



How School Meals Contribute to the Sustainable Development Goals

A Collection of Evidence



World Food Programme

About this Paper

School meals have **multiple benefits** and there is hard evidence that supports this claim. However, due to the multi-faceted nature of school meals, it is difficult to obtain a complete overview of the evidence.

This paper attempts to give such an **overview**. It collects existing, independent evidence of the benefits and impacts of school meals and uses the **Sustainable Development Goals (SDGs)** as thematic areas to organize the evidence. The paper also gives an indication of the specific **targets** to which school meals can contribute.

The paper shows how school meals can contribute directly to SDG2, SDG4 and SDG5 and indirectly to SDG1, SDG8 and SDG10. Each section starts with a short explanation of the **link between school meals and the SDG** and then goes on to list a selection of evidence that supports this link. The evidence cited in each section is **by no means exhaustive** but is selected because of its broad geographical coverage or because of its clear link to the SDG in question.

The paper and the selection of evidence are updated on a continuous basis.

About the Evidence in this Paper

All evidence cited in this paper is based on independent research published after 2009 in international peer-reviewed journals (or similar). In other words, it is recent evidence of the **highest possible quality** that is available in the public domain.

It is important to understand that evidence generated by research is only meaningful in the context in which the research was conducted (in particular the specific time frame, geographical area, and socio-economic environment). Usually the **results cannot be generalized**.

However, some evidence cited in this paper is not based on original research but on **review studies** or **meta-analyses** of a set of pre-existing studies. The results of these review studies or meta-analyses have a more global validity but usually come with a wide confidence interval.

WFP did not play any role in the studies cited in this paper, unless specified otherwise. The citation of a study in this paper does not imply that WFP endorses or validates the research or its results.

Basic Facts about School Meals Worldwide

Nearly every country in the world has some form of school meals programme in place (WFP 2013A).

School meals programmes are the most common **social safety net** in the world (WB 2015).

An estimated **368 million children** receive a meal at school every day, both in developing countries and in affluent countries (WFP 2013a).

The global investment in school meals is in the order of **US\$75 billion a year** (WFP 2013a).

The **Midday Meal Scheme in India** is the largest school meals programme in the world, as it feeds 105 million children every day (WB 2015).

Basic Facts about WFP School Meals Programmes

Since the establishment of WFP in 1961, school meals have been part of **WFP's mission** (UN 1961).

In 2015, WFP provided school meals to **17.4 million children** in 62 countries, spending **US\$321 million**. In the majority of these countries, WFP also provided technical assistance (WFP 2016).

In 2015, WFP provided solely **technical assistance** on school meals programmes to 10 governments, indirectly benefiting an estimated 10 million children (WFP 2016).

In 37 countries WFP provided technical assistance on **home-grown school meals** (WFP 2016).



2 ZERO HUNGER



Contributing to Zero Hunger

When the rations are appropriately designed, school meals can improve the nutrition status of pre-school children, primary school children and adolescents, by addressing macronutrient and micronutrient deficiencies. This leads to enhanced nutrition and health, decreased morbidity, and increased learning capacities.

A **meta-analysis of 45 studies** of school meals programmes around the world revealed that when children receive a standard meal of 401kcal/day during 200 days/year as part of a primary school meals programme, they gain on average 0.37 kg per year more than their peers who are not part of the programme. In pre-school meals programmes children gain on average 0.54 cm per year (Kristjansson et al 2016).

A study conducted by Abizari et al (2014) in Ghana showed that **energy, nutrient and micronutrient intake** were significantly higher and more adequate among children participating in a school meals programme. Also, compared to the control group, anemia prevalence was 10 percent lower.

The Midday Meals Scheme in India, the largest school meals programme in the world, has significant positive impacts on the **height, weight and health** of children, in particular those whose families are suffering the impacts of drought and related crop loss (Singh et al 2014).

School meals or snacks are often fortified to provide extra micronutrients to children. Best et al (2011) systematically reviewed 12 studies of **school meal fortification** in 11 countries and found that fortified school meals or snacks consistently reduce anemia prevalence and improve micronutrient states (in particular of iron, vitamin A, iodine and folate). Some studies also reported improved learning and decreased morbidity.

School meals programmes are sometimes combined with **deworming** campaigns. A meta-analysis shows that this has positive effects on infected children, increasing their weight by 0.75kg on average, but the value of mass deworming is still debated (Taylor-Robinson et al 2015; Croke et al 2016).

School meals programmes can include the distribution of **take-home rations** (THRs). A study in Burkina Faso revealed that the younger siblings of students receiving THRs from WFP showed significantly higher weight-for-age (+0.4 standard deviations) than in the control group. The study also showed that this gain was higher than what would be expected from transferring the monetary value of the THR to the household (Kazianga et al 2014).

There is also growing attention to the potential of schools to serve as a platform for awareness raising on **healthy diets and eating habits** (Global Panel on Agriculture and Food Systems for Nutrition, 2015)

Relevant targets

- 2.1 End hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food
- 2.2 End all forms of malnutrition
- 2.3 Double the agricultural productivity and incomes of small-scale food producers
- 2.4 Ensure sustainable food production systems

4 QUALITY EDUCATION



Contributing to Education

When a school meals programme is part of a package of investments in education, it can help maximize the return of these investments, because school meals facilitate access to school, increase enrolment and attendance rates and improve the nutritional status, health and cognitive development of children.

A systematic review of 216 education programmes in 52 low- and middle-income countries (3IE 2016) found that school meals programmes are one of the few education interventions that show **positive impact in both school participation** (enrolment, attendance, completion) **and learning** (scores on cognitive, language and mathematics tests).

School participation — A meta-analysis of school meals programmes across 32 sub-Saharan countries showed an average increase in **enrolment** of 10 percent in schools with a school meals programme (Gelli 2015).

A meta-analysis of 45 studies of school meals programmes around the world revealed that children receiving a school meal during the entire school year **attend** school 4-7 days more than children who do not receive school meals (Kristjansson et al 2016).

Relevant targets

4.1 Ensure that all girls and boys complete free, equitable and quality primary and secondary education

4.2 Ensure that all girls and boys have access to quality early childhood development care and pre-primary education

4.5 Eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations

4.6 Ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy

Learning — The 3IE review of 216 education programmes in 52 low- and middle-income countries found that school meals programmes increase children's performance on cognitive, math and language tests; the standardized means differences are respectively +0.11, +0.10 and +0.09 (3IE 2016).

Micronutrient **fortification** can also improve learning. A study in rural China involving 3600 fourth-grade students showed that students who received extra iron in their school meals had higher haemoglobin levels in their blood (+2g/L) and performed better on math tests (+0.1 standard deviations) (Luo et al 2012).

Including in high-income countries school meals improve learning and cognition. Sørensen et al (2015), analyzing a Danish pilot project, found that children receiving healthy school meals (the "New Nordic Diet") showed higher **language proficiency** than their peers who brought packed lunches from home (+11 percent reading speed and +25 percent correct reading).



5 GENDER EQUALITY



Contributing to Gender Equality

Girls struggle more than boys for access to education; one in every ten girls in the world is out of school, while with boys this figure is one in twelve (UNESCO 2015). Women and girls are also more exposed to hunger and malnutrition than boys; they represent 60 percent of all undernourished people in the world (FAO 2010). And when adolescent girls are out of school, they are more vulnerable to forced marriage, early pregnancy, violence and even human trafficking.

When adequately designed, school meals programmes can narrow these gender gaps and help break the vicious cycle of discrimination against girls.

The effects of school meals programmes on girls' school enrolment and schooling level vary with the design of the school meals programme. In a meta-analysis of school meals programmes in 32 sub-Saharan countries, Gelli (2015) found that onsite meals combined with take-home rations for girls are particularly effective: in these programmes, the increase in **girls' enrolment** was about 12 percent greater than the change in boys' enrolment.

Afridi (2011) evaluated a change in design of a school meals programme in rural India, from the monthly distribution of take-home rations to the daily serving of a meal at school. The transition had a significant positive impact on the daily participation rates of children in the lower grades. The average monthly attendance rate of girls in grade one was more than 12 percent higher while there was a small but positive effect on grade one boys' attendance rate.

Higher levels of education correlate with **lower levels of child mortality**. Child mortality diminished drastically around the world in the period 1970-2009 and around 50 percent of the saved lives can be attributed to the increased education of their mothers (Gakidou et al 2010).

There is also a strong correlation between higher levels of education and a **reduction in child marriages**. Over 60 percent of child brides in developing countries have no formal education. If all girls in sub-Saharan Africa and South and West Asia had secondary education, child marriage would fall by 64 percent, from almost 2.9 million to just over 1 million (UNESCO 2014).

Relevant targets

- 5.1 End all forms of discrimination against all women and girls everywhere
- 5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation
- 5.3 Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation
- 5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate

1 NO POVERTY



Helping to Reduce Poverty

8 DECENT WORK AND ECONOMIC GROWTH



Contributing to the Economy

10 REDUCED INEQUALITIES



Helping to Reduce Inequality



When well-designed, school meals programmes have direct benefits for children: they improve their nutrition status, health, and level of education. These direct outcomes further contribute to wider processes such as the reduction of poverty and inequality and economic growth.

Computations from more than 800 surveys in 139 countries show that the **private return for one additional year of education is a 10 percent increase in income** (Montenegro and Patrinos 2014, as cited in UNICEF 2015). The returns are higher for women than for men. The returns are generally higher in low- or middle-income countries than in high-income countries.

Also **early childhood interventions have a significant private return**. Gertler et al (2014) interviewed the beneficiaries of a psychosocial stimulation programme for growth-stunted toddlers in Jamaica twenty years after the programme and found that they earned 25 percent more than the stunted control group, enough for them to catch up to the earnings of non-stunted peers.

At national level, additional years of education also have a **positive impact on the GDP per capita and poverty rates**. UNICEF (2015) reports that each additional year of education of a country's population is associated with a 13 to 35 percent increase in GDP per capita. Also, each additional year of education in the 25–34 age group results in a 9 percent decrease in the country's poverty rate (measured as the percentage of the population living on less than US\$2 per day).

Economic modelling by WFP shows that every US\$1 invested in school meals programmes brings a **US\$3-10 economic return** from improved health, education and productivity (WFP 2013b).

Using data from 114 countries for the period 1985–2005, Patrinos and Psacharopoulos (2013) demonstrated that there is a correlation between increasing the education level in a country, measured by average years of education and **decreasing income inequality**, as measured by the Gini coefficient: one extra year of education is associated with a reduction of the Gini coefficient by 1.4 percent.

Educated people and the children of educated people tend to be healthier. In a cross-national study, de Walque and Filmer (2011) found that in developing countries outside Africa the mortality rates for women with at least primary education are 36 percent lower than for women with less than primary education. In Africa, the mortality rates of adult women with primary education are 14 percent lower than for women with less than primary education.

Children of more educated mothers are more likely to attend school. Research in 16 sub-Saharan African countries found that, on average, 68 percent of children of uneducated mothers attended school, 87.7 percent of children of mothers with six years of education attended school and 95.5 percent of children of mothers with 12 years of education attended school (Majgaard and Mingat 2012).

School meals programmes per se can also create employment opportunities and improve the livelihoods of the communities near the schools, especially when the food for the school meals is sourced or cooked locally, but more independent research is needed to support this claim.

Relevant targets

1.2 Reduce at least by half the proportion of men, women and children of all ages living in poverty

1.3 Implement nationally appropriate social protection systems and measures for all, including floors

1.4 Ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance

Relevant targets

8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services

8.6 Substantially reduce the proportion of youth not in employment, education or training

8.7 Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers and by 2025 end child labour in all its forms

Relevant targets

10.2 Empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status

10.4 Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality

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Other useful resources

The school meals information hub on WFP.org:
www.wfp.org/school-meals

WFP School Feeding Policy 2013:
www.wfp.org/content/school-feeding-policy

State of School Feeding Worldwide 2013
<http://documents.wfp.org/stellent/groups/public/documents/communications/wfp257481.pdf>

All evaluations of WFP School Meals Programmes
www.wfp.org/evaluation/list?

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