Economics of food insecurity and malnutrition

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Abstract

Despite significant progress achieved in the last two decades, global hunger and malnutrition remain big challenges. About 805 million people in the world continue to suffer from chronic hunger and more than 2 billion people suffer from micronutrient deficiencies. Moreover, overweight and obesity are on the rise in low- and middle-income countries. Hunger and malnutrition impose huge economic and social costs which can be felt at individual, household, and societal levels. For example, hunger and undernutrition cost the global economy US$1.4–2.1 trillion per year, or 2–3% of global gross domestic product, according to the FAO. The economic returns to eliminating hunger and malnutrition can also be very high. Evidence from IFPRI-led research demonstrates that there are substantial, lifetime economic benefits from reducing child undernutrition. In India, for example, every dollar spent on interventions to reduce stunting is estimated to generate about US$34 in economic returns. This paper makes the economic case for investing in the elimination of global hunger and malnutrition. It also focuses on the inefficiencies of policies and practices that add to the burden of hunger and malnutrition: such as under-investment in food security and nutrition; lack of social safety nets to protect the poorest; unsustainable natural resource use in food production; trade restrictions; and gender inequality in agriculture.

This paper focuses on one of the dimensions of food security and nutrition: that is, the economics of hunger and malnutrition. Ending hunger and malnutrition is not only a moral obligation, it also makes economic sense. One of the key messages here is that hunger, malnutrition and poverty remain big challenges. Eliminating hunger and malnutrition must be top priority in the development of the Sustainable Development Goals – the anchor of the post-2015 development agenda. Hunger and malnutrition should be eliminated for ethical and economic reasons. Efficient policies and prioritised investments will be critical in achieving the goal.

As papers by Ms Kyte and Ms Bishop mention (see Kyte 2014; Bishop 2014), there has been tremendous progress in reducing hunger, malnutrition and poverty in many regions in Asia, particularly East Asia and South-East Asia (Figure 1). In fact, the prevalence of hunger has been cut in half or more than half in these regions. While progress has been made in these regions, in other parts of the world, particularly Africa and South Asia, the prevalence of hunger and undernutrition remains very high.

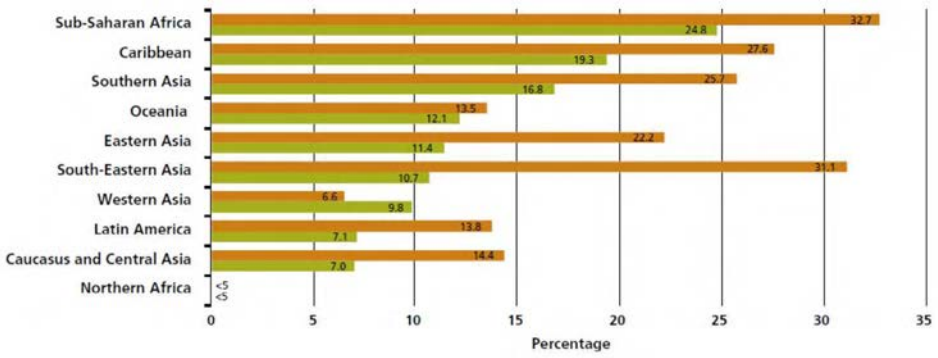

Figure 1. Prevalence of undernourishment by region. Source: FAO, IFAD & WFP 2013. For each country, orange (top bar) =1990–92; green (lower) = 2011–13.

In Africa, 25% of the population still suffer from chronic hunger or undernourishment. Progress in reducing hunger and undernutrition in the region has been very slow. In fact, as a whole, Africa has not been on track to achieve the Millennium Development Goal of reducing hunger by half between 1990 and 2015. The picture is similar in South Asia, where the prevalence of hunger is still around 17% and the region is also not on track to cut the percentage of undernourished population by half.

Globally, 805 million people are suffering from chronic hunger – lack of calories and lack of energy in their diet. There is another dimension of hunger that is not seen, which is 'hidden hunger' – lack of essential minerals and vitamins or micronutrients. Hidden hunger is prominent and most severe in some of the poorest regions and the poorest countries, including Australia's neighbouring countries in the Pacific region. Overall, more than 2 billion people are suffering from micronutrient deficiencies (Figure 2).

There exist three burdens of malnutrition – the triple burden of malnutrition. The first burden is undernourishment, which is the traditional definition of hunger according to the FAO[1] – a lack in calorie intake. The second is the lack in micronutrient absorption, or hidden hunger. The third burden of malnutrition is over-nutrition – overweight and obesity.

Currently, 2.1 billion individuals in the world are either overweight or obese, and 62% of that population is in developing countries, showing that over-nutrition is no longer a rich-country phenomenon. Over 40% of men and 50% of women are overweight and obese in Oceania (Ng *et al.* 2013). The most striking feature, and probably the most alarming, is the increase in overweight and obese children. From 1990 to 2010 the percentage of overweight and obese children has doubled (Figure 3).

Hence, with the triple burden of malnutrition affecting almost every country, ending hunger and malnutrition should be of high priority in the post-2015

[1] Food and Agriculture Organization of the United Nations

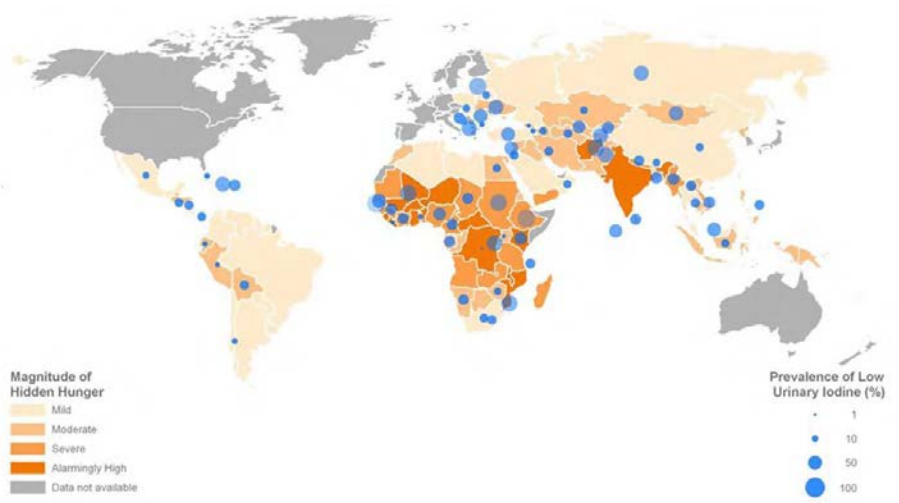

Figure 2. The Hidden Hunger Index of micronutrient deficiencies. More than 2 billion people are deficient in micronutrients. From Muthayya *et al.* 2013.

agenda. The global community is currently in the process of structuring the Sustainable Development Goals. The proposed 17 goals and 169 targets are mixed – many of them are instruments, some of them are measurable, and some are only aspirational – and place high priority on poverty eradication.

While the elimination of extreme poverty is important, ending hunger and malnutrition should be equally central, if not more critical. Why? Because hunger and malnutrition affect the capability of individuals to overcome poverty and must, therefore, be addressed first. Hunger, malnutrition and poverty are linked in a vicious cycle. For example, if a woman and her baby are undernourished, it is highly likely that her baby could experience cognitive and physical impairment, thus affecting their income-earning capacity. This, then, cycles back through further hunger and malnutrition for that family (Eggersdorfer *et al.* 2013).

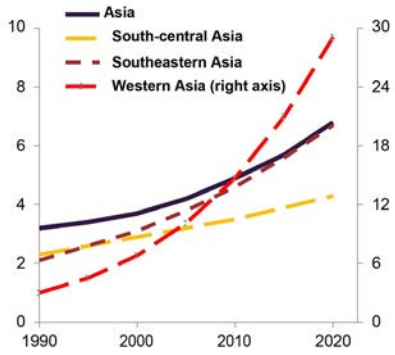

Figure 3. Prevalence of overweight and obese children under 5 years old, as percentage of population, by year (not including Japan), 1990–2020. From de Onis *et al.* 2010.

Hunger and malnutrition are costly. It is estimated that 2–3% of global gross domestic product (GDP), equivalent to US$1.4–2.1 trillion per year, is lost because of undernutrition. Another 2–3% of annual GDP is lost because of over-nutrition. Together, 5% of global GDP (US$3.5 trillion per year) is lost because of malnutrition (FAO 2013).

Strong economic returns to investment

The returns to investment in addressing hunger and malnutrition are very high. The cost-to-benefit ratio for nutrition is as much as 1:30 (Eggersdorfer *et al*. 2013; Hoddinott *et al*. 2013). This means that for every dollar invested in addressing nutrition – whether through reshaping agriculture for better nutritional outcomes, or whether as direct nutrition interventions – will reap $30 in return. In comparison, investments in rural infrastructure, education, R&D and irrigation have not shown such high returns.

While this is true, inefficient policies and practices add to the burden of hunger and malnutrition, and prevent such high returns. Therefore we must fix these weak policies, which include:

- underinvestment in food security and nutrition;
- disconnection between agriculture and nutrition policies: many ministries of agriculture aim for self-sufficiency in food, such as grain self-sufficiency, and not for nutrition;
- unsustainable natural resource use in food production: food waste and, more importantly, post-harvest loss, subsidised fertilisers and water and, in some places, free electricity.
- trade restrictions: while the 2007–08 food crisis was partly triggered by drought in Australia, it was exacerbated by trade restrictions. In the case of rice, a major staple crop in the region, many countries began to impose trade bans that increased rice prices by 100–200%, leading to panic behaviour, panic purchasing, and panic border restrictions.
- lack of social safety nets to protect the poorest: remember that one dimension of food security is accessibility, so availability through production is critical but it is equally important to make sure that the poor have the means and the income to access food.
- gender inequality in agriculture: reflect on Professor Bertini's very powerful Sir John Crawford Memorial Address on gender in agriculture, gender in rural development, and gender's role in reducing poverty (Bertini 2014). The papers of Ms Kyte and Ms Bishop also emphasise the role of gender (Bishop 2014; Kyte 2014).

Efficient policies and prioritised investments are key, so how can we fix the failed policies or misguided priorities of our investments? Here are some ways:

- accelerate investments in nutrition and reshape agriculture for improved nutrition and health;
- promote sustainable intensification and resilient food systems;
- transform smallholders;
- scale-up well-targeted, productive and cross-sectoral social safety nets;

- facilitate trade that is open, transparent and fair;
- support gender equality in agriculture.

Accelerate investments in nutrition and reshape agriculture for improved nutrition and health

Reshaping agriculture for improved nutrition is a fundamental shift that we must look into. It requires two different but linked approaches (Figure 4). Nutrition-specific interventions help to address immediate causes of undernutrition, which include micronutrient supplementation, breastfeeding and complementary feeding practices and dietary diversification.

More important are nutrition-sensitive programs, policies and approaches that address the underlying causes of undernutrition. Such interventions offer ways to reshape agriculture for better nutrition and health outcomes instead of, for example, maximised grain production or self-sufficiency. Nutrition outcomes, instead of self-sufficiency goals, for example, should be used to evaluate the performance of Ministers of Agriculture. Along with this, nutrition-sensitive programs should include, for example, social safety nets because they are very important to ensure universal access to food. Additionally, women's empowerment is a nutrition-sensitive approach that must be considered.

IFPRI, together with University of Oxford and USAID (United States Agency for International Development), has developed a Women's Empowerment in Agriculture Index (WEAI) that includes indicators such as:

- income-earning opportunities,
- a woman's role in associations, and
- a woman's ownership of assets.

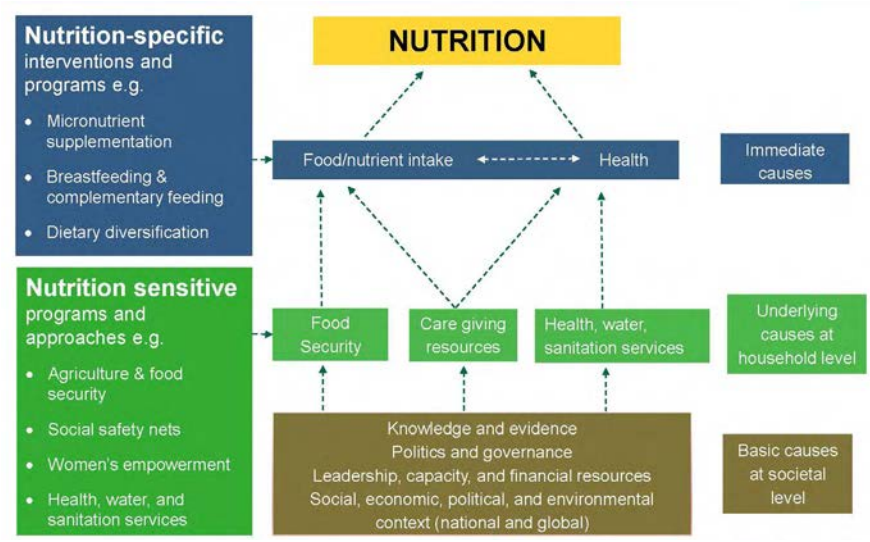

Figure 4. Interactions between nutrition-specific and nutrition-sensitive interventions. Adapted from von Grebmer *et al*. 2010, Black *et al*. 2013.

We have found that ownership of assets is the most critical factor in empowering women, whether through control of land, water, or other assets. With this index we can evaluate performance of countries and encourage government accountability in women's empowerment. We at IFPRI hope that global institutions, whether the FAO, the World Bank or CGIAR, will construct that index for every country, over time, and make policy-makers accountable for improved gender equality.

Promote sustainable intensification and a resilient food system

Promoting sustainable intensification and resilient food systems is a matter for the entire CGIAR system. Sustainable intensification research involves cross-cutting analysis on how to produce more – 'more' here means more nutrition, or more nutritious food – with less inputs, such as water and energy. Water, for example, can be used for other purposes, such as for clean drinking water. Additionally, with less reliance on energy and less carbon emission, we can adapt the whole food system to help to mitigate climate change. In sum, sustainable intensification involves more outputs, particularly more nutrition, with more efficient use of all inputs on a durable basis while:

- reducing environmental impacts and greenhouse gases,
- building resilience, and
- increasing natural capital and the flow of environmental services.

At IFPRI we use a global model to analyse how different technologies can help in achieving these different goals by producing more with less. There are a number of appropriate agricultural technologies (Figure 5), all with different costs, which must be adapted based on context and country specificity. For instance, no-till, nitrogen-use efficiency and drought-tolerant varieties (such as Green Super Rice); and conservation agriculture in wheat and maize production can achieve much better nutrition outcomes using less water and less land and producing smaller carbon emissions.

Transforming smallholders

Not all smallholders are the same; in fact, they are all very different. They account for the majority of the poor and undernourished population of the world and that is why we need to work to help them. Smallholders are not homogenous – some smallholders have large holdings, some small; some farm in

Figure 5. Eleven agricultural technologies and techniques that promote sustainable intensification. From Nelson *et al*. 2009; Rosegrant *et al*. 2014.

areas dominated by traditional agriculture, some are in emerging economies, and others are in more urbanised areas. We need a range of policies and instruments to help this diverse group transform their businesses.

Depending on their situations, smallholders should be encouraged to move up or move out of farming. Smallholders should be encouraged to move up when commerialisation is feasible and when they have the means to improve links to global and urban markets. Where non-farm sectors are expanding, such as in urbanised economies, smallholders could increase their incomes by engaging in non-farm activities by moving out of agriculture. Pathways to enhance the profitability of smallholder farms must include institutional reform – land ownership or leasehold, and access to rental markets. Scaling-up innovation in smallholder-friendly financial services and access to finance is key, and so is investment in new technologies and innovative risk-management tools, so that smallholders can adapt to climate-smart agricultural practices. Smallholders should also be linked to agrifood value chains. Finally, promoting market-based price stabilisation mechanisms is key, as smallholders are vulnerable to price fluctuations or volatility.

Productive social safety nets

Scaling-up productive social safety nets is important. Better-targeted and more productive social protection policies can give smallholders:

- short-term cushions for coping with livelihood shocks; and
- long-term productivity-enhancing or exit opportunities.

Many smallholders lack access to nutritious foods. Either they do not produce enough or they do not have income to buy from markets. Productive social safety nets should guarantee smallholders have access to nutritious foods while at the same time supporting smallholders' own growth and development.

Cross-sectoral social protection can reach the poor more effectively. The Productive Social Safety Net Programme in Ethiopia is a good example. When the 2012 drought occurred in the Horn of Africa, in Somalia for example, 16 million people suffered from hunger and 3 million children suffered from malnutrition. In Ethiopia, however, 7 million of the poor avoided being hungry because of the social safety net set up by the Ethiopian Government, with the support of research institutions like IFPRI (Gilligan *et al.* 2008). Aother example is the Bangladesh Vulnerable Group Development Programme. It includes food security and nutrition interventions with income-generating activities that target women (Ahmed *et al*. 2009).

Facilitate open, transparent and fair trade

In relation to trade, the World Trade Organization has emphasised import tariffs and restrictions, but we need to work on export bans and restrictions as well. Export bans hinder the efficiency of agricultural markets and prevent fair trade from neighbouring countries. Furthermore, export bans and restrictions can lead to and exacerbate high food price spikes and volatility which hurt both poor consumers and producers. Trade should be transparent and fair.

The elimination of distortionary trade policies will not only improve access to food but also promote efficient allocation of resources. We need to create global and regional grain reserves in poor countries, such as those in the Horn of Africa that import food. We must also remove the competition between food and fuel – minimise grain-based biofuel production.

In addition, the OECD[2] countries need to cut down their subsidies. Emerging economies such as China and India should not repeat the mistakes of the OECD countries. Protection policies of emerging economies like these should be monitored.

Support gender equality

We must make governments accountable for their performance on gender equality. Gender inequality leads to inefficient allocation of resources. By contrast, gender equality in agriculture leads to:

- higher agricultural output and gains in productivity;
- reduced hunger and malnutrition, especially for the next generation; and
- improved rural livelihoods.

To support gender equality in agriculture, governments can strengthen land rights for women, improve women's access to inputs and credit, and provide them with agricultural training and up-to-date agricultural information.

Conclusion

Concerted action for efficient policies and prioritised investments is critical in eliminating hunger and malnutrition by 2025, and we must work together to achieve it. This is both good economics and the right thing to do. Nutrition is a basic human right.

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