

Unleashing Gains in Economic Productivity with Investments in Nutrition

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Key Messages

- Investments in optimum nutrition—particularly those focused on the critical first 1,000 days of life—are some of the best value-for-money development actions. They help prevent the devastating, lifelong consequences of childhood malnutrition and enable children to be healthy, educated, productive members of society. They also lay the groundwork for the success of investments in other sectors.
- The scale-up of a set of nutrition interventions needed to reach the global nutrition targets would generate enormous economic benefits over the productive lives of beneficiaries in low- and middle-income countries: \$417 billion for stunting, \$110 billion for anemia, \$298 billion for breastfeeding, and \$25 billion for the treatment of severe wasting.
- Returns on every dollar invested in reaching the global nutrition targets range from \$4 for wasting to \$11 for stunting, \$12 for anemia, and \$35 for investing in exclusive breastfeeding.

Why Invest in Nutrition?

Current estimates suggest that all forms of malnutrition (undernutrition, micronutrient deficiencies, and overweight) cost the global economy an estimated \$3.5 trillion per year, or \$500 per individual, creating a major impediment for governments in their efforts to reduce poverty and create thriving and prosperous communities (Global Panel 2016). Unlike investments in physical infrastructure, investments intended to reduce malnutrition generate benefits that are durable, inalienable, and portable. These investments also fuel progress toward all 17 development goals delineated in the Sustainable Development Goals (SDGs), including education and alleviating poverty. Why is this so? Ensuring optimum nutrition—particularly early in life—can permanently alter an individual’s development trajectory and maximize her or his productive potential.

As of 2015, 159 million children were chronically malnourished, as measured by stunting or low height for age, which means that they are at risk of failing to achieve their own genetic potential not only for physical but also for cognitive development. Childhood stunting has lifelong consequences not just for health but also for human capital, poverty, and equity.

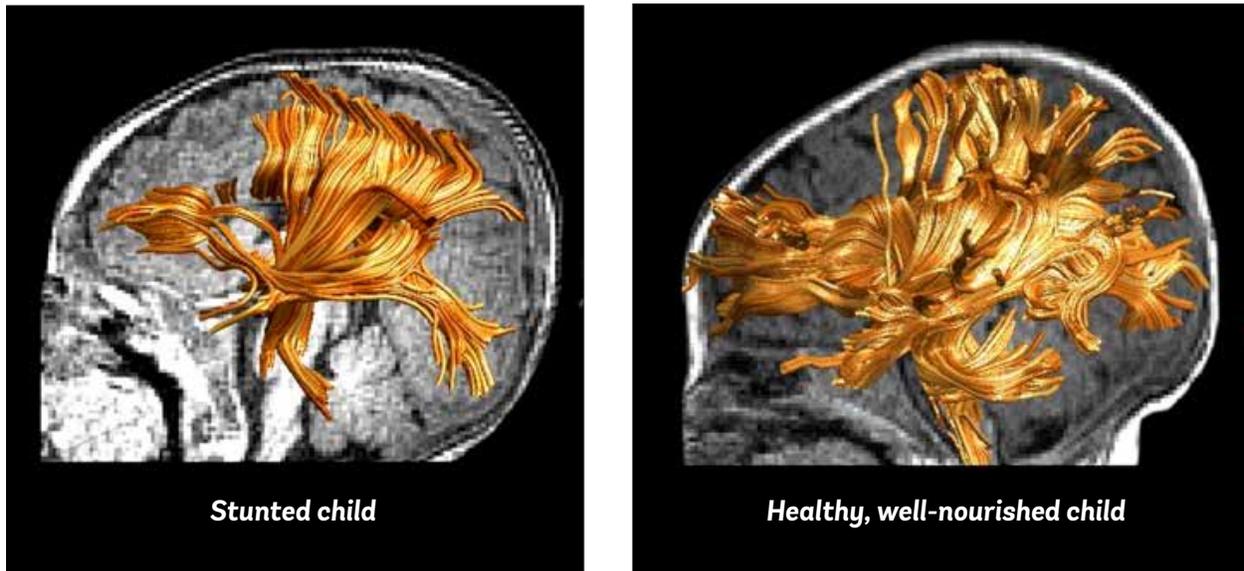
Note: This summary is based on Shekar, Meera, Jakub Kakietek, Julia Dayton Eberwein, and Dylan Walters. 2017. *An Investment Framework for Nutrition: Reaching the Global Targets for Stunting, Anemia, Breastfeeding, and Wasting*. Directions in Development Series. Washington, DC: World Bank. doi:10.1596/978-1-4648-1010-7; available at <https://tinyurl.com/InvestmentFrameworkNutrition>.

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How Does Malnutrition Impact Economic Growth?

Not only are chronically undernourished children short in physical stature, but the development of their brains—their “gray-matter infrastructure”—is also stunted. Between the third trimester and the third year of life, one million synapses are formed every second and these connections build essential brain architecture, which is the foundation upon which all learning, behavior, and health depend.¹ Fewer neural connections are formed in the brain of an undernourished child, and these gaps cannot be closed later in life (Figure 1).

**Figure 1: Gray-Matter Infrastructure:
A Healthy, Cared-for Child Has a More Fully Developed Brain than a Stunted Child**

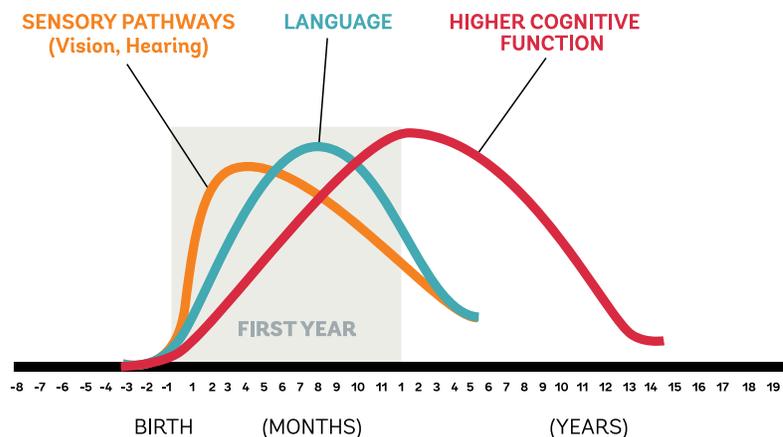


Source: Nelson 2017. Reprinted with permission.

This critical brain development happens early in life, mainly before the age of two, and affects children’s sensory pathways, language, and higher cognitive functioning (Figure 2).

Childhood stunting has life-long consequences for cognitive function, human capital, poverty, and equity (Victora et al. 2010). Importantly, malnutrition often exists in an inter-generational cycle, and malnourished mothers are more than twice as likely as well-nourished mothers to have stunted children (Ozaltin, Hill, and Subramanian 2010).

Figure 2: Early Life Is a Highly Sensitive Period for Brain Development



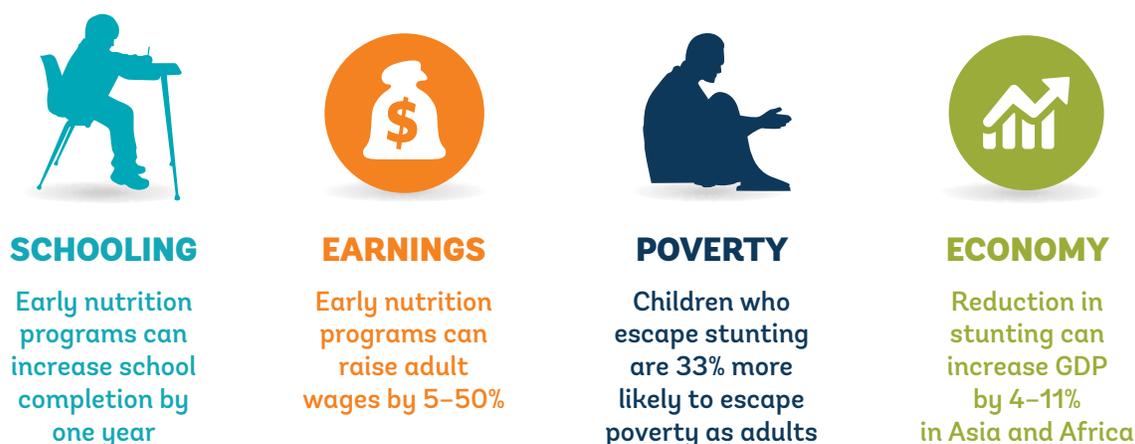
Source: Based on Charles A. Nelson, Harvard University. Used with permission.

¹. This estimate of one million synapses per second is from Charles A. Nelson (personal communication, April 2017).

Widespread evidence from a range of settings and using diverse empirical approaches indicates that malnutrition leads to reductions in schooling and in learning per year of school, ultimately resulting in lower earnings. Being stunted in early childhood is associated with a delayed start at school (Daniels and Adair 2004), reduced schooling attainment (Fink et al. 2016; Martorell et al. 2010), and substantially decreased adult wages when measured at both the individual (Hoddinott et al. 2008) and country level (Fink et al. 2016). One study found that young children who were stunted were 33 percent less likely to escape poverty as adults (Hoddinott et al. 2011). These consequences add up to overall GDP losses of 4 to 11 percent in Africa and Asia (Horton and Steckel 2013).

Fortunately, these losses are largely preventable if adequate investments in proven interventions are made, particularly those that focus on ensuring optimal nutrition in the critical 1,000-day window between the start of a woman’s pregnancy and her child’s second birthday. Not only do these investments improve the nutritional status of a population for a lifetime (Figure 3), but they also stimulate gains in the efficiency of health and education spending and trigger productivity gains that further accelerate economic growth.

Figure 3: Investments in Nutrition Build Human Capital and Boost Shared Prosperity

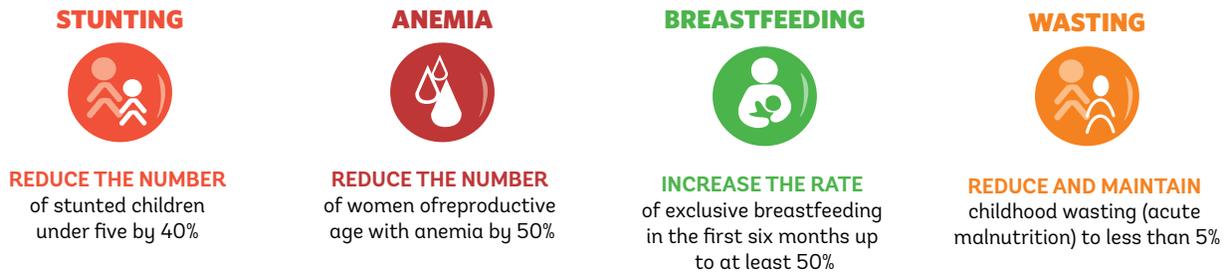


Data Sources: Hoddinott et al. 2008; Hoddinott et al. 2011; Horton and Steckel 2013; and Martorell et al. 2010.

An Investment Framework for Nutrition

In 2012—to rally the international community around improving nutrition—the 176 members of the World Health Assembly endorsed the first-ever global nutrition targets, focusing on six areas: stunting, anemia, low birthweight, childhood overweight, breastfeeding, and wasting. These targets aim to boost investments in cost-effective interventions, spearhead better implementation practices, and catalyze progress toward reducing malnutrition. Some of the targets (stunting and wasting) are further enshrined within the United Nations’ Sustainable Development Goal 2 (SDG 2), which commits to ending malnutrition in all its forms by the year 2030.

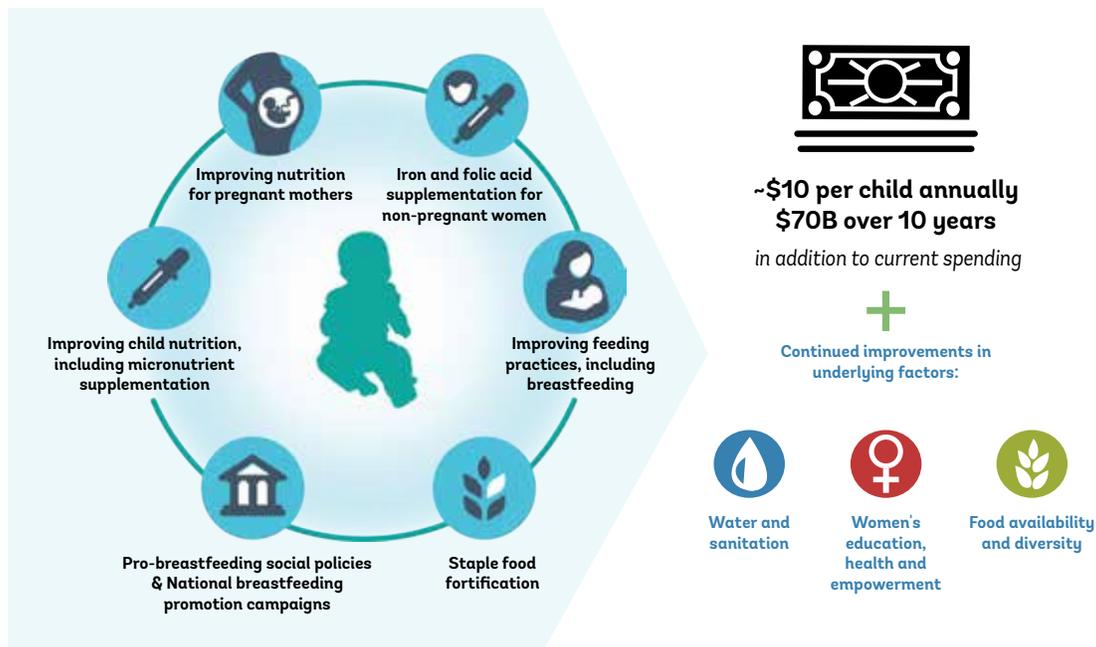
Figure 4: Four World Health Assembly Global Targets for Nutrition



Source: WHO 2014.

The recent report *An Investment Framework for Nutrition* estimates the resources required over 10 years to reach four of the six global targets (Figure 4) (Shekar et al. 2017).² The world needs an investment of \$7 billion per year above current levels over 10 years to achieve the global targets for stunting, anemia, and breastfeeding, and scaling up treatment of severe wasting among children (Figure 5).³

Figure 5: An Affordable Package to Meet Four Global Nutrition Targets



The expected health impact of this investment is enormous: 65 million cases of 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 children under five years of age would be treated for severe wasting and 105 million 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.

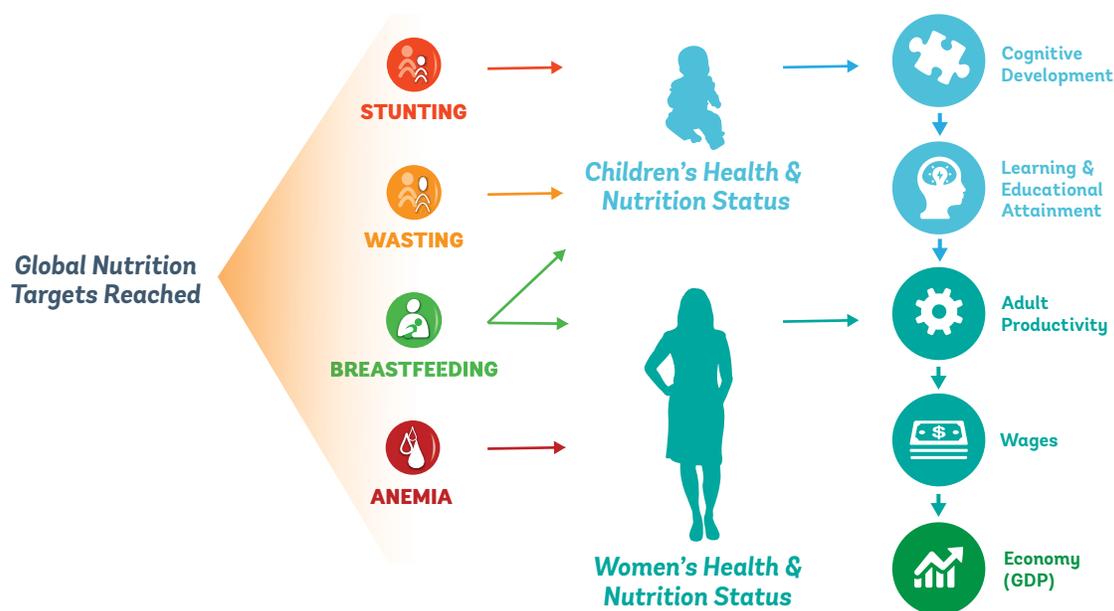
² Two of the global nutrition targets—those for low birthweight and for child overweight—were not included in the analyses because when the work was undertaken there were insufficient data on the prevalence of low birthweight and a lack of consensus on effective interventions to reach the target for child overweight.

³ Financing needs are estimated for scaling up interventions to treat severe wasting, but it was not possible to estimate the financing needs of achieving the wasting target because of a lack of evidence about which interventions are effective in preventing wasting.

Economic Benefits of Investing in Nutrition

In addition to these massive gains in health and nutrition, reaching the global nutrition targets would generate enormous economic benefits by improving the health and nutrition status of women and children. Ensuring that mothers are healthy and well-nourished and that they can provide optimal nutrition to their children allows children to realize their full physical and cognitive development potential and women's productivity to not be hampered by illness, especially anemia (Figure 6).

Figure 6: How Reaching the Global Nutrition Targets Generates Economic Benefits



The scale-up of the nutrition-specific interventions needed to reach the stunting target is estimated to generate about \$417 billion in economic benefits over the productive lives of beneficiaries in low- and middle-income countries.⁴ In addition, investments in anemia prevention are expected to generate \$110 billion over 10 years. Investing in a basic breastfeeding promotion package is projected to yield an additional net benefit of \$298 billion over 10 years across all low- and middle-income countries by preventing cognitive losses and child mortality. The scale-up of the treatment of severe acute malnutrition in children would result in at least \$25 billion in increases in economic productivity over the productive lifetimes of those children. Additional health system cost-savings are also likely because many of these investments reduce the burden of childhood illnesses such as diarrhea and pneumonia.

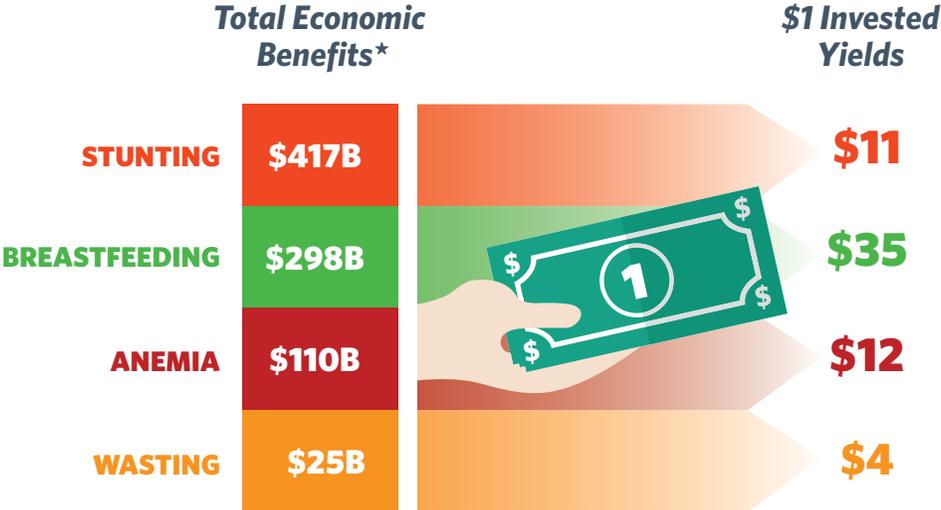
Investments in Nutrition Are among the Most Cost-Effective Development Actions

With many competing development objectives, the main challenge for policy makers is to decide which actions should be prioritized. One way to do this is to compare benefit-cost ratios across interventions and programs. Even though methodologies differ across studies (see Alderman, Behrman, and Puett 2017

⁴ The bulk of the benefits (about 98 percent) would be the consequence of the cognitive losses avoided in children under age five and the resulting improvements in economic productivity. The remaining 2 percent would result from premature mortality averted by the interventions.

for a detailed discussion of these differences), there is a strong body of evidence that shows very high economic returns to investing in nutrition (Alderman, Behrman, and Puett 2017; Copenhagen Consensus Center 2015; Hoddinott et al. 2013). Indeed, investments in nutrition compare favorably with other health and education investments (or other basic development investments; Copenhagen Consensus 2015). The analyses in *An Investment Framework for Nutrition* (Shekar et al. 2017) support that conclusion and report benefit-cost ratios that are impressive under a range of assumptions. Returns on every dollar invested in reaching the global nutrition target range from \$4 for the wasting target to \$11 for the stunting target, \$12 for the anemia target, and \$35 for the exclusive breastfeeding target (Figure 7). Not only are investments in nutrition one of the best value-for-money development actions, they also lay the groundwork for the success of investments in other sectors.

Figure 7: Investments to Meet the Global Nutrition Targets Have Enormous Economic Returns



*Total economic benefits in low- and middle income countries over 10 years for women and over the productive lives of children who benefit from these interventions.

A Call to Action

Now is the time to act. The science on investing in good nutrition in the first 1,000 days of a baby’s life, from pre-pregnancy to a child’s second birthday, is indisputable. This is because investments in early nutrition are not just crucial, they are also irrevocable, with benefits that last a lifetime. The evidence is clear that better early nutrition for children results in higher earnings later in life and contributes to overall economic growth.

As countries prepare for a more digitalized global economy, failure to tackle this challenge is condemning millions of children to lives of exclusion—lives where they will not have the brain power to succeed in school or find jobs in an increasingly digitalized workplace.

Three key steps to investing in nutrition to boost economies:

- 1 Invest** in high-impact nutrition interventions.
- 2 Strengthen policies** across sectors so that nutrition is fully integrated, especially in food security, agriculture, education, water and sanitation, and women’s empowerment policies.
- 3 Track and report** spending and impacts on nutrition across sectors.

Acknowledgments

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For more information please see: <https://tinyurl.com/InvestmentFrameworkNutrition>

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