

# The hunger metrics mirage: There's been less progress on hunger reduction than it appears

Prabhu L. Pingali<sup>a,1</sup>

As the timeframe for achieving the Millennium Development Goals (MDGs) came to an end in 2015, the United Nations lauded great progress, calling its MDG campaign the “most successful anti-poverty movement in history” (1). In its final progress report, the United Nations states that poverty has decreased by half and hunger has fallen dramatically (1). Sixty countries are said to have achieved the hunger-reduction target since 1990. Among the achievers are a strikingly large number of the so-called “least developed countries,” and many of them are the poorest countries of sub-Saharan Africa. There is no doubt that much of the developing world made significant progress in enhancing food supplies and reducing hunger over the past 25 years. However, tracking progress by country and across countries has been marred by the ambiguity of the metrics that have been used.

The MDGs are internationally agreed goals that were adopted in 2001 to operationalize the Millennium Declaration, a commitment made in 2000 by representatives of 189 nations to fight extreme poverty in its many dimensions. Under this declaration, nations states pledged “to halve, by the year 2015, the proportion of the world’s people whose income is less than one dollar a day and the proportion of people

who suffer from hunger” (2), which later became the first (MDG 1) of eight total MDGs. To monitor progress toward each goal, a set of specific targets and indicators were adopted by the United Nations. Among these is the hunger target (MDG 1c) of halving the prevalence of undernourished, or the proportion of people below the minimum level of dietary consumption, between 1990 and 2015 (3). A reduction in prevalence is an important metric; it shows progress being made toward hunger reduction, especially at a global level. But it could also overstate the relative achievement of individual countries with high fertility rates.

The year 2015 also marked the end of the monitoring period for the World Food Summit (WFS) goal, which preceded the MDGs. At the WFS in Rome in 1996, representatives of 182 nations pledged, “to eradicate hunger in all countries, with an immediate view to reducing the absolute number of undernourished people to half their present level no later than 2015” (4). The number of undernourished would be those who fall below the minimum level of dietary consumption for a given country and year (3). The WFS goal has been monitored by the Food and Agricultural Organization (FAO) of the United Nations, over the same 25-year reference period as the MDGs, from 1990 to 2015.

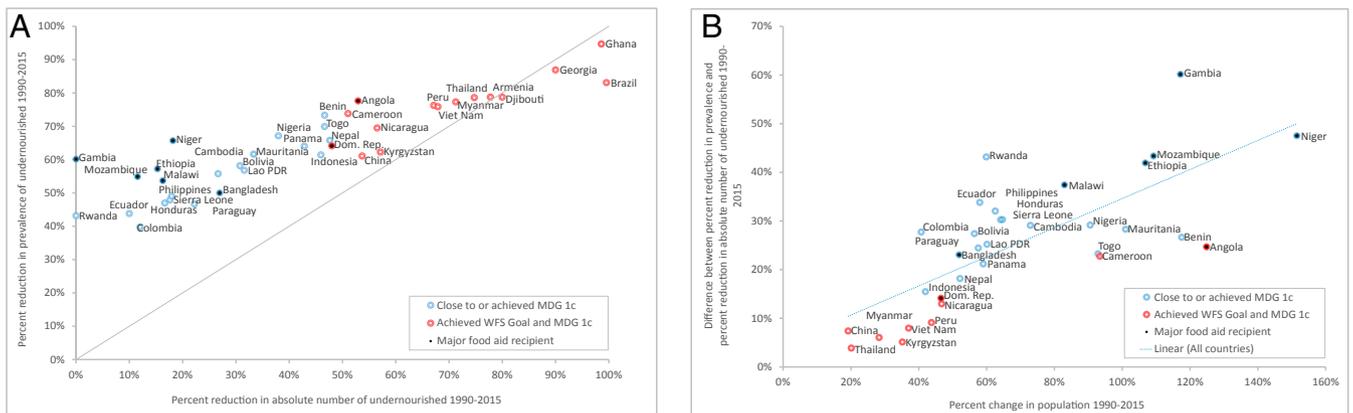


Fig. 1. (A) Absolute versus relative progress toward achieving the International Hunger Targets, 1990–2015 (from refs. 5 and 8–10). (B) The divergence between the prevalence and the absolute hunger metrics relative to population growth, 1990–2015 (from refs. 5 and 7–10).

<sup>a</sup>Charles H. Dyson School of Applied Economics and Management and Tata-Cornell Institute for Agriculture and Nutrition, Cornell University, Ithaca, NY 14853

Author contributions: P.L.P. wrote the paper.

<sup>1</sup>Email: plp39@cornell.edu.

Any opinions, findings, conclusions, or recommendations expressed in this work are those of the authors and do not necessarily reflect the views of the National Academy of Sciences.



made little progress in reducing the number of undernourished over the reference period, yet both countries reached or came close to reaching MDG 1c. The situation was similar for Niger, Mozambique, Ethiopia, Malawi, and several other countries.

In general, progress in terms of a reduction in prevalence is greater than the percentage reduction in absolute numbers; this is because of growth in a country's population over time. For countries with low rates of population growth the difference between the prevalence and absolute metrics is small, but for countries with high growth rates the two metrics diverge quite substantially. Fig. 1B shows the divergence between the prevalence and the absolute hunger metrics relative to population growth over the 1990–2015 time period. Not surprisingly, the difference between the two metrics is smaller for countries that have achieved both the MDG and the WFS goals. The divergence between the metrics is strikingly large for countries that have witnessed rapid population growth, such as Ethiopia, Mozambique, and Niger.

Countries that have made absolute progress in hunger reduction are those that had managed to keep

from a very low productivity base and, hence, has not been able to meet the demands of a rapidly rising population. Bangladesh and Malawi, on the other hand, witnessed rapid staple crop productivity growth and became close to self-sufficient during the MDG reference period. In 1990 Bangladesh was the largest recipient of food aid; it accounted for 7% of Bangladesh's total food supplies, which dropped to 1% by 2012. Explicitly identifying a country's reliance on food aid could help point to the need for prioritizing food-crop productivity growth in its development strategy.

### Moving Forward

In September 2015, the member states of the United Nations adopted the Sustainable Development Goals (SDGs) "which seek to build on the work of the MDGs and complete what they did not achieve" (13). The 17 goals and 169 targets specified in the United Nations Resolution are designed to holistically address the economic, social, and environmental dimensions of sustainable development. The emphasis on tackling hunger continues in the post-2015 agenda with the SDG's call for ending hunger and achieving food security and improved nutrition (Goal 2).

The United Nations has stated that indicators are being developed for tracking progress toward the SDG targets (13). In this context, it is essential to critically reflect on methods and metrics used for measuring progress under the MDG framework to avoid the ambiguities of the past. Potential improvements could include the formulation of indicators that focus on absolute progress as opposed to the reduction in prevalence. There is also a need to identify a suite of indicators that track progress toward broader nutrition outcomes, such as reduced micronutrient malnutrition, rather than just the current focus on calorie adequacy. Given the emphasis on country ownership of the SDGs, it is important that the chosen indicators can track change at multiple scales, from the community to the national and global levels.

Finally, it is imperative to conduct an independent expert assessment of the reliability and suitability of the currently available hunger statistics for monitoring progress toward the SDGs. The hunger prevalence estimates depend exclusively on the data made available through the FAO. It calculates the prevalence of undernourished for each country using per capita calorie availability at the national level, as reported in its food balance sheets, and then estimates the distribution of this variable across the national population. The number of hungry people in a country is estimated using country-specific cut-off points of minimum calorie requirement per capita (14).

The data required for deriving the hunger numbers come from self-reporting of production and food supply statistics to the FAO by individual countries. There are questions about the consistency and quality of reporting, especially for the least-developed countries that often do not have the statistics capacity to regularly monitor the state of their food supply. The resulting data gaps are often filled by extrapolating from neighboring regions

## Potential improvements could include the formulation of indicators that focus on absolute progress as opposed to the reduction in prevalence.

their food supply growth at par with or above the rate of growth of population (Fig. 2). Such countries include China, Thailand, and Vietnam. But 31 countries had population growth that outpaced food supplies, coming close to MDG 1c but falling short of WFS goals. Fertility rates for 11 of the 31 countries in this category are among the top 20% in the world (12). Ghana, Angola, and Cameroon are exceptions; they had high population growth rates while still achieving the WFS goal. Ghana's success can be attributed to high and sustained growth in food supply, whereas the other two met their increased food requirements through imports paid through oil revenues.

### Food Aid

Although there has been progress in improving domestic food supplies, external food assistance continues to play an important part in reducing hunger prevalence for countries that have chronic food deficits. Not explicitly accounting for food aid in total food supplies adds to the hunger metrics mirage, as it tends to show more progress than what was really achieved by the country itself. In fact, 8 of the 31 countries that came close to or achieved MDG 1c by 2015 were major food aid recipients (Fig. 1).

Some countries have made significant progress in weaning off of food aid (such as Bangladesh and Malawi), but several others continue to have high dependence. Ethiopia, for example, continues to be highly dependent on food aid: it received around 813 million tons in food aid in 2012, which is almost the same as it was in 1990. Although the country has made significant progress in enhancing domestic food supplies, it started

and countries (14, 15). Data quality and consistency for countries facing internal conflict is an added concern.

Eliminating hunger is a global and a national imperative and the SDG agenda hopes to get us there by 2030. Essential for success are investments for enhancing food supply in the least-developed countries of the world. Our quest will also require improved

hunger and nutrition statistics and meaningful and reliable metrics for tracking progress toward the “zero hunger” goal.

### Acknowledgments

Research support from Megan Witwer is gratefully acknowledged.

- 1 United Nations (2015) *The Millennium Development Goals Report 2015* (United Nations Development Program, New York).
- 2 United Nations (2000) *United Nations Millennium Declaration*. Resolution adopted by the General Assembly on 8 September 2000 (A/RES/55/2) (United Nations General Assembly, New York).
- 3 FAO (2015) *The State of Food Insecurity in the World: Meeting the 2015 International Hunger Targets: Taking Stock of Uneven Progress* (Food and Agriculture Organization of the United Nations, World Food Programme and International Fund for Agriculture and Development, Rome).
- 4 FAO (1996) *Rome Declaration on World Food Security and World Food Summit Plan of Action*. World Food Summit, 13–17 November, FAO, Rome.
- 5 FAO (2015) *Global Food Security Indicators* (FAOSTAT Database). Available at [faostat3.fao.org/download/D/FS/E](http://faostat3.fao.org/download/D/FS/E). Accessed October 1, 2015.
- 6 FAO (2015) *Food Balance Sheets* (FAOSTAT Database). Available at [faostat3.fao.org/download/FB/FBS/E](http://faostat3.fao.org/download/FB/FBS/E). Accessed November 30, 2015.
- 7 United Nations (2015) *World Population Prospects, the 2015 Revision* (Population Indicators Database). Available at [esa.un.org/unpd/wpp/Download/Standard/Population/](http://esa.un.org/unpd/wpp/Download/Standard/Population/). Accessed November 30, 2015.
- 8 Clay E, Pillai N, Benson C (1998) *Food Aid and Food Security in the 1990s: Performance and Effectiveness*. Working paper 113 (Overseas Development Institute, London).
- 9 WFP (2006) *Food Aid Flows* (World Food Programme, Rome). Available at [www.reliefweb.int/sites/reliefweb.int/files/resources/6747CF0FFDE69910852572F10053DBD5-WFP\\_2006%20Food%20Aid%20Flows\\_June%202007.pdf](http://www.reliefweb.int/sites/reliefweb.int/files/resources/6747CF0FFDE69910852572F10053DBD5-WFP_2006%20Food%20Aid%20Flows_June%202007.pdf). Accessed October 23, 2015.
- 10 WFP (2012) *Food Aid Flows* (World Food Programme, Rome). Available at [documents.wfp.org/stellent/groups/public/documents/newsroom/wfp262299.pdf](http://documents.wfp.org/stellent/groups/public/documents/newsroom/wfp262299.pdf). Accessed October 23, 2015.
- 11 All Party Parliamentary Group on Population, Development and Reproductive Health (2007) *Return of the Population Growth Factor: Its Impact upon the Millennium Development Goals*. Available at [www.appg-popdevrh.org.uk/Publications/Population%20Hearings/APPG%20Report%20-%20Return%20of%20the%20Population%20Factor.pdf](http://www.appg-popdevrh.org.uk/Publications/Population%20Hearings/APPG%20Report%20-%20Return%20of%20the%20Population%20Factor.pdf). Accessed October 23, 2015.
- 12 World Bank (2015) *Fertility Rates* (World Development Indicators Database). Available at [data.worldbank.org/indicator/SP.DYN.TFRT.IN](http://data.worldbank.org/indicator/SP.DYN.TFRT.IN). Accessed November 14, 2015.
- 13 United Nations (2015) *Transforming Our World: The 2030 Agenda for Sustainable Development*. Resolution adopted by the General Assembly on 25 September 2015 (A/RES/70/1) (United Nations General Assembly, New York).
- 14 FAO (2012) *The State of Food Insecurity in the World: Economic Growth is Necessary but not Sufficient to Accelerate Reduction of Hunger and Malnutrition* (Food and Agriculture Organization of the United Nations, World Food Programme and International Fund for Agriculture and Development, Rome).
- 15 FAO Committee on World Food Security (2012) *Global Strategic Framework for Food Security and Nutrition*. 39th Session, 15–20 October, FAO, Rome.