The Cost of HUNGER in AFRICA

Social and Economic Impacts of Child Undernutrition

The Social and Economic Impact of Child Undernutrition in Ethiopia
This document is based on the report “The Social and Economic Impact of Child Undernutrition in Egypt, Ethiopia, Swaziland and Uganda”, prepared within the framework of the Memorandum of Understanding between the UN Economic Commission for Africa (ECA) and the World Food Programme (WFP): “The Cost of Hunger in Africa: The Economic and Social Impact of Child Undernutrition”, coordinated by Josué Dioné, Director of the Food Security and Sustainable Development Division at ECA, Steven Were Omamo and Abdoulaye Diop from the WFP Liaison Office to the African Union and ECA, and Mustapha Sidiki Kaloko, Commissioner for Social Affairs at the African Union Commission (AUC).

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The team is grateful for the institutional leadership provided to this project Dr. Kesetebirhan Admasu.Minister of Health, Federal Democratic Republic of Ethiopia by H.E. the Minister of Health of Ethiopia and Director of ENHRI, Dr. Amha Kebede Director General ENHRI, Nkosazana Dlamini Zuma, Chairperson, AUC; Carlos Lopes, Executive Secretary, ECLAC; Ertharin Cousin, Executive Director, WFP; and Ibrahim Mayaki, CEO, NEPAD.

The design and implementation of the study was directed by a Steering Committee jointly led by Menghestab Haile (WFP), Maurice Tankou (ECA), Ademola Olajide and Janet Byaruhanga from the Health, Nutrition and Population Division of the Social Affairs Department at the AUC and Boitshepo Bibi Giyose from the New Partnership for Africa’s Development (NEPAD).

The steering Committee highlights the special contributions by the ENHRI in supporting the adaptation of the Model to Estimate the Social and Economic Impact of Child Undernutrition in Africa. Their contributions evidence Ethiopia’s commitment to regional collaboration.

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Design: Rachel Quint, Addis Ababa, Ethiopia
When a child is undernourished, the negative consequences follow that child for his/her entire life. These negative consequences also have grave effects on the economies where s/he lives, learns and works.
Foreword

The year, Ethiopia was proud to be elected as the chair of the African Union during the year of Pan-Africanism and the African Renaissance and the 50th anniversary of this continental organization. In the past fifty years, Ethiopia, and the entire continent, has experienced remarkable growth and achievement. We look forward to another fifty years of growth and success.

As this study shows, however, we cannot rely solely on traditional drivers of growth. Our economy is struggling under the burden of child undernutrition. We must invest not only in roads and bridges and enterprise, but also in the nutrition of the youngest Ethiopians.

In order to achieve improve child nutrition at national level, we must be able to bring together a coordinated inter-sectoral response that is able to address the direct determinant of undernutrition, beyond just the health sector. The Cost of Hunger Study continues to be contribution in bringing together the will and actions necessary for a decisive response to address this issue.

We have always suspected the high economic and social impact of malnutrition in Ethiopia. But now we know how much. This study is ground-breaking, as it is able to establish an economic value on this impact.

Unlike other studies of its kind, the data used for COHA is national data from Ethiopian Ministries. This study illustrates that we can effectively use our data to evaluate the economic and social situation in our country. This can then be used to develop tailored policy to address specific challenges. Further, the data was processed by a skilled team of professionals from the Ethiopian Nutrition and Health Research Institute and the Federal Ministry of Health who had the opportunity to expand their capacity in data analysis through the process. The systematic approach of data analysis used in COHA can be replicated to other aspects of the activities that are undertaken by the Federal Ministry of Health and other ministries.

As the Government of Ethiopia moves forward in the implementation of the Growth and Transformation Plan, we need to emphasize the importance of eliminating undernutrition. In the context of the COHA results, the FMOH has developed a comprehensive National Nutrition Plan, which has the possibility of bringing together actions that can reduce the barriers that are imposed in undernourished children, from an early age, up until they become productive members of society.

As we congratulate the African Union on the monumental 50th anniversary and celebrate the successes of the past 50 years, we look forward to an exciting new era that will focus on human capital, and specifically nutrition, as a key element for Ethiopia’s development.

H.E. Minister of Health 
Director of ENHRI
10 Things Everyone Should Know about Child Nutrition in Ethiopia

1. Today, more than 2 out of every 5 children in Ethiopia are stunted.

2. As much as 81% of all cases of child undernutrition and its related pathologies go untreated.

3. 44% of the health costs associated with undernutrition occur before the child turns 1 year-old.

4. 28% of all child mortality in Ethiopia is associated with undernutrition.

5. 16% of all repetitions in primary school are associated with stunting.

6. Stunted children achieve 1.1 years less in school education.

7. Child mortality is associated with undernutrition has reduced Ethiopia’s workforce by 8%.

8. 67% of the adult population in Ethiopia suffered from stunting as children.

9. The annual costs associated with child undernutrition is estimated at 55.5 billion Ethiopian

10. Eliminating stunting in Ethiopia is a necessary step for sustained development in the country.
About the Study

The Cost of Hunger in Africa (COHA) is an African Union Commission (AUC) led initiative through which countries are able to estimate the social and economic impact of child undernutrition. Twelve countries are participating in the study. Ethiopia is part of the four first-phase countries, the first to carry out the study and present results.

The COHA study illustrates that child undernutrition is not only a social issue, but also an economic issue, as countries are losing significant sums of money as a result of current and past child undernutrition. To that end, in March 2012, the Regional COHA Study was presented to the Fifth Joint Meeting of AU Conference of Ministers of Economy and Finance and ECA Conference of African Ministers of Finance, Planning and Economic Development, in Addis Ababa, Ethiopia. The Ministers issued a resolution confirming the importance of the study and recommending it continue beyond the initial stage.

The COHA study in Ethiopia is led by the Federal Ministry of Health (FMoH), through the Ethiopian Health and Nutrition Research Institute (EHNRI), Ministry of Education (MoE), Ministry of Finance and Economic Development (MoFED), Central Statistics Agency (CSA), the country office for the World Health Organization (WHO) and the World Food Programme (WFP). At regional level, the COHA project is being led by the African Union Commission (AUC) with technical leadership from the United Nations Economic Commission for Africa (UNECA) and support from WFP.

During the process, all data for the study was collected from national data sources including the Ethiopia Household Income, Consumption and Expenditure Survey 2010/11 (EHICES), CSA Databases, Demographic and Household Survey (DHS) 2011, previous DHS studies, the African Centre for Statistics (ACS), UN Population Division as well as primary data collection.

Methodology

How does the Model Calculate the Cost of Child Undernutrition?

The COHA model is used to estimate the additional cases of morbidities, mortalities, school repetitions, school dropouts, and reduced physical capacity that can be directly associated with a person’s undernutrition status before the age of five. In order to estimate these social impacts for a single year, the model focuses on the current population, identifies the percent of that population who were undernourished before the age of five, and then estimates the associated negative impacts experienced by the population in the current year. Using this information and economic data provided by the Ethiopian National Implementation Team (NIT), the model then estimates the associated economic losses incurred by the economy in health, education, and potential productivity in a single year.

<table>
<thead>
<tr>
<th>0-5 years</th>
<th>Undernourished children are at higher risk for anaemia, diarrhoea, and respiratory infections. These additional cases of illness are costly to the health system and families. Undernourished children are at higher risk of dying.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-18 years</td>
<td>Stunted children are at higher risk for repeating grades in school and at higher risk for dropping out of school. Additional instances of grade repetitions are costly to the education system and families.</td>
</tr>
<tr>
<td>15-64 years</td>
<td>If a child dropped out of school early and is working in non-manual labour, he/she may be less productive. If s/he is working in manual labour he/she has reduced physical capacity and may be less productive. People who are absent from the workforce due to undernutrition-related child mortalities represent lost economic productivity.</td>
</tr>
</tbody>
</table>
When a child is undernourished, he or she will have an increased chance of experiencing specific health problems. For every additional case of child illness, both the health system and the families are faced with an additional economic cost.

Effects on HEALTH
Results from Ethiopia
Results in Health

When a child is undernourished, he or she will have an increased chance of experiencing specific health problems.

Research shows that undernourished children under five are more likely to experience cases of anaemia, acute diarrhoeal syndrome (ADS), acute respiratory infection (ARI), and in some cases, fever. For every additional case of child illness, both the health system and the families are faced with an additional economic cost. "Incremental morbidity" are the additional number of episodes that affect underweight children.

### Health Cost of Undernutrition – Related Pathologies

(*Cost in millions of Ethiopian birr*)

<table>
<thead>
<tr>
<th>Pathology</th>
<th>Incremental Morbidity</th>
<th>Cost to Families</th>
<th>Cost to System</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBW/IUGR</td>
<td>148,173</td>
<td>ETB 575</td>
<td>ETB 117</td>
<td>ETB 693</td>
</tr>
<tr>
<td>Anaemia</td>
<td>365,311</td>
<td>ETB 572</td>
<td>ETB 1</td>
<td>ETB 572</td>
</tr>
<tr>
<td>ADS</td>
<td>527,153</td>
<td>ETB 216</td>
<td>ETB 15</td>
<td>ETB 231</td>
</tr>
<tr>
<td>ARI</td>
<td>114,300</td>
<td>ETB 122</td>
<td>ETB 22</td>
<td>ETB 144</td>
</tr>
<tr>
<td>Underweight</td>
<td>2,991,509</td>
<td>ETB 113</td>
<td>ETB 17</td>
<td>ETB 130</td>
</tr>
<tr>
<td>Fever/Malaria</td>
<td>264,232</td>
<td>ETB 48</td>
<td>ETB 13</td>
<td>ETB 61</td>
</tr>
<tr>
<td>Total</td>
<td>4,410,678</td>
<td>ETB 1,646</td>
<td>ETB 185</td>
<td>ETB 1,831</td>
</tr>
</tbody>
</table>

Children who are underweight are also more likely to die from illnesses related to undernutrition.

28% of child deaths are associated with undernutrition

There are an estimated 378,591 additional annual cases of child mortality associated with child undernutrition, in the period from 2004 to 2009.
When a child is undernourished, that child’s brain is less likely to develop at healthy rates, and that child is more likely to have cognitive delays. Stunted children are more likely to repeat grades in school or drop out.

Effects on EDUCATION
Results from Ethiopia
Results in Education

Students who were stunted as children will have reduced cognitive capacity and are therefore more likely to repeat grades in school.

The graph below illustrates the relatively higher repetition rates among stunted students.

**Repetition Rates by Nutritional Status**

<table>
<thead>
<tr>
<th>Repetition Rate of Students who were stunted as children</th>
<th>Repetition Rate of Students who were not stunted as children</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.1%</td>
<td>11.2%</td>
</tr>
</tbody>
</table>

**Repetitions Associated with Stunting by Grade Level**

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Number of Repetitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>38,713</td>
</tr>
<tr>
<td>2</td>
<td>25,508</td>
</tr>
<tr>
<td>3</td>
<td>18,219</td>
</tr>
<tr>
<td>4</td>
<td>19,449</td>
</tr>
<tr>
<td>5</td>
<td>19,563</td>
</tr>
<tr>
<td>6</td>
<td>9,311</td>
</tr>
<tr>
<td>7</td>
<td>10,292</td>
</tr>
<tr>
<td>8</td>
<td>11,432</td>
</tr>
</tbody>
</table>

Repetitions are costly both to the family of the student, as well as to the education systems. Both need to invest resources for an additional year of schooling. Costs for families include uniforms, books and exercise books, and school fees. Economic costs have been calculated to estimate the cost of the additional years of schooling associated with undernutrition.

**Costs of repetitions associated with undernutrition**

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total public costs</td>
<td>34 million ETB</td>
</tr>
<tr>
<td>Total cost to families/caretakers</td>
<td>59 million ETB</td>
</tr>
<tr>
<td>Total cost</td>
<td>93 million ETB</td>
</tr>
<tr>
<td>Equivalent % Social expenditure on education</td>
<td>1.48%</td>
</tr>
</tbody>
</table>
Students who are undernourished are also more likely to drop out of school. The data from Ethiopia illustrates that expected number of schooling years achieved by a student who was stunted is 1.27 years lower than the expected schooling for a student who was not undernourished. The graph below illustrates dropout trends.

![Retention Rate by Nutritional Status](image)

The economic impact of school dropout is not, however, incurred while a person is in school. Rather, the economic costs are incurred when the population is of working age, as people may be less productive, and earn less income, as a result of fewer years of schooling achieved. Thus, considerations of losses associated to lower schooling are described in the section that relates to labour productivity.
When a child is stunted, this will impact them when they enter the labour force. On the whole, stunted workers are less productive than non-stunted workers, and are less able to contribute to the national economy.

Effects on **PRODUCTIVITY**  
Results from Ethiopia
When a child is stunted, this will impact them when they enter the labour force. On average, stunted workers are expected to be less productive than non-stunted workers, and are less able to contribute to the national economy.

If a person was undernourished as a child, they would have been more likely to drop out of school; on average people currently in the workforce who were undernourished as children have achieved fewer years of schooling. Further, in Ethiopia, income levels in non-manual labour are directly proportional to years of schooling achieved. As such, it is possible to estimate the losses in potential income associated to undernutrition.

The lower educational achievement of the stunted population has an effect on the expected income of a person as an adult. For Ethiopia, the stunted population working in non-manual activities is estimated at represent 5% of the country’s labour force. The estimated annual losses in income for this group, due to lower schooling are 625 million Ethiopian birr, which is equivalent to 0.2% of the GDP in 2009.

In manual activities, people who were stunted as children have reduced physical capacity as adults. This lost physical capacity corresponds to a reduced ability to earn income in manual intensive activities.

An estimated 67% of workforce, or 26 million people in the workforce were stunted as children.

The model estimates that 36.2 million Ethiopians work in manual activities, of which 24.3 million were stunted as children. This represented an annual loss that surpasses 12.8 million Ethiopian birr in potential income lost due to lower productivity, which is equivalent to 3.8% of GDP.
**Undernourished children have a higher risk of dying compared to children who are not underweight.**

As such, the COHA model estimates the proportion of child mortalities that are associated to undernutrition. Further, the model estimates those mortalities who would have been of working age (15-64) today, but are absent from the workforce. The model estimates that the 3.2 million people of working age population that would be part of the economy in 2009 could have increased national productivity in excess of 4.8 billion working hours.

Considering the productive levels of the population, by their age and sector of labour, the model estimates that the economic losses of the working hours due to mortality are 40 billion Ethiopian birr, which represents 11.9% of the country’s GDP for 2009.

**Total losses in productivity for 2009 are estimated at approximately 53.6 billion Ethiopian birr, which is equivalent to 16% of Ethiopia’s GDP.**

The figure below, illustrates the distribution of losses. The largest share of cost, amounting to 75%, is due to working hours lost from individuals who died, before reaching the age of five, due to high rates of undernutrition. Lower productivity in manual activities represents 24% of the cost, as there is a large proportion of the population in Ethiopia engaged in agriculture.
Total losses associated with undernutrition are estimated at 55.5 billion Ethiopian birr, or USD $4.7 billion for the year 2009. These losses are equivalent to 16.5% of GDP of that year.
Scenarios for Improved Nutrition

The previous section showed the social and economic costs associated with high historical trends of child undernutrition. Most of these costs are already cemented in society and policies must be put in place to improve the lives of those already affected by childhood undernutrition. Nevertheless, there is still room to prevent these costs in the future.

A key element of discussion are the potential economic savings that could be achieved in each context with a firm reduction of the prevalence of stunting. In this sense, the model is able to generate a baseline for various scenarios, based on nutritional goals established in each country. For this initial analysis, two different change scenarios are being proposed.

- **Baseline Scenario: The Cost of Inaction.** Progress in reduction of stunting and underweight child stops. In this scenario, the progress of reduction of the prevalence of undernutrition stops at the level achieved in 2009. Although highly unlikely, it serves as a basis for estimating the saving for scenarios of change.

- **Scenario #1: Cutting by Half the Prevalence of Child Undernutrition by 2025.** In this scenario, the prevalence of underweight and stunted children would be reduced to half of the value of the reference year of 2009. In this scenario, the prevalence of underweight and stunted children would be reduced to half of the value of the reference year of 2009. In the case of Ethiopia this would mean a constant reduction of 1.5% points annually in the stunting rate, from 46.4% (estimate, 2009) to 23.2% in 2025. With the right combination of proven interventions, this scenario would be achievable, as the rate of reduction for stunting from 2001 to 2011 is estimated at 1.1%, which is close to the progress rate required in achieving this scenario.

- **Scenario #2: The ‘Goal’ Scenario.** Reduce Stunting to 10 percent and Underweight children to 5 percent, by 2025. In this scenario, the prevalence of stunted children would be reduced to 10% and underweight children with less than five years, to 5%. Currently, the global stunting rate is estimated at 26%, with Africa having the highest prevalence as a region at 36%. This Goal Scenario, would require a true call to action, and would represent an important regional challenge in which countries of the region could collaborate jointly in its achievement. The progress rate required to achieve this scenario would be 2.3% annual reduction for a period of 16 years, from 2009 to 2025.

The progressive reduction of child undernutrition generates a similar reduction in the cost associated with it. The distances between the trend lines would indicate the savings that would be achieved on each scenario.

**Trends of Estimated Costs of Child Undernutrition**

![Graph showing trends of estimated costs of child undernutrition over years from 2009 to 2025 with different scenarios indicated.]
Scenarios for Improved Nutrition

The potential economic benefits of reducing undernutrition are a key element in making the investment case for nutrition investments. The reduction in clinical cases for the health system, grade repetition, improvements in educational performance and physical capacity are elements than have a direct contribution in national productivity.

<table>
<thead>
<tr>
<th>ETHIOPIA</th>
<th>Halving Child Stunting</th>
<th>Reaching 10% &amp; 5% by 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required progress per year</td>
<td>1.5%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Average Annual Savings</td>
<td>US$376 million</td>
<td>US$784 million</td>
</tr>
</tbody>
</table>

In order to make the goal scenario achievable, stronger effort must be made at national level. The following graph illustrates the progress rate required in the reduction of stunting by each country to meet the 10 percent stunting and 5 percent underweight targets.

In addition to the scenarios presented, an additional analysis has been carried out for Ethiopia. The National Nutrition Plan has established a target of achieving 30% stunting by the year 2015. If this target were to be achieved, the model estimates that the annual average savings of this scenario would be an average of US$106 Million, and would require a progress of 2.7% annually from the values estimated for 2009.
Conclusions

Child Undernutrition: Implications for Ethiopia’s Growth and Transformation Plan

The Cost of Hunger Study is an important step forward to better understand the role the child nutrition and human development can play as a catalyser, or as a constrain, in implementation of Ethiopia’s Growth and Transformation Plan (GTP). This plan, that projects a sustained GDP growth of 11% to 15% from 2010 to 2015, represents the national strategy of the country towards poverty eradication. In its implementation, the GTP outlines opportunities in the agricultural and industrial sectors, and a series of indicators that need will be monitored to assess the progress towards the ultimate goal. The results of the COHA study demonstrate that in order to enhance and sustain the results envisioned in this plan, child stunting must be addressed a key priority.

The results of the COHA study demonstrate that in order to achieve sustainable human and economic growth, special attention must be given to the early stages of life as the foundation of human capital. These results of the study are supported by a strong evidenced base, and a model of analysis specially adapted for Africa, which demonstrates the depth of the consequences of child undernutrition in health education and labour productivity. This study further quantifies the potential gains of addressing child undernutrition as a priority. Now, stakeholders have, not only the ethical imperative to address child nutrition as a main concern, but a strong economic rationale to position stunting in the centre of the development agenda.

The GTP has a key element in its implementation that addresses the importance of improving access and quality of health services. This study estimates that child undernutrition generates health costs equivalent to 0.5% of the total public budget allocated to health. These costs are due to episodes directly associated with the incremental quantity and intensity of illnesses that affect underweight children and the protocols necessary for their treatment. Although this amount might seem relatively small, it is important to note that only 3 out of every 10 children are estimated to be receiving proper health attention. As the health coverage expands to rural areas, there will be an increase of people seeking medical attention; this can potentially affect the efficiency of the system to provide proper care services. This study illustrates that a reduction of child undernutrition could facilitate the effectiveness of this expansion by reducing the incremental burden generated by the health requirements of underweight children.

The GTP also prioritized the importance of reducing child mortality. The COHA study estimates that 28% of all cases of child mortality are associated with the higher risk of undernutrition. Hence, a preventive approach to undernutrition can help reduce this incremental burden to the public sector, and also reduce the costs that are currently being covered by caretakers and families.

On of the key elements of the GTP is the expanding preschool, primary and secondary access and increase enrolment. This represents a particular opportunity in Ethiopia where the population under 15 years is estimated to be 40% of the total population. These children and youth must be equipped with the skills necessary for competitive labour. Thus, the underlying causes for low school performance and early desertion must be addressed. As there is no single cause for this phenomenon, a comprehensive strategy must be put in place that considers improving in the quality of education and the conditions required for school attendance. This study demonstrates that stunting is one barrier to attendance and retention that must be removed to effectively elevate the educational levels and improve individuals’ labour opportunities in the future.

The study estimated that children who were stunted experienced a 3.9% higher repetition rate in primary school. As a result, 16% of all grade repetitions in primary school are associated to the higher incidence of repetition that is experienced by stunted children. These numbers suggest that a reduction in the stunting prevalence could also support an improvement in schooling results, as it would reduce preventable burdens to the education system. There was not enough information to analyse this aspect for secondary education in Ethiopia.

A critical pillar in the successful implementation of the GTP lays in the capacity of the country to elevate the levels of productivity in the population, both in the rural and urban context. Achieving this in short-term, in a way that also has an impact in the reduction of poverty rates, it requires an important investment in specialized training to continuously build the capacities in the population. This will facilitate the shift of the workforce towards a more skilled labour, as the economy is able to produce new jobs to reduce youth unemployment.
Conclusions (continued)

The study estimates that 67% of the working age population in Ethiopia is currently stunted. This population has achieved on average lower school levels than those who did not experience growth retardation of 1.1 years of lower schooling. As industries continue to develop increasing number of people participate in skilled employment, this loss in human capital will be reflected in a reduced productive capacity of the population. Thus, it may be a particularly crucial time to address child undernutrition and prepare future youth for better employment by prioritizing the reduction of stunting in the GTP.

The COHA model also provides an important prospective analysis that sheds light on the potential economic benefits to be generated by a reduction in the prevalence of child undernutrition. The model estimates that, in the analysed countries, a reduction of the prevalence to half of the current levels of child undernutrition by the year 2025 can generate annual average savings of ETB 4.4 billion (US$376 million). An additional scenario shows that a reduction to 10% stunting and 5% underweight for that same period could yield annual average savings of ETB 9.2 billion (US$784 million). This economic benefit that would result from a decrease in morbidities, lower repetition rates and an increase in manual and non-manual productivity, presents an important economic argument for the incremental investments in child nutrition.

This study is also an important example of how South-South collaboration can work to implement cost effective activities in development and knowledge sharing. Ethiopia’s participation as one of the pilot countries of the study, and its feedback in collecting the data at national level was an important element in adapting the COHA methodology to Africa. The contributions of the Ethiopia NIT will serve to facilitate the expansion of this tool in the continent.

Lastly, this study illustrates the valuable role that data and government-endorsed research can play in shedding light on pertinent issues on the continent. This study will help the country engage within global nutrition movements such as the Scaling Up Initiative as programmes and interventions are put in place to address stunting as a national priority.
Recommendations

This study presents some key initial findings of the Cost of Hunger in Ethiopia, as well both challenges and opportunities regarding the reduction of child undernutrition to the country. This analysis was been presented in 2 dimensions:

**Strengthening and improving on-going interventions that directly address early childhood undernutrition.** The Government of Ethiopia and its development partners have in place a series of activities, which is most cases, are demonstrating results in the reduction of child undernutrition. Nevertheless, an increase in the reduction rate will require a scaling-up in current interventions that have proved effective. Some of the actions recommended by the NIT in for this include:

1) **Promotion of access and utilization to essential services:** The government of Ethiopia has in place maternal child health such as ANC, PNC and Young child health services provided through the health delivery system. While these are directed to ensure healthy pregnancies and good birth outcomes while promoting positive health seeking, the coverage and utilization is still remain limited. To increase the rate of reduction of child stunting in Ethiopia, it is recommended that the health system outreach services coupled with logistics and supplies management be strengthened and supported to facilitate access and promotion of the utilization at community and household level.

2) **Scale up of food fortification for school going children and children above 6 months.** In Ethiopia, consumption of balanced diets is often limited to the affluent population group mostly located in the urban areas. The bigger proportion of Ethiopia’s location is located in the rural areas. While access to food may not always be a problem, food diversity is limited and food consumed depends on the region. Worse still, the complementary foods used for children above 6 months of age are often starch-based and of low nutrient value. Children in primary school face similar challenges of limited diversity. Given the strong link between micronutrient deficiencies and stunting, it is recommended that flour fortification is scaled up to facilitate mandatory use of fortified food in school meals and ensure increased nutrient intake for school going children.

3) **Promotion of the consumption of fortified complementary food especially in populations most affected by micronutrient deficiencies and stunting.** This could include exploring home fortification using Micronutrient powders as a strategy for improving the quality of complementary food for children above 6 months of age.

4) **Promotion of Public-Private partnerships could also be promoted as a strategy of engaging the private sector (especially in the food production and processing industry) to better understand and incorporate the health and nutritional needs of the population in their products, promotions and distribution mechanisms.** This might also assist address the constraints (such as tax subsidies on processing technology equipment, fortificants, etc) of the public sector related to coming up with the right products.

5) **Increase efforts and explore further opportunities in Bio fortification.** Given that most rural communities practice subsistence farming and may not be able to access fortified food products due to either remoteness or affordability, bio fortification of common staple such as bean, maize, sweet potatoes may be promoted through the Ministry of Agriculture and other existing mechanisms in order to allow households practicing subsistence farming access better improved food commodities form own production.

6) **Promotion of awareness of the entire population.** The government supports awareness activities through various sectors and mechanisms. Nutrition awareness remains limited across the whole population including the educated. The demonstrated impact of nutritional deficiencies in most parts of the country requires enhancing the awareness on the importance of nutrition especially in the 1st 1000 days of a child’s life and the school-going age group that has been found to facilitate nutritional catch-up starting from the early childhood care and development centres.

7) **An important mechanism to help raise this awareness is to increase nutrition sensitization actions on existing sector activities.** These may include developing of a nutrition hand guide that facilitates not only the literate but also educators on the locally available food commodities that could be used, blended, processed to develop a nutritionally enriched food that can be used by the various vulnerable groups. The last version of such a guide for Ethiopia was last updated in 1969. Perhaps an updated on the takes into account foods that have since been introduced into country (as imports or locally grown) may be considered.
Recommendations (continued)

**Addressing the bottlenecks that undermine the efficiency of existing interventions.** In order for nutrition intervention to maximize their results, certain elements, that are not directly within the scope of the activities themselves must be addressed, in order to achieve a sustained reduction in child undernutrition.

Improving nutrition in Ethiopia requires the following: An enabling policy environment to facilitate planning and implementation of the above recommendations; mandatory large scale industrial fortification of common staples widely consumed such as wheat, maize and vegetable oil; mandatory use of fortified maize flour and vegetable oil in school feeding programmes; tax subsidies on fortificants and other food processing and agricultural technology and equipment.

**Coordination of multi-sectoral nutrition interventions for common objective of addressing undernutrition is also needed. This includes:**

1) **Support the Ethiopia National Nutrition Plan (NNP) secretariat in their coordination role of ensuring the different sectors play their role in contributing to the implementation of the national nutrition plan.**

2) A clear recommendation of this study is that **Ethiopia must review their national development frameworks to ensure that the reduction of the stunting provenance is an outcome indicator of their social and economic development policies.** Chronic child undernutrition can no longer be considered a sectoral issue, as both its causes and solutions are linked to social policies across numerous sectors. As such, stunting reduction will require interventions from the health, education, social protection, and social infrastructure perspectives. Stunting can be an effective indicator of success in larger social programs.

3) This study encourages countries not to be content with “acceptable” levels of stunting; equal opportunity should be the aspiration of every country the continent. In this sense, **it is recommended that aggressive targets are set in Ethiopia for the reduction of stunting that go beyond proportional reduction, to establish an absolute value as the goal for the country at 20% by the year 2025.** This interim value can will demonstrate long term commitment and its achievement will set the basis for stronger efforts towards the elimination of child undernutrition in Ethiopia.

4) The achievement of this aggressive goal cannot be reached from just the health sector. In order to be able to have a decisive impact on improving child nutrition, a **comprehensive multi-sectoral policy must be put in place, with strong political commitment and allocation of adequate resources for its implementation.** This plan should look to accelerate the actions on the determinants of child undernutrition such as inadequate income, agricultural production, improving gender equality and girls’ education, improving water supply and sanitation, but also by addressing deeper underlying determinants such as the quality of governance and institutions and issues relating to peace and security. To ensure sustainability of these actions, whenever possible, **the role of international aid must be complementary to nationally led investments, and further efforts have to be done in ensuring the strengthening of national capacity to address child undernutrition.**

5) An important element that must be addressed to enhance the national capacity to address malnutrition is to improve the monitoring and evaluation systems. Currently, the assessments of the prevalence of child nutrition are carried-out with a periodicity of between 3 to 5 years. **Nevertheless, in order to be able to measure short term results in the prevention of stunting, a more systematic approach with shorter periodicity is recommended, of 2 years between each assessment.** As the focus on the prevention of child undernutrition should target children before 2 years of age, these results will provide information to policy makers and practitioners on the results being achieved in the implementation of social protection and nutrition programmes.

6) Another important element is to further the understanding of the determinants of child undernutrition in each context. **As an initial step, it is recommended that the assessment of child nutrition also includes information that relates the nutritional status of the children to the livelihoods and economic activities of the households.** This information can be used to inform programme design to ensure that interventions effectively reach these vulnerable families with appropriate incentives and innovative approaches within social protection schemes.