

# Knowledge Brief

*Health, Nutrition and Population Global Practice*

## COSTED PLAN FOR SCALING UP NUTRITION IN NIGERIA

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### KEY MESSAGES:

- Nigeria is home to the third largest population of stunted children in the world with over 11.5 million children under five—38 percent—chronically undernourished (stunted).
- Implementing 10 key nutrition-specific interventions in all regions of Nigeria would cost \$837 million annually, produce tremendous health benefits (8.7 million disability-adjusted life years - over 183,000 lives saved and over 3 million cases of stunting averted) and is highly cost effective (\$102 per disability-adjusted life year).
- This package of 10 interventions could increase economic productivity by \$2.6 billion each year over the productive lives of the beneficiaries and has an impressive internal rate of return of over 18 percent.
- Given resource constraints, eliminating the public provision complementary food for the prevention of moderate acute malnutrition (which is not very cost-effective) would result in a very cost-effective scenario that would scale up 9 interventions nationwide, cost \$511 million, and save 8.6 million disability-adjusted life years and over 160,000 lives. The cost per disability-adjusted life year is \$56.
- A much lower-cost scenario would scale up only selected interventions (see Box 2) to partial coverage levels in states where stunting prevalence exceeds 35 percent; it would require only \$184 million and would save almost 2.3 million disability-adjusted life years and 59,000 lives at a cost per disability-adjusted life year saved of \$82.

### Introduction

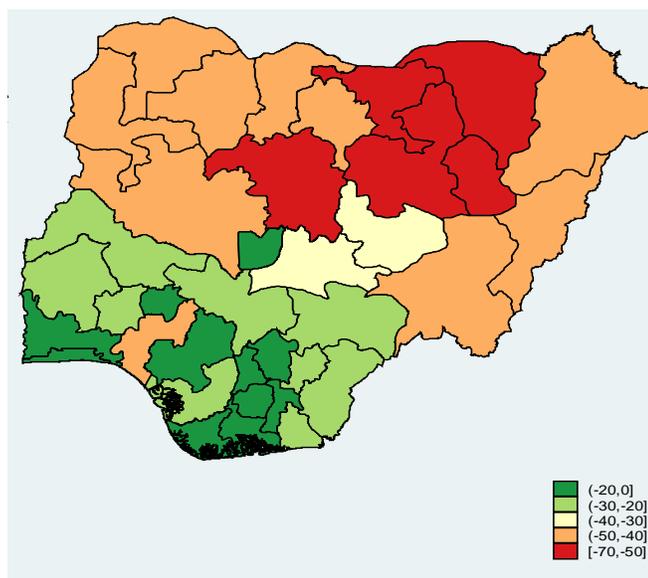
This Knowledge Brief presents the cost of scaling up key effective nutrition interventions in Nigeria and compares different scale-up scenarios to determine which one produces the best results for the lowest cost. The goal of

the analysis is to aid the Government of Nigeria in setting priorities by identifying the most cost-effective packages of interventions and by leveraging additional resources from domestic budgets and development partners. This analysis is complemented by a fiscal space analysis of the Save One Million Lives (SOML) program in Nigeria (Results for Development 2014).

## Malnutrition in Nigeria

Nigeria is home to the third largest population of chronically undernourished (stunted) children in the world. Figure 1 shows the striking disparities between northern and southern regions, in which all states in North East and North West regions of the country have a stunting prevalence above 40 percent, whereas the majority of states in the southern regions have a stunting prevalence below 25 percent (Nigeria MICS 2011). The prevalence of stunting in the North West region is 2.5 times that of the South East region. For example, in Lagos, only 8.9 percent of children under five are stunted, whereas in the State of Katsina, the prevalence is 61.9 percent. Vitamin and mineral deficiencies (*hidden hunger*) are also pervasive, of which anemia and vitamin A deficiencies are the most prevalent.

**Figure 1: State-level prevalence of stunting, 2011**



Source: Nigeria MICS 2011.

A number of interventions are effective in reducing malnutrition and are consistently identified as being among the most cost-effective development actions, with huge potential to reduce poverty and boost prosperity. Investing in nutrition can increase a country's GDP by between 3 and 11 percent annually (Horton and Steckel 2014). Cost-benefit analysis shows that nutrition interventions are highly cost effective (World Bank 2010, Hoddinott et al. 2013). Investments in early nutrition boost wages by 5 to 50 percent and make children 33 percent more likely to escape poverty in the future, as well as to address gender inequities (Hoddinott et al 2008, Hoddinott et al 2011).

## Interventions to Reduce Malnutrition

The analysis considers 10 nutrition-specific interventions that have been shown to be effective in reducing malnutrition (Box 1). The expected results include lives saved, cases of stunting averted, and disability-adjusted life years.<sup>1</sup> Cost-effectiveness is measured as the cost per life saved, the cost per case of stunting averted, and the cost per disability-adjusted life year saved. We estimate the total costs for scaling up all 10 interventions nationwide, and also four more modest scale-up options: (1) focusing on only the regions with the highest burden of malnutrition, (2) scaling up only a subset of interventions, (3) scaling up a subset of interventions only in the regions with the highest burden of malnutrition, and (4) scaling up interventions to partial (rather than full) coverage rates. We also estimate the cost of scaling up four nutrition-sensitive interventions in sectors other than health that have shown potential for improving nutritional outcomes.

### Box 1: Nutrition-Specific and Nutrition-Sensitive Interventions Considered in the Analysis

**Nutrition-specific interventions** address the immediate determinants of child nutrition:

1. Community nutrition programs for growth promotion
2. Vitamin A supplementation
3. Therapeutic zinc supplement with oral rehydration salts
4. Micronutrient powders
5. Deworming
6. Iron-folic acid supplementation for pregnant women
7. Iron fortification of staple foods
8. Salt iodization
9. Public provision of complementary food for the prevention of moderate acute malnutrition
10. Community-based management of severe acute malnutrition in children

**Nutrition-sensitive interventions** are delivered through sectors other than health and have the potential to improve nutrition indirectly:

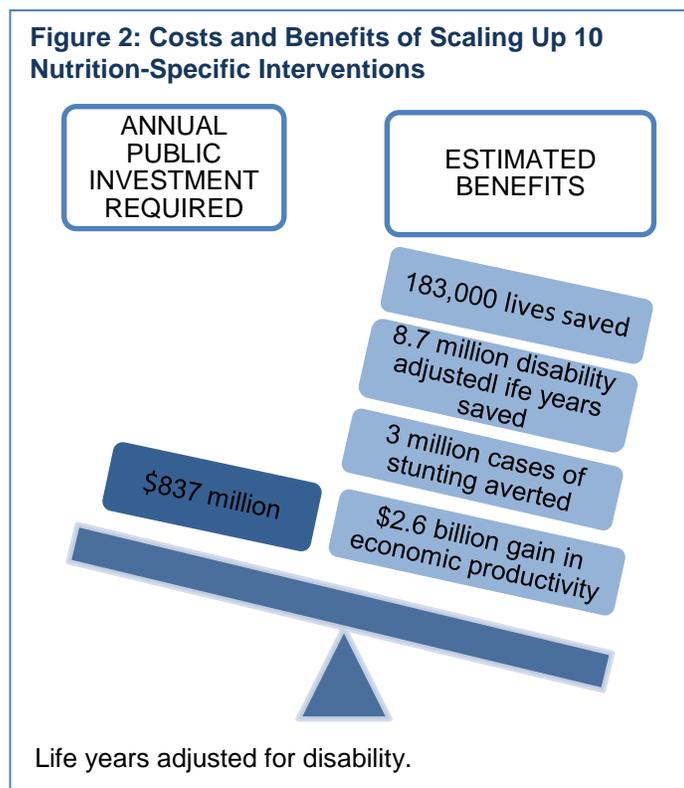
1. Biofortification of cassava
2. Aflatoxin control in maize and groundnuts
3. School-based based deworming
4. School-based promotion of good hygiene

### Nutrition-Specific Intervention

Implementing 10 nutrition-specific interventions in all regions of Nigeria would cost \$837 million<sup>2</sup> annually, would

produce tremendous health benefits, and has the potential to increase economic productivity by \$2.6 billion each year over the productive lives of the beneficiaries (Figure 2). It also would yield an impressive internal rate of return of 18 percent. Most of the 10 interventions are highly cost-effective, with the exception of the public provision of complementary food for the prevention of moderate acute malnutrition, which in Nigeria is only moderately cost-effective according to WHO-CHOICE criteria (WHO 2014).

**Figure 2: Costs and Benefits of Scaling Up 10 Nutrition-Specific Interventions**



Resource constraints are likely to prevent immediate and full national scale-up, however, so we also explore more modest scale-up options and identify three scenarios that are the most cost-effective (Box 2). (Additional scenarios are explored in the full report.) The scenario with the greatest impact per dollar spent is to scale up all interventions except the public provision of complementary food for the prevention of moderate acute malnutrition in all states. This option would be a highly cost-effective investment with a cost per disability-adjusted life year saved of \$56 and a cost per life saved of \$2,919. Yet this scenario is still extremely expensive and would require an annual public investment of \$511 million. As illustrated in the box, the analysis finds several cost-effective alternative scenarios, so the choice of scenario will depend both on budgetary considerations and on political considerations regarding targeting services to states with the highest burden of malnutrition. The costs of the interventions estimated here are likely to be slight overestimates, while the benefits are likely to be underestimated.

### Box 2: Three Cost-Effective Scale-Up Options

If full coverage is not immediately feasible, the three most cost-effective gradual scale-up scenarios are:

**1. Most cost-effective:** Scale up 9 interventions (excluding the public provision of complementary food for moderate acute malnutrition) to full program coverage:

- **\$511 million** public investment required
- 8.6 million disability-adjusted life years saved
- 164,000 lives saved
- **cost per life year saved = \$56**

**2. Lower cost:** Scale up critical interventions including community nutrition programs, micronutrient supplementation, deworming, and community-based management of severe acute malnutrition to full program coverage in states where stunting prevalence exceeds 25 percent:

- **\$337 million** public investment required
- 4.7 million disability-adjusted life years saved
- 96,000 lives saved
- **cost per life year saved = \$66**

**3. Scaling up to partial program coverage levels is lowest cost scenario:** scale up micronutrient and deworming interventions to partial coverage levels in all 36 states, and scale up community nutrition programs and community-based management of severe acute malnutrition to partial coverage levels in states where stunting prevalence exceeds 35 percent:

- **\$184 million** required
- 2.3 million disability-adjusted life years saved
- 59,000 lives saved
- **cost per life year saved = \$82**

## Nutrition-Sensitive Interventions

We identify and cost four nutrition-sensitive interventions relevant to the Nigerian context (see also Box 1), for which there is some evidence of positive impact on nutrition outcomes and some cost information. The estimated annual costs are modest: \$25 million for biofortification of cassava, \$65 million for aflatoxin control, \$8 million for school-based deworming, and \$60 million for school-based promotion of good hygiene. However, these must be considered preliminary estimates, as there are significant limitations in the available data and in the methodological approaches, especially in contextualizing global unit costs to the Nigerian situation. In addition, we were not able to estimate the benefits of these interventions because of data and methodological shortcomings, although we do

report benefits estimated by other reports. More robust data on nutrition-sensitive interventions are needed to inform future scale-up priorities.

## Financing Improvements in Nutrition

The costs discussed thus far relate only to the scale-up from current coverage and do not take into account the financing necessary to maintain existing coverage levels, which Results for Development (R4D) estimates to be approximately \$49 million annually (Results for Development 2014). The R4D analysis also identifies several sources of planned investments for nutrition estimated at about \$175 million over the next four years. This analysis suggests a planned increase in funding for nutrition of approximately \$126 million over four years. Our analysis predicts financing needs over five years of between \$769 million and \$987 million depending on the scenario, resulting in an estimated financing gap of between \$543 and \$861 million over five years. Therefore any scale up of nutrition interventions will not only require additional financing but also the prioritization of interventions based on need, cost-effectiveness, and allocative efficiencies.

## Conclusion

These results will be useful to decision makers as they plan future efforts to scale up interventions to address malnutrition in Nigeria and develop nutrition financing plans that bring together the health, education, and agriculture sectors. The health sector must include the costs of plans for financing universal health coverage and SOML within its nutrition pillar. Several opportunities exist for incorporating these highly cost-effective interventions into the World Bank's current and planned investments in health, and education.

## Sources

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## Notes

<sup>1</sup> A life year adjusted for disability (also known as a DALY) is equivalent to a year of healthy life lost due to a health condition.

<sup>2</sup> All dollar amounts in US dollars.

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*This HNP Knowledge Note highlights the key findings from: Meera Shekar, with Christine McDonald, Tuoyo Okorosobo, Ali Subandoro, Max Mattern, Julia Dayton Eberwein, Jonathan Kweku Akuoku and Wendy Karamba. 2014. "Costed Plan for Scaling Up Nutrition: Nigeria." Health, Nutrition and Population (HNP) Discussion Paper. Washington, DC: The World Bank Group.*

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