedback loop, each potentiating the effects of the other. It is these multiple and potentially multiplicative benefits that make well-designed school feeding programs a worthwhile investment.

CONCLUSIONS

The main messages we take forward from this reimagining of school feeding are as follows:

- The realization of human potential through development requires age-specific investments throughout

Figure P.2 Four Key Benefits of School Feeding Programs



Note: A school feeding program provides direct benefits for education through increased attendance, especially of girls, and indirect benefits for education modulated via improvements in health that in turn benefit cognition and learning. The programs also improve health and development directly through better quality and quantity of diet. Together, these health and education benefits contribute to human capital development. The programs also provide an investment in local economies, first, as a safety net with a transfer value of about 10% to 15% of income, and second, through the local purchase of food. Together, these benefits add up to a significant return on investment, which may also be multiplicative, for example, bio-fortified foods may not only contribute to health and learning but also increase returns to the agricultural market. This figure is based on the analyses of the Partnership for Child Development (Gelli and others 2016).

the 8,000 days of childhood and adolescence. The current focus on the first 1,000 days is an essential but insufficient investment; there is a need to expand investments in children and adolescents during the next 7,000 days.

- The essential investments in human capital development during the next 7,000 days include education and health. Volume 8 proposes two evidence-based, cost-efficient health packages, one delivered through schools and one focusing on later adolescence, that can provide age-specific support over this 7,000-day period. These packages can be delivered at scale using the school as a platform for delivery. Together, the packages can secure the gains of investment in the first 1,000 days, enable substantial catch-up from early growth failure, and leverage improved learning from simultaneous investments made by the education sector.
- The school-based package includes school feeding, alongside malaria prevention, deworming, vaccination, and vision and health promotion. Evidence over the past 10 years has resulted in a paradigm shift in understanding the role of school feeding as a development intervention, in particular, the recognition of significant benefits for multiple sectors, including health, education, social protection, and the local agricultural economy.

- Benefit-cost analysis shows that there are two streams of mutually reinforcing benefits driven by school feeding: (1) high returns to human capital development, as reflected in improved education and health outcomes, and (2) economically significant levels of investment in local economies through the income transfer associated with the social safety net dimension of school feeding, and the purchase of food from local smallholder farmers and lateral benefits such as salaries for caterers. These benefit streams constitute a virtuous cycle, with stable and strong local economies promoting human capacity development and labor market opportunities for these communities.
- Reimagining school feeding as a cost-effective investment in human capital development and in local economies has resulted in an acceleration in country-led demand for school feeding. While school feeding continues to play an important role in emergencies and as a response to social and environmental shocks, it is increasingly recognized as a major investment of relevance to all countries in terms of social stability, peace-building, and national development.
- The *DCP3* analyses show that the creation of human capital requires investment in child and adolescent development throughout the first 8,000 days of life. There is currently significant underinvestment in health and nutrition at precisely those ages when there is most focus on education outcomes (the “next 7,000 days”). The cost-effective essential package, of which school feeding is a crucial component, is intended to help fill this gap. In order for countries to strengthen their human capital, governments and development partners need to significantly increase investment in children over 5 years of age so they can deliver the essential package to those age groups that would benefit most.

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