

# MCC Nutrition Investment Toolkit

Taking a nutrition-smart  
approach to compact  
development

April 2024





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**ABBREVIATIONS**

BCA	Benefit-cost analysis
CFS	Committee on World Food Security
CMAM	Community management of acute malnutrition
DALY	Disability-adjusted life-year
DHS	Demographic and health survey
ERR	Estimated rate of return
FAO	Food and Agriculture Organization (UN)
FNG	Fill the Nutrient Gap
GAIN	Global Alliance for Improved Nutrition
GDP	Gross domestic product
GNI	Gross national income
GNR	Global nutrition report
HAZ	Height-for-age Z-score
HDDS	Household dietary diversity score
HRV	Hausmann, Rodrik, and Velasco
IFAD	International Fund for Agricultural Development
IYCF	Infant and young child feeding
JME	Joint Malnutrition Estimates
LMIC	Low- and middle-income countries
MAM	Moderate acute malnutrition
MDD	Minimum dietary diversity
MEL	Monitoring, evaluation, and learning
MICS	Multiple indicator cluster survey
MIS	Management information system
OECD	Organization for Economic Cooperation and Development
PPP	Purchasing power parity
QALY	Quality-adjusted life-year
RCA	Root cause analysis
RUTF	Ready-to-use therapeutic food
SAM	Severe acute malnutrition
SBC	Social and behavior change
SOFI	State of Food Insecurity
SQ-LNS	Small-quantity lipid-based nutrient supplements
SUN	Standing up for nutrition
VSL	Value of a statistical life
VSLY	Value of a statistical life year
WASH	Water, sanitation, and health
WHA	World health assembly
WRA	Women of reproductive age
WTP	Willingness to pay
YLD	Years lived with disability

## INTRODUCTION

Despite significant social and economic development at the global level, the burden of malnutrition remains unsolved – particularly in low- and middle-income countries (LMIC). According to the most recent report on the State of Food Insecurity and Nutrition, 2.4 billion people did not have access to nutritious, safe, and sufficient food in 2022 (FAO et al. 2023). Millions of children under five years of age continue to suffer from stunting (148 million), wasting (45 million), and being overweight (37 million) (FAO et al. 2023). At least 1 in 2 children suffer from deficiencies in essential micronutrients (FAO et al. 2023). In 2022, economic shocks surpassed conflict as the primary driver of acute food insecurity and malnutrition in several major food crises (FSIN 2023). Cumulative shocks at the global level, including soaring food prices and severe disruption to markets, undermine countries’ resilience and capacity to respond to periods of crises.

Malnutrition comes with significant global economic and social costs (Siddiqui et al. 2020, Beaudreault 2019). Investments by the Millennium Challenge Corporation (MCC) have great potential to support healthy diets and nutrition while also advancing livelihoods and prosperity and protecting the planet.

However, more work is required to systematically consider nutrition when designing compacts to address the defined constraints to economic growth, and consequently not fully benefiting from the high potential return on investment of nutrition gains at the population level.

**The nutrition investment toolkit is designed to provide technical guidance, evidence, and analytical tools to support nutrition-related investments that improve overall economic rate of return and contribute to positive nutrition outcomes. Building on existing knowledge, frameworks, and thinking, it provides pragmatic and practical ideas for how to consider nutrition interventions and programs to achieve a greater development impact.**

The toolkit takes a nutrition-smart approach that considers the impact that investments in any sector may have on nutrition status, especially among women and children and aims to improve or preserve nutrition status where feasible and reduce unintended negative impacts.

### BOX 1

#### WHAT IS MALNUTRITION?

(WHO 2020)

Malnutrition refers to deficiencies, excesses, or imbalances in an individual’s dietary intake and is usually divided into two broad groups:

1. Undernutrition: this includes stunting, wasting, underweight, and micronutrient deficiencies or insufficiencies
2. Overnutrition: including overweight, obesity, and diet-related noncommunicable diseases (such as heart disease, stroke, diabetes, and cancer).

## FRAMEWORK FOR NUTRITION INTERVENTIONS

Many LMIC countries face the triple burden of malnutrition: undernutrition - in the form of stunting and wasting - widespread micronutrient deficiencies and increasing overweight and obese populations. Globalization, urbanization, socio-economic inequities, environmental crises, health epidemics, market failures, and humanitarian emergencies drive the nutrition situation and present new, critical challenges. Urgent and intentional investment is needed to address these issues.

Many decades of research have identified the first 1,000 days of a child's life as the window of opportunity to support adequate nutrition for long-term health, development, and well-being, i.e., during pregnancy and the first two years of a child's life.<sup>1</sup> The benefits of adequate nutrition are far-reaching and compound throughout a life course: in childhood, adequate nutrition contributes to lower morbidity and mortality, improved cognitive, motor, and socioemotional development, and greater school performance and learning capacity. In adulthood, safe and healthy diets lower rates of obesity, non-communicable diseases (NCDs), and associated healthcare costs, and contribute to greater work capacity and productivity.

In recognition of the importance of nutrition on growth, health, development, and well-being, the World Health Assembly (WHA) established 6 global nutrition targets for maternal, infant, and child nutrition for 2025 (WHO 2014).<sup>2</sup>

1. Childhood stunting: 40% reduction in the number of children under 5 who are stunted
2. Childhood wasting: Reduce and maintain childhood wasting to less than 5%
3. Childhood overweight (including obesity): No increase in prevalence of overweight children overweight (<5 years)
4. Anemia among women of reproductive age (15–49 years): 50% reduction of anemia in women of reproductive age
5. Low birth weight (<2500g): 30% reduction in low birth weight
6. Breastfeeding: Increase the rate of exclusive breastfeeding in the first 6 months up to at least 50%

There are several evidence-based, interventions to support reaching these targets, however significant investment is required and currently lacking (**Box 2**). A 2017 World Bank report found that an additional investment of \$70 billion over 10 years is needed to achieve the global targets for childhood stunting, anemia in women, exclusive breastfeeding, and the scaling up of the treatment of severe wasting in children (Shekar et al. 2017). The expected impact of an increased investment is enormous: 65 million cases of childhood stunting and 265 million cases of anemia in women would be prevented in 2025, as compared with the 2015 baseline. In addition, at least 91 million more children under five years of age would be treated for severe wasting and 105 million additional babies would be exclusively breastfed during the first six months of life over 10 years. Altogether, investing in interventions to reach these targets would also result in at least 3.7 million child deaths averted (Shekar et al. 2017). There is also a potential for large returns on

<sup>1</sup> See the Lancet Series on Maternal and Child Undernutrition from 2008, 2013, and 2021, as well as [1,000 Days](#) for more information.

<sup>2</sup> Established in 2012. Targets for 2030 are under discussion. For more information, see the [WHO/UNICEF discussion paper](#) on the extension of the 2025 Maternal, Infant, and Young Child nutrition targets to 2030 (WHO and UNICEF 2017).

investment. Every dollar invested in this package of nutrition-specific interventions could yield between \$4 and \$35 in economic returns when combined with continued improvements in the underlying factors of malnutrition – addressed by nutrition-sensitive interventions and investments (Shekar et al. 2017). This type of analysis can support decision-makers in advocating for nutrition-related interventions across many sectors.

In addition to the six maternal, infant, and young child targets, there are four additional voluntary global targets for 2025 for noncommunicable diseases: reduced average adult salt intake, reduced adult diabetes, reduced adolescent overweight and obesity, and reduced adult overweight and obesity. Although the deadline for achieving all 10 of these global nutrition targets is fast approaching, country-level progress is varied.

According to the Global Nutrition Report (GNR)

2022, only seven countries (out of 194 included) are on track to meet four of the six maternal, infant and young child nutrition targets by 2025 and no country is on track to halt the rise in adult obesity or achieve a 30% relative reduction in salt/sodium intake (GNR 2022).

Achieving nutrition’s full impact on health and development outcomes requires a multisectoral approach, encompassing both nutrition-specific and nutrition-sensitive investments (**Box 3**).

**BOX 2**

**AN AFFORDABLE PACKAGE OF NUTRITION-SPECIFIC INTERVENTIONS TO MEET GLOBAL NUTRITION TARGETS**

(SHEKAR ET AL. 2017)

- Improving nutrition for pregnant mothers
- Iron and folic acid supplementation for non-pregnant women
- Improving feeding practices, including breastfeeding
- Improving child nutrition, including micronutrition supplementation
- Staple food fortification
- Pro-breastfeeding social policies and national breastfeeding promotion campaigns

**BOX 3**

**NUTRITION-RELATED INFLUENCES ON FETAL AND CHILD DEVELOPMENT CAN BE THOUGHT OF IN THREE CATEGORIES:**

(Ruel and Alderman 2013)

<b>Nutrition-Specific</b>	<b>Nutrition-Sensitive</b>	<b>Enabling environment for nutrition</b>
<p>Interventions that address the <u>immediate determinants</u> of nutrition and development—adequate nutrient intake, caregiving practices, and low burden of infectious disease.</p> <p><b>Examples:</b> micronutrient supplementation; promotion of optimum breastfeeding and complementary feeding; treatment of severe acute malnutrition; treatment and prevention of disease</p>	<p>Interventions that <u>address the underlying determinants</u> of nutrition — food security, caregiving resources, access to health services, and a safe and hygienic environment. They can also serve as delivery platforms for nutrition-specific interventions.</p> <p><b>Examples:</b> behavior change communication for healthy diets, agrifood system investments, social safety nets, early child development; women’s empowerment; child protection; schooling; family planning services</p>	<p>Investments that strengthen and support leadership, capacity, advocacy, legislation, and financial resources for nutrition, as well as the socio-economic and environmental context</p> <p><b>Examples:</b> Supporting the creation/management of national nutrition strategies and accountability, advocacy for food safety and labeling, lobbying for supportive parental leave policies</p>

Nutrition-specific interventions are key to accelerating progress. However, it is also critical that other MCC sectors—like agriculture and value chains, education and workforce development, and gender and social inclusion— develop nutrition-sensitive interventions for investment where relevant. A truly multisectoral approach will achieve optimal nutrition outcomes through greater coverage, while also helping these compacts achieve more powerful results and demonstrate a greater return on investment (UNICEF 2020). Since their adoption, the global nutrition targets have helped focus the global community on priority areas to improve the nutritional status of mothers, infants, and young children. Many other organizations have added their voices to the effort and called on member states to take action – Agenda 2030, the Standing up for Nutrition (SUN) Movement, Zero Hunger Challenge, and the Rome Declaration on Nutrition and the Framework for Action are all advocating for increased investment and attention on nutrition. To reduce malnutrition in all its forms, these efforts must continue and involve global players in every sector.



## CHAPTER 1: RATIONALE FOR MCC INVESTMENT IN NUTRITION FOR ECONOMIC GROWTH

### CHAPTER OBJECTIVE

This chapter introduces nutrition, healthy diets, and tools for better understanding the link between adequate nutrition and economic development.

As economies grow, there is a shift away from agriculture towards industry and services. Trade and international policy present opportunities for continued growth and more people move to larger cities for education and employment (Brookings 2019). With these transformations, many LMICs are also experiencing dietary transition towards diets that are higher in fats, salt, added sugars, and ultra-processed foods (Box 4).<sup>3</sup> As a result, the incidence of overweight, obesity, and noncommunicable diseases is also on the rise. Governments must allocate limited resources to simultaneously deal with undernutrition and micronutrient deficiencies, as well as overweight and obesity.

Infrastructure accumulation and energy investment are key drivers of economic growth and poverty reduction. However, there are also investment needs across health systems, education systems, and agrifood systems to ensure that economic growth also supports healthy, food-secure people (Pena et al. 2018, Morris et al. 2023, Pingali 2007). MCC is well-placed to be a leader in large-scale, nutrition-smart investments.

### NUTRITION WITHIN THE COMPACT DEVELOPMENT PROCESS

Across MCC sectors, evidenced-based interventions and strategies can be added to compact investment activities when relevant to support the production, sale, and consumption of nutritious foods, reduction of malnutrition and illness, and promotion of gender equity. This nutrition toolkit aims to help MCC staff consider

#### BOX 4

#### WHAT IS A HEALTHY DIET?

(CFS 2021)

**Healthy Diets:** Diets of adequate quantity and quality to achieve optimal growth and development of all individuals and support functioning and physical, mental, and social well-being at all life stages and physiological needs. Healthy diets are safe, diverse, balanced, and based on nutritious foods.

**Nutritious foods:** Nutritious foods are safe foods that contribute essential nutrients such as vitamins and minerals, fiber, and other components to healthy diets that are beneficial for growth, health, and development, guarding against malnutrition.

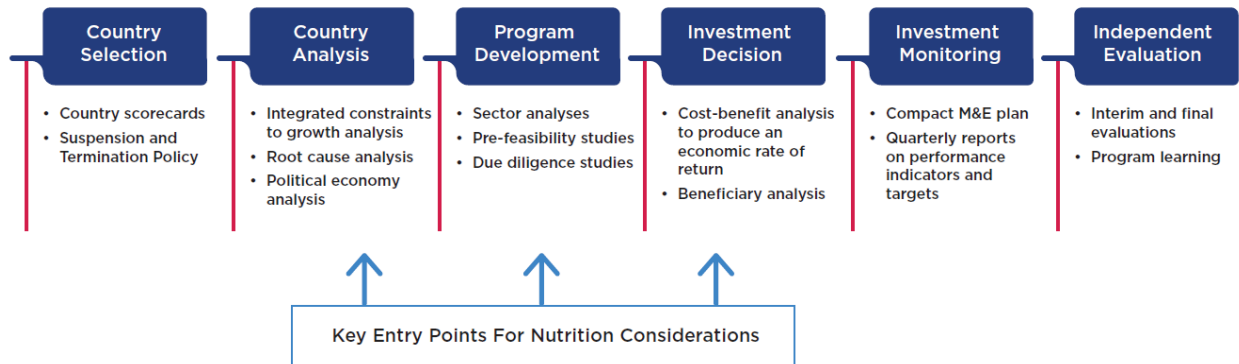
**Unhealthy diets:** Diets are a major risk factor for multiple forms of malnutrition and poor health outcomes globally. These diets include those of insufficient quantity and quality of nutrients and are a driver of hunger, micronutrient deficiency, undernutrition, or overnutrition.

<sup>3</sup> While most packaged foods are processed in some way, processing itself is not necessarily harmful to health (i.e. milling whole grains). Ultra-processed foods refer to industrial formulations of food-product manufactured from substances derived from foods or synthesized from other organic sources. They typically contain little or no whole foods, are ready-to-eat, and have poor nutritional quality – often high in fat, salt, and sugar (Monteiro et al. 2019).

nutrition at three key points during compact development: 1) During the root cause analysis, 2) during program development, and 3) during the initial BCA (Figure 1.1).

Applying a nutrition lens early in the compact development process will optimize the contribution of nutrition (including ensuring that compacts or programs do not harm the nutritional status), while at the same time empowering women and promoting sustainable and climate-resilient practices to boost economic growth.

**Figure 1.1: When to consider nutrition in the compact development process**



Source: MCC Compact Development Process Overview

## ADVOCACY TOOLS, RESOURCES, AND RESEARCH

There are many research tools available to support a better understanding of the economic and social costs of malnutrition in a given country. However, they require significant planning, time, and funding to collect data. MCC may be working in countries where these tools have already been used and MCC analysts should look at the data from completed studies to inform analysis, where they are available. The table below (Table 1.1) highlights several tools that may support data gathering relevant to MCC investments.

Additional information on these tools, including technical briefs, tool video tutorials, software, and publications are available in the [Nutrition Modeling Consortium](#) resource repository (NYAS). For more information on tools to assess agriculture and nutrition context specifically, USAID Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) has provided an [Agriculture and Nutrition Context Assessment Tool Locator](#) (SPRING n.d).

**Table 1.1 Available Tools**

Name	Description	Country Context
<a href="#"><i>The Cost of Hunger in Africa</i></a> (WFP and the African Union 2014)	This tool estimates the social and economic impacts of child undernutrition focusing on the health, education, and labor sectors.	21 countries have completed the study to date – including Burkina Faso, Chad, Democratic Republic of Congo, Egypt, Eswatini, Ethiopia, The Gambia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Sudan, Tanzania (2023), Uganda, and Zimbabwe.
<a href="#"><i>The Cost of not Breastfeeding</i></a> (Alive and Thrive 2022)	This tool provides country-level estimates of economic and human capital costs associated with limited breastfeeding.	Detailed case studies were produced for China, India, Indonesia, Mexico, and Nigeria.
<a href="#"><i>Fill the Nutrient Gap (FNG)</i></a> (Bose et al. 2019)	This tool combines an analytical framework and a stakeholder buy-in process to build consensus and improve decision-making. It highlights likely nutrient gaps and identifies barriers to adequate nutrition intake in a specific context for a specific target group.	Data available for 17 countries: Burkina Faso, Sri Lanka, Pakistan, Cambodia, Lao People’s Democratic Republic, El Salvador, Ghana, Madagascar, Mozambique, Tajikistan, Niger, Philippines, Mali, Indonesia, Cameroon, Mauritania, Ecuador, Tanzania (partial).
<a href="#"><i>PROFILES</i></a> (NYAS 2019)	This is a spreadsheet-based nutrition advocacy tool used to calculate the benefits of improved nutrition over a specific period (lives saved, disabilities averted, human capital gains, economic productivity gains). Uses secondary, national-level data from DHS, MICS, MIS, and national micronutrient surveys.	Country case studies are available in Bangladesh, Ethiopia, Ghana, Guatemala, Haiti, Tanzania, Uganda, and Zambia. PROFILES approach requires local team members with nutrition knowledge in context, and relationships with stakeholders – stakeholder meeting + PROFILES analysis workshop (about 2 weeks). The planning process can take a year or more.
<a href="#"><i>Cost of a Healthy Diet</i></a> (Food Prices for Nutrition 2023)	This set of software tools helps analysts convert any set of food price data into the cost per day of a healthy diet, using Excel or Stata. These calculations are now used for the Cost and Affordability of Healthy Diets (CoAHD) metric of global food security reported in FAOSTAT.	This project develops and shares user-friendly materials and provides limited technical assistance through country workshops and other activities in nine focus countries: Bangladesh, India, Pakistan, Burkina Faso, Ethiopia, Ghana, Malawi, Nigeria, and Tanzania.

## CHAPTER 2: CONSIDERING NUTRITION DURING COUNTRY ANALYSIS

### CHAPTER OBJECTIVE

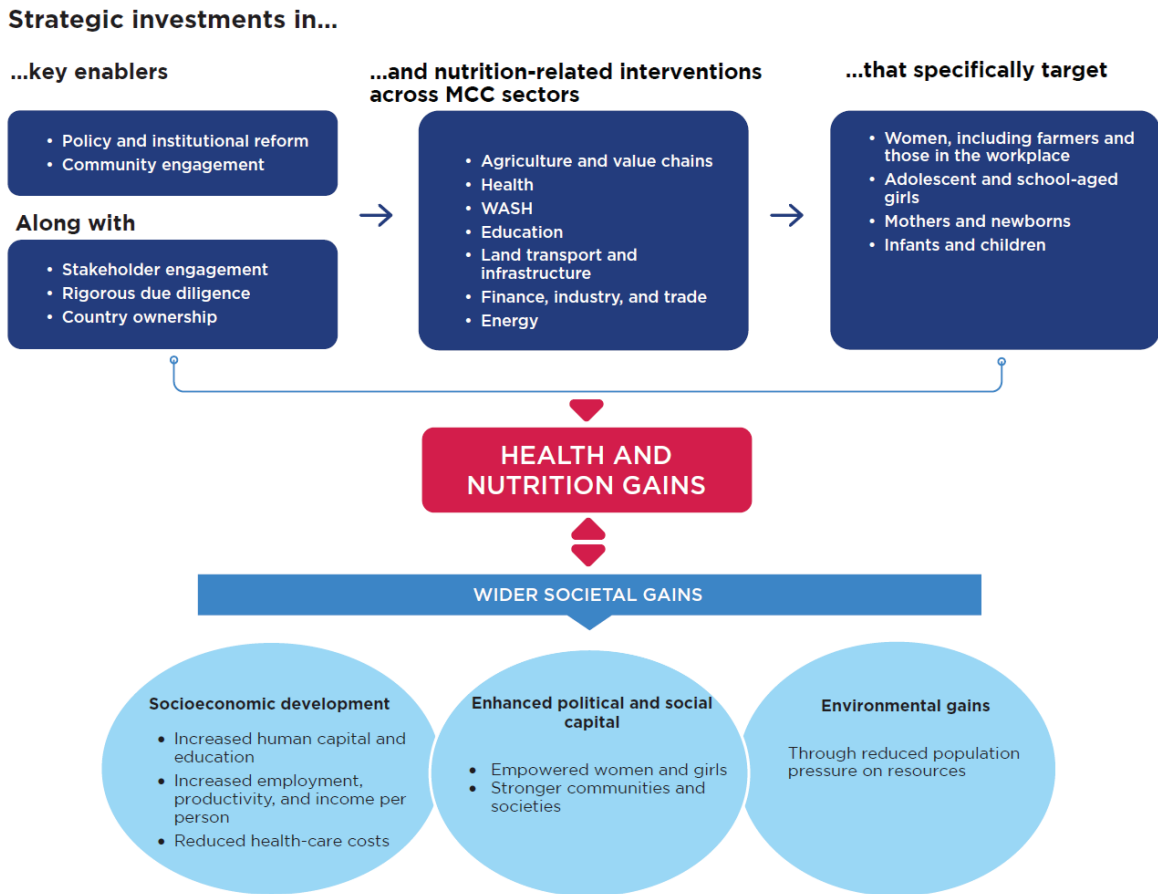
This chapter presents the link between nutrition and the economy, through the Hausmann, Rodrik, and Velasco (HRV) model lens. It aims to support MCC economists to consider nutrition within the integrated constraints to growth and root causes analysis (RCA) step during the Country Analysis phase of compact development.

### NUTRITION AND THE HAUSMANN, RODRIK, VELASCO (HRV) MODEL

During the first phase of the compact development process, MCC and the selected partner country jointly analyze the data to determine the main constraints to economic growth using the Hausmann, Rodrik, Velasco (HRV) model. Although poor nutrition may not present as the main constraint to economic growth, there may still be a link between nutrition and the identified constraint – either as an underlying factor or root cause or as an associated risk for the population.

Nutrition outcomes result from complex interactions and individual, household, sector, and broader societal investments in poverty reduction, education, and gender equity. Strategic investments in key interventions optimized for nutrition can support health and nutrition gains – which can lead to wider societal gains in socioeconomic development, enhanced political and social capital, and environmental gains (**Figure 2.1**).

**Figure 2.1: Conceptual framework for MCC investment in nutrition and nutrition-related interventions across MCC sectors**



Source: Adapted from Stenberg et al. 2013

Investment in sectors where nutrition is not traditionally considered – like infrastructure, education, or agricultural value chains - can contribute significantly to nutrition and health outcomes in addition to broader societal impacts and impacts on the economy if programs are optimized for nutrition when and where relevant.

### LINK BETWEEN NUTRITION AND ECONOMIC PRODUCTIVITY

A well-nourished population is crucial to economic growth. Nutritional status, human capital, and economic productivity are closely intertwined. Malnutrition adversely affects the physiological and mental capacity of individuals, which can impact educational attainment and workplace productivity, leaving them more susceptible to poverty and hindering economic growth (Siddiqui et al. 2020). The estimated impact of malnutrition on the global economy was USD 3.5 trillion per year in 2016, and is likely greater now, with the lingering impacts of the COVID-19 pandemic (Global Panel 2016, Carducci et al. 2021). This is a result of economic growth foregone, lost investments in human capital associated with preventable child deaths, as well as premature adult mortality linked to NCDs. The causal chain also goes the other way - macroeconomic volatility and negative economic shocks can substantially increase poverty and food and nutrition insecurity (Beaudreault 2019, Siddiqui et al. 2020, McDermott and Swinnen 2022).

Many countries have data available on progress made against the WHA nutrition targets (GNR 2020, 2022). In addition, MCC analysts may already be working with large national data sets that include nutrition-related statistics. These data can be used to signal when nutrition issues may warrant further investigation through key informant interviews and other information-gathering efforts at the country level to triangulate information. Nutrition status indicators also have direct and indirect links to economic productivity. At the national level, some of these statistics have prevalence “benchmarks” that can be used to determine whether a nutrition issue has public health significance – and by extension, significance to promoting economic productivity. Other nutrition statistics are typically compared to accepted recommendations (e.g., breastfeeding) or rates as low as possible (e.g., low birthweight). Generally accepted values are indicated in the table below.

**Table 1.2 Benchmark values for key nutrition statistics and links to economic productivity**

Nutrition statistic	Link to economic productivity	Benchmark value at the population level
Stunting in children under 5	<p>Stunting is often the result of long-term (generational) nutrition deprivation - short maternal stature is a strong predictor of child undernutrition in low and middle-income countries (Khatun 2019). Being stunted in early childhood has been associated with slower cognitive development, lower IQ scores, and reduced schooling attainment by one year, as well as reductions in adult income by 5% to 53% (Shekar et al. 2017).</p> <p>Increases in labor productivity associated with improvements in stunting have been calculated in several economic analyses. Much of this work cites evidence from a study in Guatemala, which found that children who were stunted at the age of 3 years had 66% lower consumption (and by extension, earnings) in adulthood compared to their non-stunted peers (Hoddinott et al. 2013). There is also a large economic literature citing different estimates across various contexts of the “height premium”, or increase in income per unit (cm/inch) of adult height attained, which are associated with measured or modeled improvements in height resulting from an intervention to estimate productivity benefits of stunting reduction (McGovern et al. 2017)</p> <p>However, it is important to note that while linear growth retardation and stunting are associated with poor growth and development outcomes, reduced earnings, and increased incidence of NCDs, the evidence does <i>not support a causal link</i>, and recent research and advocacy from within the nutrition community has sought to add nuance to the global focus to reduce the prevalence of stunting. (Leroy and Frongillo 2019).</p>	<p>Prevalence cut-off values for public health significance:</p> <ul style="list-style-type: none"> <li>• <b>High 20 - &lt;30%</b></li> <li>• <b>Very high &gt;=30%</b></li> </ul> <p>(JME 2023)</p> <p>Examples from MCC Compact Countries:</p> <ul style="list-style-type: none"> <li>• Indonesia (30.8%)</li> <li>• Lesotho (34.6%)</li> <li>• Malawi (35.5%)</li> <li>• Mozambique (37.5%)</li> <li>• Nepal (31.5%)</li> <li>• Senegal (17.9%)</li> <li>• Timor-Leste (46.7%)</li> <li>• Togo (23.8%)</li> </ul> <p>(GNR 2022)</p>

Nutrition statistic	Link to economic productivity	Benchmark value at the population level
<p>Childhood wasting in children under 5</p>	<p>Wasting in children is a symptom of acute undernutrition – a direct consequence of insufficient food intake or a high incidence of infectious diseases. Wasting impairs immune function and increases the risk of illness and death (WHO 2020). A study in Ethiopia in 2020 estimated that the impact of wasting on the national economy of Ethiopia is estimated to be about USD 200 million annually (Laillou et al. 2020). Increasing the reach and effectiveness of therapeutic interventions to reach the 2030 Sustainability Development Goal for the reduction in wasting will prevent additional economic costs of up to USD 800 million over the next decade. (Laillou et al. 2020)</p>	<p>Prevalence cut-off values for public health significance:</p> <ul style="list-style-type: none"> <li>• <b>High 10 - &lt;15%</b></li> <li>• <b>Very high &gt;=15%</b></li> </ul> <p>(JME 2023)</p> <p>Examples from MCC Compact Countries</p> <ul style="list-style-type: none"> <li>• Indonesia (10.2%)</li> <li>• Nepal (12%)</li> <li>• Timor-Leste (8.3%)</li> <li>• Togo (5.7%)</li> </ul> <p>(GNR 2022)</p>
<p>Overweight (including obesity) in children under 5</p>	<p>Childhood obesity is associated with a higher probability of obesity in adulthood, which is linked to several diet-related NCDs. Adult obesity and diet-related non-communicable diseases are increasingly affecting economic productivity globally. Empirically the economic burden of being overweight generally looks at the cost-of-illness from obesity and related non-communicable diseases, direct medical costs and indirect costs, or productivity losses, associated with early mortality and morbidity. Other indirect costs are included, such as transportation costs from seeking treatment and human capital costs due to lower investment in education and training.</p> <p>Estimates of the economic impacts of obesity as a percentage of GDP using a cost-of-illness approach are mostly available for higher-income countries. Okunogbe et al. (2021) found that the costs of obesity per capita in 2019 ranged from USD 17 in India to USD 940 in Australia. These economic costs (health care costs, absenteeism, productivity loss due to diet-related NCDs) are comparable to 1.8% of gross domestic product (GDP) on average across the eight countries studied, ranging from 0.8% of GDP in India to 2.4% in Saudi Arabia. By 2060, with no significant changes to the status quo, the economic impacts from obesity are projected to grow to 3.6% of GDP on average. Reducing obesity prevalence by 5% from projected levels or keeping it at 2019 levels will translate into an average annual reduction of 5.2% and 13.2% in economic costs, respectively, between 2020 and 2060 across the eight countries (Okunogbe et al. 2021)</p> <p>Analysts should use caution interpreting these estimates because the economic burden from overweight is only a fraction of the cost attributable to overweight-related non-communicable diseases. The indirect costs or productivity losses from absenteeism, disability, presenteeism (working while sick), and worker’s compensation in the USA and other high-income settings typically account for 70% of the total global cost of obesity (Nugent, Levin, Hale, Hutchinson, 2020).</p>	<p>Prevalence cut-off values for public health significance (childhood overweight &lt;5 yrs*):</p> <ul style="list-style-type: none"> <li>• <b>High 10 - &lt;15%</b></li> <li>• <b>Very high &gt;=15%</b></li> </ul> <p>(JME 2023)</p> <p>Examples from MCC Compact Countries:</p> <ul style="list-style-type: none"> <li>• Belize (7.3%),</li> <li>• Benin (16.7%)</li> <li>• Indonesia (8%)</li> <li>• Mongolia (26.5%)</li> <li>• Senegal (2.3%)</li> </ul> <p>(GNR 2022)</p> <p>*No established prevalence values for adult overweight</p>



Nutrition statistic	Link to economic productivity	Benchmark value at the population level
Iron-deficiency anemia among women of reproductive age (15-49 years)	Increases in labor productivity due to anemia treatment and prevention have been noted in many cross-sectional and interventional studies. A recent systematic review of available data from 12 studies found strong evidence that anemia negatively impacts occupational performance and that therapeutic iron interventions through fortification or supplementation can yield substantial productivity gains. Outcome measures considered were quantitative measures of labor-outcome relevant to the occupational context (e.g., a mass of product harvested), which can be translated to additional income or sales (Marcus, Schauer, Zlotkin 2021).	Prevalence cut-off values for public health significance: <ul style="list-style-type: none"> <li>• <b>Moderate 20-39.9%</b></li> <li>• <b>Severe &gt;40%</b></li> </ul> (WHO 2011) Examples from MCC Compact Countries: <ul style="list-style-type: none"> <li>• Belize (20.5%)</li> <li>• Benin (55.2%)</li> <li>• Mozambique (47.9%)</li> <li>• Indonesia (31.2%)</li> <li>• Lesotho (29.9%)</li> <li>• Malawi (31.4%)</li> <li>• Nepal (35.7%)</li> </ul> (GNR 2022)
Low birthweight (infants born weighting <2500g / 5.51lbs)	<p>A recent study in The Lancet series on small vulnerable newborns estimated that eight proven preventive interventions fully implemented in 81 low-income and middle-income countries could prevent 5.2 million small and vulnerable newborn births and 566,000 stillbirths per year. When coupled with enhanced care to reduce complications of preterm births, they could avert 476,000 neonatal deaths per year. For more on the economic benefits of reducing low birthweight in low-income countries, see the foundational work by <a href="#">Harold Alderman and Jere Behrman</a> (Alderman and Behrman 2004).</p> <p>One of the first cost evaluations of low birthweight in a low-income country (Mozambique) found that reducing the prevalence of low birthweight would transfer cost savings to the health systems and households. An increase in birthweight of 100 grams could lead to a 53% decrease in direct and indirect household costs. (Sicuri et al. 2011).</p> <p>Scaling efforts to attain high effective coverage are needed to reach global targets for the reduction of low birthweight births and neonatal mortality, and long-term benefits on growth and human capital (Hofmeyr et al. 2023)</p>	Evidence of a reduction trend (incidence declining year-on-year) Examples from MCC Compact Countries: <ul style="list-style-type: none"> <li>• Belize (no trend- 8.6%)</li> <li>• Mozambique (no trend - 13.8%)</li> <li>• Lesotho (no trend- 14.6%)</li> <li>• Nepal (some progress - 21.8%)</li> <li>• Togo (no trend - 16.1%)</li> </ul> (GNR 2022)



Nutrition statistic	Link to economic productivity	Benchmark value at the population level
Breastfeeding	<p>Evidence shows that breastfeeding has many health, human capital, and future economic benefits. Results of analysis by Walters, Phan, and Mathisen (2019) using the ‘Cost of Not Breastfeeding’ tool show that 595,379 childhood deaths (6 to 59 months) from diarrhea and pneumonia each year can be attributed to not breastfeeding according to global recommendations from WHO and UNICEF. It also estimates that 974,956 cases of childhood obesity can be attributed to not breastfeeding according to recommendations each year.</p> <p>For women, breastfeeding is estimated to have the potential to prevent 98,243 deaths from breast and ovarian cancers as well as type II diabetes each year. This level of avoidable morbidity and mortality translates into global health system treatment costs of USD 1.1 billion annually. The economic losses of premature child and women’s mortality are estimated to equal USD 53.7 billion in future lost earnings each year. The largest component of economic losses, however, is cognitive losses, which are estimated to equal USD 285.4 billion annually. Aggregating these costs, the total global economic losses are estimated to be USD 341.3 billion, or 0.70% of global gross national income (Walters et al. 2019).</p>	<p>Exclusive breastfeeding in first 6 months &gt;50% (WHO 2014)</p> <p>Trend toward the recommendation of 100% exclusive breastfeeding for 6 months (WHO)</p> <p>Examples from MCC Compact Countries:</p> <ul style="list-style-type: none"> <li>• Belize (33.2%)</li> <li>• Benin (41.5%)</li> <li>• Mozambique (41%)</li> </ul> <p>(GNR 2022)</p>
Micronutrient status (iron, vitamin A, vitamin C, calcium, thiamine)	<p>Micronutrient deficiencies are common in LMICs whose populations consume diets high in staple crops, but low in micronutrient-rich foods such as meat and animal products, fruits, and vegetables. Inadequate intake contributes to the global burden of disease through increased rates of illness, disability, and death from infectious diseases and long-term health impacts, and disproportionately affects women and children (Keats et al. 2019). These impacts may result in lower labor productivity (Tiwasing et al. 2019). Jha et al. (2009) found that calories, carotene, iron, riboflavin, and thiamine have significant positive effects on wages in rural India, particularly for female workers (Tiwasing et al. 2019).</p> <p>Although most research on nutrition and labor productivity has focused on calorie consumption (protein-energy malnutrition) rather than micronutrient consumption due to data limitations, one study from Thailand examined the impact of micronutrient intake on labor productivity of rice-producers found that higher intakes of calcium, vitamin A, and iron increased household earnings and farm output (Tiwasing et al. 2019)</p>	<p>Existence of significant (usually &gt;20%) deficiency, as cited in literature</p> <p>Examples from MCC Compact Countries:</p> <p>Mozambique: 69% of children Vitamin A deficient (Amaro 2019)</p> <p>Indonesia: 13-20% adults vitamin C deficiency (Rowe and Carr, 2020)</p> <p>Uganda: 70% vitamin C deficiency in pregnant women (Rowe and Carr, 2020)</p>

## DETERMINANTS OF NUTRITION STATUS

Guiding questions can be used to explore the determinants of nutrition during the RCA (as other assessments, interviews, and reviews are underway), as well as during program design and development (see **Chapter 3**). It may not be possible or necessary to answer every question. Special attention should be paid to include the views and responses of women and other marginalized groups (based on ethnicity, age, disability status, for example) in addition to businesses. For additional considerations for gender and

women's empowerment, see the jointly authored *Guidelines for measuring gender transformative change in the context of food security, nutrition, and sustainable agriculture* (FAO, IFAD, WFP, CGIAR 2023). Where feasible, disaggregate information by marital status, as well as male- and female-headed households. Analysts should keep these questions in mind as they conduct context assessments and include questions in focus groups when and where relevant.

1. Questions related to businesses:

- a. Are your employees healthy and able to be productive at the workplace? Do your employees have access to enough food to be healthy and productive?
  - Do employees present as malnourished – thin arms and legs, feeling weak, faint, or fatigued?
  - Do employees present as malnourished – carrying excess weight, high blood pressure, diabetes, etc.?
  - Do malnourished employees impact productivity, efficiency, or innovation?
- b. Do issues related to food and water safety impact your employees' health or productivity?
  - Do employees have access to healthy and safe foods at work?
- c. Do employees know about beneficial health and nutrition habits?
- d. Does your business offer breastfeeding support and supportive parental policies?

2. Questions related to the demand for nutritious foods and safe WASH practices by households:

- a. How do households access food: through homestead production, purchase of commercial products, collection, barter, gifts, or food aid?
  - What are the barriers to households accessing more nutritious foods (income, distance, scarcity, etc.)? Does this vary by season?
  - How do households access food markets in terms of distance, transportation means, and cost?
- b. What is a typical diet for the area?
  - Consider what proportion of the diet is composed of nutrient-dense foods such as fruit, vegetables, and protein (meat, legumes, etc), and how much is made up of processed foods high in sugar, salt, and saturated and trans fats.
  - How do individual diets vary within households and who or what determines that?
  - Is a healthy diet affordable for poor households? Do households have sufficient purchasing power to buy both staple food and nutrient-rich non-staple foods and other essential items?
- c. What are the most prevalent diseases (e.g. malaria, HIV/AIDS, diarrheal diseases, acute respiratory infections, chronic diseases)?

- d. Where do households access drinking water? Is there a piped water supply? Is the water clean or contaminated (with biological or chemical contaminants)?
  - e. Do households have access to and practice regular deworming?
  - f. Do households have access to latrines? Do households use latrines?
  - g. Do households have access to soap? Is hand washing practiced, i.e. before handling, preparing, and eating food?
3. *Questions related to the supply of nutritious foods and food safety:*
- a. What food groups are produced in the targeted geography?
    - What kinds of foods can be produced competitively in local environmental conditions, considering climate, soil health, rainfall, etc.? What climate-resilient crops are grown?
    - What are the main constraints to high nutritious food production?
  - b. Are the foods that are produced mostly consumed by the household or sold in markets?
  - c. What are the most significant food safety issues, such as chemical/residual pesticides or microbiological contaminants, in the food supply?
4. *Questions related to the enabling environment for nutrition:*
- a. Are there policies, strategies, or legal frameworks that ensure the safe production and processing of nutrient-dense foods, such as fortification?
  - b. Are there policies to increase access to nutritious foods, such as government-funded school feeding programs or targeted food assistance to vulnerable populations?
    - What foods are included?
  - c. What are the barriers to women’s control of resources? What are other gender-based constraints?

The responses to these questions will help ascertain what is needed to ensure the availability of and access to nutritious foods and to ensure a sustainable food system. For businesses to deliver nutritious foods to markets, they will need to understand the demand from households/consumers and to understand what is being consumed and why those items have been chosen. They will also need to understand how to make nutritious foods available and more affordable. Here, governments play a big role too. Government policies, taxes, and other incentives can help build an enabling environment to make affordable nutritious food available to all.

Assessing nutrition constraints early in compact development – during the country analysis stage – is key. It will be more difficult to raise nutrition-related issues after programs are chosen and designed.

## CHAPTER 3: CONSIDERING NUTRITION DURING PROGRAM DEVELOPMENT

### CHAPTER OBJECTIVE

This chapter guides MCC decision-makers through a process to determine whether nutrition should be incorporated within a compact or in program design by considering the nutrition context. If incorporating nutrition is appropriate, this chapter also provides sector-specific program impact pathways, considerations, and evidence-based interventions.

As MCC examines possible nutrition-related interventions by sector, it is also important to integrate gender and climate objectives to ensure changes are effective, inclusive, and environmentally sustainable, as well as strengthen resilience in the face of rising shocks and stressors. To help ensure success, the process should be participatory and determined by each context. At the outset of the root cause analysis, it is crucial to identify any nutrition problems that are faced or could be faced by the target participants of MCC's investments. Conducting a nutrition situation analysis, in addition to any other assessments typically undertaken by MCC teams to understand context, will support a more collective approach to developing and designing investments.

There are three things to keep in mind when considering if and where nutrition should be incorporated into projects and activities within a compact:

- i. the nutrition context, country policy objectives, and dietary and nutritional status indicators
- ii. the opportunities to address malnutrition (potential entry points to integrate nutrition activities)
- iii. key partners, stakeholders, and other actors

Each of these is explored in more detail below.

### Nutrition context

Program designers should consider what national-level policies and commitments exist to enable (or hinder) long-term, sustainable progress in nutrition.

- What are the priorities within the national nutrition strategy or multisectoral nutrition plans or country food system plans of action?
  - [\*Scaling Up Nutrition Movement members \(Country Profiles\) \(SUN\)\*](#)
  - [\*Systematic review of national nutrition plans, based on the revised SUN Checklist 2020 for 'good' national nutrition plans \(SUN 2021\)\*](#)
- What commitments has the Compact country made?
  - [\*Scaling Up Nutrition Movement members \(Country Profiles\) \(SUN\)\*](#)

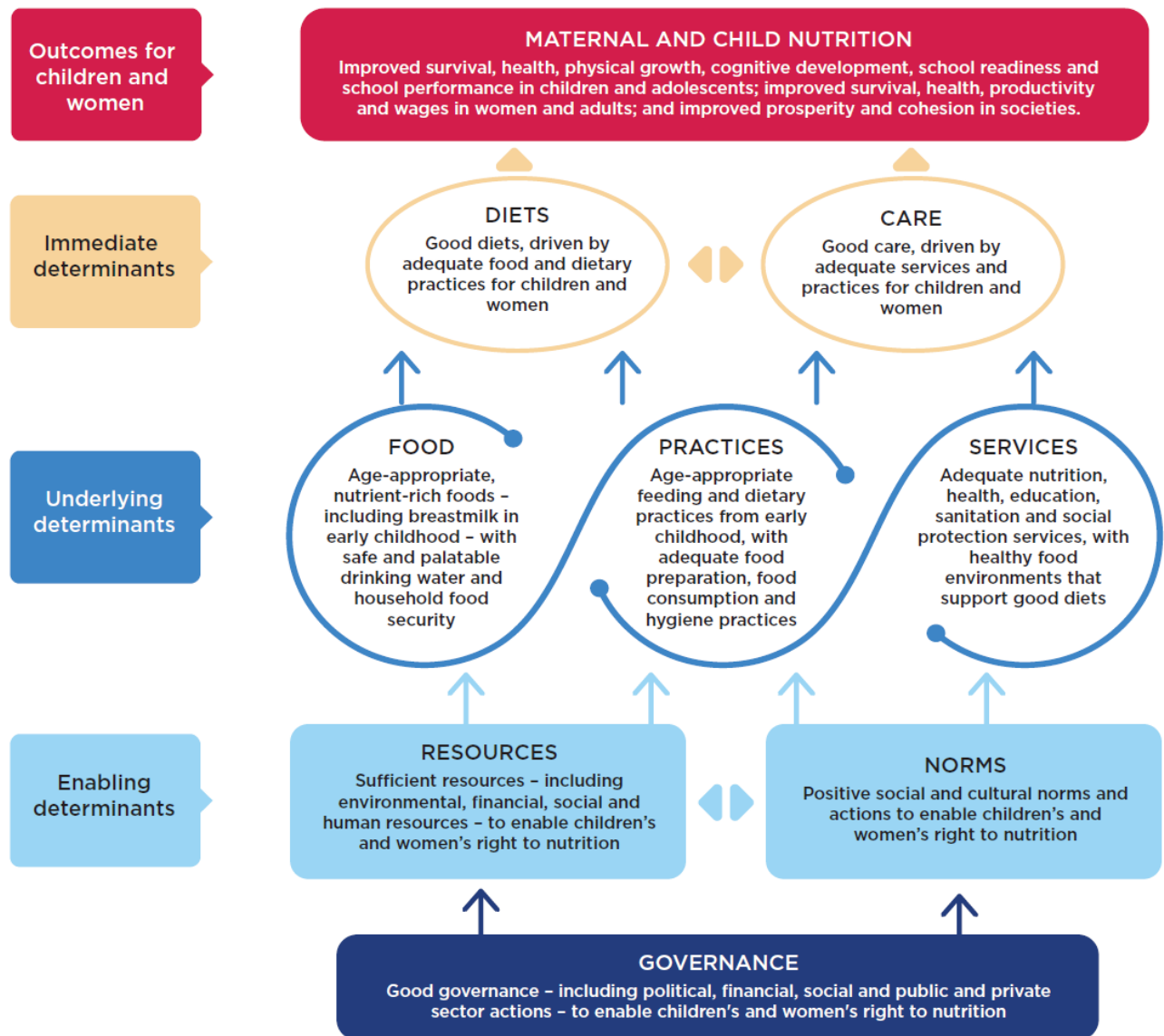
- [\*Nutrition for Growth \(N4G\) commitments \(GNR 2022\)\*](#)
- What is the country's progress in achieving national and global goals?
  - [\*UN Decade of Action on Nutrition \(WHO 2016\)\*](#)
  - [\*Sustainable Development Goals progress report \(UN 2022\)\*](#)
  - [\*World Health Assembly goals \(WHO 2017\)\*](#)
  - [\*Global Nutrition Report country profiles \(GNR 2022\)\*](#)
  - UNICEF Data: [\*Countdown to 2030 \(UNICEF 2023\)\*](#)
  - [\*Food Systems Dashboard \(FSCI 2024\)\*](#)
- What other secondary data exists on nutrition status?
  - [\*Demographic and Health Surveys \(DHS\) \(USAID 2024\)\*](#)
  - Multiple Indicator Cluster Surveys (MICS) (UNICEF 2024)
  - Other available surveys (micronutrient surveys, etc.)
- What support, monitoring, and coordination systems are in place for nutrition data gathering and monitoring?
  - Review coordination mechanisms at national and local levels to assess functionality and capacity constraints

A review of nutritional status indicators and causes of malnutrition (see **Chapter 2**) can be covered primarily through secondary data sources and existing reports, with some additional stakeholder interviews to help contextualize the data and fill in the gaps. If possible, the MCC should look for data that is disaggregated by gender, geography, socio-economic status, etc., as well as specific to the population that the MCC is interested in targeting, to understand who may be more affected by malnutrition and any equity considerations that should be kept in mind. As a first step, it is important to review existing poverty assessments and reports by UN Development Program or the World Bank related to the country, as well as the most recent DHS and MICS surveys and other nationally representative household survey reports.

### **Opportunities to address malnutrition through investment**

Once the nutritional status of the relevant groups has been determined, it is important to understand the immediate, underlying, and enabling determinants of maternal and child nutrition (**Figure 3.1**). These may be related to dietary adequacy and health care; food access, feeding practices, nutrition, health, and education services; or the enabling environment for good nutrition, including resources, cultural norms, good governance, women's empowerment, and climate change. See Chapter 2 for a list of questions and considerations to support program designers in building a strong understanding of the specific nutrition situation.

**Figure 3.1: UNICEF conceptual framework on the determinants of maternal and child nutrition**



Source: UNICEF 2020

As with any program, nutrition-related interventions may have varied effects on different populations. Analysts must consider the local context, as well as the health and sanitation environment, gender and care practices, access to productive assets, and policy frameworks and regulations.

**Key partners, stakeholders, and other actors**

One of the key drivers of success in nutrition interventions lies in bringing the right people around the table to understand the interest and context-based priorities in line with national nutrition strategies. The mix of stakeholders will differ depending on local contexts, identified through the MCC stakeholder mapping exercise. Some countries have clear nutrition champions that should be included, for example:



- SUN Government Focal Point
- Nutrition counterparts within government (e.g., the Ministry of Health, the Ministry of Agriculture, and special offices of the Vice President)
- SUN-related donor networks
- Nutrition working groups
- Agencies that regulate food products
- National and sub-national multi-sectoral nutrition coordination committees
- Donors with nutrition investments (e.g. Bill & Melinda Gates Foundation, UNICEF, FAO)
- Other US agencies and departments in-country (e.g. USAID Feed the Future)

In other countries, there may not be ‘specific’ stakeholders for nutrition. Instead, all relevant government sectors and non-state actors (NGOs, private sector organizations, research institutions, etc.) should be evaluated for nutrition relevance, and depending on the context, brought together to understand the specific implications of investments on nutrition outcomes.

During the design of the project, the MCC team should agree on which actors or institutions should be involved at which level to better sustain the interventions beyond the compact. If nutrition will be included in the program design, it will be beneficial to bring in a nutrition expert at the start of the compact design process to ensure that entry points for nutrition and healthy diets are being considered at the start of the planning process of the investment.

## EMBEDDING NUTRITION-RELATED OBJECTIVES AND OUTCOMES WITHIN PROJECT LOGIC

**Make nutrition an explicit objective:** It is recommended that projects that are relevant to nutrition include an explicit nutrition objective (for example, enabling healthy diets) in their project logic that also links to the overall objectives of the compact. The inclusion of a nutrition objective can act as a signal for project implementers to design project components in a way that maximizes nutrition impact. The project logic should include the specific nutrition activities and indicators that will be monitored to achieve the nutrition objectives. See **Chapter 5** for more information on best practices in monitoring and evaluation for programs with nutrition components.

**Consider the MCC program impact pathway for improving nutrition:** The project logic development process can also help mitigate any potential harm to nutrition by uncovering unintended consequences early and allowing analysts to develop strategies to avoid them, as well as by creating a monitoring framework to uncover unforeseen issues in a timely manner. It should articulate the specific short- and long-term nutrition-related outcomes (e.g., maternal and child dietary diversity, exclusive breastfeeding, consumption of fortified food vehicles) that interventions intend to affect and the ultimate intended nutrition status impacts (e.g. reduced stunting, reduced incidence of low birthweight, reduced incidence of wasting), although it may not be feasible to directly measure impacts within a project lifecycle. See more

on project logic for nutrition in each sector below and **Chapter 5** on program monitoring, evaluation, and learning (MEL).

**Determine outcomes of interest:** Nutrition outcomes do not need to be limited to long-term objectives like reducing stunting (for more on stunting as an outcome of interest, see **Table 1.2**). Focusing on long-term outcomes may unnecessarily discount other benefits that MCC's programs could bring to communities, such as improved diets (diversity and quality), breastfeeding practices, and reduced illness, and that are more feasible and likely to be achieved in the project timeline (Leroy and Frongillo 2019).

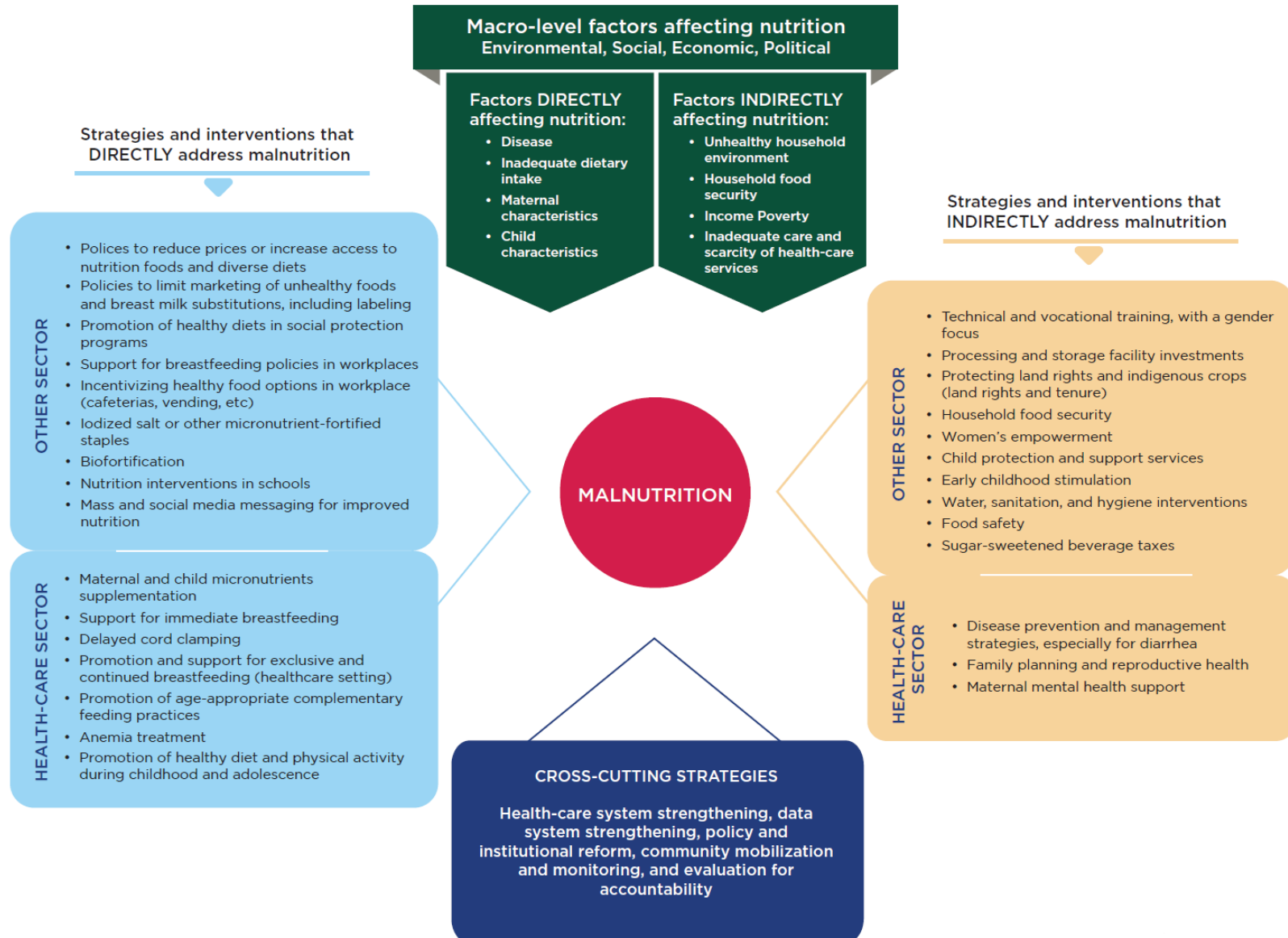
## DESIGNING NUTRITION-SMART INVESTMENTS IN ANY SECTOR

Investments in all sectors can play a role in improving nutrition status if programs are carefully designed to maximize impact. Although some sectors have more obvious links to nutrition (e.g., health), investments in agriculture, irrigation, water, and sanitation can also be made nutrition-smart (**Figure 3.2**). Continued investments in nutrition-specific interventions to avert maternal and child undernutrition and micronutrient deficiencies through community engagement and delivery strategies that can reach poor segments of the population at greatest risk can make a great difference (Bhutta et al. 2013). It is also important to start sensitizing stakeholders to the emerging issue of overweight and obesity in many countries undergoing economic transition, this is a key nutrition issue, especially in urban areas. When these strategies are complemented by nutrition-sensitive approaches (women's empowerment, agriculture, food systems, education, employment, social protection, and safety nets), they can greatly accelerate nutrition progress in countries with the highest burden of maternal and child undernutrition and mortality.

Nutrition interventions must build on the existing evidence and guidance base, as well as fully align with the country's health sector development plans and nutrition strategy, as available.



**Figure 3.2: Framework for the classification of interventions to address malnutrition: beyond the healthcare sector**

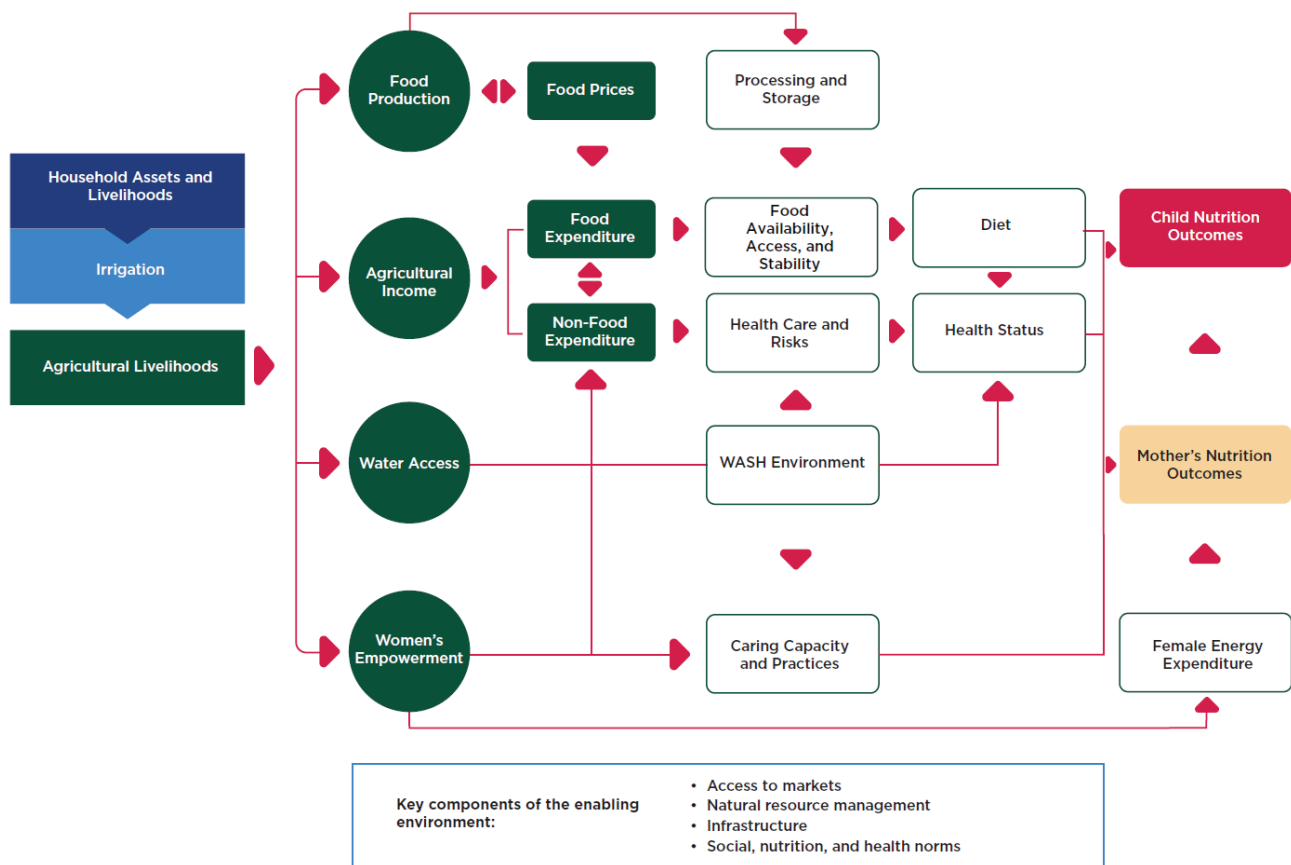


Source: Adapted from Keats et al. 2021

### Agriculture and value chains

Agricultural investments affect the nutrition of individual household members through multiple, inter-related pathways. In general, they can be thought of in four main routes at the household level: a) food production (affecting household food availability, as well as prices), b) agricultural income for expenditure on food and non-food items, c) water supply, and d) women’s empowerment (affecting income, caring capacity and practices, female energy expenditure. The enabling environment for nutrition – natural resource management, policy and governance, norms and knowledge, and other factors - influences all pathways (Figure 3.3).

**Figure 3.3: Pathways to nutrition outcomes through investments in the agriculture sector**



Source: Adapted from Choufani et al. 2021

Agriculture and value chain investments made by MCC can play a key role in supporting food security. Based on the 1996 World Food Summit, food security is defined as when all people, at all times, have physical and economic access to sufficient safe and nutritious foods that meet their dietary needs and food preferences for an active and healthy life (World Bank 2022). The term is further broken into four ‘pillars’ or dimensions. Availability of food (supply side), access to food (economic and physical ability to access), utilization (ability for the body to absorb nutrients), and stability (adequate access over time). For a population to be food-secure, all four pillars must be met simultaneously. While food security does not equate to adequate nutrition, MCC may already be making investments that support one or more of these

pillars. Considering how to make these investment nutrition-sensitive can support nutrition security as well as food security.

Household access to food is also affected by the ability to avoid food loss and food safety concerns. Regulations to improve food safety have the potential to reduce foodborne disease and encourage the consumption of diverse and nutritious foods as part of healthy diets. Food safety does not cover only viral and bacterial pathogen contamination but also chemical contaminants and additives. Evidence suggests that assuring the safety of nutritious foods through policy enforcement and food labeling enhances the willingness of consumers to pay for them as part of healthy diets. However, it could also result in reducing access to nutritious foods, by discouraging traditional and informal markets and raising prices beyond the reach of low-income consumers (City, University of London and R4D 2022). More research is needed on how food safety interventions impact access and affordability of nutritious foods for households and individuals with limited income, food security of small producer households, women's empowerment, and environmental sustainability. More research is needed on how food safety interventions impact access and affordability of nutritious foods for households and individuals with limited income, food security of small producer households, women's empowerment, and environmental sustainability (GAIN 2021).

Nutrition-smart investments in agriculture have been shown to reduce undernutrition while also leading to higher economic returns compared with other investments (Hoddinott et al. 2013, World Bank 2008). Although agriculture and food system programs are implemented in diverse contexts and through a variety of approaches, three recent systematic reviews (Ruel et al. 2018, Margolies et al. 2022, Di Prima et al. 2022) agree that integrating nutrition within these types of programs results in the improvement of dietary diversity, especially among women and children. Ruel notes that, overall, programs that are tailored to be nutrition-sensitive are highly successful at meeting production and consumption goals for targeted nutritious foods, as well as improved food security, and there is evidence that these changes lead to increases in dietary diversity at the household and individual levels. More specifically, Margolies found that the odds of reaching minimum diet diversity<sup>4</sup> were 45% higher for those children participating in nutrition-sensitive agrifood system programs, compared to a standard program.

## Irrigation

Irrigation is one of the largest uses of water globally. In lower and middle-income countries where agriculture makes up a large part of the national economy, efficient and effective use of water is needed for economic productivity and poverty reduction. Irrigation, like agriculture, impacts food security, health, and nutrition, in three ways: a) through production, b) through income, c) through women's empowerment, but has an added pathway of d) water supply (Choufani et al. 2021).

Through irrigation investments, there could be increased agricultural productivity including that of nutrient-rich crops, as well as fruits and vegetables, and an extension of the production calendar into the lean season (Passarelli et al. 2018, Choufani et al. 2021). Along with increased productivity, there may be an

<sup>4</sup> The minimum dietary diversity (MDD) score for children 6-23 months old is a population-level indicator designed by the World Health Organization (WHO) to assess diet diversity as part of infant and young child feeding (IYCF) practices among children. For more information on calculating this indicator, refer to the WHO measurement guidelines (WHO 2008). The criterion for MDD is 5 of 8 groups, per a questionnaire. Note that the WHO 2010 document describes 7 food groups, however based on a June 2017 expert consultation these have been updated to reflect the inclusion of breast milk as an 8th food group.

increase in income from the sale of these crops in the market, as well as employment opportunities related to the irrigation infrastructure, and as discussed above irrigation could reduce the time women spend collecting water that can be used on other income-generating activities or health and nutrition-related activities. Research from Ghana, Tanzania, and Ethiopia suggests that households had a higher dietary diversity if they were irrigators (Choufani et al. 2021).

Irrigation has also been found to negatively impact water pollution and disease, as fertilizers and pesticides enter the water supply and promote the spread of vector-borne diseases, such as malaria. (Choufani et al. 2021). This means that while irrigation can improve the nutrition environment it must be designed correctly for use in agriculture and domestic use. Large-scale agriculture and value-chain investments should consider nutrition and health impacts, by combining or integrating programs with other social and public health interventions (Margolies et al. 2022).

### Value Chains

Value chains have the potential to influence nutrition by reducing constraints in the supply and demand of nutritious foods and increasing the availability, accessibility, safety, and affordability of nutritious foods coupled with social marketing, behavior change communication, and food and nutrition education. A nutrition-sensitive value chain enables the consumption of healthy diets through three linked pathways (Figure 3.4). The own-production pathway includes strategies that increase the supply of nutritious foods in a household for consumption as well as marketable surplus.

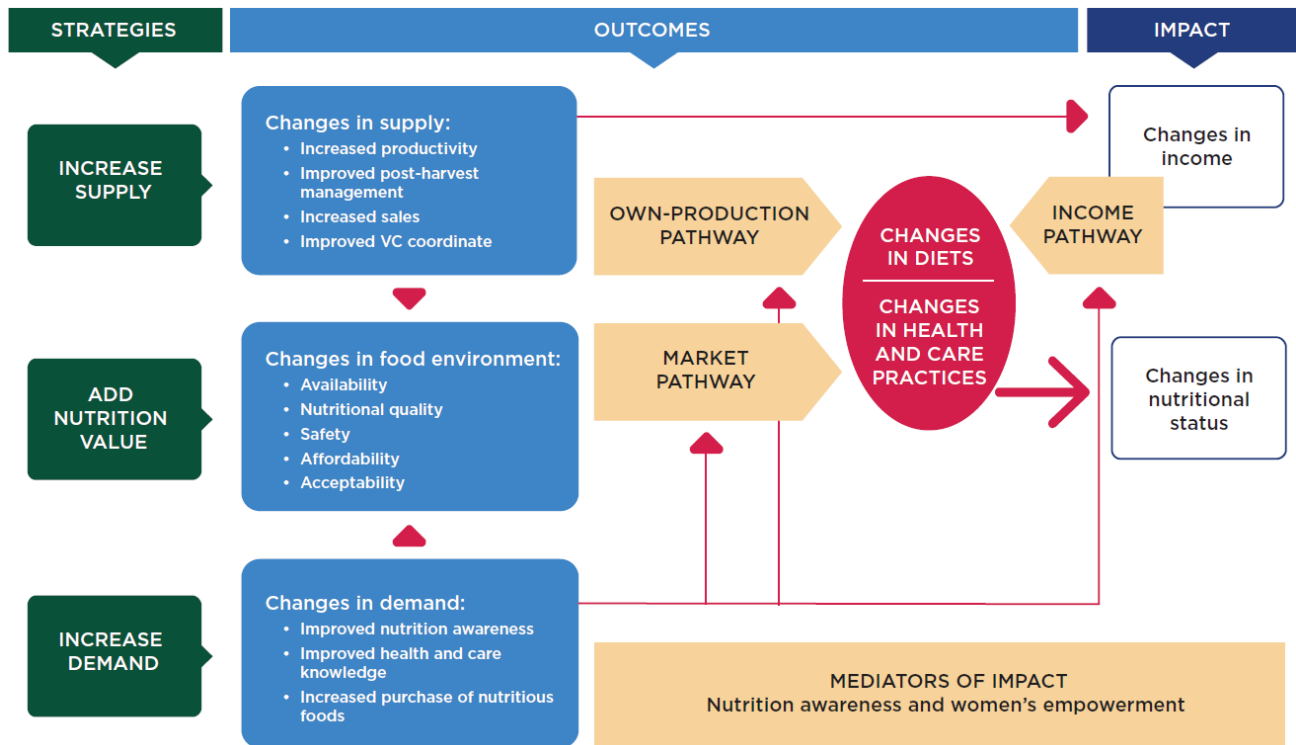
The income pathway is linked to the production pathway but also may include other related income-earning opportunities (e.g., processing, packaging, etc.). Greater income can enable households to purchase fresh fruits and vegetables, as well as animal-source foods, however, changes in income must be accompanied by nutrition social and behavior change (SBC) to have an impact on nutrition status. Conditional cash transfers and in-kind transfers could also fall under the income/production pathway (although not typically a value chain investment). Evidence from Bangladesh generated by Innovations for Poverty Action suggests that both are effective in improving household food intake and food security, but only impact child growth when paired with SBC (Henderson and Warren 2021).

The market pathway is cross-cutting. Nutrition-sensitive activities in this pathway support positive changes in the food environment by adding and preserving nutritional value (processing, safe storage) and promoting demand for nutritious products. These efforts should focus on specific dietary or nutrient gaps identified in the target population (Ruel and Alderman 2013).

Large-scale food fortification (LSFF) programs have been in place in many countries since the 1900s and have successfully eradicated micronutrient deficiencies in middle- and high-income countries (Osendarp et al. 2018). Milled grain, rice, condiments, spices, oils, and seasoning can be used as vehicles to increase intake of vitamins and minerals. Based on the country context and micronutrient, cost-effectiveness of fortification has been estimated between \$22 per disability-adjusted life year (DALY) saved for iron fortification in East Africa to \$140 per DALY saved for iron fortification in Latin America (Osendarp et al. 2018). However, lack of monitoring and enforcement policies, as well as poor compliance with standards by private industry, can undermine the nutritional impact of LSFF.

As women are heavily engaged in post-harvest activities, innovative approaches for value addition may help them to reduce current gaps in terms of income, access to resources and services, and business opportunities. Specifically increasing women’s mobility and access to markets could improve women’s empowerment (Njuki et al. 2022). For more on how nutrition-sensitive activities in value chain investments can contribute to a project’s ERR, please see the Excel workbook, **Annex 1: General Assumptions and Parameters**.

**Figure 3.4: Pathways to nutrition outcomes through value chain investments**



Source: Adapted from De la Pena, Garrett and Gelli 2008

**Evidenced-based nutrition-smart interventions in Agriculture and Value Chain investments**

Several activities have been shown to improve dietary diversity when integrated within the agrifood system. The above-mentioned systematic reviews of peer-reviewed studies point to the following set of interventions delivered through the agrifood system that increase dietary diversity and/or improve other nutrition outcomes by targeting different aspects of the agrifood system framework:

- Nutrition education in the farming curriculum (farmer field schools) and agriculture extension programs to support the production of diverse and nutritious crops
- Investment in irrigation and improved water sources to support year-round cropping for increased access to nutritious food
- Biofortification for nutrition – plant breeding and provision of improved seeds

- Fortifying staple foods (such as flour, rice and salt) with essential vitamins and minerals (supported by a strong regulatory framework, *see the Transport and Infrastructure section for more*)
- Promotion of small-scale livestock production and increased availability of and access to animal-source foods
- Promotion of fish farming and vegetable production in an integrated system
- Facilitation of market access through farmer and producers’ organizations to increase the availability of nutritious foods at market
- Assessment of indigenous crops for their nutritional value as they can be climate-resilient alternatives to staple crops, given their unique adaptability to challenging local environmental conditions
- Value chain investments, including integrated cold chain, to add and preserve nutrients in processed and/or packaged food products (improved shelf life and quality)
- SBC to communities to promote the consumption of safe and nutritious foods as part of healthy diets. Specifically, across contexts, the evidence suggests that maternal education (especially on nutrition) is associated with positive outcomes for household nutrition and diet quality.
- Promotion of home and school gardening to improve nutrition knowledge
- Food safety and hygiene education, especially production for own consumption (see more on hygiene, safe animal husbandry, and safe food preparation under WASH)
- Gender equity and women’s empowerment activities to support decision-making in agriculture and household purchases
- Cash and in-kind transfers, when combined with SBC

*Additional Tools and Resources to Maximize the Nutrition Impact of Agriculture and Value Chain Investments*

Tools and Resources	Description
<p><i>All tools and resources are cited in the Reference section.</i></p>	
<p><a href="#"><i>Designing nutrition-sensitive agriculture investments: Checklist and guidance for programme formulation</i></a> (FAO 2015)</p>	<p>This tool provides guidance for those designing agricultural investments in identifying the information needed during situation appraisal to plan the design of a nutrition-sensitive agriculture program; supporting the definition of objectives, target groups, choice of interventions and implementation modalities; and critically reviewing program and strategy documents with a “nutrition lens” after the design has been completed.</p>



<p><a href="#"><u>Supporting nutrition-sensitive agriculture through neglected and underutilized species: Operational framework</u></a> (IFAD 2019)</p>	<p>This resource offers recommendations on practical methods, approaches, and tools for the use-enhancement of neglected and underutilized species in both the design and implementation of nutrition-sensitive agriculture projects.</p>
<p><a href="#"><u>Prioritizing Nutrition in Agriculture and Rural Development: Guiding Principles for Operational Investments</u></a> (Herforth et al. 2012)</p>	<p>This resource provides a set of guiding principles for incorporating nutrition goals into the design and implementation of agricultural and rural development projects and provides examples of current best-evidence options for operational investments.</p>
<p><a href="#"><u>Nutrition-Sensitive Value Chains: A Guide for Project Design</u></a> (IFAD 2018)</p>	<p>This resource provides guidance on how to design nutrition-sensitive value chain projects, with a particular focus on smallholder producers. It includes practical resources, tools and templates to be used at each step of the design process.</p>
<p><a href="#"><u>Agri-food System Pathways to Healthy Diets: A Stepwise Approach</u></a> (FAO 2023)</p>	<p>This course uses a stepwise approach to identify critical entry points for actions within the agrifood systems to improve the availability, accessibility, affordability, and consumption of nutritious food, as part of healthy diets.</p>
<p><a href="#"><u>The Status of Women in Agrifood Systems</u></a> (FAO 2023)</p>	<p>The status of women in agrifood systems report uses extensive new data and analyses to provide a comprehensive picture of women’s participation, benefits, and challenges they face working in agrifood systems globally.</p>
<p><a href="#"><u>Nutrition-Sensitive Irrigation and Water Management</u></a> (Bryan 2019)</p>	<p>This resource includes evidence and guidance on project design and results framework indicators for nutrition-sensitive irrigation and water management investments across water, agriculture, rural development, and other sectors, in which improving nutrition in vulnerable populations is a specific objective of the project. It draws on existing guidance on nutrition-sensitive agriculture developed by the Food and Agriculture Organization (FAO 2015) and the World Bank (2014), with an emphasis on water-related aspects of these guidelines</p>

## Health

MCC is well positioned to support host country governments to make policy and programmatic decisions that positively influence nutrition and health outcomes. MCC in the Mongolia compact worked with private industry to promote better health for the country's people, leading to several improvements, including a reduction of salt, sugar and fat in popular food brands. At compact completion, the two major Mongolian bread factories had reduced salt content in their products by 12 percent, and a leading dairy producer now offers five reduced-sugar and three sugar-free products. MCC's investments also supported new food labeling standards to protect and inform consumers.

MCC can support host country governments to adopt policies and programs to provide supplementary nutritious food, nutrition education, breastfeeding support, and health care referrals to low-income women, infants and young children at nutrition risk. The United States government provides this assistance through the Women Infants and Children (WIC) program. An economic [evaluation](#) of California's program has shown that investing \$1 in prenatal WIC resulted in a mean savings of \$2.48 (Nianogo et al. 2019). As WIC participants spend their social assistance benefit, income is generated for those involved in producing, transporting, and marketing the food and other goods purchased by recipients, further extending the nutritional and economic benefits.

The foundation for good health and nutrition is laid before birth. However, many babies face challenges in-utero and are born preterm, face fetal growth restriction, and are born small for gestational age (low birthweight). These conditions can result in an increased risk of stillbirth, neonatal death, and childhood mortality and are associated with multiple morbidities with short- and long-term consequences for newborns, families, and society. Preventing small and vulnerable newborns is possible. WHO recommends a package of care for all pregnant women that includes antenatal care visits with skilled health workers to address health and nutrition issues through diet and supplementation to reduce infant and maternal mortality (Ashorn et al. 2023).

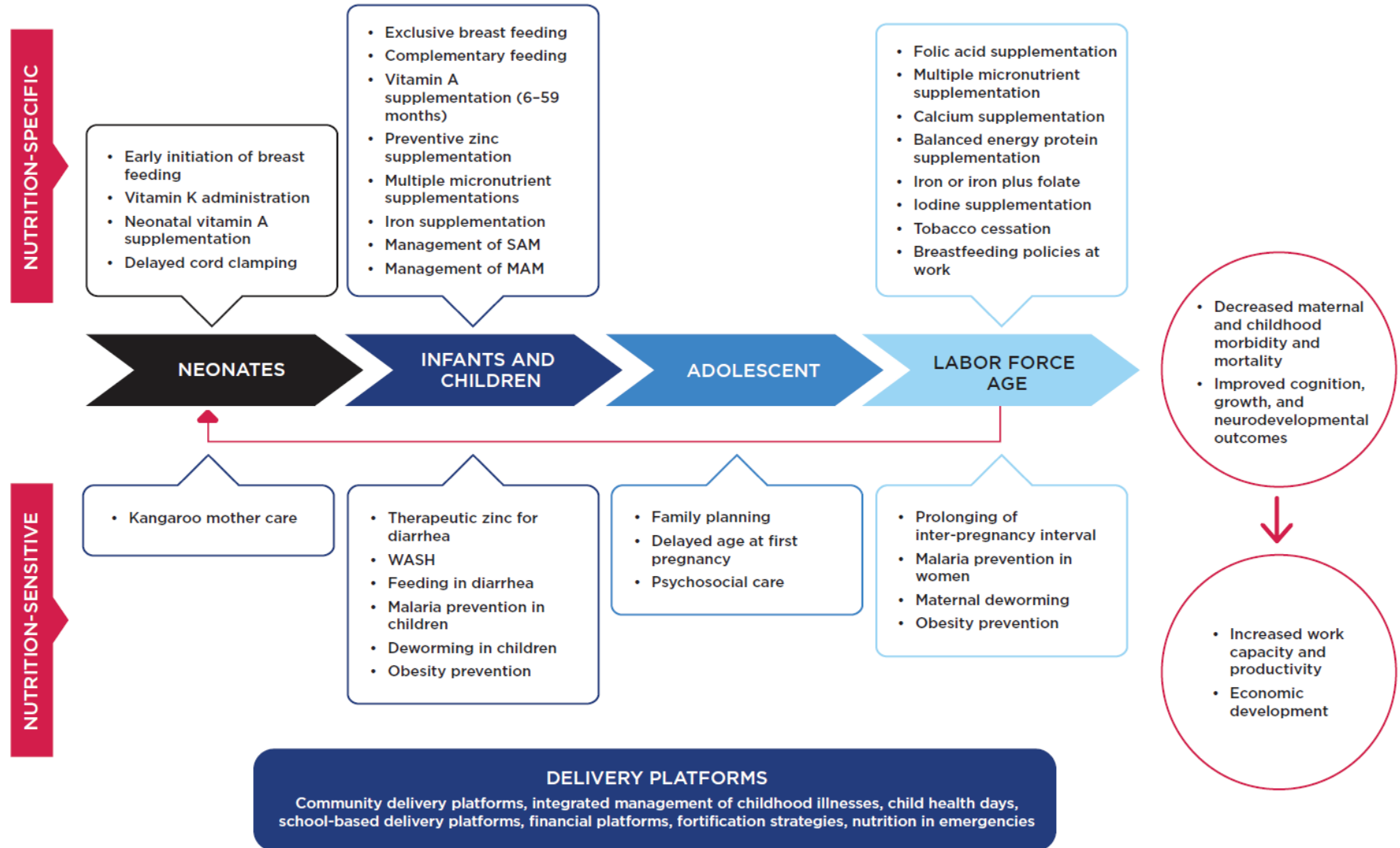
Beyond the critical 1,000 days of a child's life (five years), adolescence is a second nutrition-sensitive time for transformative growth and development. The impact of nutrition on adolescent development extends beyond physical growth to neurodevelopment, immunity, and risk for NCDs later in life (Norris et al. 2022). Adolescent nutrition interventions for both boys and girls provide a foundation for a healthy start to life for the next generation. Regular visits to healthcare providers, access to reproductive planning, and gender equity and empowerment are crucial during this life stage and an opportunity to reduce the risk of small and vulnerable babies (Bhutta et al. 2013).

Nutrition interventions in health target several ages and demographics for the greatest impact – adolescents, women of reproductive age, pregnant women, newborns, infants, and children under five (**Figure 3.5**).



**Figure 3.5: Conceptual framework for nutrition-related interventions in the health sector across the lifecycle**

Note: WASH = water, sanitation, and hygiene, SAM = severe acute malnutrition, MAM = moderate acute malnutrition



Source: Adapted from Bhutta et al. 2013

Targeting maternal, child, and adolescent nutrition through health sector interventions is crucial. A report released by the WHO estimated that a stronger focus on nutrition within health services could save 3.7 million lives by 2025 (WHO 2019). Since the foundational 2013 *Lancet* series on maternal and child nutrition, evidence on recommended interventions has strengthened and several new interventions have been added to the original list of recommendations (see below).

### Evidenced-based nutrition-smart interventions in Health

- Strengthening government policy or programs that provide supplementary food to low-income women, infants, and young children
- Antenatal multiple micronutrient supplementation, including folic acid and iron
- Neonatal vitamin K administration
- Vitamin A supplementation
- Zinc supplementation (preventative and therapeutic)
- Balanced energy and protein dietary supplements (targeted)
- Public provision of complementary foods<sup>5</sup> for children
- Community-based management to treat children with acute malnutrition through primary health care centers (CMAM)
- Preventive small-quantity lipid-based nutrient supplements (SQ-LNS) for children (24 micro- and macronutrients)
- Malaria prophylaxis in children
- Intermittent preventive treatment of malaria during pregnancy
- Delayed cord clamping
- Integrated interventions (e.g., diet, exercise, and behavioral therapy) to reduce childhood obesity
- Social breastfeeding promotion, including advocating for supportive workplaces and policies
- Kangaroo mother care for the promotion of breastfeeding and care of preterm infants
- Health system strengthening to support regular health assessments and guidance from healthcare workers
- Infant and young child nutrition counseling
- Social behavior change communication, especially targeting adolescents

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<sup>5</sup> Around the age of 6 months, an infant's energy and nutrient needs starts to exceed what is provided through breastmilk. At this age, they are also developmentally ready for other foods. Complementary foods are age-appropriate, provide adequate nutrition, and properly fed.

For more information on these interventions, including study parameters, effect sizes, and trial types. Please see the sources above, especially the Lancet Nutrition Series papers from 2013 and Ashorn et al. 2023.

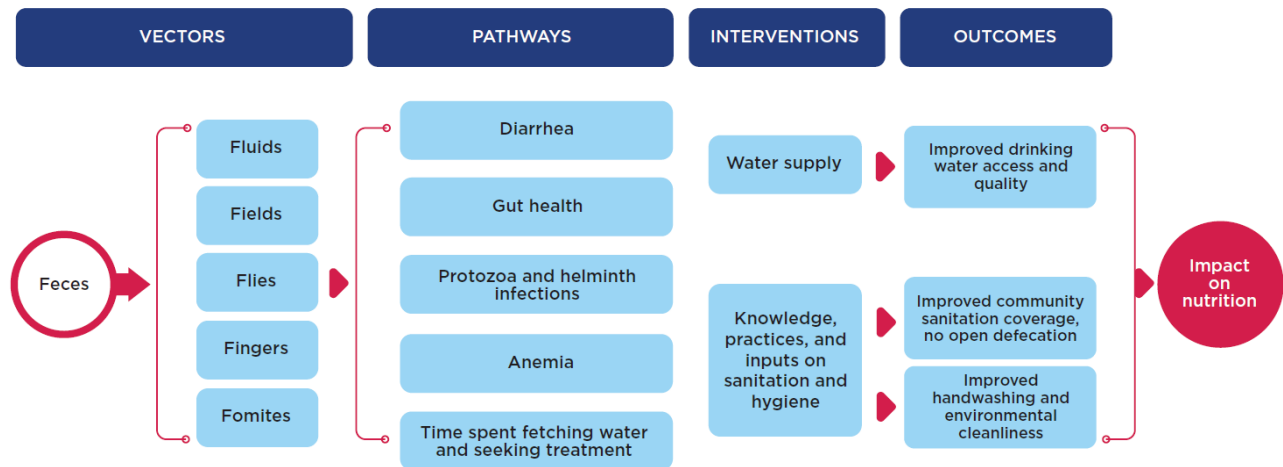
*Additional Tools and Resources to Maximize the Nutrition Impact of Health Sector Investments*

Tools and Resources	Description
All tools and resources are cited in the Reference section.	
<a href="#">Food and Nutrition Actions in Health Systems (WHO 2024)</a>	A collection of resources to assist with the application of essential nutrition actions delivered through healthcare and community platforms
<a href="#">New Guide for Integrating Early Detection and Treatment of Child Wasting into Primary Health Care (R4D and UNICEF 2021)</a>	This guide offers a 6-step process to identify ways to integrate early detection and treatment of child wasting within routine primary health care services.
<a href="#">Essential Nutrition Actions: Mainstreaming Nutrition through the Life-Course</a> (WHO 2019)	This publication provides a compilation of actions to address malnutrition in all its forms, for integration of nutrition interventions in national health policies, strategies, and plans.
United States Government: <a href="#">Economic evaluation of California’s Women, Infants and Children (WIC) Program to prevent Preterm Birth</a> (Nianogo et al. 2019)	Economic evaluation of California prenatal participation in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) to prevent preterm birth. The evaluation found that investing \$1 in prenatal WIC resulted in a mean savings of \$2.48. As WIC participants spend their social assistance benefit, income is generated for those involved in producing, transporting, and marketing the food and other goods purchased by recipients.

Water, Sanitation, and Hygiene (WASH)

Improved water supply, sanitation, and hygiene (WASH) practices have the potential to impact children’s nutritional status through multiple pathways (Figure 3.6). These include (1) fewer episodes of diarrheal disease; (2) improved gut health; (3) reductions in protozoa and helminth infection; (4) reductions in anemia; and (5) time and cost savings associated with fetching water, caring for sick household members, and seeking treatment (World Bank 2019). However, it is important to note that these pathways are hypothesized, the specific pathway by which a pathogenic environment leads to undernutrition is less well-known, although research is underway (USAID 2015)

**Figure 3.6: Pathways to nutrition outcomes through investments in WASH**



For irrigation interventions, please see figure 3.3 in the Agriculture and value chains section of this chapter.

Source: Adapted from FAO 2019

Successful WASH investments include three components: 1) water and sanitation infrastructure and hygiene commodities; 2) behavior change communication for sustained improvements in water and sanitation access and hygiene practices; and 3) supportive policies, capacity building, partnerships, financing, and community mobilization (USAID 2015).

There is strong evidence that poor WASH conditions - such as fecal contamination of the household environment and unsafe disposal of infant and child feces contribute significantly to diarrheal disease episodes (Bawankule et al. 2017; Cronin et al. 2016; Mara et al. 2010). There is also good evidence that repeated episodes of diarrhea (and level of severity) are associated with poor growth outcomes and nutrition status in young children (Checkley et al. 2008; Ferdous et al. 2013; Moore et al. 2010).

Interventions that improve WASH conditions are associated with lower risk of diarrhea and better nutrition outcomes. A meta-analysis of intervention studies found that (1) handwashing with soap reduces diarrhea by 30 percent compared to no intervention; (2) sanitation interventions reduce diarrhea by 25 percent compared to no intervention (with evidence for higher reduction at 45 percent when coverage is above 75 percent), and (3) piped water supply of higher quality and continuous availability to premises reduces diarrhea by 75 percent and 36 percent, respectively, compared to unimproved drinking water (Wolf et al. 2018).

Improved water sources and practices must be accompanied by knowledge transfer and behavior change for nutrition impact. In particular, messaging should include child-centered WASH, which focuses on exposure pathways most strongly associated with enteric infections known to cause malnutrition. This might include cleanliness of children’s play areas, safe disposal of child feces, separation of livestock from the home, washing children’s hands before eating, safe food preparation, use of cups (not bottles) for child feeding, and use of clean or treated water to prepare food. Delivery of these messages may be most effective through health workers (USAID 2015). Program designers should work with the relevant units within ministries (including health, agriculture public works, and education) to develop multifaceted behavior

change strategies and standardized messaging and materials, so organizations working in WASH and nutrition are conveying consistent hygiene and nutrition messages, approved by the government. Behavior change strategies may include a variety of approaches including counseling, training, mass communication, and community organization.

WASH investments should consider how to reach underserved populations and facilitate a comprehensive and functional sanitation supply chain with improved governance and engagement of the private sector. An at-scale approach includes a focus on strengthening national institutions, fostering strong private sector participation, and enabling behavior change.

### **Evidenced-based nutrition-smart interventions in WASH**

- Improved drinking water supply systems (including in households)
- Improved sanitation service chain
- Handwashing facilities, including the provision of soap
- Use of Point of Use water treatment, including solar disinfection of water
- Food safety and hygiene education, especially production for own consumption (safe animal husbandry)
- Food safety training and certification for processing facilities and workers
- Adequate and enforced food safety standards and labeling
- Combine WASH with other nutrition-specific and nutrition-sensitive interventions to reduce child stunting
- “Baby WASH” or “Child-centered WASH” including food hygiene, a clean play environment, management of animal and child feces, and infant and child handwashing
- Targeted WASH behavioral interventions to households with pregnant women and those with children under the age of 2

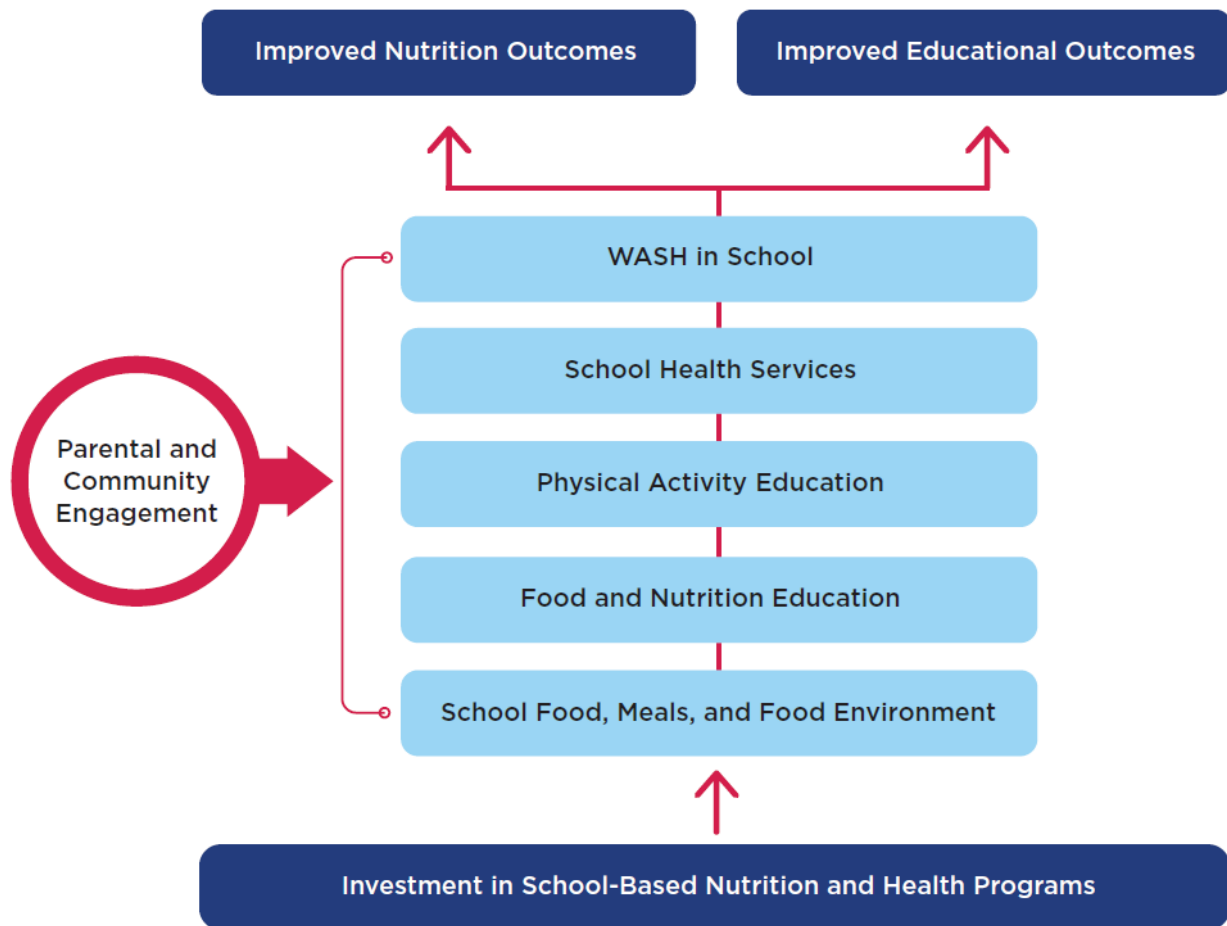
*Additional Tools and Resources to Maximize the Nutrition Impact of WASH Investments*

<b>Tools and Resources</b>	<b>Description</b>
<p><i>All tools and resources are cited in the Reference section.</i></p>	
<p><a href="#"><u><i>Nutrition-Sensitive Water Supply, Sanitation, and Hygiene (World Bank 2019)</i></u></a></p>	<p>This resource includes evidence and guidance on project design and results framework indicators for nutrition-sensitive water supply, sanitation, and hygiene (WASH) operations and components of other sector and subsector projects, including social protection, health, disaster risk management, and irrigation. This note presents evidence for the effects of WASH on nutritional outcomes for each hypothesized pathway.</p>
<p><a href="#"><u><i>WASH Nutrition: A Practical Guidebook on Increasing Nutritional Impact through Integration of WASH and Nutrition Programmes (ACF 2017)</i></u></a></p>	<p>This resource provides practitioners with examples and tools to design and implement effective WASH and nutrition programs, supporting integrated projects</p>

**Education and Workforce Development**

The education sector has the potential to improve immediate nutrition outcomes by providing food in schools and the long-term impact through increased education, particularly among adolescent girls. The education sector aims to support children to reach their potential and become productive members of society, similar to those in the nutrition sector (Bundy et al. 2009). When designing nutrition-related interventions in the education sector, it is important to consider sustainability, especially in countries with food-insecure communities.

**Figure 3.7: Pathways to improved nutrition through investments in the education sector**



Source: Adapted from Xu et al. 2021

The framework in **Figure 3.7** suggests five pathways for impacting nutritional status through education and schools, based on the literature. The first pathway relates to school feeding and meals provided at school as well as foods available in the vicinity of schools (vendors, etc.). School meals offer a platform to supply healthy and nutritious foods and improve dietary diversity. Involving local and smallholder farmers can improve food quality and strengthen local agriculture (Masset and Gelli 2013). For example, the MCC Education program in Ivory Coast has successfully organized communities through women’s groups to be ready to produce food for middle school canteens (MCC 2021). In countries where boarding school is common, there is an opportunity to add nutritious food choices to the menus as well as offer reproductive health and nutrition education in the curriculum. For the meals to support nutrition, the food must be safely handled, and quality and nutritious foods should be supplied.

The second pathway is through food and nutrition education. This includes theoretical knowledge on topics related to food, health, hygiene, and nutrition, as well as skills-based training (in kitchens, during mealtimes, or in school gardens) related to these topics. Interventions related to this have been shown to impact nutrition knowledge, diet quality, and nutrition status, but depend on the quality of education and teaching method. Although there is little published evidence on the impact of nutrition education



in vocational schools, there are a few case studies that focus on agricultural extension programs (Dia 2018). One study in Northern Tanzania found that agricultural interventions can influence the underlying determinants of undernutrition through improved food security (Larsen and Lilleør 2015). Kuria (2014) found that farmers participating in a Kenyan Farmer Field and Life School project that addressed nutrition consumed more meals than before joining the project (Kuria 2014). An assessment conducted in Senegal where farmers received nutrition training through Farmer Field Schools highlighted improved meal frequency and dietary diversity, with 94% of the children daily consuming at or above the recommended four food groups (Dia et al. 2017). Agricultural extension programs and technical and vocational education and training centers are key transmitters of knowledge to farmers and other skilled workers and offer an under-utilized platform for the integration of nutrition education into the curriculum.

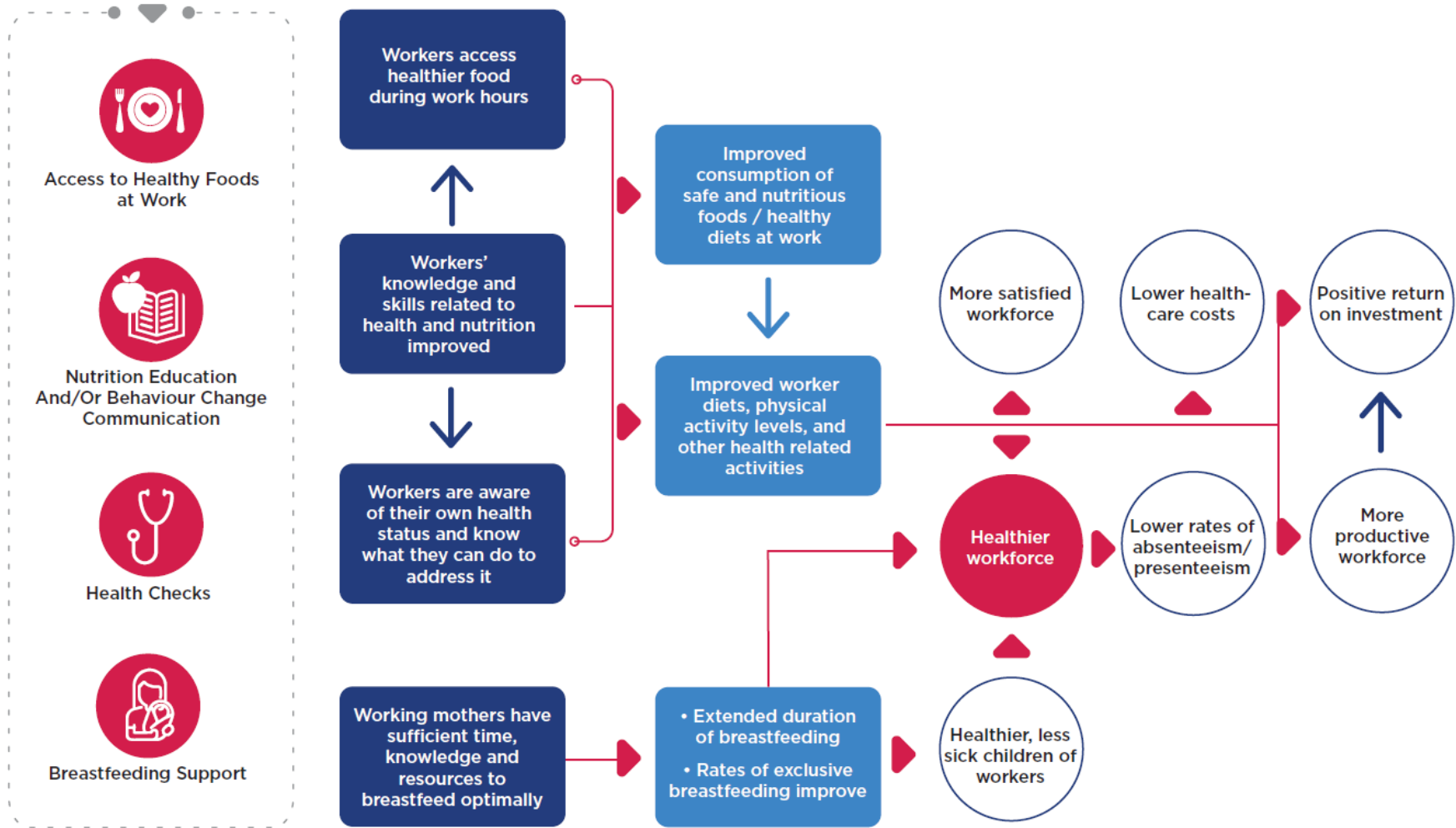
The third pathway includes physical education activities, leisure activities, and extra-curricular activities – all of which increase students' physical activity and, along with a healthy diet, support maintaining a healthy weight (WHO 2008).

The last two pathways are through school health services and WASH in school. School-based health clinics and services as well as routine health assessments can support better health and nutrition at schools. These services include vitamin A and iron supplementation, growth monitoring, and deworming interventions (Bhagwat et al. 2014; Studdert et al. 2004). Lastly, the lack of availability of drinking water and sanitary facilities within schools limits hygiene and sanitation practices leading to poor nutrition outcomes (Erismann et al. 2017). For more on related interventions in health and WASH, please see those sectors above. All of these pathways rely on parental and community engagement.

Once an individual becomes a part of the labor force, workplaces offer a unique structure through which nutrition can be influenced. These set of workforce nutrition interventions can help address access and demand for nutritious and healthy foods, routine health checks at the workplace, and provide breastfeeding support to working parents (**Figure 3.8**). Improving access to healthy foods daily has been shown to improve short-term cognitive functioning and long-term nutritional health in adults. In addition, coupled with behavior change communication related to nutrition and healthy diets, these programs can change workers' preferences towards healthier foods and improve their ability to make healthier nutrition choices for themselves and their households. Health checks in workplaces and factory settings, can help early detection of non-communicable diseases, and prevent them when they are coupled with counseling. Lastly, breastfeeding support at workplaces enables working mothers to breastfeed exclusively for 6 months and continually for up to two years. These interventions have been shown to increase job satisfaction and reduce the number of sick days while improving nutrition knowledge, higher consumption of healthy foods and micro-nutrients, supporting weight loss, and increasing the duration of exclusive breastfeeding (GAIN 2019).



**Figure 3.8: Pathways for nutrition program impact through a healthier workforce**



Source: Adapted from Gain 2019

**Evidenced-based nutrition-smart interventions in education and workforce development**

- Sustainable school feeding programs (beyond the life of initial investment)
- Children’s ability to access clean water and sanitation services at school
- School gardens to promote food and agriculture knowledge
- Children’s knowledge of nutrition, motivation, and capacity to perform safe food prep and storage practices
- Children’s knowledge of, motivation, and capability to perform health and hygiene practices
- Training of teaching staff on nutrition and food knowledge and behaviors
- Nutrition and support services for pregnant and nursing women, infants, preschoolers, and adolescents.
- Skill training for the labor market
- Healthy changes to work-provided meals coupled with nutrition education
- Health checks accompanied by individual counseling or nutrition education at workplaces
- Respecting or exceeding national laws on the duration of paid maternity leave (ensuring 6 months minimum)
- Providing an appropriate place and time to express/pump milk during work hours
- Providing options for working mothers such as on-site childcare and flexible work schedules

*Additional Tools and Resources to Maximize the Nutrition Impact of Education and Workforce Development Investments*

<b>Tools and Resources</b>	<b>Description</b>
<i>All tools and resources are cited in the Reference section.</i>	
<a href="#"><u>School Policy Framework (WHO 2008)</u></a>	This guidance supports the development and implementation of policies that promote healthy eating and physical activity in the school setting through changes in environment, behavior, and education.
<a href="#"><u>Focusing Resources on Effective School Health: A FRESH Start to Improving the Quality and Equity of Education (UNESCO 2000)</u></a>	This resource identifies a core group of activities, each already recommended by the participating agencies, and captures the best practices from program experiences.
<a href="#"><u>The Evidence for Workforce Nutrition Programmes: Evidence Brief 1 - Healthy Food at Work (GAIN) (Dhillon and Stone 2019)</u></a>	This evidence brief focuses on healthy food at work, providing a review of the evidence for impact, best practices, and case studies.

<a href="#"><i>The Evidence for Workforce Nutrition Programmes: Evidence Brief 2 - Nutrition Education (GAIN) (Dhillon and Stone 2019)</i></a>	This evidence brief focuses on workforce nutrition education programs, providing a review of the evidence for impact, best practices, and case studies.
<a href="#"><i>The Evidence for Workforce Nutrition Programmes: Evidence Brief 2 - Nutrition-focused Health Checks (GAIN) (Dhillon and Stone 2019)</i></a>	This evidence brief focuses on workforce nutrition-focused health checks, providing a review of the evidence for impact, best practices, and case studies.
<a href="#"><i>GAIN Workforce Nutrition Programme Evidence Brief 4: Workplace Breastfeeding Support (Dhillon and Stone 2019)</i></a>	This evidence brief focuses on workplace breastfeeding support programs, providing a review of the evidence for impact, best practices, and case studies.

### Other Investment Sectors

While the impact of other investments on nutrition outcomes is less clear, all sectors can take a nutrition-smart approach to designing, implementing, and monitoring investment activities. The following sectors have limited rigorous economic evaluations to identify evidence-based interventions to improve nutrition, however, based on the literature, this section includes best practices and considerations for program designers.

#### *Land and Property Rights*

Land, fisheries, forests, and other natural resources provide a basis for livelihoods and social, cultural, and religious practices. Pressure on these resources is increasing as areas are sought for cultivation and are occupied by urban expansion, and as people abandon areas because of degradation, climate change, and conflicts (FAO 2017). The livelihoods of many, especially vulnerable and marginalized groups – such as women, youth, indigenous people, ethnic minorities, and internally displaced persons – are based on their access to land, fisheries, and forests. Seventy-five percent of poor people in middle- and low-income countries live in rural areas, and most of them depend directly or indirectly on agriculture for their livelihoods (World Bank 2008, IFAD 2011). Many of them are smallholder farming households. Most people in rural areas in developing countries do not have any form of documentation to protect their land and natural resources rights. In this context of tenure insecurity, their livelihoods and consequently their food and nutrition security are at risk. At the same time, a context of tenure insecurity is also detrimental to the promotion of responsible investment in agriculture that could increase productivity and enhance food security and nutrition (FAO 2017).

Evidence from several countries shows that improving rural households' ability to own and control land can benefit household diets and food security. A 2021 study in Nigeria found that land tenure is a critical factor in achieving poverty reduction, household food security, and improved nutritional status for those who reside in rural areas (Kehinde et al. 2021). Similar results were also found in Malawi from a land redistribution program (increasing food availability) and in Zambia (increased daily calories) (Kehinde et al. 2021). However, it is important to note that increased daily calories or food availability does not neces-

sarily improve nutrition status (for example, if the caloric increase is a result of increased consumption of starchy vegetables).

Women's land tenure can benefit the nutrition status of the whole family. Women with higher land-owning status have better access to prenatal care and are more likely to receive care during critical nutrition periods (Landsea 2012). When women own land and have decision-making power, a greater proportion of agricultural income is spent on food for the household. In addition, OECD Development Centre 2012 data, analyzed by the Center for Women's Land Rights showed that countries where women lack rights or opportunities to own land have on average 60% more malnourished children than countries where women have some or equal access to land (Landsea 2012). However, women's land tenure is not always sufficient to offset preexisting gender norms and inequalities (City, University of London and R4D 2022). Critical research gaps remain on the pathways between land tenure and household food security and diets, including the impacts of large-scale land investment and enclosures in pastoral communities on income and dietary intake, and the climate change impacts of land tenure policies, especially related to women's and small-holder farmers' ability to implement adaptation measures (World Bank, 2014). Large-scale investments in this sector should consider the pathways to improved nutrition and assumptions made to ensure activities do not harm nutrition status and support improved nutrition where feasible.

### *Transport and Infrastructure*

Rapid urbanization and the relocation of individuals from farms to cities have transformed food systems in LMICs. Transportation infrastructure has an opportunity to support access to healthy and sustainable diets, but investments must consider nutrition impact carefully (Morris 2023). In areas where road and transport infrastructure are poor, accessibility, affordability, quality, and safety of nutritious foods for consumers are significantly reduced, and food producers may not be able to get inputs and resources or reach markets. Improved road infrastructure and proper storage and processing facilities decrease food losses and enable certain foods like vegetables, fruits, and animal-sourced foods to travel quickly to avoid getting spoiled. Adequate processing and storage infrastructure promotes food security through year-round access to safe and nutritious foods. Production, distribution, and sale of diverse and nutritious foods could be facilitated if greater investments are made in developing relevant infrastructure (Morris 2023).

Urban agriculture (growing food crops in an urban environment, in public or private spaces) can also directly contribute to diverse food supplies for local population centers, providing easier access to nutrition and healthy food, supporting urban food security, and providing economic activity for urban households. Because agricultural inputs are often traded through urban centers, they can be more readily available to households for home gardens and community garden plots. Including open and agricultural space as a planning element is a climate-smart approach, as well as a nutrition-sensitive one (Gerster-Bentaya 2013).

While road networks, lower transportation costs, and increasing access to services like food delivery on-demand could make healthier diets more affordable for consumers, it could also introduce the risk that diets become less healthy with the availability of ultra-processed foods high in fats, sugar, and salt. In addition, there are risks to the environment (clearing forests and increasing erosion) and the potential to worsen gender inequalities if women's transport patterns are not considered (City, University of London and R4D 2022). Therefore, when designing transportation and infrastructure investments, the impact on

nutrition should be considered and options to support healthy diets selected whenever possible. At the very least, program designers should aim to ‘do no harm’ to nutrition within the target area.

### *Finance, Industry, and Trade*

Food fortification and biofortification are well-established strategies to address micronutrient deficiencies at the population level (Osendarp et al. 2018). However, success hinges on buy-in from industry and private-sector partners. Effective, sustainable, and far-reaching implementation is key, as well as oversight to ensure consistent high-quality products. While assessing monetary benefits across countries from fortification initiatives is challenging, the Copenhagen Consensus consistently ranked food fortification as one of the top 4 priority development interventions (2008). Investment in fortification infrastructure and industry acceptance, as well as quality control, may also facilitate greater consumer confidence in marketed products and enable international trade of fortified products (TechnoServe 2019).

Trade policies shape political institutions, modes of production, consumption patterns, and lifestyles. These factors are recognized as important enabling factors and drivers of nutrition and health outcomes through changes in *income* and changes in *prices* (depending on whether households are net consumers or net sellers). Trade reforms and liberalization have been linked to both under-nutrition and a rise in overweight and obesity, as well as the spread of NCDs in LMIC (Cuevas Garcia-Dorado et al. 2019, Hawkes 2006). However, there are governments using trade reforms and policies to improve diets as part of a food systems approach. For example, Ghana created evidence-based, non-discriminatory standards for imported and domestic meat to reduce the availability of low-quality, high-fat meats in the food supply. Samoa developed a comprehensive, World Trade Organization-compliant nutrition policy that included non-discriminatory fiscal policy measures to incentivize the production and consumption of healthy foods (Global Panel 2020).

At the national level, compacts can support governments to adopt public health policies that restrict marketing unhealthy foods to children (reduce exposure to sugary, high salt or calorie produces), add taxes to discourage consumption of unhealthy foods and beverages, and promote food labeling to help consumers make informed choices. When designing investments to support industry and trade, MCC should consider the potential impact on nutrition status through changes in income and prices to the extent possible, particularly for women, children, and adolescents.

### *Energy*

At the production level, the availability of energy can support investment in modern irrigation infrastructure. At the food processing level, energy will facilitate the introduction and expansion of food processing technologies at scale (see section on **finance, industry, and trade** above). Investment in clean energy is a climate-smart strategy that can also be nutrition-sensitive – providing farmers with a safe, sustainable, and reliable source of energy for agricultural activities and produce value conservations through cold chain and enhanced food safety. Energy investments should be evaluated to avoid unanticipated harm to nutrition (e.g. loss of diverse agricultural environments for the creation of energy sources, disruption to fisheries due to hydroelectric dams, or other water-based energy investment).

## CHAPTER 4: CONSIDERING NUTRITION WHEN CONDUCTING BCA TO ESTIMATE THE ECONOMIC RATE OF RETURN (ERR)

### CHAPTER OBJECTIVE

This chapter presents a process to guide BCA and estimations of the ERR for projects that include nutrition-related activities.

Across all sectors, analysts strive for comparability and quality in benefit-cost and other economic evaluation results. Current MCC guidance on using benefit-cost analysis in the health sector is summarized in the [Health Sector Cost-Benefit Analysis Guidance](#) published on September 28, 2023. Additional information can be found in the [Harvard Reference Case Guidelines for Benefit-Cost Analysis in Global Health and Development](#), a set of guidelines designed to clarify concepts, aid in implementation, and provide default values for key parameters – including options for standard sensitivity analysis (Robinson et al. 2019).

As the root causes of the binding constraints are identified in a Compact country, country teams propose and refine projects to address them. This chapter presents a process to guide economists when conducting a BCA and estimating the ERR for projects that include nutrition-related activities.

### COSTING PROJECTS WITH NUTRITION COMPONENTS

In an ex-ante economic evaluation, primary data collection and calculation may not be feasible or necessary, given the purpose and timing of estimating a return on investment for MCC. Rather, it is common to use a ‘bottom-up’ approach to calculate the cost for each input using the best available secondary data on average resource use and costs combined with expert opinion from implementing partners.

#### *Financial costs*

For nutrition-related interventions, typical financial costs include the cost of personnel, volunteer incentives, commodities (micronutrient supplements and powders, food supplements, seeds, animal feed, or other inputs for the production of nutrient-rich foods), transport, per diems, and travel. Many interventions require training workshops, site visits or counseling visits at the community or household level to reach target participants, such as pregnant and lactating women. When nutrition-related interventions are private sector focused (e.g. fortified food policy limited sodium content, etc.) costs may also include capacity building, marketing or machinery. Costs should also be included for activities related to SBC, which is an essential component of most nutrition programs. SBC activities may include mass media campaigns (radio, TV, social media), or facility or household counseling to raise awareness and improve knowledge, attitudes, and practices, requiring financial expenditures for materials design, production, and distribution. Other financial costs will be more specific to the design of the intervention and may be related to the provision of technical assistance, cooking or food preparation demonstration projects, training workshops, the establishment of credit groups, and other types of community groups including women, men, or adolescents. Additionally, investment to improve the supply and quality of nutrient-rich foods, some projects may support small to medium entrepreneurs, certification in marketing, training, and regulatory certification (Margolies et al. 2021, Thai et al. 2023, Levin et al. 2019).



*Economic costs*

Economic costs or “opportunity costs” represent resources consumed, thus preventing the opportunity to devote those resources to another purpose. They also correct for any market or price distortions. For example, in many nutrition interventions, volunteers are used to effectively reach households for behavior change communication, linking households to care or delivering nutritional supplements. Funding agencies may procure, donate, or subsidize the cost of inputs (i.e. Vitamin A capsules or ready to use therapeutic food (RUTF)) to a national program. For many MCC investments, the country partner government may also contribute resources, such as government personnel, infrastructure, and even basic supplies and equipment. Often, the largest source of economic costs is the time provided by volunteers helping to reach participants and the participants themselves, although this may be difficult to capture. Recent studies in Bangladesh, Malawi, and Nepal indicated that economic costs comprised between 25% and 50% of total costs (Margolies et al. 2021; Thai et al. 2022).

Costs can vary widely across different types of nutrition programs – especially multisectoral nutrition programs and depend on the country context and the scale of the intervention. Once the Compact focus is determined, analysts will need to identify the target population for each intervention component (i.e. children under 5 years with severe acute malnutrition, pregnant women, adolescent girls, children 6 to 59 months, etc.). In some cases, the target population may be a percentage of the total households receiving the intervention (i.e., if it is a WASH, safety net, irrigation, or agricultural investment, for example). Next analysts will need to identify current coverage and provide projected coverage post-intervention. Coverage data for key nutrition indicators is available from the [Lives Saved Tool \(LiST\)](#), [Joint Child Malnutrition Estimates \(JME\)](#) (UNICEF, WHO, World Bank), [Multiple Indicator Cluster Surveys \(MICS\) \(UNICEF\)](#), the [Demographic and Health Surveys \(DHS\) \(USAID\)](#), and other nationally representative surveys.

Analysts can assemble demographic data, prevalence data to estimate the population in need at baseline, and intervention coverage levels to estimate target group numbers for each year of the project (and for different options, if options reflect different coverage rates for target groups and/or a different geographic scope). Analysts will need to estimate the change in the total numbers of target groups over time, taking into consideration assumptions on coverage increases over time, as well as population increases for each target group over the project period. Demographic data is available from the country’s census, estimates, and UNICEF. Analysts will need to access country-level data for specific populations such as the number of pregnant women, percentages of adolescent girls in the

**BOX 5****CAPTURING TOTAL COSTS FOR NUTRITION INTERVENTIONS**

For an illustrative set of data needed to develop total costs for a nutrition intervention, see Annex 1 for cost and potential benefit parameters and assumptions of multisectoral nutrition strategies.

- See the worksheet tab ‘Coverage assumptions’, for listing interventions, target population, and coverage assumptions.
- See the worksheet tab ‘Cost unit costs’ for examples of the types of unit costs and cost data that are needed.
- See the ‘Cost Calculations’ and ‘Cost Summary total cost’ worksheet tabs for how data are combined to estimate and summarize total cost requirements.



population, to refine demographic indicators for nutrition-related target groups. In many cases, these data will need to be disaggregated at the sub-national level depending on the distribution of needs within a country.

Analysts can also develop a list of input costs for each feasible option for investment. For nutrition-specific interventions, obtaining input unit costs can be straightforward, since many countries have been implementing nutrition projects with support from USAID, UNICEF, and other donors. For nutrition-sensitive interventions, related to agriculture, WASH and social transfers may rely more heavily on assumptions and the best available published data, given the country and context. Information on unit costs may be found in accessible administrative financial reports or through public database prices of commodities, equipment, training workshops, planning workshops (for example, the [UNICEF Nutrition Supply Catalogue](#)). Government health or nutrition budgets may be a good source of data (e.g. estimating personnel costs with a civil servant salary scale). Additional information may also be available in the [SUN Country Profiles](#), as discussed in **Chapter 2**.

Then for each intervention component, the analyst can combine information on unit costs with the number of units (i.e. target population or number of households) to estimate a total cost for each year of the compact.

## DEFINING AND ESTIMATING POTENTIAL BENEFITS FROM NUTRITION-RELATED PROJECTS

In addition to capturing the intervention costs, analysts must identify, value, and monetize all expected benefits. Interventions that directly and indirectly affect nutrition outcomes are linked to a range of outputs and benefits. These should include both immediate and future benefits. Investments in nutrition that effectively reduce wasting, stunting, and micronutrient deficiencies have been shown to increase cognitive skills and labor productivity. Specifically, there are several relevant health and economic benefit categories for multisectoral investments aimed at improving maternal and child health and nutrition:

- Benefits from reducing illness and death
- Benefits related to improved cognition
- Benefits related to improved productivity
- Benefits related to increased household income
- Benefits related to increased GDP

Below we discuss the broad range of benefits for consideration in economic evaluations of nutrition interventions. Since some of these are not easily included in benefit-cost analysis, we discuss currently available approaches and challenges of incorporating these broad types of benefits into benefit-cost analysis. **Table 4.1** lists benefits by sector, a general description, and an example that is relevant to nutrition interventions (Wun et al. 2022).

**Table 4.1 Benefits associated with nutrition interventions**

(Wun, et al 2022:6)

Benefits	Description	Example
<b>Health sector</b>		
Nutrition status improved	Averted mortality and morbidity associated with nutrition disorders and their associated DALYs/QALYs, or improvements in anthropometry (i.e., stunting and wasting). Typically used in cost-effectiveness analyses.	Stunting, wasting averted  Number of DALYs averted by reducing stunting, wasting, vitamin A deficiency, other micronutrient deficiencies, or diarrhea
Mortality benefits	Monetary valuation life years saved	Value of a statistical life year and other methods to monetize the value of life years saved
Morbidity benefits	Monetary valuation of reduced risk of non-fatal health risks occurring before death, or illness that poses no risk of mortality	Value of direct and indirect costs averted or saved due to prevention that reduces illness and care-seeking behavior.
Cost savings: health system	Averted health (or other social services) provider costs	Reduction in medical service costs.
Cost savings: beneficiary	Averted direct (out-of-pocket) costs and indirect (opportunity) costs	Reduction in health facility fees, medication, and travel expenses and time savings to and from health facilities, averted days of illness, averted schooling losses
<b>Other economic and social benefits</b>		
Income	Increase in current household income or national GDP	Increase in current value of agricultural or livelihoods productivity; or depending on the scale of investment increase in GDP growth or levels.
Productivity gain	Increases in future income earnings due to improvements in nutrition and other health status	Change in projected wage rates
Cognitive/education gain	Gain in school attendance, increases in test performance, cognitive, and psychomotor development	Additional years of educational attainment

Benefits	Description	Example
Dietary diversity (household, women, children)	Increase in the diversity of food consumed (usually the number of food groups)	Improvement in household dietary diversity score (HDDS) or reaching women's minimum dietary diversity (MDD)
Food security	Improvement in the quantity or quality of food access or consumption	Improvement in household food security score
Women's empowerment	Increase in women's ability to make important life choices, access opportunities, and improve their economic status and wellbeing	Percentage of women and men who are empowered in key domains related to decision-making, control of income, and time allocation (Women's Empowerment in Agriculture Index)
Mental/social health	Increase in emotional, social, or psychological wellbeing	Decrease in shame or stress or increase in pride from certain activities (e.g., open defecation, ownership of new technologies)
Knowledge/attitudes/practices	Improvement in knowledge, attitudes, or practices related to nutrition	Awareness of the importance of exclusive breastfeeding and hygiene

For nutrition benefits in BCA, there are two distinct steps. The first step is estimating the impacts of the nutrition intervention, using the LiST model, or drawing impacts from related studies and applying standard approaches in epidemiology, for example, population attributable fraction. The second step is monetizing the benefits using the methods summarized in **Table 4.2** below.

**Table 4.2** presents the three recommended benefits to include plus a summary of monetizing the benefits, based on the Harvard BCA guidance (Robinson et al. 2019) and an application in Haiti (Wong et al. 2019). For agricultural interventions, we also recommend including an estimate of increased income from marketed surplus.

**Table 4.2. Benefits associated with nutrition interventions and basis for monetization**

Benefit Types	Monetization method
Benefits from avoided premature mortality	<p>Estimation options:</p> <p><i>Value of a statistical life (VSL)</i>: Estimate VSL by transferring a value derived from the US (USD 9.4 million in 2016 US dollars, equivalent to 160x GNI per capita purchasing power parity (PPP)) using an income elasticity of 1.5.</p> <p><i>Constant value of statistical life year (VSLY)</i>: Use 100x and 160x GNI per capita PPP, from OECD and US, assuming an income elasticity of 1.</p> <p>See Robinson et al. (2019) for details on these alternative approaches.</p>
Benefits from reduced morbidity or reduced non-fatal health risks	<p><i>Willingness to Pay (WTP)</i> estimates for avoiding diarrheal disease: WTP to avoid a case of diarrhea in children under five years valued at \$35.40*; Adjust to country context, using GNI per capita PPP and income elasticity of 1.0.</p> <p>*WTP is ideally derived from country-specific literature.</p> <p><i>Cost of illness</i> – Estimating an individual’s averted (or saved) cost of illness involves estimating the direct and indirect costs incurred due to illness. Direct costs may relate to treatment, for example, doctor’s visits and medication. Indirect costs include the value of time a worker loses while sick and the time other household members spend caring for the sick family member (Robinson et al. 2019).</p> <p>Valuing years lost to disability at a constant VSLY plus costs borne by third parties (outpatient costs, inpatient costs, and cost of caregivers’ time). Each incidence of diarrhea corresponds to 0.00019 Years Lived with Disability (YLD) (Salomon et al. 2015).</p>
Lifetime productivity benefits	<p><i>Productivity gains due to reduced illness or disease</i> averted stunting, and/or improved cognitive gains from early education. There are significant, lifelong economic benefits from averting stunting (see seminal work from Hoddinott et al. 2008 and 2013). Various estimates and methods capture the impact of stunting on improved wages and/or consumption, ranging from 20 to 60 percent. Most assume that reductions in stunting will improve the wages of adults, beginning at age 16 to 60, using locally relevant wage rates that are country-specific and grow in accordance with GNI per capita growth assumptions.</p> <p>In addition, increased labor productivity due to anemia treatment and prevention has been noted in many cross-sectional and interventional studies. A recent systematic review of data from 12 studies on the effect of anemia and therapeutic iron on productivity in working adults found strong evidence that anemia negatively impacts occupational performance and that therapeutic iron interventions through fortification or supplementation can yield substantial productivity gains. Outcome measures considered were quantitative measures of labor outcome relevant to the occupational context (e.g., the mass of product harvested), which can be translated to additional income or sales (Marcus, Schauer, Zlotkin 2021).</p>
Benefits from increased current income	<p><i>Changes in income, expenditure, and sales</i> – Changes in expenditure incurred (-) or income gained (+) as the result of an intervention already are presented in monetary terms.</p>

## PRACTICAL GUIDANCE IN MONETIZING BENEFITS

### *Using Lives Saved Tool*

A starting point for estimating the health benefits of nutrition investment is using the well-established mathematical model the Lives Saved Tool (LiST). MCC economists should access the LiST tool through the OneHealth Tool. LiST has recently been updated for maternal and child nutrition and includes efficacy and population-affected fractions for 34 nutrition-related intervention outcome pairs for women and children less than five years of age. [Tong et al. \(2022\)](#) provide a summary of the 34 nutrition-related intervention outcome pairs in LiST. In addition, the [LiST visualizer](#) describes the detailed pathways from intervention to reductions in risk factors, including wasting, stunting, etc., and ultimately to mortality outcomes due to stillbirth, maternal mortality, neonatal mortality, and child mortality. The advantage of using the LiST is that data are available for most low and middle-income countries, with pre-populated models available using coverage data from the Demographic Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS), and mortality rates from the UN Inter-agency Group for Child Mortality Estimating (UN-IGME), World Health Organization, UNICEF, UNPF, and the World Bank. Using existing models, analysts only need to make assumptions on the potential of interventions to increase coverage and update any country-specific information to override model assumptions.

[The Lives Saved Tool Website](#) has extensive resources and provides technical assistance for using and applying LiST to most LMICs for assessing a set of effective nutrition interventions. The country data pack is an optional download that can be used with the LiST tool, providing demographic data for all countries based on World Population Prospects 2019. LiST often has pre-populated national and sub-national country-level LiST models that can be used with support for many countries. For other nutrition conditions, such as wasting and some micronutrient deficiencies, information on the duration of illness and utility weights can be obtained from the Global Burden of Disease Study (Salomon et al. 2013), life expectancy can be obtained from WHO Life Tables, easily accessible in the [WHO Global Health Observatory](#). Links to the resources on the LiST website are also available in Annex 1.

### *Valuing lifetime productivity benefits: Which evidence should be used?*

Although there is a consensus that reductions in growth faltering (stunting) lead to cognitive improvements that are reflected in higher earnings in adulthood, there is still some uncertainty around the magnitude of the parameters to use to monetize this benefit. Several methods and metrics have been used to demonstrate the lost growth potential on cognitive growth, learning, and impact on adult wages or lifetime earnings (Thomas and Strauss 1997, Victora et al. 2008, Hanushek and Wößmann 2008, Behrman et al. 2010, Fink et al. 2016)). Economists have captured the impact of stunting, using different estimates of either increase in wages or consumption, ranging from 10 to 60 percent (Behrman et al. 2004, Hoddinott et al. 2008, 2011, 2013, McGovern et al. 2017, Galasso and Wagstaff 2018, Wong and Radin 2019). Seminal research by Hoddinott and colleagues found that an individual stunted at age 36 months was predicted, as an adult to have 66% lower per capita consumption, a direct measure of the economic cost of stunting (Hoddinott et al. 2011, 2013). An increase in per capita consumption of moving individuals from stunted to not stunted is equal to an increase in per capita permanent income. Depending on the interventions, analysts may want to adjust estimates to account for the intervention's effectiveness in reducing stunting, as well as whether income gains are realized. For example, assuming that a package of recommended nu-

trition-specific interventions can only reduce stunting by 20% (Bhutta et al. 2013), the predicted increase in income may be 13.2%; when assuming only 90% of gains are materialized, the increase is 11.8%.

<b>Table 4.3: Estimates of the impact of stunting on earnings</b>	
66% lower consumption per capita if stunted	Hoddinott et al. (2011)
59.4% (0.9*66%) lower consumption per capita if stunted	Hoddinott et al. (2013)
46% higher adult wages if not stunted	Hoddinott et al. (2008), Wong and Radin (2019)
21% lost lifetime earnings if stunted	Galasso and Wagstaff (2018)
11.8% (0.9x0.2x66%) lower consumption per capita/adult wages if stunted	Hoddinott et al. (2013)
1% increase in height leads to a 2.4% increase in adult male earnings	Thomas and Strauss (1997)
1-cm increase in stature is associated with a 4% increase in wages for men and a 6% increase in wages for women	McGovern et al. (2017)

<b>Table 4.4: Estimates of the impact of stunting on cognitive growth and learning</b>	
Individuals who were stunted at 36 months scored more than a full standard deviation lower on tests of vocabulary and non-verbal cognitive ability	Hoddinott et al. (2011)
Each unit increase in height-for-age Z-score (HAZ) at age 2 y is associated with an additional 0.47 y of educational attainment.	Fink et al. (2016)

<b>Table 4.5: Estimates of the impact of cognitive growth and learning on earnings</b>	
Being literate raises earnings by 10%, and an additional grade of schooling, controlling for literacy, raises earnings by an additional 5%	Hanushek and Wößmann (2008)
Additional grade of schooling raises wages by 9% and an increase of one standard deviation in tests of reading and vocabulary raises wages by 35%.	Behrman et al. (2010)
Return to each additional year of schooling was 7.9%.	Fink et al. (2016)
17.8% increase in wages per 1 standard deviation improvement in test scores	Evans and Yuan (2019)

Given the wide range of evidence in the literature, analysts will need to make their assumption based on the best available evidence and conduct sensitivity to assess the uncertainty of this evidence on the economic rate of return. Conservative estimates are recommended, and sensitivity analysis can vary the assumptions of income growth due to reductions in stunting, along with variation in the discount rate.



*Estimating the costs averted by non-fatal illness*

Improved nutrition is associated with reductions in diarrhea, pneumonia, measles, and meningitis. However, to include both benefits and costs, analysts need additional information on treatment-seeking behavior, i.e. what percent do nothing, go to a pharmacy, or go to a doctor's office, the number of productive days lost for the typical case of illness, and monetizing lost time when attributable to working adults, using the relevant wage rates for the population of interest. Other costs will include medical treatment costs, including the costs of medicines and outpatient or inpatient visits. Capturing these costs for one or more averted illnesses can be time-consuming, and treatment unit costs are not always readily available in the literature.

*Compare costs and benefits*

At this stage, the analyst can start to compile all the necessary information in an Excel worksheet to estimate costs and benefits. The Assumptions and General Parameters Excel workbook found in Annex 1 provides an example of data requirements and assumptions needed for the valuation of morbidity and mortality gains, using the [Harvard Reference Case Guidelines for Benefit-Cost Analysis in Global Health and Development \(Robinson et al. 2019\)](#). This workbook has been designed to complement MCC BCAs and can be added in with other costs and benefits of compact investments. Currently, the worksheets have information that can be used by the MCC in the standard BCA calculations, including benefits associated with mortality reduction, reduced risk of non-fatal illness, lifetime productivity, and increased income.

## COMMON CHALLENGES FACED BY PRACTITIONERS IN MAKING THE ECONOMIC CASE FOR INVESTING IN NUTRITION

Common challenges in applying BCA to nutrition investments stem from the complexity of factors that affect individual and household food intake, ranging from immediate factors, such as the interaction between diet and disease, and intermediate factors linked to household food security, breastfeeding, and young child feeding practices and access to health services, as well as causal factors linked to education and poverty. Interventions to address causal, intermediate, and immediate factors can be complex. Investing in multiple sectors at once that combine agriculture or infrastructure with explicit nutrition outcomes may have complex project impact pathways, making it hard to identify the impact of a single component on economic and nutrition outcomes.

There is also the challenge of when benefits accrue in different periods, and whether the timeframe for evaluating the full range of benefits is sufficient. To date, most evaluations in the literature are based on interventions and evaluations that last 3-5 years through pilot projects, demonstration projects, or randomized controlled trials. For example, behavior change communication impacts are a critical component for improving nutrition, and yet their impacts are rarely measured after five years. Any changes in knowledge, attitudes, or practices, and consequential improvement in nutrition outcomes may be short-lived and are only known for the pilot area, as they are rarely scaled. Notably, in these contexts, it is unclear how long any observed impact may last. Another challenge is that the changes in the production of nutrient-rich foods and market surplus are unlikely to affect market prices in the short term, or at all. The main concerns are how to consider tradeoffs between welfare, market prices, and mortality, and to accurately capture the costs and benefits of these policy objectives.



## Full accounting of nutrition benefits

The guidance on BCA analysis developed by the Harvard School of Public Health, mentioned above, has provided approaches for valuing mortality and morbidity associated with nutrition investments. However, there is some concern that these approaches will lead to double counting the benefits of healthier foods. One potential area of double counting can occur when a nutrition-sensitive agricultural intervention increases income and improves diets. If there is an improvement in a nutrition indicator (e.g. stunting), how much of that is due to improved diet versus the extra income gained from agricultural intervention?

Another challenge is understanding the extent to which consumers' valuation of nutritional attributes is already reflected in the market price and quantity of each item. Before any intervention, a population's food spending is influenced by their beliefs and experiences about healthiness as well as other attributes of food, and that information is reflected in consumer expenditures, business income, and economic growth. For that reason, BCA for any intervention should address only the differences in prices and quantities caused by the use of scientific evidence beyond what consumers already use to form their effective demand and willingness to pay (WTP) for nutritious foods, in the same way, that BCA for other public-sector actions counts only the difference they make for market outcomes.

While estimates of WTP do provide an aggregate measure of the maximum amount individuals are willing to pay to obtain a given benefit, market prices may not always capture the true value of a good to society. The recent literature on these gaps – or market distortions - is reviewed in Masters, Finaret, and Block (2022). When both negative and positive externalities (value) are captured, the true value of many foods may be lower or higher than their market price (Kennedy et al. 2023). This is especially true in low-income settings, where financial restrictions, behavior biases, incomplete information, externalities, taxes, and subsidies may distort market prices.

There are valid concerns about how to methodologically capture the full range of benefits from investing in immediate, underlying, and enabling determinants of maternal and child nutrition. A recent review of the measurement of benefits in the economic evaluation of nutrition interventions found that the current literature often underestimates the total sum of benefits because further methodological research is required (Wun et al. 2022). Many of the benefits are difficult to quantify, and price distortions from unrecognized nutritional effects of food on health will differ for different people.

As MCC considers how to harness current investments to improve nutritional outcomes, this guidance document offers some recommendations to address the concerns about double counting of benefits. This does not address the methodological challenges, but these approaches may increase analysts' confidence in BCA results that include nutrition components. These recommendations are designed to support BCAs of MCC investments that are primarily in other sectors but have also added an objective to improve nutritional outcomes of a given target population, alongside other key objectives related to that sector. For example, household diet diversification among poor households, in addition to production diversification and market access facilitation.

There are three options for assessing the robustness of results and for addressing the above issues related to full accounting.

*Option 1: Omit the additional benefits associated with improved nutrition*

In this scenario, analysts will need to select interventions that have been demonstrated to be effective and cost-effective. In this option, the analyst first adds the costs of the nutrition component to the overall compact investment for that sector. If the ERR is at 10% or greater, then the project meets the MCC criterion of acceptability even though the net benefits of the project have been estimated conservatively. If the ERR is below 10%, then include the additional nutrition benefits and use sensitivity analysis to assess the impact of double counting.

*Option 2: Omit hard-to-value benefits*

Account for hard-to-value nutrition benefits and impacts qualitatively and systematically, using similar approaches followed in other MCC sector BCAs. In this case, if the ERR is greater than 10%, then the project meets the MCC criterion of acceptability even though the net benefits of the project have been estimated conservatively (similar to Option 1). If the ERR is less than 10%, then MCC decision-makers would need to determine whether the qualitative benefits of the project are sufficient for it to be acceptable.

*Option 3: Conduct sensitivity analysis or scenario analysis to remove any benefits that may lead to double counting*

Sensitivity analysis can address and measure the uncertainty associated with modeled assumptions and data limitations and provide an estimate of that uncertainty for a given variable on the overall ERR. Like Option 1, scenario analysis would allow the analyst to remove the value of any benefits that may lead to double counting but provide the analyst with some options in terms of removing some or all of the benefits. This option could be used for compact investments aimed at addressing nutrition (as a stand-alone project), or for investments that integrate a nutrition component into a compact investment in another sector.

Accurately valuing benefits is a common challenge across BCA, but these options will help analysts understand the risk and magnitude of uncertainties related to assumptions, data availability, and the risk of double counting.

## Time Preferences

Benefits to early nutrition occur in different periods over a long timeframe and are unlikely to be weighted equally over time. For example, some impacts of reduced stunting in the first 1,000 days happen quickly – such as reduced infant and child morbidity – while others may happen with considerable lags, such as increased productivity in adulthood or reduced morbidity in old age (Hoddinott et al. 2013). To evaluate consequences occurring at different dates, analysts conventionally calculate the present value, defined as the value of a consequence occurring at present that has the same effect on wellbeing as the future consequence. This value is calculated by discounting<sup>6</sup> the monetary value of each future consequence by a factor that depends on the date it occurs.

<sup>6</sup> New OIRA guidance on the discount rates for BCA ([\(DRAFT\) Circular A-94 Revision \(whitehouse.gov\)](#)) may change current methods

To understand the impact of discount rates, analysts should conduct sensitivity analysis using discount rates based on LMIC contexts and the specific country's economic situation.

## CHAPTER 5. BEST PRACTICES FOR INCORPORATING NUTRITION IN MONITORING, EVALUATION, AND LEARNING

### CHAPTER OBJECTIVE

This chapter shares best practices for incorporating nutrition throughout the M&E plan, including key questions to consider when selecting performance indicators.

Nutrition should be considered in the development and design of the M&E Plan when: (1) nutrition is in the project objective, and/or (2) nutrition is in the project logic leading to the objective. The inclusion of nutrition in the M&E plan should follow MCC's Policy for Monitoring and Evaluation ([Policy for Monitoring and Evaluation of Compact and Threshold Programs | Millennium Challenge Corporation \(mcc.gov\)](#)). For projects that include nutrition-sensitive programming, nutrition indicators may also help to track and measure important outcomes. Designing nutrition indicators requires careful thought about what aspects of nutrition the project intends to improve and how it should be measured within the project. As an example, the Indonesia Compact only had nutrition performance indicators for the project with a nutrition objective (**Box 6**).

**BOX 6**

**EXAMPLE FROM INDONESIA 2013 - 2018: EXCERPT OF KEY NUTRITION PERFORMANCE INDICATORS**

(MCC 2019)

**Project 1: Procurement Modernization Project**

**Budget: \$69,173,160**

- *Objective:* Achieve significant government expenditure savings on procured goods and services

**Project 2: Community-Based Health and Nutrition to Reduce Stunting Project**

**Budget: \$120,367,345**

- *Objective:* Reduce and prevent low birth weight, childhood stunting, and malnourishment of children in project areas, and increase household income through cost-savings, productivity growth, and higher lifetime earnings.
- *Projected economic benefits and participants:* Estimated discounted \$217 million increase in income over the life of the investment. Compared to discounted costs of \$114 million. These income benefits are expected to accrue to 1.7 million children.

**Selected activities under Project 2 and nutrition-related indicators:**

- *Community Projects Activity:* Improved health and education outcomes, including nutrition
  - Number of health and education proposals approved
- *Supply-side Activity:* Improved ability of health service providers to prevent, diagnose, and treat stunting, improved nutrition of pregnant women and infants, improved sanitation behavior
  - Number of sanitary toilets constructed
  - Iron folic acid tablets delivered to district
  - Micronutrient packets delivered to district
  - Number of anthropometric kits distributed
  - Number of service providers trained in growth monitoring
  - Number of service providers trained on IYCF
  - Number of service providers trained in supportive supervision
  - Guidelines on integrating health, nutrition, and budgeting process
- *Communications Activity:* Increased awareness about stunting
  - Number of people trained in stunting awareness, treatment, and prevention
  - Stakeholders and policymakers engaged in stunting prevention
  - Nutrition of television spots aired

**Project 3: Green Prosperity Project**

**Budget: \$228,020,661**

- *Objective:* Increase productivity and reduce reliance on fossil fuels by expanding renewable energy, improve land use practices, and support management of natural resource

To read more about the key performance indicators from the Indonesia compact, see the closeout report available on MCC's website (<https://www.mcc.gov/resources/doc/star-report-indonesia/>)

There are several key considerations when choosing appropriate nutrition performance indicators:

**At what level does the project objective or result aim to influence nutrition (e.g., individual, household, market, national)?**

The project may intend to have a direct effect on individuals or households, or it may aim to strengthen the performance of nutrition actors, a nutrition-related system, or improve the enabling environment. The nutrition indicator should measure the project objective or result at an appropriate level based on the planned project activities. For example, an agriculture project may plan to ultimately increase the consumption of biofortified crops, however, they could contribute to this aim through multiple pathways. The project may intend to directly increase the consumption of iron-biofortified crops by women of reproductive age (individual level), increase adoption of biofortified crop production by farmers (household level), increase the number of vendors selling biofortified crops (market level), or it may intend to strengthen the enabling environment for biofortified crops by including biofortified crops in seed policy or improving seed multiplication and labeling for biofortified seeds (national level). Nutrition indicators should only be measured at the individual or household level among those who are directly targeted by project activities. It is also important to consider whether the project intends to affect the household as a unit or specific groups within the household. Nutrition indicators are often specific to women of reproductive age and children under two or five as these are typically the most nutritionally vulnerable household members.

**Is the indicator achievable and measurable within the scope and timeline of the evaluation?**

Nutrition impact indicators and targets should be chosen carefully. Impact indicators, such as nutrition status indicators, are difficult to improve through a five-year project due to the complex, multi-sectoral nature of nutrition, so care should be taken when choosing nutrition status indicators (**Box 7**). Impact indicators are also often difficult to measure with an evaluation and show attributable impact from the project. Health-related nutrition impact indicators may be too expensive to reasonably measure (e.g., micronutrient status), in which case projects may consider only measuring outcome and output indicators.

**What disaggregation, if any, is needed for the indicator?**

Sex, age, and other demographic disaggregation should also be used when possible and relevant to ensure that the differential effect on vulnerable groups is monitored. Agriculture projects may also consider disaggregating indicators by nutrient-rich food group or value chain.

**BOX 7****EXERCISE CAUTION WHEN CHOOSING NUTRITION STATUS INDICATORS**

(USAID Advancing Nutrition 2020)

Nutrition status indicators (e.g., stunting, wasting, underweight) should not be the focus of evaluations, and if measured, should be measured alongside other proximal indicators. They should be carefully considered before being included in a project M&E plans because:

- They are population-level indicators. Wasting and underweight can be short-term indicators, however, stunting is a long-term indicator that can take four to six years to improve. Stunting is not recommended for use because it is complex and difficult to change, and it is a statistical measure and not a clinical condition (Leroy and Frongillo 2019; USAID Advancing Nutrition 2020).
- They are complex and affected by multi-sectoral factors that are outside of the influence of one project. This makes it difficult to attribute impact to the project and means they may not be a useful way to assess project performance.
- They are expensive to assess because effect sizes are small if observed, so sample sizes need to be large. They also take skill to assess, so they have high enumerator training and oversight requirements to accurately measure.

It may be appropriate to use these indicators in an evaluation when they are feasible to measure, the indicator is expected to change in the given timeframe, and they are appropriate given the project and evaluation design. For example, nutrition status indicators may be appropriate if the project activities are expected to influence them within the project timeframe (e.g., wasting incidence can be monitored frequently) and the evaluation sampling is adequate to detect the expected effect size (e.g., adequate sample size in a population-based survey).

**Annex 2** provides illustrative nutrition indicators that can be used in the health, food and agriculture, WASH, and education sectors. The indicators are organized by impact, outcome, and output levels; however, the appropriate level of the indicator depends somewhat on the design of the project (e.g., dietary diversity could be considered an impact or outcome). For the health sector, the impact indicators are difficult to measure and change through a single project, so health outcome indicators are likely more appropriate. See **Box 8** for additional resources on M&E for nutrition.



## BOX 8

### NUTRITION M&E RESOURCES

#### M&E planning and design

- [M&E Online Course Repository \(USAID Advancing Nutrition\)](#)
- [Designing Effective Nutrition-Sensitive Agriculture Activities Workshop: Facilitator's Guide and Slides](#) (USAID Advancing Nutrition 2022)
- [Measuring Social and Behavior Change in Nutrition Programs: A Guide for Evaluators \(USAID Advancing Nutrition 2023\)](#)
- [Evaluation Planning Tool for USAID Nutrition Programs \(USAID Advancing Nutrition 2021\)](#)

#### Measurement and indicators

- [Beyond Stunting: Complementary Indicators for Monitoring and Evaluating USAID Nutrition Activities \(USAID Advancing Nutrition 2021\)](#)
- [Measuring and Monitoring Multi-Sectoral Nutrition Collaboration: Guidance and Considerations \(USAID Advancing Nutrition 2021\)](#)
- [Technical Brief on Costing Multi-Sectoral Nutrition Activities \(USAID Advancing Nutrition 2021\)](#)
- U.S. Department of State [Foreign Assistance Resource Library](#): Standard Indicators (Office of Foreign Assistance)
- [Women's Empowerment in Agriculture Index \(WEAI\) \(IFPRI\)](#)
- [Data4Diets: Food Security Indicators \(INDDEX\)](#)
- [Exclusive breastfeeding: Measurement to match the global recommendation](#) (Alayon et al. 2022)
- [Global Diet Quality Project](#) (2024)

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## ANNEX 1. GENERAL ASSUMPTIONS AND PARAMETERS (SEE FULL EXCEL FILE)

The screenshot shows an Excel spreadsheet with the following content:

	A	B	C	D	E	F	G	H	I	J	K
1											
2	<b>Overview</b>										
3	This tool is intended to guide MCC staff to consider specific costs and potential benefits of multisectoral nutrition strategies, building on standard economic										
4	evaluation methods. It is divided into <b>five tabs</b> to be completed by the team conducting the economic evaluation. It accompanies the MCC Nutrition Investment										
5	Toolkit on taking a nutrition-smart approach to compact development. Currently, the worksheets have information that can be used by the MCC in the standard										
6	BCA calculations.										
7											
8											
9	<b>List of worksheets:</b>										
10	<a href="#">The Lives Saved Tool</a>	This tab includes links to the Lives Saved Tool (LiST) including guidance, examples and other relevant resources									
11	<a href="#">Benefit Assumptions and Parameters</a>	This tab includes assumptions on growth and discount rates as well benefit parameters (including for the LiST tool)									
12	<a href="#">Coverage Assumptions</a>	This tab includes information needed on the coverage of key nutrition indicators which can be found in nationally representative surveys like the DHS and MICS, and if unavailable, could be replaced by proxies applied by LiST.									
13	<a href="#">Unit Costs</a>	This tab includes information needed on unit costs may be found in accessible administrative financial reports or through public database prices of commodities, training, etc. (e.g., through the UNICEF Supply Catalogue).									
14	<a href="#">Calculations</a>	This tab includes the detailed costing, using information on coverage and unit costs									
15	<a href="#">Summary Total Cost</a>	This tab includes the total costs from the detailed costing tab by intervention.									
16											
17											
18											
19											
20											

The spreadsheet interface includes a ribbon with 'File', 'Home', 'Insert', 'Draw', 'Page Layout', 'Formulas', 'Data', 'Review', 'View', 'Automate', 'Help', and 'Acrobat'. The status bar at the bottom shows 'Ready' and 'Accessibility: Investigate'. The taskbar on the right shows various application icons and folders.



## ANNEX 2. ILLUSTRATIVE NUTRITION INDICATORS BY SECTOR

Result type	Health	Food and Agriculture	WASH	Education
<p>Impact</p> <p><i>(difficult to attribute impact to project; high resource requirements to assess; can take four to six years to shift)</i></p>	<ul style="list-style-type: none"> <li>• Prevalence of underweight (<math>\leq 2</math> weight-for-age z-score) for children under 5</li> <li>• Prevalence of wasting (<math>\leq 2</math> weight-for-height z-score) for children under 5</li> <li>• Prevalence of low-birth weight children</li> <li>• Prevalence of anemia among children 6-59 months</li> <li>• Prevalence of vitamin A deficiency among children 6-59 months</li> <li>• Prevalence of underweight women of reproductive age</li> <li>• Prevalence of anemia among women of reproductive age</li> </ul>	<ul style="list-style-type: none"> <li>• Percent of women achieving adequacy across six indicators in Abbreviated Women's Empowerment in Agriculture Index</li> <li>• Prevalence of minimum dietary diversity for women of reproductive age</li> <li>• Prevalence of children 6-23 months receiving minimum acceptable diet</li> <li>• Percent of women of reproductive age and children under 5 with inadequate specific micronutrient intake</li> <li>• Average household share of animal protein in total protein consumption</li> <li>• Percent of households with adequate fruit and vegetable consumption</li> </ul>	<ul style="list-style-type: none"> <li>• Proportion of children under 2/5 years of age who had diarrhea and diarrhea with blood in the preceding 2 weeks</li> <li>• Proportion of children under 2/5 years of age who had diarrhea in the preceding 24 hours</li> </ul>	<ul style="list-style-type: none"> <li>• Prevalence of underweight (<math>\leq 2</math> weight-for-age z-score) children or adolescents</li> <li>• Prevalence of anemia among adolescent girls</li> </ul>

Result type	Health	Food and Agriculture	WASH	Education
<p>Outcome</p> <p><i>(some outcomes listed here may be difficult to attribute impact to project; moderate resource requirements to measure; can often shift within two to five years)</i></p>	<ul style="list-style-type: none"> <li>• Percent of early initiation of breastfeeding</li> <li>• Prevalence of exclusive breastfeeding of children under 6 months of age</li> <li>• Prevalence of children 6-23 months receiving minimum acceptable diet</li> <li>• Percent of malnourished or recently sick children under 5 receiving extra feeding</li> <li>• Prevalence of children 6-23 months receiving minimum meal frequency</li> <li>• Prevalence of minimum dietary diversity for women of reproductive age</li> <li>• Percent of children 6-59 months receiving vitamin A supplementation</li> <li>• Percent of pregnant women who consumed 90+ iron folic acid or multiple-micronutrient supplement tablets during pregnancy</li> <li>• Percent of women who received counseling on breastfeeding during their last pregnancy</li> <li>• Percent of caregivers who have correct knowledge of treating childhood diarrhea with oral rehydration solution and zinc</li> </ul>	<ul style="list-style-type: none"> <li>• Availability of diverse, nutrient-rich foods in local markets</li> <li>• Affordability of diverse, nutrient-rich foods in local markets (e.g., food affordability index)</li> <li>• Time savings for women</li> <li>• Income control by and equitable opportunities for women</li> <li>• Availability of a variety of micronutrients and animal-source foods for household consumption</li> <li>• Year-round access to a diverse diet</li> <li>• Reduced loss of nutrients in nutrient-rich foods</li> <li>• Priority for spending on food and health of an agricultural group or family members</li> <li>• Percent of farmers producing biofortified crops</li> <li>• Time available for child feeding and care</li> <li>• Women’s membership in agricultural groups</li> <li>• Women’s participation in decision-making about food purchases</li> <li>• Household consumption of fortified foods</li> <li>• Volatility in food prices</li> <li>• Market-level food diversity score</li> <li>• Yield of targeted nutritious agricultural products</li> <li>• Milestones in the improvement of institutional architecture for nutrition policy achieved as a result of the investment</li> <li>• Proportion of food vehicle brands that are fortified according to standards</li> <li>• Proportion of households that consume a fortified food vehicle</li> </ul>	<ul style="list-style-type: none"> <li>• Percent of households with access to an improved water source</li> <li>• Percent of households consistently storing their drinking water safely</li> <li>• Decreased risk of illness due to ingestion of or exposure to contaminants</li> <li>• Number of people gaining access to a basic sanitation service as a result of the investment</li> <li>• Percent of households with soap and water at a handwashing station on premises</li> <li>• Number of communities verified as open defecation-free as a result of the investment</li> <li>• Percent of households using an improved sanitation facility</li> <li>• Percent of households safely disposing of children’s feces</li> <li>• Number of water and sanitation sector institutions strengthened to manage water resources or improve water supply and sanitation services as a result of the investment</li> <li>• Value of new funding mobilized to the water and sanitation sectors as a result of the investment</li> <li>• Number of people benefiting from the adoption and implementation of measures to improve water resources management as a result of the investment</li> <li>• Percent of households using clean kitchen utensils to feed children</li> <li>• Percent of households washing raw vegetables with treated water before feeding children</li> <li>• Proportion of households with no visible feces (animal or human) in the compound/yard/ children’s play area</li> <li>• Country has developed a national nutrition plan that includes WASH</li> </ul>	<ul style="list-style-type: none"> <li>• Average Global Dietary Recommendations score for children or adolescents</li> <li>• Prevalence of minimum dietary diversity for adolescent girls 15-18 years</li> </ul>

Result type	Health	Food and Agriculture	WASH	Education
<p>Output</p> <p><i>(not difficult to attribute impact to project; low resource requirements to measure; can often shift within two to three years)</i></p>	<p>Number of mothers of children under 5 reached with maternal, infant, and young child nutrition (MIYCN) messages</p> <p>Number of pregnant women who received the recommended</p> <p>Number of children under 5 or under 2 reached with nutrition-specific interventions</p> <p>Number of pregnant women reached through nutrition-specific interventions</p> <p>Number of individuals receiving nutrition-related professional training</p> <p>A national multi-sectoral nutrition plan or policy is in place</p> <p>Number of pregnant women who received the recommended number of iron and folic acid, or multiple micronutrient supplement tablets at their first antenatal care (ANC) visit</p> <p>Number of pregnant women attending ANC who received counseling on breastfeeding</p>	<p>Number of children under 2 reached with community-level nutrition interventions</p> <p>Number of households enrolled in biofortified crop production program</p> <p>Number of people trained in homestead food production and nutrition education</p> <p>Volume of fortified food produced at the national level</p> <p>Number of nutritionally vulnerable individuals who receive specialized nutritious foods, cash, or vouchers intended to achieve a nutritional outcome</p>	<p>Number of vendors have increased knowledge of safe food-handling practices</p> <p>Number of basic sanitation facilities provided in health facilities and schools as a result of the investment</p> <p>Number of individuals trained in safe food preparation and storage</p> <p>Number of nutrition professionals trained in WASH</p> <p>Number of households reached with nutrition and WASH messages</p>	<p>Quantity of take-home rations provided at school (in metric tons)</p> <p>Number of individuals receiving take-home rations at school</p> <p>Number of daily school meals (breakfast, snack, lunch) provided to school-age children</p> <p>Number of school-age children receiving daily school meals (breakfast, snack, lunch)</p> <p>Number of schools using an improved water source</p> <p>Number of schools with improved sanitary facilities</p> <p>Number of students receiving deworming medication(s)</p> <p>Number of education policies/regulations/administrative procedures that include nutrition</p> <p>Number of schools reached</p>

Source: USAID Advancing Nutrition 2021a, 2022; U.S. Department of State n.d.; INDDEx Project 2023; WHO and UNICEF 2021; Feed the Future 2019; USDA 2019; DHS n.d.;



Reducing Poverty Through Growth

