



# School meals in the 21st century:

## Key evidence gaps and future directions

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### Template Changelog

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- ▶ Incorporated final round of feedback.

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# ABSTRACT

School meal programs are a widely implemented safety net with documented impacts across social protection, education, health and nutrition and high estimated returns to investment (Alderman et al., 2024). Globally, in 2022, these programs reached over 400 million children for a total investment of \$70 billion a year (Global Child Nutrition Foundation, 2024).

The School Meals Coalition (SMC) created in 2021 and involving 106 member countries, has brought momentum and new opportunities for school meals. Collaborative research activities by development partners from the SMC have included evidence generation, review and synthesis, and the identification of key research gaps on school meal programs.

This article provides the basis for a common research agenda to support evidence generation aimed at improving action on sustainable school meal programs. These evidence gaps were generated through a series of activities including evidence reviews, expert consultations and stakeholder workshops undertaken by SMC partners.

The priority evidence gaps focus on six key themes:

1. **Situation and context analyses:** There is a need to better understand the context and problems in key lifecycle age groups to identify potential target groups of school meals and complementary school-based services. Primary target groups include pre-school, school age children and adolescents who directly receive school meals. Depending on program needs, secondary target groups could include farmers, supply chain actors, cooks, other service providers that may be involved in the school meal service provision. Other secondary target groups may also include indirect beneficiaries of the school meal program, including siblings and caregivers of children receiving school meals.
2. **Processes, implementation and costs:** There is a need for descriptive analyses of the different implementation models for school meals using a standardised framework to allow for meaningful comparisons across contexts, including procurement and service delivery metrics that also account for environmental boundaries. In addition, evidence is needed on programs costs, cost-drivers and cost-efficiency, and how these vary by model and quality of implementation. There is also a need to understand how to design and operationalize school meal menus that balance multiple priorities, such as cost, supply capability, nutrition requirements, cultural acceptability, and environmental sustainability. This evidence is crucial for making informed decisions that ensure efficient allocation of resources and optimal service delivery.

3. **Effectiveness and impact:** There is a need to understand the effectiveness and impact of different school meal models on a broad range of outcomes. In addition to understanding the impacts of school meals on children and their families, there is a particular need to focus on the major evidence gap in the agriculture and employment domains, where more evidence is needed on the impacts and potential trade-offs of different procurement models, including issues around market integration, scale, timeliness, prices, food types (including perishables), seasonality and promotion of sustainable agricultural practices. Up to date evidence is needed on the effectiveness of school meals as platforms to promote sustainability and encourage children to accept planet-friendly meals, improve their diets sustainably and reduce food waste, particularly in higher-income contexts. There is also a need to better understand the impacts of school meals on school children's cognition and learning in humanitarian contexts. Additionally, it is important to evaluate the impacts of program innovations on both short- and long-term sustainability outcomes, including human health and nutrition, climate change, and biodiversity to identify co-benefits and manage trade-offs.
4. **Cost-effectiveness and return on investment:** There is a critical gap on the cost-effectiveness and return on investment of different school meal implementation models. In terms of cost-effectiveness, there is also a methods gap on how to aggregate the multiple benefits of school meal programs for economic evaluation, and on how to include externalities in true-cost accounting assessments. While the human capital returns are substantial and grounded in empirical evidence, improved modelling is required to estimate the potential returns on investments from the agriculture, employment and sustainability benefit streams that are currently limited by a weak evidence-base. Addressing these gaps is important as it will enable policymakers to better assess the true value and impact of school meal programs, ensuring that investments lead to enhanced education, health and nutritional outcomes and socio-economic and environmental benefits for communities.
5. **Policy processes and evidence uptake:** There is an urgent need to document good practices and lessons learned on the process of how successful programs evolved over time and were scaled up, including the transition from externally driven programmes to country owned, viable programmes at scale. There is also a need to understand how to strengthen stakeholder engagement across sectors to support effective and equitable in-country, regional, and global collaborations and provide mutual learning and capacity sharing for evidence generation, uptake and advocacy.
6. **Methods and metrics:** There is a need to develop a standardised multi-sectoral framework for the design, monitoring and evaluation of different school meal implementation models to

allow meaningful performance comparisons on costs, cost-efficiency, cost-effectiveness and return on investment analyses that includes all the potential activities, outcomes and benefits, including sustainability and environmental boundaries. In addition, there is a need to address important gaps in metrics and methods for data collection in school age children to ensure the collection and analysis of high-quality data that can drive informed decision-making and enhance the effectiveness of school meal programmes, including the development, validation and scale-up of AI tools.

## BACKGROUND

Malnutrition during childhood and early adolescence has long-term consequences for development and health, and for girls it can affect the survival and wellbeing of their children (Norris et al., 2022). Micronutrient deficiencies impair children's physical and mental development (Bailey et al., 2015). The prevalence of obesity in children and adolescents increased from less than 1% in 1975 to 6% for girls and 8% for boys in 2016 (NCD Risk Factor Collaboration (NCD-RisC), 2017). The modernization of food systems in low- and middle-income countries (LMIC) has led to shifts to unhealthy diets that coupled with reductions in physical activity have contributed to the global increase in rates of overweight and obesity (Popkin et al., 2020). Moreover, current dietary and population trends will exacerbate risks to people and the planet (Willett et al., 2019).

### **School meals as a strategy to address risks across multiple sectors at scale**

Attention to nutrition during all stages of child and adolescent development is necessary to ensure that children can thrive over the 8,000-day period spanning infancy to adulthood, and to protect investments made earlier in the life cycle (Black et al., 2013). School meal programs are a widely implemented safety net with documented impacts across social protection, education, health and nutrition (Alderman et al., 2024; Kristjansson et al., 2007) and high estimated returns to investment. Globally, in 2022 programs reached over 400 million children for a total investment of \$70 billion a year (Global Child Nutrition Foundation, 2024). As school meal programs operate in nearly every country in the world, they provide platforms to reach school-age children at scale to also improve food choices and diet quality (Hawkes et al., 2020). Moreover, by being most effective for most disadvantaged children, school meal programs can “level the playing field” in education, health and nutrition (Bundy et al., 2018).

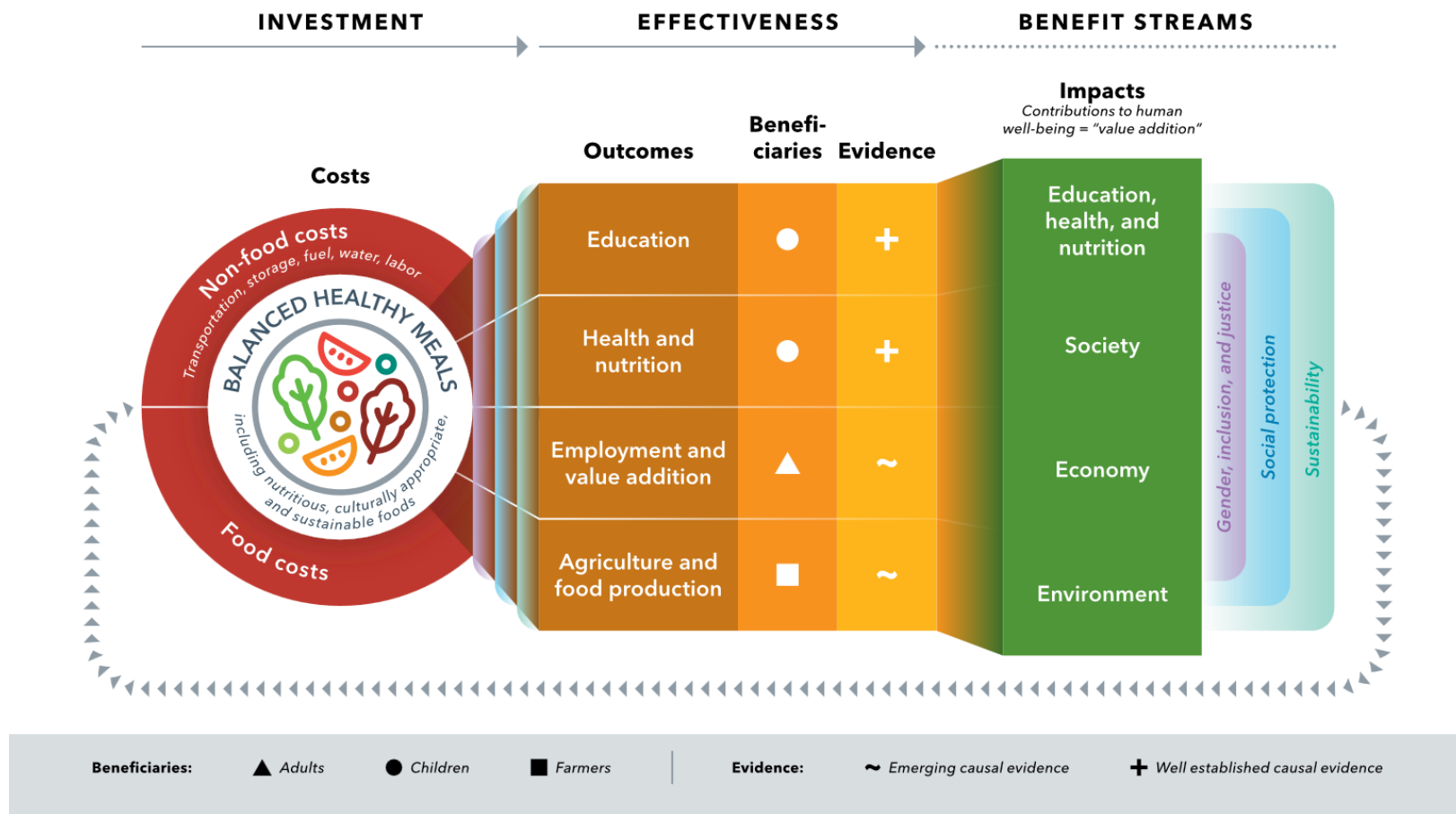
### **School meals as a catalyst food system transformation**

Experiences in high- and middle-income countries, including over half a century of programming in the USA and Japan, and more recent experiences in large-scale programs in Brazil and India, involve school meals in food system transformation, where food procurement for school meals is used as an outlet for commercial farmers to market their surplus (FAO, 2021). National governments have also shown interest in explicitly linking food system transformation with the market for school feeding, through what has become known as “home-grown” school feeding (HGFS) (Espejo F and E Galliano, 2009). In HGFS, the demand for food and services from school feeding

is channeled to smallholders and other supply chain actors with the intent of stimulating agricultural productivity, increasing incomes, improving diets and reducing food insecurity (FAO, ABC & UFRGS, 2021). However, there is little rigorous evidence on the effects on smallholder farmers of participation in school meal programs (Sumberg & Sabates-Wheeler, 2011). The evidence on the effects of school meals on school-age children's diets, food-related behaviours and health is also limited. There is also a gap in terms of methods, measurement, and data on diets and nutrition in school-age children (Kupka et al., 2020). In addition, school meal programs are being designed to also include objectives related to environmental boundaries and sustainability, though these links have yet to be extensively studied (Singh & Fernandes, 2018). Importantly, the body of evidence on the effectiveness of school meals highlights that the link between school meals and the potential benefits across social protection, education, health and nutrition, agriculture and the environment hinges on the quality of the school meal service as delivered to school children (Alderman et al., 2024). In other words, quality of implementation is key. In practice, there are important gaps and challenges in program design and delivery. Figure 1 below provides a high-level, evidence informed, systems framework linking investments in school meals to outcomes and benefit streams that can guide ongoing efforts to test assumptions and improve evidence generation on school meal programs.

## **PRIORITY EVIDENCE GAPS TO SUPPORT IMPROVING ACTION ON SUSTAINABLE SCHOOL MEAL PROGRAMS**

The School Meals Coalition (SMC) created in 2021, involving 106 member countries, has brought new momentum and opportunities for school meals, including three global research initiatives — the Sustainable Financing Initiative, the Data and Monitoring Initiative, and the Research Consortium on School Health and Nutrition. Collaborative activities by development partners have included evidence reviews and synthesis, examining programming implications and identification of key research gaps. This article provides the basis for a common research agenda to support evidence generation aimed at improving action on sustainable school meal programs. The evidence gaps summarised in this note were generated through collaborative activities undertaken by SMC partners, including evidence reviews, expert consultations and stakeholder workshops.



**Figure 1: An evidence-based systems framework on linking investments in school meals programs to outcomes, impacts and benefit streams.** This system framework captures the potential for investments, effects and benefit streams involved in the provision of nutritious school meals across multiple sectors and beneficiaries. The evidence of effects of school meal provision on children’s education, health and nutrition is fairly well established. There is little causal evidence on the effects on agriculture and employment, or on the longer-term benefits of school meal programs for children and the environment (right hand side of the figure), with much of the evidence on these issues coming from scenario-based modelling. School meals can also provide important safety nets for vulnerable populations and have often been used as platforms to address gender and socio-economic inequalities, and promote environmental sustainability, which in turn can promote further investments in school meal programs.

The evidence gaps are structured around 6 key themes including: 1) Situation and context analyses; 2) Processes, implementation and costs; 3) Effectiveness and impact; 4) Cost-effectiveness and return on investment; 5) Policy processes and evidence uptake; 6) Methods and metrics.

## 1) SITUATION AND CONTEXT ANALYSES

***There is a need to better understand the context and problems in key lifecycle age groups to identify potential target groups of school meals and complementary school-based services. Primary target groups include pre-school, school age children and adolescents who directly receive school meals. Depending on program needs, secondary target groups could include farmers, supply chain actors, cooks, other service providers that may be involved in the school meal service provision. Other secondary target groups may include indirect beneficiaries of the school meal program, including siblings and caregivers of children receiving school meals.***

More specifically, there is a need for:

- 1.1. *Describing program needs and the characteristics of potential target groups, with attention to differences across social, geographical, and environmental, contexts. This may also involve defining primary and secondary target groups, based on priority of program objectives.*
  - 1.1.1. Examples of primary target groups include pre-school and school age children, including adolescents, who may directly receive school meals.
  - 1.1.2. Examples of secondary target groups include farmers and other supply chain actors, cooks, other service providers that may be involved in the school meal service provision.
  - 1.1.3. Other secondary target groups may include indirect beneficiaries of the school meal program, including siblings, caregivers and other household members, for example.
- 1.2. *Characterising the school food environment and its links to the broader food environment in shaping children's food choices, primarily inside and around schools, and to a lesser degree on the way to school and at home.*
- 1.3. *Characterising price movements and any seasonality involved across the system including agriculture, diets, nutrition and education?*
- 1.4. *Characterising the supply side potential for smallholders and other producers to respond to the demand for nutritious, sustainably produced (e.g. using regenerative agriculture) foods for the school meal service delivery?*

## 2) PROCESSES, IMPLEMENTATION AND COSTS

***There is a need for descriptive analyses of the different implementation models for school meals undertaken using a standardised framework to allow for meaningful comparisons across contexts, including procurement and service delivery metrics that also account for environmental boundaries. In addition, evidence is needed on programs costs, cost-drivers and cost-efficiency, and how these vary by model and quality of implementation. There is also a need to understand how to design and operationalize school meal menus that balance multiple priorities, such as cost, nutrition, cultural acceptability, and environmental sustainability. This evidence is crucial for making informed decisions that ensure efficient allocation of resources and service delivery.***

More specifically, the key questions in this area include:

*2.1. What are the different implementation models for school meal programs, including procurement and service delivery activities?*

2.1.1. What are the optimal targeting mechanisms to reach the different potential target groups for school meal programs (see 1.1 on different target groups)?

2.1.2. What are the different contracting modalities to source from smallholder farmers, including farmer groups or cooperatives?

2.1.3. Who are the farmers and farmers' organisations and SMEs/MSMEs engaging with HGSF programs and what is their capacity to reliably supply the nutritional needs of SMPs?

2.1.4. To what extent do smallholder sourced prices differ from market prices?

2.1.5. When food is smallholder sourced, are there trade-offs between sold vs contributed in-kind?

2.1.6. How to optimise procurement models that vary by food (e.g. staple vs. vegetables, bio-fortified vs. non-biofortified, fish and other ASFs)?

2.1.7. What are the operational trade-offs between cluster kitchen vs. school kitchen models, particularly in urban or peri-urban settings?

2.1.8. What happens when programs switch from centralised to decentralized implementation models, or to HGSF?

*2.2. What are the costs of school meals?*

2.2.1. How do the costs and cost-efficiency vary by implementation model, including both financial (e.g. program expenditures) and economic costs (e.g. parent or community contributions) of different activities and actors across the supply and value chains, including sustainable (regenerative) agricultural practices?

- 2.2.2. How do the costs and cost efficiency vary by food basket, including different combinations of fortified, bio-fortified, fresh and specialised processed foods (e.g. high energy fortified biscuits provided during humanitarian crises)?
- 2.2.3. What are the “hidden” costs of community level contributions that are often substantial and overlooked?
- 2.3. *What is the feasibility of cost-recovery mechanisms and how does this vary by context (in-kind contribution alongside sales for farmers), free vs subsidized meals (e.g. particularly in urban areas)?*
- 2.4. *What are the environmental boundaries of school meal programs, both in terms of current implementation as well as for potential modifications at scale*
  - 2.4.1. What is the environmental footprint of the meal and menu plans and how does this vary by choice of food basket (e.g. with and without biofortified or underutilised varieties)?
  - 2.4.2. What changes in practices in the school food system, including supporting regenerative agricultural practices, can enhance the environmental sustainability and quality of the service delivery?
  - 2.4.3. How to manage trade-offs and improve cost-efficiency by optimizing meal planning, factoring in food, nutrition, sourcing, food safety, environmental and other quality standards?
- 2.5. *How to ensure optimal service delivery, including uninterrupted supply of school meals that meet food, nutrition, food safety, smallholder sourcing, and environmental standards?*
  - 2.5.1. How efficient are different procurement and delivery models in ensuring quality service?
  - 2.5.2. What are the implementation challenges and trade-offs, e.g. for caterers in outsourced model on how to handle financing, inflation and meal plan adjustments, and links to smallholders?
- 2.6. *How to ensure adequate program uptake across different populations and contexts?*
  - 2.6.1. What are the barriers and facilitating factors for program participation for the different target populations (see 1.1 on target groups)?
  - 2.6.2. What are the barriers to participation in procurement for school meals for smallholder farmers and other value chain actors (e.g. formal contracting regulations including certification, purchase limits, etc.)?
  - 2.6.3. How to ensure program participation among socially excluded groups and individuals, including people living with disabilities?
- 2.7. *What are the inter-sectoral coordination structures necessary to ensure optimal implementation at central and decentralised levels?*

## 2.8. How to enhance the accountability of financial flows?

- 2.8.1. *What governance structures are necessary to manage financial flows and reduce leakage, including in managing outsourced implementation?*
- 2.8.2. Does feedback from the community and increased accountability improve the quality of service delivery?

## 2.9. How to ensure sustained program implementation, or “durability” of the school meal program?

- 2.9.1. How can NGOs and the private sector phase out their programs and effectively hand them over to governments to fund and implement?
- 2.9.2. How can communities contribute to the transition in terms of holding the government accountable and advocating for the continuation of school meals and in terms of financial and non-financial contributions?
- 2.9.3. What is the role of small businesses (through sales or service provision) and community stakeholders, in enhancing durability, or longer-term sustainability of program?

## 2.10. How can school meal programs implementation be integrated with complementary school health and nutrition activities and what are the efficiencies involved?

- 2.10.1. How can behaviour change and nutrition education to improve food choices be integrated in school meal delivery?
- 2.10.2. What are the barriers and facilitators across delivery systems and sectors to successful integration of complementary SHN interventions?

## 3) EFFECTIVENESS AND IMPACT

***There is a need to understand the effectiveness and impact of different school meal models, particularly focusing on the major evidence gap in the agriculture and employment domains, where more evidence is needed on the impacts and potential trade-offs of different procurement models, including issues around market integration, scale, timeliness, prices, food types (including perishables), seasonality and promotion of sustainable agricultural practices. Up to date evidence is needed on the effectiveness of school meals as platforms to encourage children to accept planet-friendly meals and improve diets sustainably, as well as to improve school children’s cognition and learning in school, particularly in humanitarian contexts. There is a need to investigate the role of school meals in promoting sustainability, particularly in higher-income contexts. Additionally, it is important to evaluate the impacts of program innovations on both short- and long-term sustainability outcomes, including human health, climate change, and biodiversity to identify co-benefits and manage trade-offs.***

More specific issues framed within this high-level gap include:

*3.1. Developing a common program theory, or theory of change, for the different school meal implementation models, across education, nutrition, social protection, agriculture and environment dimensions, to underpin impact evaluation design and identification of appropriate outcome and impact indicators.*

*3.2. Evidence gaps by context:*

3.2.1. Particular evidence gaps exist for effects on children and caregivers in dense, high-poverty urban and peri-urban areas, for urban refugees and displaced populations, and during humanitarian crises.

*3.3. Evidence gaps by target group:*

3.3.1. Address evidence gaps in primary target groups including preschoolers and adolescents receiving school meals.

3.3.2. Address evidence gaps in secondary target groups, including smallholder farmers, cooks and other value chain actors, as well as on indirect beneficiaries including younger siblings or caregivers.

3.3.3. What are the effects of involvement in school meal service provision and how to address gender imbalances across the service provision involved?

3.3.4. Examine the effectiveness of interventions on disadvantaged or socially excluded groups.

*3.4. Evidence gaps by outcome:*

3.4.1. Diets, health and nutrition, including overweight, obesity, and NCD prevention; micronutrient status in primary and secondary target groups (see 1.1 on target groups).

3.4.2. Smallholder farmer production output, diversity, sales, revenue, income, environmental footprint and climate risks of production system (including farming and post-harvest practices).

3.4.3. Employment (jobs) for service providers, income (parents' ability to participate in labour force), and overall welfare effects.

3.4.4. Mental health (children, caregivers, teachers, households), particularly in conflict/humanitarian crises.

3.4.5. Household food security and resilience.

*3.5. Evidence gaps on mechanisms and pathways of impact:*

- 3.5.1. What are the links between service delivery (including costs, quality, frequency and duration) and effectiveness of programs?
  - 3.5.2. Understanding effects and mechanisms on girls, particularly adolescent girls, and how effects and mechanisms may differ for different groups of girls
  - 3.5.3. Understanding the effects and mechanisms on children, caregivers and families, particularly those living in conflict-affected settings where school meals can contribute to provide a sense of “normalcy” and safety.
  - 3.5.4. Understanding effects on intermediary outcomes on program impact pathways, including women’s empowerment, and care practices, knowledge and practices related to nutrition, healthy diets, healthy lifestyles.
- 3.6. *What are the effects of integrating school meal programs alongside different complementary programs or design features?*
- 3.6.1. Can combining school meal programs with behaviour change or nutrition education interventions be an effective strategy to improve diets in school age children, value chain actors and other community members?
- 3.7. *Understanding potential negative unintended effects of school meal programs:*
- 3.7.1. Are there unintended effects on overweight, obesity and NCDs risks associated with school meal programs?
  - 3.7.2. What are the effects of school meals and procurement mechanisms on the market prices for food and labour?
  - 3.7.3. What is the impact of providing micronutrient fortified foods in areas of high prevalence of infections (e.g. helminths, malaria) and high prevalence of micronutrient deficiencies?
  - 3.7.4. What are the effects on the health of cooks and on the environment of using unimproved stoves, or on deforestation for using firewood as cooking fuel? What are the barriers and challenges and opportunities in transitioning to clean cooking technologies and practices?
  - 3.7.5. What are the effects on the health of smallholder farmers of unsustainable farming practices (e.g. exposed to pesticides, water-borne disease from poor irrigation practices)? What are the benefits to smallholder/community health of supporting the transition to regenerative agriculture as a source of school meals?
  - 3.7.6. What are the potential trade-offs in terms of women’s time use in program participation, if they have to volunteer their time for cooking and firewood collecting, for example, versus

reductions in their caregiving time if young children are more likely to attend school or pre-school?

3.7.7. What are the effects on time availability of collecting firewood by cooks and/or community/schoolchildren?

3.8. *What are the longer-term effects of school meal programs?*

3.8.1. What are the medium- and long-term effects of programs on students' later-in-life health, education and labour outcomes (e.g., nutritional status, cognitive ability, degree completion, completed years of schooling, employment, and wages)?

3.8.2. What are the long-term effects on biodiversity and climate change mitigation and adaptation of regenerative school meals and planet-friendly school meals?

3.8.3. How to establish data systems of adequate duration to understand and capture these impacts?

## 4) COST-EFFECTIVENESS AND RETURN ON INVESTMENT

***There is a critical gap on the cost-effectiveness and return on investment of different school meal implementation models. In terms of cost-effectiveness, there is also a methods gap on how to aggregate the multiple benefits of school meal programs for economic evaluation, and on how to include externalities in true-cost accounting assessments. In addition, while the human capital returns are substantial and grounded in empirical evidence, improved modelling is required to estimate the potential returns on investments from the agriculture, employment and sustainability benefit streams that are currently limited by a weak evidence-base. Addressing these gaps is important as it will enable policymakers to better assess the true value and impact of school meal programs, ensuring that investments lead to enhanced nutritional outcomes, socio-economic and environmental benefits for communities.***

More specific priority evidence gaps include:

4.1. *What is the investment case (in its broadest sense) for school meals?*

4.1.1. Develop cost-benefit analyses for the different implementation models with strong links to empirical data, including sensitivity analyses for impacts where evidence gaps exist (e.g. for agriculture, employment and equity benefit streams, environment and climate benefits).

4.1.2. Include true cost accounting in cost-benefit models that value externalities, including for interventions promoting sustainable production and post-harvest practices, as well as indicators related to environmental and climate boundaries.

- 4.1.3. Given the thin empirical evidence on agriculture, employment and environmental impacts, what are appropriate methods to model the potential returns on investments from the agriculture, employment, biodiversity benefit streams (including climate change mitigation and adaptation benefits)?
- 4.1.4. What are the potential long-term cost savings in terms of reduced healthcare costs. including from potential diet improvements and reduction in NCD risk?
- 4.1.5. How to enhance buy-in from communities (and government sectors?) in understanding benefits of investing in school meals
  - 4.1.5.1. Benefits for children are clear, while evidence for farmers or cooks is not clear and not a given
  - 4.1.5.2. May not necessarily be more lucrative, but can provide a reliable market

## 5) POLICY PROCESSES AND EVIDENCE UPTAKE

***There is an urgent need to document good practices and lessons learned on the process of how successful programs evolved over time and were scaled up, including the transition from externally driven programmes to country owned, viable programmes at scale. There is also a need to understand how to strengthen stakeholder engagement across sectors to support effective and equitable in-country, regional, and global collaborations and provide mutual learning and capacity sharing for evidence generation, uptake and advocacy.***

More specific evidence gaps include:

- 5.1. *What are the “stories of change” documenting country experiences in implementing school meal programs?*
  - 5.1.1. For example: Japan, look at nutrition education and smallholder link and sustainability; Brazil experience with small holders and the PNAE more widely; Finland, first established by law in 1948...etc.
  - 5.1.2. As programs transition to national ownership, how to ensure the process leads to a sustainable model?
  - 5.1.3. Where did the transition work well, and where it did it not work as well? Are there particular characteristics of country governments which make the transition smoother?
  - 5.1.4. How can countries manage financing and budgeting to cover the full costs of implementation, accounting for different financing channels (remittances, community contributions) as well as inflation?

5.1.5. What community-level governance and management systems can support the successful transition to national implementation of school meal programs?

5.1.6. How to scale-up successful pilot programs and what are the most effective approaches for country to country, region to region learning and sharing?

5.2. *How to strengthen multisectoral enabling environment for school meals, including policy, laws, regulations?*

5.3. *How to strengthen stakeholder engagement across sectors driving research and development process?*

5.3.1. How to build effective and equitable in-country, regional, and global collaborations with mutual learning and capacity sharing for evidence generation, uptake and advocacy?

5.3.2. How to engage with communities to generate and share knowledge, strengthening this into a two-way process supporting program improvements?

## 6) METHODS AND METRICS

***There is a need to develop a standardised multi-sectoral framework for the design, monitoring and evaluation of different school meal implementation models to allow meaningful performance comparisons on costs, cost-efficiency, cost-effectiveness and return on investment analyses that includes all the potential activities, outcomes and benefits, including sustainability and environmental boundaries. In addition, there is a need to address important gaps in metrics and methods for data collection in school age children to ensure the collection and analysis of high-quality data that can drive informed decision-making and enhance the effectiveness of school meal programmes, including the development, validation and scale-up of AI tools.***

More specific needs in this area include:

6.1. *Develop a common program theory framework, or theory of change, for school meals across education, nutrition, social protection, agriculture and environment dimensions, to underpin identification of appropriate performance indicators.*

6.2. *Develop, compile, and where needed validate, methods and metrics for data collection and analysis of school meal programs, including coverage, quality of service delivery (processes), outcomes, impacts and cost-effectiveness.*

6.2.1. Inventory of existing indicators and methods and identify gaps or areas for improvement and prioritization for evidence generation, and development of recommendations or guidelines for metric use.

- 6.2.2. Validate methods and metrics for dietary assessment in school age children and adolescents.
- 6.2.3. Validate methods and metrics for school meal quality, including food, nutrient and environmental dimensions.
- 6.2.4. Validate indicators, methods and metrics for effective environmental and climate considerations in procurement for school meals.
- 6.2.5. Develop aggregate metrics for the multiple outcomes and impacts from school meal programs to allow for cost-effectiveness estimations and comparisons across programs.

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