

## Ending hunger and malnutrition - how much would it cost?

**Asia-Pacific needs to invest an additional \$24 billion annually to end hunger, achieve food security and improved nutrition and promote sustainable agriculture.**

Some 486 million people remain undernourished in Asia and the Pacific (FAO and others, 2018). More than half of the world's malnourished children live in the region. Malnutrition includes both undernutrition and overnutrition commonly identified through inadequate height-for-age or stunting; inadequate weight-for-height or wasting; deficiencies in micronutrients; and excessive weight-for-height. It delays physical and cognitive development with life-long consequences. Stunting reduces schooling attainment, decreases wages and reduces the likelihood of escaping poverty in adulthood. This results in excessive health care spending and lower economic productivity. Investments targeting the first 1,000 days of a child's life, from the start of pregnancy to the second birthday, can prevent these effects with high benefit-cost ratios (box 1).

Children who circumvent stunting are 33 per cent more likely to break out from poverty in adulthood (Hoddinott and others, 2013). According to Horton and Steckel (2013), a reduction in stunting can increase per capita GDP by 4-11 per cent in Africa and Asia. The 2018 Global Nutrition Report (Development Initiatives, 2018) assessment reveals that 94 out of the 194 countries assessed are on track for at least one nutrition target while no country is on track to achieve the adult obesity and anemia targets. In the larger landscape of reducing malnutrition, progress is hampered by conflict and climate change resulting in severe weather conditions impacting agriculture, health and WASH related infrastructure, disrupting food security, jobs and wages.

Nutrition is part of the broader agenda on ending hunger and promoting sustainable agriculture. As the percentage of households that cannot afford diversified healthy diets is very high – ranging from 21 per cent in Cambodia to 68 per cent in Indonesia (WFP, 2015-2017) – countries need to support diverse food systems in their agricultural sectors. Investments to achieve Goal 2 will need to address the challenges of expanding populations, climate change, fertilizer overuse, competing use of land and land degradation, among others.

The literature provides a wide range of cost estimates for ending hunger and undernutrition, depending on the nature of the intervention (Fan and others, 2018). In an attempt to estimate SDG 2, two of those approaches have been adopted.

Under target 2.2 which aims to meet the global nutrition targets,<sup>1</sup> the first approach based on an assessment by the World Bank - An Investment Framework for Nutrition (Shekar and others, 2017) estimates additional financing needs to meet such global nutrition targets in 37 countries, of which 17 are for countries in Asia and the Pacific. The study estimates

additional financing needs to reach global nutrition targets as set out by WHO (2014), through a package of nutrition-specific interventions<sup>2</sup> including (a) reducing stunting in children under five by 40 per cent; (b) reducing the number of women of reproductive age with anaemia by 50 per cent; (c) increasing the rate of exclusive breastfeeding in the first six months up to at least 50 per cent; and (d) mitigating impacts of wasting among children to less than 5 per cent. Based on this approach, an additional \$3.5 billion per year is needed to achieve these targets (figure 1).

In aggregating financing needs across all four targets, overlapping interventions that address more than one target are included only once in the total financing needs. Where costs varied across targets, the highest cost was applied.

The largest share of investment was for interventions to reduce stunting (\$21.3 billion per year), followed by preventing anaemia in women (\$8.4 billion per year); scaling up interventions for severe malnutrition under wasting (\$5.2 billion per year); and promoting exclusive breastfeeding (\$3.1 billion per year) (figure 1).

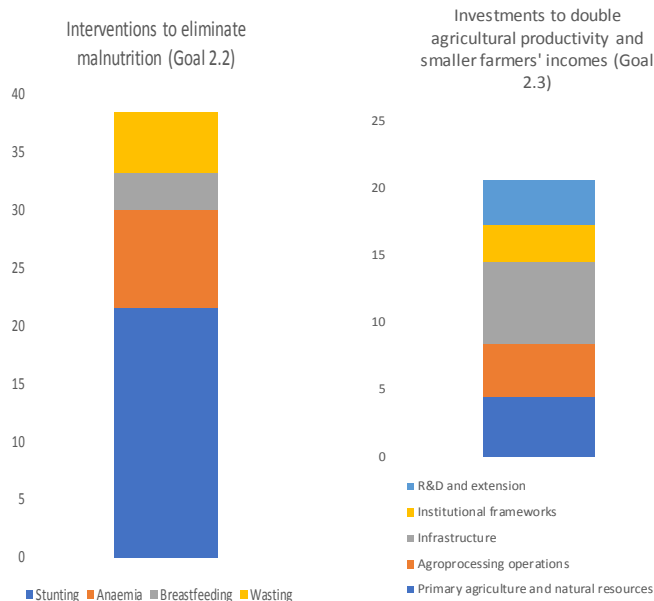
In this estimation, country-specific factors such as future economic growth, disease prevalence, effectiveness of interventions and cross-generational effects have not been considered in the estimation but are factors which could influence overall costs.

The second approach involves the additional investment needed to boost agricultural productivity and incomes of small-scale food producers, as called for under target 2.3. These are investments in improving primary agricultural and natural resources; agroprocessing operations; rural infrastructure; institutional frameworks; and research and development, and extension (Schmidhuber, Bruinsma and Boedeker, 2011). Based on FAO, IFAD and WFP (2015), the Asia-Pacific region would need an additional investment of some \$20.6 billion per year in these areas (figure 1), with the gap being much higher in South Asia compared with East Asia (table 1). Such investments would help reduce poverty, especially in rural areas where most of the poor reside.

### Policy and financing options

Investments in nutrition will come through a mix of domestic budget allocations combined with ODA, newly emerging innovative financing mechanisms, as well as household contributions. They could leverage cost-effective interventions, such as antenatal micronutrient supplements which prevent stunting as well as anaemia in pregnant women. There is synergy among the interventions such as nutrition counselling for infants and small children helping reduce both the prevalence of stunting and increasing the number of exclusively breastfed children. Likewise, antenatal

**Figure 1. Annual average investment gap, 2016-2030 to meet zero hunger targets in Asia and the Pacific**



Source: ESCAP calculations, based on FAO and World Bank.

**Table 1. Agricultural and rural investments**  
(Annual average investment gap, 2016-2030, expressed in billions of United States dollars in 2016 constant prices)

	East Asia	South Asia	Total	Share of public investment
<b>Primary agriculture and natural resources</b>	0.35	4.13	4.48	
Soil conservation	0.06	0.43	0.50	30
Water conservation/improved irrigation	0.03	1.93	1.96	30
Preservation/improvement of...	..	..	..	
Crops	0.03	0.16	0.19	30
Animals	0.03	0.12	0.15	30
Fish	0.13	0.30	0.43	30
Forests	0.05	0.13	0.18	30
Mechanization	0.02	1.05	1.07	10
<b>Agroprocessing operations</b>	0.07	3.95	4.02	
Cold and dry storage	0.02	0.72	0.74	20
Rural and wholesale market facilities	0.02	1.16	1.18	50
First-stage processing	0.04	2.07	2.10	10
<b>Infrastructure</b>	0.11	5.89	6.00	
Rural roads	0.08	3.93	4.00	90
Rural electrification	0.04	1.96	2.00	80
<b>Institutional frameworks</b>	0.05	2.68	2.74	
Land titling, tenure security	0.01	0.33	0.34	90
Rural finance	0.04	1.96	1.99	50
Food safety related regulations	0.01	0.39	0.40	90
<b>R&amp;D and extension</b>	0.08	3.27	3.35	
Research and development	0.03	1.31	1.34	90
Extension	0.05	1.96	2.01	90
<b>Total</b>	<b>0.66</b>	<b>19.92</b>	<b>20.58</b>	<b>64</b>

Source: ESCAP calculations based on FAO and others (2015).  
Note: Share of public investment is estimated at the global level. The East Asia and South Asia subregions are by FAO's definition.

micronutrient supplements prevent stunting as well as anemia in pregnant women. Scaling up of key evidence-based nutrition-specific interventions in a comprehensive manner can be an efficient and cost-effective approach to achieving nutrition target instead of focusing on specific aspects.

New research has also indicated that apart from children under five years of age and pregnant women, the adolescent years (10-19 years) are also a critical life stage where good nutrition and well-being should be promoted. Not only is "catch-up" growth (height) possible during these years but they are years where harmful behaviors can be established and having a sound well-being into adulthood can help

**Box 1. Food for thought: the investment case for nutrition**

Investments in nutrition have high human and economic returns. They are associated with better health and education outcomes, and many other co-benefits across the Sustainable Development Goals, as illustrated in the figure below. Every dollar spent in scaling up nutrition interventions targeting the first 1,000 days of life yields a return of at least \$16 (Haddad and others, 2014).

In a comprehensive study, Shekar and others (2017) estimated that an additional \$70 billion investment would be needed over 10 years to achieve global nutrition targets. Such investment would translate into significant developmental impacts, reducing millions of cases of stunting, anaemia and wasting, increasing the rate of exclusive breastfeeding and averting up to 3.7 million child deaths. Compared with the 2015 baseline, 30 million fewer children would be stunted, 105 million more babies would be exclusively breastfed during the first six months of life and 91 million more children under five years of age would be treated for severe wasting by 2025. The benefit-cost ratio could be as high as 35 for curbing anaemia, as shown in the table on the next page. In the long run, such outcomes would produce more productive workers generating higher earnings through higher cognitive and physical capacities.

	Stunting	Anaemia	Exclusive breastfeeding	Wasting (acute malnutrition)
<b>Development outcomes</b>	Reduce stunting of children under five by 40 per cent	Reduce number of women of reproductive age with anaemia by 50 per cent	Increase rate of exclusive breastfeeding in first six months by at least 50 per cent	Reduce and maintain acute malnutrition to less than 5 per cent
<b>Impact</b>	65 million cases of stunting prevented	265 million cases of anaemia in women prevented	105 million more babies exclusively breastfed	91 million children treated for severe wasting
<b>Child deaths averted</b>	2,800,000	800,000	520,000	860,000
<b>United States dollars</b>				
<b>Economic benefits (billions) *</b>	\$417	\$298	\$110	\$25
<b>\$1 invested yields</b>	\$11	\$35	\$12	\$4

Source: Based on Shekar and others, 2017  
\* In low- and middle-income countries over 10 years for women and over the productive lives of children benefiting from such interventions.

The investment case for nutrition is based on not only the benefits of action but also on the cost of inaction. In the Philippines, a joint UNICEF Government study (UNICEF, 2018a and 2018b) revealed alarming statistics that 700,000 children under five years old are at risk of dying and more than 3.3 million are deprived of their full potential in life due to undernutrition. The associated economic loss was measured through pathways that may result in values foregone in future workforce, future productivity, work performance deficit and additional health-care costs. The loss would amount to \$4.5 billion per year, or 1.5 per cent of GDP (in 2015), if no action were taken to tackle undernutrition.

Based on such evidence, the Government of the Philippines has introduced an intervention package called the National Nutrition Intervention Scenario (NIS) programme. The interventions go beyond supplements, fortifications, consultations, treatment of malnutrition and breastfeeding to include education to encourage positive nutrition behaviours. The NIS programme would involve public and private primary health-care centres, nutrition workers and volunteers at the community level, the existing Pantawid Pamilyang Pilipino Program (4Ps) for low-income families, as well as the media and private industries. An estimated budget of \$113 million per year would be required for these interventions to reach coverage of 90 per cent. The benefit-cost ratio yields a return of \$12 for every dollar invested. The overall economic returns amount to \$1.5 billion per year towards the economy while 14,000 children under five years of age would be prevented from dying.

reduce risk of NCDs (Development Initiatives, 2018). In many countries, early marriage results in mothers with low body weight placing risks to the child. Recent studies have also highlighted the increasing concern on obesity and its implications on NCDs.

At the same time, greater focus can be given towards healthy diets for all age groups, keeping in mind rural and urban settings, and exposure to cheap and convenient unhealthy processed foods, which are leading to a “double burden” of malnutrition as evident with undernourished and overweight children living in the same communities or even occurring in the same child (FAO and others, 2018). An example of urban governance of food issues is the “Seoul Food Master Plan” in 2017 in the Republic of Korea (FAO and others, 2018) where it was recognized that ageing population and changing food habits have resulted in increased diabetes and hypertension, while obesity rates of school-aged children and men have increased. With the aim of increasing access to food not only for the poor but to improve the quality of food accessible, specific interventions included increasing fruit and vegetable vending machines, fruit package retailers, fruit cafes at public transport hubs, piloting logos identifying low salt and smart meals restaurants and packaged food.

An enabling policy environment is imperative to the achievement of nutrition targets. Paid maternity leave, breastfeeding counselling, direct engagement with communities to promote behavior change, marketing restrictions and food package labelling on food high in sugar, salt and fat contents such as in Chile, Peru, Uruguay, taxing sugary beverages and food products are some examples of policies that can support nutrition goals. In this digital age, use of social media, big data, artificial intelligence, geospatial data can help improve assessment, targeting and behavior change.

Finally, water, sanitation and hygiene infrastructure, behavior change, agricultural policies to enhance food security, poverty reduction and social security, education, women’s empowerment should continually be enhanced to support achievement of nutrition targets.

Investment in agriculture should enhance sustainable agricultural practices, including soil and water conservation, improved irrigation systems, greater water efficiency and preservation of biodiversity, as well as genetic improvements in agriculture, fisheries and forestry (FAO, IFAD and WFP, 2015). Mechanization may also be required to increase agricultural productivity. While the bulk of investment in agriculture is carried out by private agents, especially by farmers themselves, provision of certain goods and services require public investment; for instance, there are natural monopolies, such as irrigation systems, where only one network is desirable for efficiency reasons.

## Endnotes

1. In 2012, the World Health Assembly endorsed the Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition (WHO, 2014), spelling out the first-ever global nutrition targets in six areas. These were included under target 2.2 of SDG 2 – Zero Hunger which aims to end all forms of malnutrition by 2030, including reaching internationally agreed targets on stunting and wasting in children under 5 years of age by 2025 as well as addressing the nutrition needs of adolescent girls, pregnant and lactating women and older persons.

2. For more details on methodology, see technical appendix.

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The MPFD Policy Briefs aim at generating a forward-looking discussion among policymakers, researchers and other stakeholders to help forge political will and build a regional consensus on needed policy actions and pressing reforms. Policy Briefs are issued without formal editing. This issue was prepared by Daniel Jeongdae Lee and Kiatkanid Pongpanich. It benefited from comments and suggestions by Jun Fan (United Nations Children’s Fund); Sweta Saxena and Mahesh Niyal (Macroeconomic Policy and Financing for Development Division, ESCAP). For further information on this issue, please contact Hamza Ali Malik, Director, Macroeconomic Policy and Financing for Development Division, ESCAP ([escap-mpdd@un.org](mailto:escap-mpdd@un.org)).