

# Working Together for a Better Future in Uganda

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Fighting Malnutrition: A Call to Action for Community-Based Services Officers July 2015

**Today in Uganda, half of children are malnourished. Despite government efforts to make nutrition services more available, malnutrition remains a serious problem. Your community needs your help to overcome malnutrition.**

Malnutrition in Uganda can be seen in many ways. Malnourished children may be shorter than healthy children their age because long-term malnutrition hurt their growth, or they may be too thin because of severe, short-term malnutrition, or they may be both short and thin. Malnutrition starts early—even babies in the womb can become malnourished if their mother is not able to eat well before and during pregnancy. Young children are at great risk and malnutrition in childhood can affect them for their entire life.

## Why does this matter?

- Malnourished children are more likely to get sick and die than healthy children. Almost half of child deaths in Uganda are because of malnutrition.<sup>2,3,4</sup>
- Because malnourished children get sick more often, parents miss more days of work and have more of their income going toward medicine and doctor's bills than those of healthy children.<sup>2,3</sup>
- Malnourished children are more likely to develop diseases later in life such as diabetes and heart disease.<sup>2</sup>
- Malnutrition slows growth and brain development, lowering intelligence, and making it harder for children to succeed.<sup>2,3,4,5</sup>
- Malnourished children under 2 learn to sit, stand, and walk later than their well-nourished peers. Malnourished children enrol in school later, have more days out of school due to illnesses, perform worse in school, and complete fewer years of schooling. Because of this, malnourished children become adults who earn less money compared to those who are well-nourished and better-educated as children.<sup>2,3,4,5</sup>



Photo credit: Heather A. Lawrence, Photoshare, 2005

## Why are so many Ugandans malnourished?

- Many do not eat a wide enough variety of foods (including fruits and vegetables of many different colours, and eggs, fish and meat once a day when possible) to provide all the nutrition their body needs.
- Some do not eat enough food or enough times a day to meet their body's needs.
- Illnesses such as diarrhoea that do not allow food to be absorbed and used by the body can also cause malnutrition.
- How women and children are cared for can contribute to malnutrition, including feeding (such as giving children food or liquid other than breastmilk before 6 months of age) and gender-based violence.
- On average, Ugandan women give birth to six children, often close together, not giving the mother's body enough time to recover and build up enough nutrients for another pregnancy, and puts a strain on family income.<sup>1</sup>
- Giving birth begins early in Uganda. More than half of adolescent girls have given birth or are pregnant by 19. This causes serious problems because adolescent girls are more likely to be malnourished and have a malnourished baby.<sup>1</sup>
- More than half of women in Uganda do not visit health facilities while pregnant to receive support on health and nutrition for mother and baby.
- Food taboos and low male involvement in decisions on health also contribute to malnutrition.

From birth to 2 years is the time in a child's life when they are most likely to become malnourished. We as a community must do everything we can to ensure that caregivers of young children have the knowledge, time, and resources to make sure our children are well fed and nurtured. This also means that men must respect their partners and make them feel safe and protected.

## What Should I Share with My Community?

- Those most at risk of malnutrition are adolescents, pregnant and breastfeeding women, and children under 2. Every family member has a responsibility to ensure the nutritional needs of these vulnerable groups are met.
- We must improve the nutritional status of our adolescent girls, and delay first pregnancy past the age of 19. This will have a huge impact on improving child nutrition and survival.
- Make sure children are born at least 2 years apart, which will improve the health of mothers and babies.
- A pregnant woman should visit a health facility as soon as she knows she is pregnant and eat a healthy diet with at least one extra meal a day.
- Breast milk is the best food for a baby during the first 6 months of life and is all that is needed for a baby to grow and develop. It is important that women are given support to breastfeed their baby. This means other family members need to help her with chores and ensure she is eating a wide variety of foods.
- At 6 months, breast milk alone is not enough for infants. They should also start to eat semi-solid foods rich in nutrients and protein 2-4 times a day, depending on age, and given a small snack as needed while continuing to breastfeed. By 12 months a baby needs 3 meals and 3 small nutritious snacks a day in addition to continued breastfeeding.
- All households should use a latrine, and treated drinking water that is stored in a covered container for preparing meals. All family members should wash their hands with soap under poured/flowing water after handling soiled diapers, using the latrine, and before preparing or serving food.
- If you grow food or raise animals to sell, first keep enough to feed your family, or buy a healthy variety of foods for the family.
- Visit your health centre or talk to your village health team to get more information on the best nutrition for you and your family and to make sure your baby is growing properly.

## What Can You Do As a Community-Based Services Officer to Improve Nutrition?

- Include nutrition in annual plans and budgets for sub-counties and communities.
- Mobilize communities to identify and address nutrition issues and their underlying social causes by developing a community action plan.
- Support and scale up community-based nutrition initiatives.
- Advocate and seek solutions for reducing workload for all women, especially pregnant and lactating women.
- Address detrimental food taboos and norms in the community that impair nutrition.
- Integrate nutrition messages in community mobilization activities.
- Establish community-based forums to facilitate dialogue and provide information to community members on nutrition. This information can be obtained at the local health centre.
- Engage men in accessing family health services, household food production, and supporting women with the time and resources needed to make sure children are well fed and nurtured.
- Ensure nutrition issues are discussed and recorded during participatory planning processes.
- Engage with other groups involved with community-based work including religious groups/leaders, village health teams, child protection committees, networks of people living with HIV and adult literacy groups, for example.



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## Fighting Malnutrition: A Call to Action for Civil Society Organizations Working in Food Security and Agriculture

July 2015

**Despite increased food production in Uganda, malnutrition is still a critical problem because many households are food insecure. Agriculture is essential to promoting food security and can be leveraged to improve nutrition. In Uganda:**

- Malnutrition can take many forms, including chronic malnutrition (stunting, or low height-for-age), underweight (low weight-for-age), acute malnutrition (wasting, or low weight-for-height), anaemia, vitamin A deficiency, iodine deficiency, and low birth weight less than 2.5 kg.<sup>1,2</sup>
- Nearly 50% of children under 5 and 30% of pregnant women suffer from malnutrition in Uganda.<sup>1</sup>
- Malnutrition is the underlying cause of as many as 45% of child deaths in Uganda.<sup>3,4,5</sup>
- Children who are malnourished are at greater risk of infections, such as diarrhoea and pneumonia, which in turn increases the risk of malnutrition. Malnourished children also have a greater risk of developing chronic diseases, such as diabetes and heart disease, in adulthood.<sup>3,4</sup>
- Food insecurity is a significant underlying cause of malnutrition. Factors that lead to food insecurity are multifaceted and are often a result of high food prices, low agricultural productivity, climate change, landlessness, natural disasters, lack of education, and the fact that a majority of Ugandans depend on agriculture as a main source of income. Gender inequality, which limits women's control of household resources and decision making, only worsens food insecurity and poverty.
- Poor growth in children hinders the potential of Uganda's future labour force. Iron deficiency anaemia and stunting result in reduced labour productivity, which impedes agricultural production and slows the progress of development.<sup>4,5</sup> Fifty-four percent of the current labour force was stunted in childhood.<sup>4</sup>
- Malnutrition due to stunting, iron deficiency anaemia, iodine deficiency, and low birth weight will cost Uganda more than 19 trillion Ugandan Shillings (US\$7.7 billion) in lost productivity by 2025.<sup>5,6</sup>



Photo credit: Jessica Scranton, FHI 360

*Improving nutrition will improve agricultural productivity.*

- Agriculture systems can inadvertently harm household nutrition if:
  - A woman's role in child care is compromised due to her workload
  - Workload increases without an increase in food consumed
  - Men and women are exposed to hazardous conditions that affect their health, including unsanitary conditions
  - Food prices increase, causing families to eat fewer varieties of foods

A healthy and productive workforce in Uganda is needed to improve and sustain agricultural productivity.

### How can improved nutrition support the work of civil society organizations working in food security and agriculture?

- The agriculture and nutrition sectors are interdependent and synergistic. Improving nutrition would lead to increased productivity—including in the agriculture sector—resulting in economic productivity gains exceeding 4.3 trillion Ugandan Shillings (US\$1.7 billion) by 2025.<sup>5</sup>

### Civil society organizations working in agriculture and food security can support improved nutrition in Uganda by:

- Supporting integration of nutrition in agriculture plans, policies, and programmes.
- Advocating for more resources to implement proven household-level agricultural interventions that can improve household food security and nutrition.
- Promoting sustainable production and consumption of diverse foods, including encouraging families to buy nutritious foods in the market place.
- Supporting the development of guidance on food storage and consumption by household members.
- Advocating for stronger food safety regulations and fostering safe post-harvest handling and storage practices to reduce contamination and infections.
- Promoting women's access to and control over productive resources, capital, and income generation.
- Promoting the use of labour-saving technologies to help women manage competing priorities and their caring, reproductive, and productive roles.
- Promoting opportunities to train women in agro-processing at the household level.
- Increasing wages for male and female agricultural workers and ensuring that men and women receive equal pay for equal work to increase families' ability to buy nutritious foods.
- Ensuring safe working conditions for agricultural workers, including proper sanitation.
- Providing opportunities to diversify household income.
- Promoting the adoption of high-yield nutritious crops and small livestock production, including small ruminants.
- Ensuring food, especially staples such as millet, sweet potatoes, sorghum, matooke, and maize, remain affordable for families.
- Intensifying nutrition and health behaviour change interventions within agricultural interventions, with a focus on men and influencers of behaviour at the household and community levels.



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## Fighting Malnutrition: A Call to Action for Civil Society Organizations Working in Education

July 2015

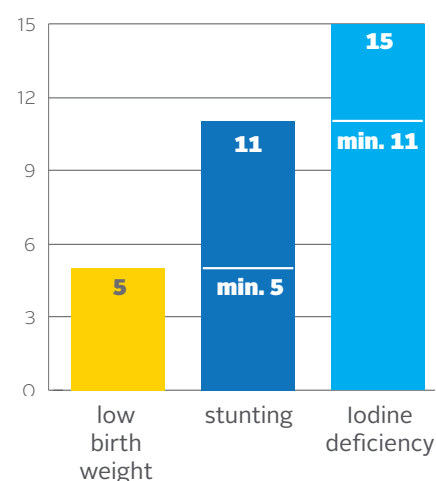
The Uganda Vision 2040 identifies human capital development as one of the keys for Uganda's transformation into a prosperous and modern country. Education is a critical element for this goal, but malnutrition is holding Uganda back.

- Malnutrition in children, especially during the critical 1,000-day period from pregnancy through a child's second birthday, affects their ability to learn by delaying and impairing cognitive development, contributing to poor school performance, and resulting in a less productive population.
- Uganda's loss in human capital is due to overlapping forms of malnutrition, including chronic malnutrition (stunting, or low height-for-age), underweight (low weight-for-age), acute malnutrition (wasting, or low weight-for-height), anaemia, vitamin A deficiency, iodine deficiency, and low birth weight (less than 2.5 kg), decreasing the potential of the country's children.<sup>1,2</sup>
- More than 40% of children under 2 are stunted in Uganda.<sup>1</sup> Children who are stunted learn to sit, stand, and walk later; have poorer cognitive function; enrol in school later; perform worse in school; are more likely to repeat grades; miss more days of school due to illness; and are more likely to drop out of school than well-nourished children.<sup>2,3,4,5</sup>
- 10% of children weigh less than 2.5 kg at birth, a weight that is linked to poor cognitive development during infancy and decreased attention span later in life.<sup>1,2,5</sup>
- Anaemia affects half of children under 5, and vitamin A deficiency affects 30%.<sup>1</sup> This can impair cognitive development and worsen school absenteeism by increasing the likelihood and severity of infections.



Photo credit: Alex Mokori, RCQHC, 2010

### IQ Points Lost to Malnutrition<sup>4</sup>



Malnutrition is *preventable and treatable*. The Copenhagen Consensus 2012 determined that nutrition is the *best investment* for countries to improve health, schooling, and productivity.

## How can improved nutrition support the work of civil society organizations working in education?

- As children's nutritional status improves, so do their cognitive development and school performance, leading to better completion rates, higher educational attainment, and improved earning capacity in adulthood. When parents are well educated, they are more likely to have well-nourished families, continuing the cycle.
- By 2025, investment in proven, effective, and high-quality nutrition interventions implemented at scale will improve child development, cognitive function, and school performance. Improved nutrition would:<sup>2,4,5</sup>
  - Prevent permanent brain damage in about 236,000 children and increase the average child's IQ by up to 13.5 points through prevention of iodine deficiency
  - Improve cognitive development in children by preventing and treating iron deficiency anaemia
  - Result in earlier school enrolment, children staying in school longer, and better performance in school—by 2025, this would total 19.8 million equivalent school years of learning gained
  - Strengthen future intellectual and productive capacity of Ugandans

## Civil society organizations working in education can support improved nutrition in Uganda by:

- Supporting and expanding early childhood development programmes that work in tandem with nutrition programmes to promote optimal cognitive development.
- Supporting nutrition early in life for children's cognitive development so they have the best chance to perform well in school.
- Promoting the completion of secondary education for boys and girls to improve nutrition for the next generation of children.
- Developing a comprehensive nutrition curriculum for tertiary institutions, including teacher training, nursing, agriculture, and social development colleges.

*Improving nutrition will greatly improve education outcomes.*



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## Fighting Malnutrition: A Call to Action for Civil Society Organizations Working in Family Planning

July 2015

**Family planning, nutrition, and health are synergistic. We must progress in all three if Uganda is to meet its development goals.**

- On average, Ugandan women give birth to six children, often close together, not giving the mother's body enough time to recover and build up enough nutrients for another pregnancy, and putting a strain on family income. This is the highest fertility rate in eastern and southern Africa.<sup>1</sup>
- About 25% of births occur within 24 months of a previous birth.<sup>1</sup> Children conceived less than 24 months after the birth of the next older sibling have a greater risk of dying and becoming malnourished than children born farther apart.<sup>2</sup>
- Childbearing begins early in Uganda. Fifty-eight percent of adolescent girls have given birth or are pregnant by age 19. This has serious consequences because adolescent girls are more likely to be malnourished and have a low birth-weight baby who is more likely to become malnourished.<sup>1</sup>
- Family planning counselling with older mothers and women is an opportunity to counsel them on improving the nutritional status of their adolescent girls and on delaying first pregnancy past the age of 19. This will have a huge impact on improving young child nutrition and survival.
- Family planning interventions, through adequate birth spacing, have been shown to reduce risk for low birth weight and stunting and to decrease infant and maternal mortality. As birth weights increase in a population, nutritional status improves and mortality decreases. As children's nutritional status improves, so do their cognitive development and performance in school, leading to higher educational attainment and improved earning capacity in adulthood. Those who attain a higher level of education are more likely to use family planning and often marry later and delay childbearing, thus continuing the cycle.



Photo credit: Jessica Scranton, FHI 360

*Improving nutrition is essential for sustained improvement in health outcomes and nutrition counselling provides a key opportunity to discuss family planning options with women of reproductive age.*

## How can nutrition interventions support the work of civil society organizations working in family planning?

- In Uganda, nutrition counselling is an opportunity to discuss family planning options with women of reproductive age.



Photo credit: Basil Safi, Photoshare, 2012

## Civil society organizations working in family planning can expand use of family planning and support improved nutrition in Uganda by:

- Promoting the delay of first pregnancy past the age of 19 by expanding access to family planning services to adolescent girls and their partners because women who wait to have their first child after adolescence have improved nutritional status and better birth outcomes than adolescent mothers.
- Supporting nutrition service providers to improve the nutritional status of adolescent girls, women of childbearing age, and pregnant and lactating women.
- Improving and promoting access to family planning services to encourage small family size and adequate birth spacing (at least 2 years) to reduce the risk of low birth weight and to decrease infant and maternal mortality.
- Engaging men in family planning and safe motherhood.
- Engaging in community-level activities to change normative perceptions about the value of women beyond childbearing.
- Supporting the development of legislation to give women greater custody rights over their children.



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## Fighting Malnutrition: A Call to Action for Faith Leaders

July 2015

**Your congregation looks to you, not just for spiritual guidance, but also for practical advice on how to lead their lives. Today in Uganda, half of children are malnourished. Your community needs your help to overcome malnutrition.** Malnutrition in Uganda can be seen in many ways. Malnourished children may be shorter than healthy children their age because long-term malnutrition hurt their growth, or they may be too thin because of severe, short-term malnutrition, or they may be both short and thin. Malnutrition starts early - even babies in the womb can become malnourished if their mother is not able to eat well before and during pregnancy. Young children are at great risk and malnutrition in childhood can affect a child's entire life.

### Why does this matter?

- Malnourished children are more likely to get sick and die than healthy children. Almost half of child deaths in Uganda are because of malnutrition.<sup>2,3,4</sup>
- Because malnourished children get sick more often, parents miss more days of work and have more of their income going toward medicine and doctor's bills than those of healthy children.<sup>2,3</sup>
- Malnourished children are more likely to develop diseases later in life such as diabetes and heart disease.<sup>2</sup>
- Malnutrition slows growth and brain development, lowering intelligence, and making it harder for children to succeed.<sup>2,3,4,5</sup>
- Malnourished children under 2 learn to sit, stand, and walk later than their well-nourished peers. Malnourished children enrol in school later, have more days out of school due to illnesses, perform worse in school, and complete fewer years of schooling. Because of this, adults who were malnourished as children earn less money compared to those who were well-nourished and better-educated as children.<sup>2,3,4,5</sup>



Photo credit: Basil Safi, Photoshare, 2005

### What Are So Many Ugandans Malnourished?

- Many do not eat a wide enough variety of foods to provide all the nutrition their body needs.
- Some do not eat enough food or enough times a day to meet their body's needs.
- Illnesses such as diarrhoea that do not allow food to be absorbed and used by the body can also cause malnutrition.
- How women and children are cared for can contribute to malnutrition, including feeding and health care.
- On average, Ugandan women give birth to six children, often close together, not giving the mother's body enough time to recover, and build enough nutrients for another pregnancy.<sup>1</sup>
- Giving birth begins early in Uganda. More than half of adolescent girls have given birth or are pregnant by 19. This causes serious problems as adolescent girls are more likely to be malnourished and have a malnourished baby.<sup>1</sup>
- More than half of women in Uganda do not visit health facilities while pregnant where support is given for the health and nutrition of both mother and baby.

## What Should I Tell My Congregation?

- Those most at risk of malnutrition are adolescents, pregnant and breastfeeding women, and children under 2. Every family member has a responsibility to ensure the nutritional needs of these vulnerable groups are met.
- We must improve the nutritional status of our adolescent girls, and delay first pregnancy past the age of 19. This will have a huge impact on improving child nutrition and survival.
- Make sure children are born at least 2 years apart, which will improve the health of mothers and babies.
- A pregnant woman should visit a health facility as soon as she knows she is pregnant and eat a healthy diet with at least one extra meal a day. This includes fruits and vegetables of different colours, and eggs, fish, and/or meat once a day when possible. Use iodized salt for the baby's brain to grow properly.
- Breast milk is the best food for a baby during the first 6 months of life and is all that is needed for a baby to grow and develop. It is important that women are given support to breastfeed their baby. This means other family members need to help her with chores and ensure she is eating a wide variety of foods.
- At 6 months, breast milk alone is not enough for infants. They should also start to eat semi-solid foods rich in nutrients and protein 2-4 times a day, depending on age, and given a small snack as needed while continuing to breastfeed. By 12 months a baby needs 3 meals and 3 small nutritious snacks a day in addition to continued breastfeeding.
- All households should use a latrine, and treated drinking water that is stored in a covered container for preparing meals. All family members should wash their hands with soap under poured/flowing water after handling soiled diapers, using the latrine, and before preparing or serving food.
- If you grow food or raise animals to sell, first keep enough to feed your family, or buy a healthy variety of foods for the family.
- Visit your health centre or talk to your village health team to get more information on the best nutrition for you and your family and to make sure your baby is growing properly.

**From birth to 2 years is the time in a child's life when they are most likely to become malnourished.** We as a community must do everything we can to ensure that caregivers of young children have the knowledge, time, and resources to make sure our children are well fed and nurtured. This also means that men must respect their partners and make them feel safe and protected.

## Suggestions on Addressing Nutrition

You can discuss the importance of making wise choices in families and seeking guidance on the best nutrition for children using these passages:

*"Where there is no guidance, a people falls, but in an abundance of counsellors there is safety." Proverbs 11:14*

*"And make not your own hands contribute to your own demise, for the Lord loves the actions of good." Quran 2:195*

*"Do you not know that your body is a temple of the Holy Spirit within you, whom you have from God? You are not your own, for you were bought with a price, so glorify God in your body." 1 Corinthians 6:19-20*

*"Eat of the good things which have been provided for you... Eat of what is lawful and wholesome on the earth." Quran 2:173, 168*



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## Fighting Malnutrition: A Call to Action for Development Partners

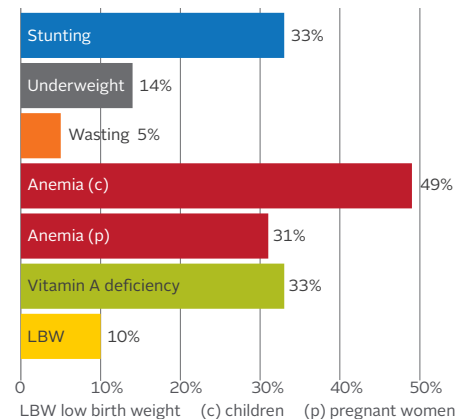
July 2015

**Despite continued investment by the Government of Uganda and donors, almost half of children in Uganda are still malnourished.** Without improvement in nutrition Uganda's Vision 2040 goal of a prosperous and modern Ugandan society cannot be achieved. Malnutrition in Uganda can take many forms, including chronic malnutrition (stunting or low height-for-age), underweight (low weight-for-age), acute malnutrition (wasting or low weight-for-height), anaemia, Vitamin A deficiency, iodine deficiency, and low birth weight (less than 2.5 kg). Malnutrition in Uganda affects poor families more so than wealthy families: 38.3% of the poorest children under 5 are stunted. But even among wealthy families, 20.5% of children under 5 are stunted.<sup>1</sup>

### Why does this matter?

- Malnourished children are more likely to get sick and die than healthy children. Almost half of child deaths in Uganda are because of malnutrition.<sup>2,3,4</sup>
- Because malnourished children get sick more often, parents miss more days of work and have more of their income going toward medicine and doctor's bills than those of healthy children.<sup>2,3</sup>
- Malnourished children are more likely to develop diseases later in life such as diabetes and heart disease.<sup>2</sup>
- Malnutrition slows growth and brain development, lowering intelligence, and making it harder for children to succeed.<sup>2,3,4,5</sup>
- Malnourished children under 2 learn to sit, stand, and walk later than their well-nourished peers. Malnourished children enrol in school later, have more days out of school due to illnesses, perform worse in school, and complete fewer years of schooling. Because of this, malnourished children become adults who earn less money compared to those who are well-nourished and better-educated as children.<sup>2,3,4,5</sup>

### Prevalence of Malnutrition in Uganda<sup>1</sup>



### IQ Points Lost to Malnutrition<sup>5</sup>

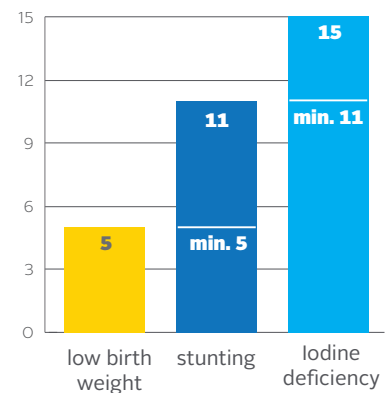


Photo credit: Basil Safi, Photoshare, 2012

*But malnutrition is preventable and treatable. The children of Uganda can be free of all forms of malnutrition **if we act now.***

Main data sources include: <sup>1</sup> Uganda Demographic and Health Survey 2011, <sup>2</sup> Lancet Nutrition Series 2013, <sup>3</sup> The Cost of Hunger in Uganda Summary Report, <sup>4</sup> Reducing Malnutrition in Uganda: Estimates to Support Nutrition Advocacy – Uganda PROFILES 2013, and <sup>5</sup> “Effects of Health and Nutrition on Cognitive and Behavioural Development in Children in the First Three Years of Life” (Grantham-McGregor et al. 1999) and “Developmental potential in the first 5 years for children in developing countries” (Grantham-McGregor et al. 2007). All calculations of US\$ to Uganda Shillings are based on an exchange rate of US\$1 = 2504.60 Uganda Shillings.

## What Can You Do As a Development Partner to Improve Nutrition?

- Continue coordination efforts among all development partners.
- Advocate for and assist the Government of Uganda to:

### Focus direct nutrition interventions on four critical areas:

- Improving adolescent nutrition
- Improving maternal nutrition during pregnancy and the post-partum period
- Improving nutrition of children under 2
- Improving treatment and prevention of severe moderate acute malnutrition among children under 5

### Advocate for and assist the Government of Uganda to support:

- Resource allocation at all levels for nutrition services
- Multisectoral coordination across ministries and within local governments
- Capacity strengthening to ensure there are skilled staff to provide nutrition services
- Health system strengthening to ensure nutrition is effectively integrated
- Development and implementation of a strong supervision and monitoring system
- Community based organisations to create demand for nutrition services
- Integration of activities to improve nutrition within agriculture, education, water and environment, and community development sectors
- Strengthening programs on food safety and food handling practices

## What are the gaps in nutrition programming?

- Lack of comprehensive nutrition services to communities across the country.
- Inadequate collaboration and coordination among and within health, agriculture, education, water and environment, food safety, and community development resulting in limited integration of services.
- Inadequate collaboration and coordination among government sectors and development partners, United Nations bodies, and international non-governmental organisations.
- Inadequate systems and staff capacity for nutrition service delivery.
- Limited linkage with the private sector in nutrition.
- Limited public awareness of malnutrition which impacts the demand for quality nutrition services to be provided in communities.
- Inadequate accountability and governance for nutrition in Uganda.

- Promotion of hand washing with soap before preparation of food and feeding a child
- Increased public-private partnerships to improve nutrition

### Ensure food security through the following interventions:

- Food supplementation
- Ensure agriculture and community development programs are nutrition sensitive



THE REPUBLIC OF UGANDA  
MINISTRY OF HEALTH



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## Fighting Malnutrition: Talking Points for Development Partners

July 2015

### Investing in Nutrition Now is Crucial for Uganda's Development

- We share the belief that every Ugandan has the right to good nutrition, health, education, and opportunities for economic growth. All of the projects being funded by development partners stand in support of the government to improve nutrition outcomes.
- We know that reducing malnutrition in Uganda will require a coordinated, multi-sectoral approach and, to that end, we support the implementation of the Uganda Nutrition Action Plan.

### The benefits of investing in nutrition far outweigh the costs

- Between 2013-2025, improved nutrition would:<sup>3,4,5</sup>
  - Save more than 101,000 infants' lives by improving breastfeeding practices.
  - Save more than 60,000 children's lives by decreasing vitamin A deficiency.
  - Save ~119,000 children's lives by preventing stunting.
  - Save ~26,000 infants' lives by reducing low birth weight.
  - Save ~20,000 infants' and ~7,000 mothers' lives by decreasing maternal anaemia.
  - Prevent permanent brain damage in about 236,000 children and increase the average child's IQ by up to 13.5 points through prevention of iodine deficiency.
  - Result in earlier school enrolment, children staying in school longer, and better performance in school. By 2025, this would total 19.8 million equivalent school years of learning gained.
  - Lead to economic gains through increased productivity exceeding 4.3 trillion Ugandan Shillings (US\$1.7 billion) by 2025.
  - Lead to improvement in the health and family planning sectors. Since health, family planning, and nutrition are synergistic, investing in any one sector alone will not lead to the same return as investing in all of them.

### Steps the Government of Uganda Can Take to Improve Nutrition

- Ensure nutrition is captured in national and local government development plans and budgets.
- Integrate activities to improve nutrition in health, agriculture, education, water and environment, and community development sectors, and hold them accountable for improving nutrition.
- Ensure adequate skilled staff are available at all levels to provide nutrition services.
- Develop a strong supervision and monitoring system to assess progress on food security and nutrition.
- Ensure structures are in place to integrate nutrition into all levels of the health system.
- Strengthen multi-sectoral coordination across ministries and local governments to mainstream nutrition.
- Let development partners know how we can support the Government of Uganda more effectively.
- Ensure that the health system has capacity to prevent and treat malnutrition.
- Finalize a food and nutrition policy and action plan to support implementation.
- Improve food storage and processing and reduce waste.
- Implement behaviour change communication strategies to improve hygiene and sanitation practices, including handwashing.
- Increase public-private partnerships to improve nutrition.



This brief is made possible by the generous support of the American people through the support of the Office of Health, Infectious Diseases and Nutrition, Bureau for Global Health, U.S. Agency for International Development (USAID), and USAID/Uganda, under terms of Cooperative Agreement No. AID-OAA-A-12-00005, through the Food and Nutrition Technical Assistance III Project (FANTA), managed by FHI 360.

Main data sources include: <sup>1</sup> Uganda Demographic and Health Survey 2011, <sup>2</sup> Lancet Nutrition Series 2013, <sup>3</sup> The Cost of Hunger in Uganda Summary Report, <sup>4</sup> Reducing Malnutrition in Uganda: Estimates to Support Nutrition Advocacy – Uganda PROFILES 2013, and <sup>5</sup> “Effects of Health and Nutritional Development on Cognitive and Behavioural Development in Children in the First Three Years of Life” (Grantham-McGregor et al. 1999) and “Developmental potential in the first 5 years for children in developing countries” (Grantham-McGregor et al. 2007). All calculations of US\$ to Uganda Shillings are based on an exchange rate of US\$1 = 2504.60 Uganda Shillings.

# Malnutrition in Uganda

## *We've Already Paid Too High a Price*

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## Agriculture and Nutrition Fact Sheet

September 2014

**Agriculture is the foundation of national development and is essential to protect and promote food security in Uganda. However, despite increased food production, the rate of malnutrition in Uganda is still unacceptably high because many households in Uganda are food insecure and lack access to food.**

- Malnutrition in Uganda can take many forms, including chronic malnutrition (stunting, or low height-for-age), underweight (low weight-for-age), acute malnutrition (wasting, or low weight-for-height), anaemia, vitamin A deficiency, iodine deficiency, and low birth weight (< 2.5 kg).<sup>1,5</sup>
- Nearly 50% of children under 5 and 30% of pregnant women suffer from malnutrition in Uganda.<sup>1</sup>
- Malnutrition is the underlying cause of as many as 45% of child deaths in Uganda.<sup>2,3,4</sup> Children who are malnourished are at greater risk of infections (such as diarrhoea and pneumonia), which in turn increases the risk of malnutrition. Malnourished children also have a greater risk of developing chronic diseases (such as diabetes and heart disease) in adulthood.<sup>2,3</sup>
- Food insecurity is a significant underlying cause of malnutrition in Uganda. The causes of food insecurity in Uganda are multifaceted, often a result of poverty, landlessness, high fertility, natural disasters, high food prices, lack of education, and the fact that a majority of Ugandans depend on agriculture as a main source of income. Gender inequality only worsens food insecurity and poverty.

### Malnutrition reduces Uganda's agricultural productivity.

- A healthy and productive workforce in Uganda is needed to improve and sustain agricultural productivity. Poor growth in children hinders the potential of Uganda's future labour force. Iron deficiency anaemia and stunting result in reduced labour productivity, which hinders agricultural production and slows the progress of development.<sup>3,4</sup>
- Malnutrition due to stunting, iron deficiency anaemia, iodine deficiency, and low birth weight will cost Uganda more than 19 trillion Ugandan Shillings (US\$7.7 billion) in lost productivity by 2025.<sup>4</sup>
- Investing in nutrition now would lead to economic gains in the future through increased productivity exceeding 4.3 trillion Ugandan Shillings (US\$1.7 billion) by 2025.<sup>4</sup>
- Agriculture systems can inadvertently harm household nutrition if:
  - A women's role in child care is compromised due to her workload
  - Workload increases without an increase in calories consumed
  - Men and women are exposed to hazardous conditions that affect their health, including unsanitary conditions
  - Food prices increase, causing families to eat fewer varieties of foods



Photo credit: Jessica Scranton, FHI 360

**Agriculture and nutrition are interdependent. Nutrition can be improved through increased access and availability of food at the household level, and improved nutrition increases agricultural productivity. The agriculture sector can support nutrition by:**

- Ensuring a legal and policy framework for improved nutrition, including:
  - Reviewing and integrating nutrition in the Agriculture Sector Development Strategy and Investment Plan (DSIP) and in the National Agriculture Policy.
  - Developing guidelines for integrating nutrition in sector, district, and sub-county plans, policies, and agricultural activities.
- Providing strong political and technical leadership and commitment to nutrition within the Ministry of Agriculture, Animal Husbandry and Fisheries and strong coordination with other ministries, including the Ministry of Health; the Ministry of Education and Sports; the Ministry of Gender, Labour and Social Development; and the Ministry of Local Government.
- Allocating more resources for implementing proven household-level agricultural interventions that can improve household food security and nutrition.
- Strengthening the capacity of agricultural extension workers to implement household-level agricultural interventions, including integrating nutrition into pre-service and in-service training curricula for agricultural extension service providers.
- Putting in place a monitoring and evaluation framework to track implementation of nutrition interventions for development, including nutrition as an impact and outcome indicator for agriculture programs, and food and nutrition security indicators in the 2016 Uganda Demographic and Health Survey and National Household Expenditure Survey (NHES).

### **Some Strategies to Improve Nutrition and Sustain Food Security**

- Promote women's access to and control over productive resources, capital, and income generation.
- Promote the use of labour-saving technologies to enable women to manage competing priorities and their caring, reproductive, and productive roles.
- Promote opportunities to train women in agro-processing at the household level.
- Increase wages for male and female agricultural workers and ensure that men and women receive equal pay for equal work to increase families' ability to buy nutritious foods.
- Ensure safe working conditions for agricultural workers, including proper sanitation.
- Provide opportunities for diversification of household income.
- Promote the adoption of high-yield nutritious crops, including biofortified staples like iron-rich beans and orange sweet potatoes.
- Promote small livestock production, including small ruminants.
- Ensure food, especially staples such as millet, sweet potatoes, sorghum, matooke, and maize, remain affordable for families.
- Intensify nutrition and health behaviour change interventions within agricultural interventions, with a focus on men and influencers of behaviour at the household and community levels.



This brief is made possible by the generous support of the American people through the support of the Office of Health, Infectious Diseases and Nutrition, Bureau for Global Health, U.S. Agency for International Development (USAID), and USAID/Uganda, under terms of Cooperative Agreement No. AID-OAA-A-12-00005, through the Food and Nutrition Technical Assistance III Project (FANTA), managed by FHI 360.

# Malnutrition in Uganda

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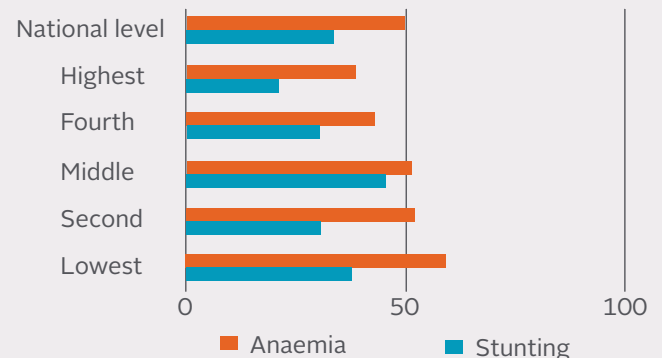
### Economic Development and Nutrition Fact Sheet

September 2014

**Despite Uganda's progress in meeting the first Millennium Development Goal of halving poverty by 2015, without improvement in nutrition, Uganda's Vision 2040 goal of a prosperous and modern Uganda society cannot be achieved.**

- Uganda adopted pro-growth policies that helped reduce poverty from 56% in 1995 to 25% in 2010, a decline of 2 percentage points a year. It was expected that, as household income increased, malnutrition would decrease.
- However, the 2011 Uganda Demographic and Health Survey indicates that malnutrition exists in both wealthy and poor households, suggesting that more income at the household level does not always lead to better diets or health practices.<sup>1</sup>
- Stunting (or low height-for-age) decreased by 5 percentage points from 2006 to 2011 but, even with this progress, more than 2 million children in Uganda are stunted. This is unacceptable.<sup>1,2</sup>
- While rates of anaemia have decreased in recent years, half of children under 5 and nearly a quarter of women of reproductive age remain anaemic.<sup>1</sup>

**Stunting and anaemia by wealth quintile<sup>1</sup>**



**Malnutrition has and will continue to slow Uganda's economic development.**

- Malnutrition, including anaemia, stunting, and iodine deficiency disorders, weakens Uganda's economy through losses in productivity due to poor physical status, less education as a result of impaired cognitive development resulting in lower wages, and through increased health costs associated with treating malnutrition and related diseases.<sup>2,3</sup>
- Malnutrition reduces a person's ability to fight illness, increases severity of illness, drives up health care costs, and reduces productivity, confining households to a vicious cycle of poverty.<sup>2,3</sup>
- The effects of stunting are largely irreversible beyond 2 years of age; 54% of adults in Uganda today suffered from stunting as children, meaning that more than 8 million people of working age are not able to achieve their potential as a consequence of childhood malnutrition.<sup>3</sup>
- Stunting alone will cost Uganda more than 19 trillion Ugandan Shillings (US\$7.7 billion) in lost productivity by 2025. The poor incur most of these costs, as they are more likely to be malnourished.<sup>1,2</sup>



## Malnutrition is *preventable and treatable*.

Increasing commitment to and investment in nutrition now, as outlined in the Uganda Nutrition Action Plan, will be crucial for Uganda in the decades to come.

- For every US\$1 spent on nutrition, there is a US\$30 return in health and economic benefits.<sup>4</sup>
- By investing in proven, effective nutrition interventions implemented at scale, hundreds of thousands of lives will be saved and improved by 2025.<sup>2</sup>
- Progress in nutrition would result in children staying in school longer and performing better in school, resulting in improved economic productivity over the long term.<sup>3</sup>
- Investing in nutrition now would lead to economic gains through increased productivity exceeding 4.3 trillion Ugandan Shillings (US\$1.7 billion) by 2025.<sup>2</sup>

The Ministry of Finance can support improved nutrition in Uganda by:

- Creating a “vote function” for nutrition that would require all sectors and local governments to establish a budget line specifically for nutrition. This would hold sectors and local governments accountable for ensuring prioritisation of nutrition activities in planning and reporting and make more services available for mothers and children.
- Allocating additional funding for nutrition at all levels, which could make more services available for mothers and children.
- Including nutrition in Uganda’s Poverty Alleviation Initiatives.
- Supporting implementation of comprehensive nutrition services throughout the country and adequate institutional structures to scale up nutrition.
- Integrating nutrition indicators in the sector and local government performance templates. This would hold key public sectors and local governments accountable for nutrition services.
- Providing incentives to the private sector to increase investment in nutrition, including but not limited to:
  - Tax breaks for fortification of staples (such as oil with vitamin A and flour with iron)
  - Subsidies for labour-saving technologies



THE REPUBLIC OF UGANDA



FANTA III  
FOOD AND NUTRITION  
TECHNICAL ASSISTANCE



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### Education and Nutrition Fact Sheet

September 2014

**Education is a key element in Uganda's Vision 2040 for a prosperous and modern country.** But malnutrition is holding Uganda back. Malnutrition in children, especially during the critical 1,000-day period from pregnancy through a child's second birthday, affects their ability to learn by delaying and impairing cognitive development, contributing to poor school performance and resulting in a less productive population.

- Uganda's loss in human capital is due to overlapping forms of malnutrition, including **chronic malnutrition** (stunting, or low height-for-age), **underweight** (low weight-for-age), **acute malnutrition** (wasting, or low weight-for-height), **anaemia**, **vitamin A deficiency**, **iodine deficiency**, and **low birth weight** (< 2.5 kg), decreasing the potential of the country's children.<sup>1,5</sup>
- More than 40% of children under 2 are stunted in Uganda.<sup>1</sup> Children who are stunted learn to sit, stand, and walk later; have poorer cognitive function; enrol in school later; perform worse in school; are more likely to repeat grades; miss more days of school due to illness; and are more likely to drop out of school than well-nourished children.<sup>2,4</sup>
- On average, stunted children lose 3–4 grade equivalents more than children who were never undernourished.<sup>4,6</sup>
- 10% of children weigh less than 2.5 kg at birth, a weight that is linked to poor cognitive development during infancy.<sup>1,2,3</sup>
- Anaemia affects half of children under 5 and vitamin A deficiency affects 30% of children under 5.<sup>1</sup> This can impair cognitive development and worsen school absenteeism by increasing the likelihood and severity of infections.



Photo credit: Alex Mokori, RCQHC, 2010

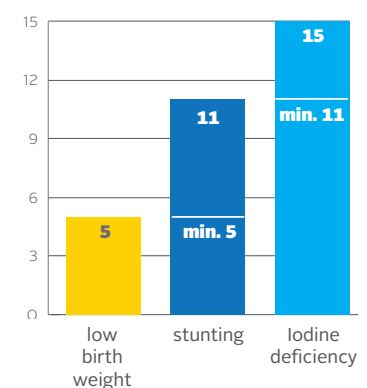
Uganda's Vision 2040 objectives on human capacity development may not be realized because of high malnutrition levels in Uganda

### Malnutrition is *preventable and treatable*.

**Increasing and sustaining commitment to and investment in nutrition now is crucial for Uganda for the decades to come.**

- By 2025, investment in proven, effective, and quality nutrition interventions implemented at scale will improve child development, cognitive function, and school performance. Improved nutrition would:<sup>2,3,4</sup>
  - Prevent permanent brain damage in about 236,000 children and increase the average child's IQ by 13.5 points through prevention of iodine deficiency
  - Improve cognitive development in children by preventing and treating iron deficiency anaemia
  - Result in earlier school enrolment, children staying in school longer, and better performance in school – by 2025, this would total 19.8 million equivalent school years of learning gained related to a reduction in stunting alone
  - Strengthen future intellectual and productive capacity of Ugandans

IQ Points Lost to Malnutrition<sup>4</sup>



**Improving nutrition improves education outcomes. The education sector can support improved nutrition in Uganda by:**

- Providing strong technical and political leadership and commitment within the Ministry of Education and Sports, to coordinate nutrition interventions in education.
- Supporting and expanding early childhood development programmes that work in tandem with nutrition programs to promote optimal cognitive development.
- Supporting nutrition early in life for children's cognitive development, so that they have the best chance to perform well in school.
- Promoting the completion of secondary education for boys and girls to improve nutrition for the next generation of children.
- Developing a comprehensive nutrition curriculum for tertiary institutions, including teacher training, nursing, agriculture, and social development colleges.

**People with higher levels of education have better health outcomes than those with less education. Some nutrition-related activities to improve learning and school performance include:**

- Updating education sector policies and strategies that are relevant to nutrition
- Endorsing and operationalising the draft National School Health Policy
- Finalising and disseminating the School Feeding guidelines
- Supporting implementation of mandatory food fortification regulation by promoting use of fortified foods in schools and biofortified staples (e.g. iron-rich beans and orange sweet potatoes) in school feeding programmes
- Organising mass de-worming
- Supporting water and sanitation initiatives
- Educating children on positive health and nutrition practices



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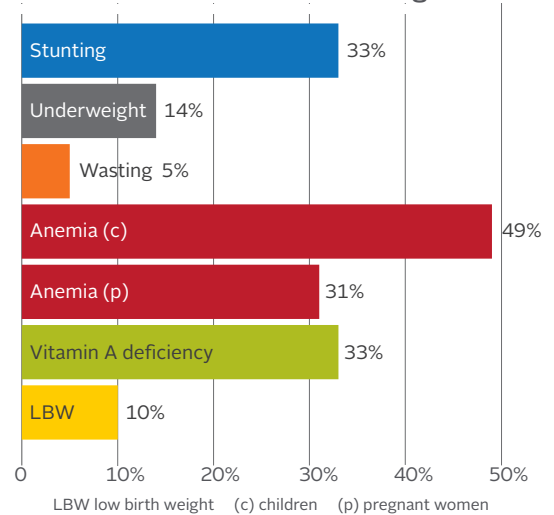
### Health and Nutrition Fact Sheet

September 2014

While Uganda has made great strides in reducing poverty, the rates of malnutrition in children and mothers are still unacceptably high, compromising their health and survival.

- Malnutrition in Uganda can take many forms, including chronic malnutrition (stunting, or low height-for-age), underweight (low weight-for-age), acute malnutrition (wasting, or low weight-for-height), anaemia, vitamin A deficiency, iodine deficiency, and low birth weight (< 2.5 kg).<sup>1,2</sup>
- Rates of anaemia are especially alarming, affecting half of children under 5 and 30% of pregnant women.<sup>1</sup> Of the 17 women who die in childbirth every day in Uganda, about 4 die as a result of problems linked to anaemia.<sup>2</sup>
- Malnutrition is the underlying cause of as many as 45% of child deaths in Uganda. Children who are malnourished are at greater risk of infections (such as diarrhoea and pneumonia), which in turn increases the risk of malnutrition. Malnourished children also have a greater risk of developing chronic diseases (such as diabetes and heart disease) in adulthood.<sup>3,4,6</sup>
- Low birth weight babies are four times more likely to die within the first month of life than other babies.<sup>2</sup>
- On average, Ugandan women give birth to six children, straining family resources. This is the highest fertility rate in eastern and southern Africa.<sup>1</sup>
- About 25% of births occur within 24 months of a previous birth, giving the mother little time to replenish her own body's nutrients.<sup>1</sup> Children conceived less than 24 months after the birth of the next older sibling have a greater risk of dying and becoming malnourished than children born farther apart.<sup>5</sup>
- Childbearing begins early in Uganda. Twenty-four percent of women age 15–19 are already mothers or pregnant with their first child. This has serious consequences because, relative to older mothers, adolescent girls are more likely to be malnourished and have a low birth weight baby who is more likely to become malnourished.<sup>1</sup>

Prevalence of Malnutrition in Uganda<sup>1</sup>



### Malnutrition is *preventable and treatable*.

The 1995 Uganda Constitution guarantees all people the right of access to basic health care services, as well as to food and nutrition security. Increasing and sustaining commitment and investment for nutrition now is crucial for the health and well-being of the Ugandan population in the decades to come.

#### If there is no change in nutrition by 2025<sup>6</sup>

**568,000**

lives of children under 5 will be lost related to **stunting**

almost **15,000**

mothers' lives will be lost related to **maternal anaemia**

**82.1** million

equivalent school years of learning will be lost related to **stunting**

**1.1 million**

children will be born with **irreversible brain damage** with a **decrease in IQ** related to **maternal iodine deficiency**

**272,000**

lives of children under 5 will be lost related to **wasting**

**221,000**

lives of children under 5 will be lost related to **vitamin A deficiency**

**363,000**

lives of children under 2 will be lost related to **poor breastfeeding practices**

- By investing in proven, effective nutrition interventions implemented at scale, hundreds of thousands of lives will be saved and improved by 2025.<sup>2</sup>
- Progress in nutrition would result in children staying in school longer and performing better in school. People with higher levels of education have better health outcomes than those with less education.<sup>1,4</sup>

## Scale-up of proven, effective, and quality nutrition services that range from prevention to treatment of malnutrition in Uganda is urgently needed.

- Improved nutrition will require:<sup>2,4</sup>
  - Strong political leadership, commitment at the highest levels, and adequate budget allocation to implement the Uganda Nutrition Action Plan (UNAP) and to ensure that nutrition is integrated into the programmes of relevant ministries and local governments.
  - Implementation of comprehensive nutrition services throughout the country and adequate institutional structures to scale up nutrition.
  - Implementation of family planning services throughout the country to promote smaller family size, adequate birth spacing (at least 2 years), and delayed marriage and first pregnancy until after the adolescent years.
  - Strong multi-sectoral coordination amongst relevant government ministries, along with local governments, the private sector, and civil society organisation partners.
  - Prioritisation and implementation of multi-sectoral interventions to improve nutrition.
  - Informing the public about malnutrition, its dangers, the benefits and access points of nutrition services.
- The health sector can support improved nutrition in Uganda by:
  - Committing and allocating additional funding for nutrition at all levels.
  - Integrating nutrition and family planning into departmental plans, sectoral strategic plans, and district development plans.
  - Strengthening intra- and inter-sectoral partnerships and coordination in design and implementation of nutrition programmes, including ensuring that nutrition is integrated into health sector programmes and formulating partnerships for implementation of the mandatory fortification regulation.

## Some Proven, Effective Interventions to Improve Nutrition

- Promotion of optimal breastfeeding
- Promotion of appropriate complementary feeding
- Improved hygienic practices
- Vitamin A supplementation
- De-worming
- Iron-folic acid and calcium supplements for pregnant and lactating women
- Family planning to promote smaller family size, increase birth spacing, and delay first pregnancy until after the adolescent years
- Promotion of good nutrition for adolescent girls and pregnant and lactating women
- Salt iodisation
- Industrial fortification and biofortification of staple foods
- Multiple micronutrient powders
- Prevention of chronic malnutrition\*
- Treatment of severe acute malnutrition\* with special foods, such as ready-to-use therapeutic foods

\* Multiple forms of malnutrition exist, but treating and preventing them require different approaches.

- Strengthening nutrition in the Uganda National Minimum Health Care Package, specifically for nutrition commodities and supplies.
- Ensuring that structures are in place to provide nutrition services at the facility level and in communities, including recruitment of nutritionists at the district/local level with adequate monitoring and supervision.
- Integrating nutrition in outreach services, including those focused on immunisations and prevention and treatment of malaria and HIV, to increase their use at the community level.
- Putting in place a monitoring and evaluation framework to track implementation of nutrition interventions at health facility, district, and sectoral levels to inform planning and decision making.
- Developing long-term systems for responding to malnutrition that include nutrition surveillance and integrating nutrition in pre-service training curriculum.



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# Working Together for the Future of Uganda

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## Media and Nutrition Fact Sheet

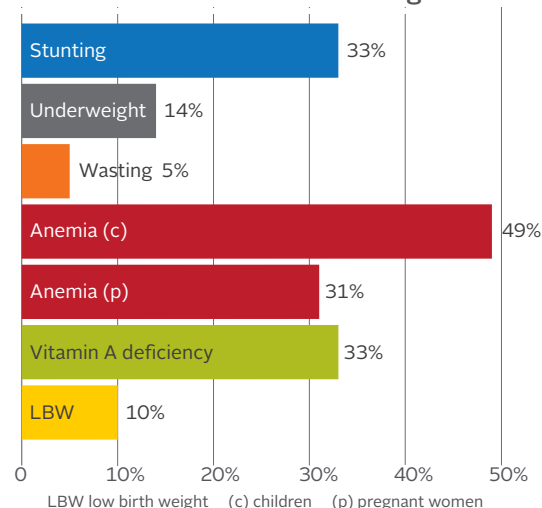
September 2014

**Today in Uganda, nearly 50% of children are malnourished. Despite continued investment by the Government of Uganda and donors, malnutrition remains a serious problem.** Malnutrition in Uganda can take many forms, including chronic malnutrition (stunting, or low height-for-age), underweight (low weight-for-age), acute malnutrition (wasting, or low weight-for-height), anaemia, vitamin A deficiency, iodine deficiency, and low birth weight (< 2.5 kg). Malnutrition in Uganda affects poor families disproportionately more than wealthy families: 37.3% of the poorest children are stunted. But even among wealthy families, 20.5% of children under the age of 5 are stunted.<sup>1</sup>

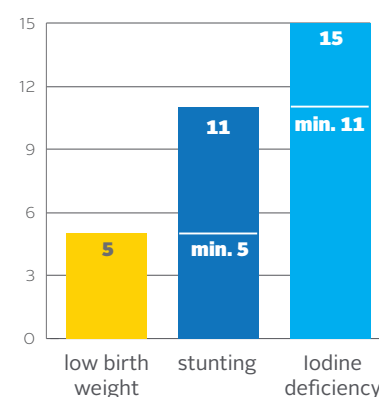
### Why does this matter?

- Malnutrition is the underlying cause of as many as 45% of child deaths in Uganda.<sup>2,3,4</sup>
- Malnourished children are more likely to have repeated illnesses and infections, which can result in a significant financial burden, especially for poor families.<sup>2,3</sup>
- Malnourished children have an increased risk of chronic diseases (such as diabetes and heart disease) in adulthood.<sup>2</sup>
- Malnutrition in childhood impairs physical growth and cognitive development, decreasing IQ points and undermining potential.<sup>2,3,4,5</sup>
  - In young childhood, malnourished children learn to sit, stand, and walk later than their well-nourished peers.
  - Malnourished children enrol in school later, miss more days of school due to illness, perform worse in school, and complete fewer years of schooling.
  - Because of this, malnourished children become adults who earn less compared to their well-nourished and better-educated peers.
- By 2025, with no additional investment or effort to prevent and treat malnutrition at the community level, the number of infant and child deaths will be approximately half a million.<sup>4</sup>
- If there is no improvement in nutrition, economic productivity losses for the country will be more than 19 trillion Ugandan Shillings (US\$7.7 billion) by 2025.<sup>4</sup>
- Uganda simply cannot afford not to act.

Prevalence of Malnutrition in Uganda<sup>1</sup>



IQ Points Lost to Malnutrition<sup>5</sup>



**But malnutrition is *preventable and treatable*. The children of Uganda can be free of all forms of malnutrition if we act now.**

- Investing in expanding comprehensive quality nutrition services to communities across the country could change this reality by significantly reducing the number of deaths of children under the age of 5 and improving school performance of children, leading to a better quality of life. For a country like Uganda, nutrition is a smart investment: For every US\$1 spent on nutrition, there is a US\$30 return in health and economic benefits.<sup>6</sup>
- Sustained intra- and inter-sectoral collaboration and coordination between the health directorates of the Ministry of Health, other ministries, development partners, United Nations bodies, and international non-governmental organisations is a precondition for expanding and sustaining quality nutrition service delivery at the community level across the country.
- There is a need to raise public awareness of malnutrition to increase the demand for quality nutrition services to be provided in communities.
- More importantly, there is a need to increase accountability for nutrition in Uganda.

**How can you, as members of the media, help?**

You decide what is news and what should be reported on. Reporting on the nutrition situation in Uganda is important and you can play a key role.

- Nutrition is an issue of personal interest to readers and viewers, and, as such, reporting on nutrition can expand readership and viewership to reach new audiences.
- The media can raise public awareness of the importance of nutrition in Uganda. Every family looks to their children as their future, and every parent wants her child to have the best start in life. Report on nutrition services and products that are available, why families should access them, and how.
- The media plays an important role as a voice for the public, and, in this role, the media can hold government and non-government institutions accountable for improving the nutrition situation of Uganda, promoting good governance for nutrition.
- Make nutrition a priority for reporting by including nutrition in your editorial policy, and give journalists opportunities to improve their capacity to report on nutrition issues.



This brief is made possible by the generous support of the American people through the support of the Office of Health, Infectious Diseases and Nutrition, Bureau for Global Health, U.S. Agency for International Development (USAID), and USAID/Uganda, under terms of Cooperative Agreement No. AID-OAA-A-12-00005, through the Food and Nutrition Technical Assistance III Project (FANTA), managed by FHI 360.



THE REPUBLIC OF UGANDA  
OFFICE OF THE PRIME MINISTER

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# Reducing Malnutrition in Uganda: Summary of Uganda PROFILES 2013 Estimates to Support Nutrition Advocacy

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This report is made possible by the generous support of the American people through the support of the U.S. Agency for International Development (USAID) Office of Health, Infectious Diseases, and Nutrition, Bureau for Global Health, and USAID/Uganda under terms of Cooperative Agreement No. AID-OAA-A-12-00005, through the Food and Nutrition Technical Assistance III Project (FANTA), managed by FHI 360.

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**September 2014**

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THE REPUBLIC OF UGANDA  
OFFICE OF THE PRIME MINISTER

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# Reducing Malnutrition in Uganda: Estimates to Support Nutrition Advocacy Uganda PROFILES 2013

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## Acronyms and Abbreviations

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COHA	Cost of Hunger in Africa
FANTA	Food and Nutrition Technical Assistance III Project
GDP	gross domestic product
IYCF	infant and young child feeding
MOES	Ministry of Education and Sports
NDP	National Development Plan
SUN	Scaling Up Nutrition
U.N.	United Nations
U.S.	United States
UBOS	Uganda Bureau of Statistics
UDHS	Uganda Demographic and Health Survey
UNAP	Uganda Nutrition Action Plan
USAID	U.S. Agency for International Development
VAD	vitamin A deficiency
WHA	World Health Assembly
WHO	World Health Organization

# 1. Introduction

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Today in Uganda, 33 percent of children under the age of 5 are stunted (too short for their age) and almost half (49 percent) suffer from anaemia, according to the 2011 Uganda Demographic and Health Survey (UDHS 2011). Stunting (or low height for age) decreased by 5 percentage points from 2006 to 2011 but, even with this progress, more than 2 million children in Uganda are stunted. However, with sustained effort and investment in nutrition, Uganda could be free of malnutrition in the near future. What will it take? What would be the benefits? What will be the consequences if nothing is done to improve nutrition? These are the questions that nutrition experts in Uganda and Washington, DC, sought to answer using PROFILES, an evidence-based nutrition advocacy tool.

First developed in the early 1990s, PROFILES consists of a set of computer-based models that calculate estimates of the benefits of improved nutrition on health and development outcomes and the consequences if malnutrition does not improve. To calculate estimates, PROFILES requires current country-specific nutrition data.

The PROFILES process was last completed in Uganda in 2010. Since then, new data have become available through the nationally representative UDHS implemented in 2011. The U.S. Agency for International Development (USAID)-funded Food and Nutrition Technical Assistance III Project (FANTA) was asked to provide updated PROFILES estimates for Uganda incorporating information from the UDHS 2011.

In Uganda, estimates (using the most recent DHS and other relevant sources) were calculated in terms of child and maternal mortality, economic productivity, disabilities, and human capital for the period 2013–2025. This report presents these PROFILES estimates to help move the nutrition advocacy agenda in Uganda forward.

## 2. Background

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### Why Invest in Nutrition, and Why Now?

Nutrition is one of the foundations of human health and development. Good nutrition plays an important role in people's health and well-being; conversely, poor nutrition can lead to anaemia, reduced immunity, and impaired physical and mental development (World Health Organization [WHO] 2014). In Uganda, malnutrition is one of the major causes of childhood illness and mortality (World Bank 2006). If malnutrition rates were reduced, Uganda would see significant improvements in the health, well-being, and productivity of its citizens.

Investing in nutrition is economically sound and has been identified as a 'best' investment (Copenhagen Consensus 2012) to save mothers' and children's lives and improve children's education outcomes, which, in turn, boost economic productivity. Every US\$1 spent on reducing malnutrition has at least a US\$30 return on investment (World Bank 2006; Copenhagen Consensus 2012). For Uganda, nutrition is an essential and cost-effective investment in its future.

### Nutrition Challenges to Address

Data from the UDHS 2011 indicate that 33 percent of all children under 5 years of age were chronically malnourished (stunted, or low height-for-age), 5 percent were acutely malnourished (wasted, or low weight-for-height), and 14 percent were underweight (or low weight-for-age) (Figure 1). From 1988/89 to 2011, stunting and underweight decreased by 15 and 6 percentage points, respectively (Figure 2). The current prevalence of stunting is considered to be of 'high' public health significance, while underweight is considered to be of 'medium' public health significance (WHO 1995).

Uganda faces numerous other nutrition issues. Thirty-three percent of children under 5 years of age in Uganda were vitamin A deficient, while 49 percent of children under 5, 31 percent of pregnant women, and 22 percent of non-pregnant women suffered from anaemia (UDHS 2011). Adolescent girls in Uganda were the most malnourished group among women of reproductive age, and 10 percent of all births in Uganda were low birth weight (UDHS 2011).

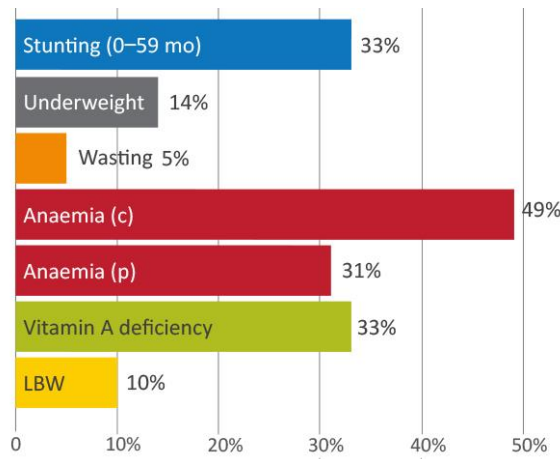
Suboptimal infant and young child feeding (IYCF) practices are common in Uganda: Although almost all children (98 percent) were breastfed at some point, only half were breastfed within an hour of birth and only 63 percent of children who were 0–5 months at the time of the UDHS were exclusively breastfed. By 4–5 months of age, the percent of exclusively breastfed children dropped to only 41 percent. In addition, among breastfed children 6–23 months, only 44 percent were fed the minimum number of times in the previous 24 hours (minimum meal frequency) and only 6 percent were given foods from four or more groups and fed the minimum times per day (minimum acceptable diet).

The causes of malnutrition in Uganda are manifold: Repeated infections (including acute respiratory infections, diarrhoea, and malaria) and suboptimal breastfeeding and IYCF practices that result in inadequate dietary intake are immediate causes of malnutrition, but underlying causes include lack of safe water, hygiene, and sanitation; food insecurity; high fertility; gender inequality; and poverty. Specifically, the high total fertility rate in Uganda (6.2 births per woman) is a significant risk factor for childhood malnutrition. Fifty-eight percent of adolescent girls have given



birth or are pregnant by age 19, and the birth intervals for adolescent girls is also shorter (median 26 months) compared to their older peers. High parity is not only a biological risk for every subsequent birth, but it also results in young mothers having very little time and resources to provide children under the age of 2 with optimum care and feeding, which often results in stunting. As such, malnutrition in Uganda is a complex problem that persists due to multiple causes rooted in various sectors. Therefore, in addition to nutrition-specific interventions, multi-sectoral nutrition-sensitive interventions are also essential to reduce and eradicate malnutrition in Uganda.

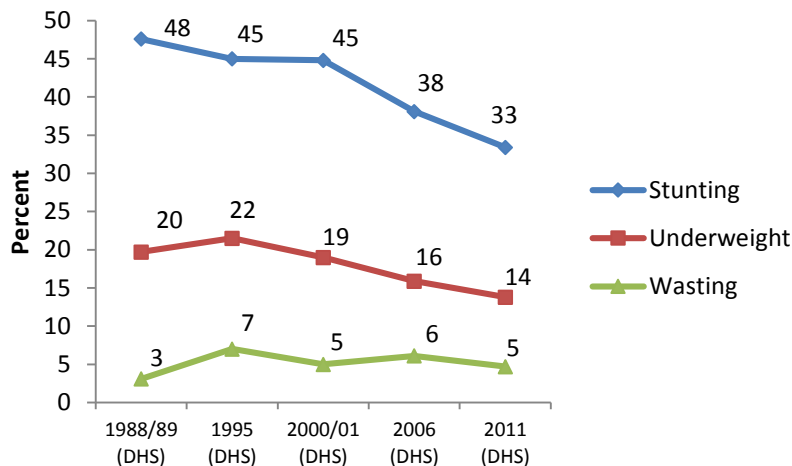
**Figure 1. Malnutrition Rates in Uganda**



c = under-5 children; p = pregnant women; LBW = low birth weight

Source: UDHS 2011 and UDHS 2011 Vitamin A Addendum

**Figure 2. Trends in Malnutrition in Uganda**



Note: For comparison purposes, the 1988/89, 1995, and 2000/01 anthropometric indicators were based on the 2006 WHO standards, to match the indicators from the 2006 and 2011 surveys. The values in the graph indicate percentage of children with z-scores < -2.

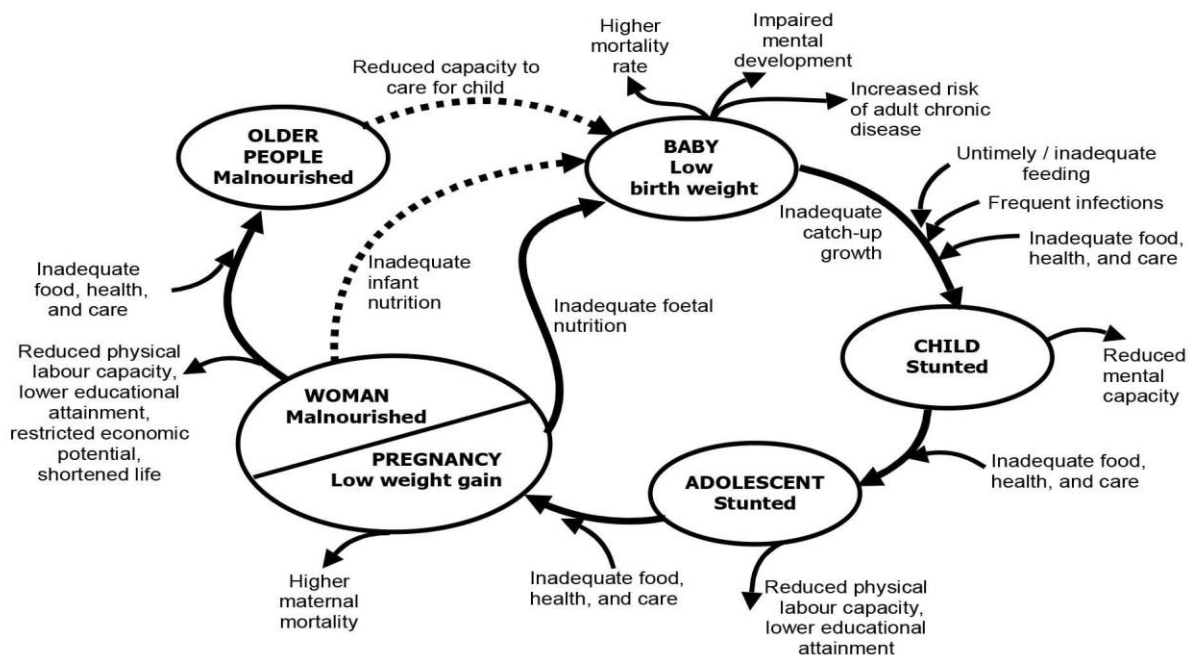
Source: UDHS 1988/89, UDHS 1995, and UDHS 2000/01, with additional analysis from the WHO Global Database on Child Growth and Malnutrition [http://www.who.int/nutgrowthdb/database/countries/who\\_standards/uga\\_dat.pdf?ua=1](http://www.who.int/nutgrowthdb/database/countries/who_standards/uga_dat.pdf?ua=1); UDHS 2006; UDHS 2011.

### What Are the Consequences of Malnutrition?

Malnutrition in Uganda has several adverse consequences. Malnourished children are more frequently ill, have delayed cognitive development, are at increased risk of death, and are likely to complete fewer years of schooling, which subsequently results in lower economic productivity.

It is well established that preventing malnutrition among children under 2 years of age should be the focus of nutrition interventions, and this is a main focus of the Uganda Nutrition Action Plan 2011-2016 (UNAP 2011-2016) which seeks to reduce levels of malnutrition among women of reproductive age, infants, and young children through 2016 and the Scaling Up Nutrition (SUN) movement (Scaling Up Nutrition Road Map Task Team 2010), of which Uganda is a member. Global evidence increasingly suggests that there are four critical points in an individual’s life during which malnutrition has the most significant consequences: under 2 years of age; under 5 years of age, when affected by acute malnutrition; adolescence; and during pregnancy and the postpartum period.

**Figure 3. Lifecycle of Malnutrition**



Source: Administrative Committee on Coordination/Subcommittee on Nutrition (ACC/SCN). 2000.

### 3. Methods

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PROFILES is an evidence-based tool that was developed for the purpose of nutrition advocacy. First developed in the early 1990s, it consists of a set of computer-based models that calculate estimates of the benefits of improved nutrition on health and development outcomes, as well as the economic and health consequences if nutrition does not improve. To calculate estimates, PROFILES requires current country-specific nutrition data.

This section presents the methods that were used to derive the estimates for Uganda in relation to each of the nutrition problems addressed by PROFILES in the country. The basic approach in PROFILES is to provide two scenarios: a ‘status quo’ scenario and an ‘improved’ scenario. The status quo scenario assumes there will be no change from the current nutrition situation throughout the chosen time period (the number of years for which estimates are calculated), aside from projected changes in population size. In contrast, in the improved scenario—with results estimated for the same time period—it is assumed that nutrition interventions that are known to be effective are implemented at scale and succeed in reaching the stated targets in terms of reductions in the prevalence of the various nutrition problems.

The targets reflect the proportion by which nutrition problems will be reduced over the chosen time period and were determined and agreed upon by Uganda- and U.S.-based nutrition experts in FANTA in November 2013. In the status quo scenario, the negative consequences are expressed, for example, in terms of lives lost, disabilities, human capital lost, and economic productivity lost. When contrasting the results between the status quo and the improved scenarios, the differences reflect the benefits of improved nutrition, expressed as lives saved, disabilities averted, human capital gained, and economic productivity gained (or, put another way, economic productivity losses averted). This is illustrated for child deaths (and lives saved) related to stunting in Figures 4a, 4b, and 4c.

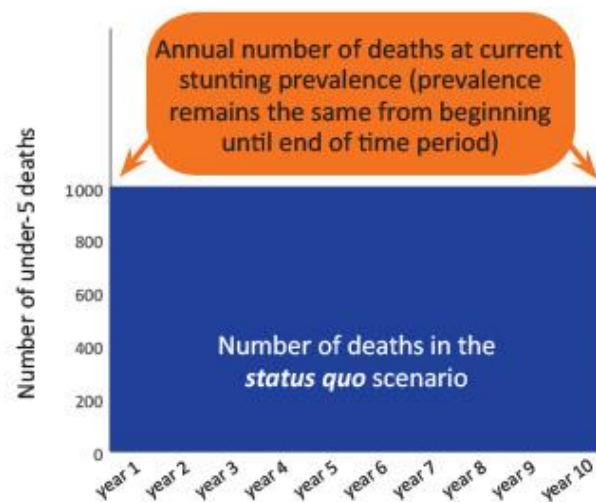
The PROFILES spreadsheet models do not include interventions; however, the assumption is that effective interventions would not be implemented at scale from Day 1, but rather would be implemented gradually over the selected time period, and that, hence, improvement in the nutrition indicators and consequently lives saved would be gradual. For this reason, the estimates of lives saved or economic productivity gains is smaller than the total number of lives lost or economic productivity lost over the chosen time period. For example, the graphs in Figure 4 show that, despite the decrease in the prevalence of stunting with the improved scenario, at the end of the 10-year time period, the number of lives lost is still greater than the number lives saved because it is assumed that the decrease in the prevalence of stunting will be gradual and therefore reductions in child mortality attributable to stunting will be gradual, and as such the gains in lives saved will also be gradual. This same basic approach is used in all the modules in PROFILES. Although nutrition interventions were not included in the PROFILES models, the subsequent steps in the nutrition advocacy process can address the need for various nutrition services, interventions, programs, or issues related to the nutrition policy environment.

**Figure 4. Status Quo Scenario vs. Improved Scenario: Illustrative Example of Number of Lives Saved (or Deaths Averted) Related to Stunting for Children under 5 Years**

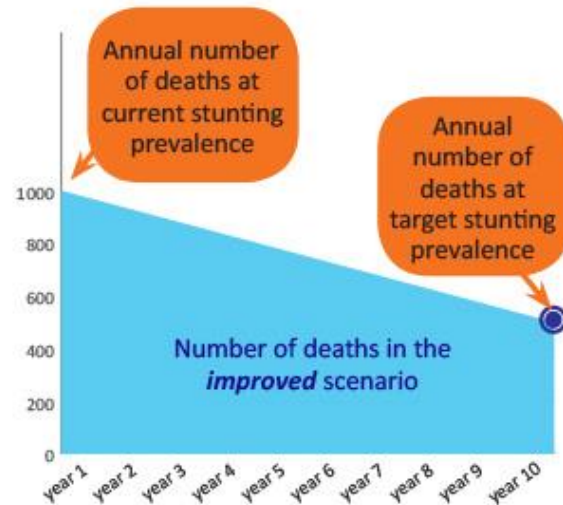
**Approach used in PROFILES to calculate estimates of lives saved (or deaths averted) and economic productivity gains (or economic productivity losses averted) related to various nutrition indicators**

Figures 4a–c provide an illustrative example of the approach used in PROFILES to calculate estimates. **(Information shown in these graphs is not from Uganda PROFILES 2013.)** The example is for stunting. The graphs show how the status quo scenario (Figure 4a) vs. the improved scenario (Figure 4b) is used to provide estimates of lives saved (or deaths averted) related to stunting among children under 5 years during a 10-year period. Figure 4c shows the number of lives saved, calculated by subtracting the number of deaths in the improved scenario from the number of deaths in the status quo scenario. A comparable approach is used in PROFILES to estimate the number of lives saved (or deaths averted) related to other nutrition indicators and to estimate economic productivity gains (or economic productivity losses averted) related to selected nutrition indicators.

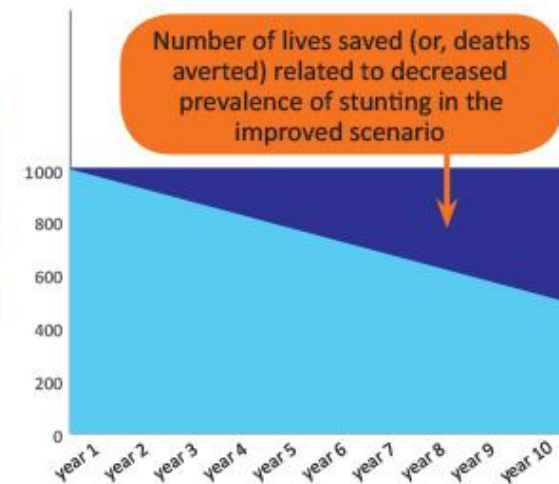
**Figure 4a. Status quo scenario (illustrative example)**



**Figure 4b. Improved scenario (illustrative example)**



**Figure 4c. Improved scenario superimposed on status quo scenario (illustrative example)**

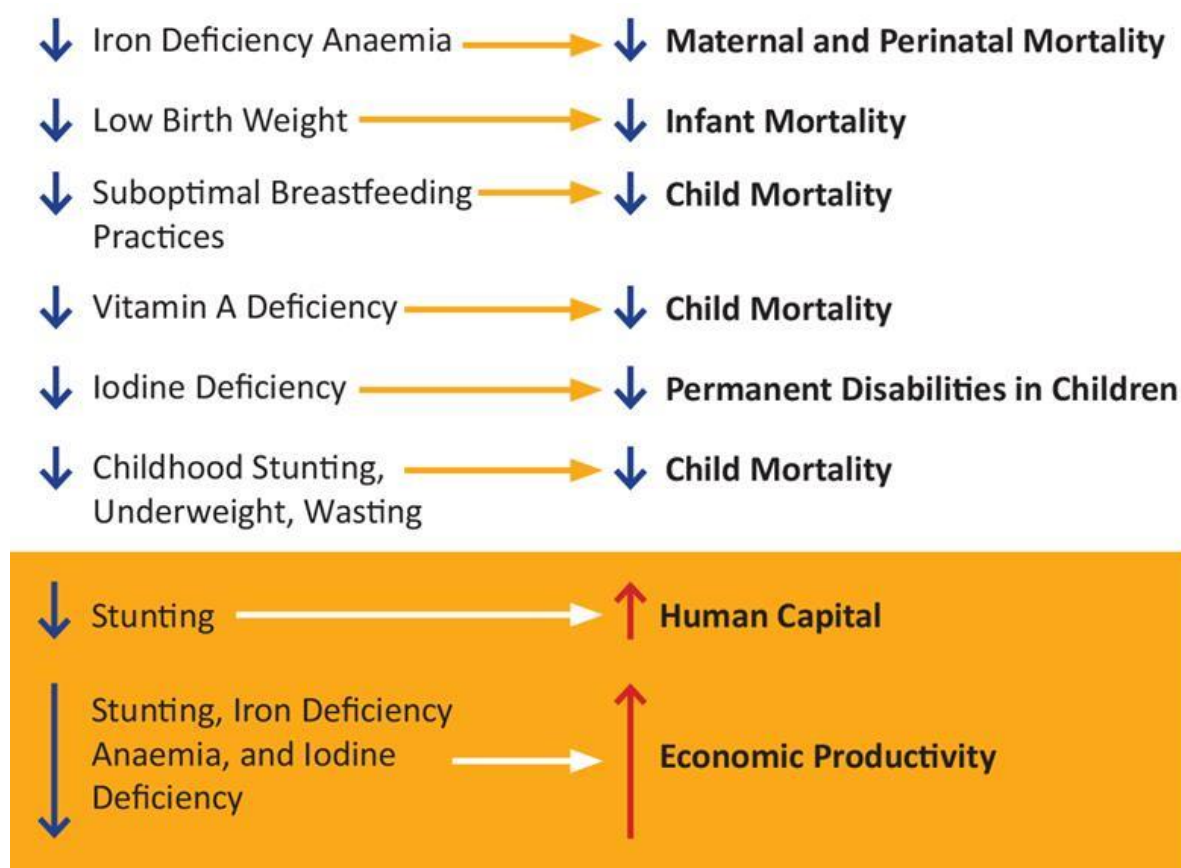


## Nutrition Problems and Consequences Addressed in Uganda PROFILES 2013

Uganda PROFILES 2013 calculates estimates of reductions in mortality and permanent disabilities and gains in human capital and economic productivity that can result from reductions in the prevalence of several nutrition indicators, namely, iron deficiency anaemia; low birth weight; suboptimal breastfeeding practices; vitamin A deficiency (VAD); iodine deficiency; and childhood stunting, underweight, and wasting. Uganda PROFILES 2013 estimates of human capital losses attributed to stunting are related to poor cognitive development that results in lost learning over time. Estimates of economic productivity losses attributed to stunting and iodine deficiency are related to poor cognitive development, which affects school performance and, later in life, earning potential. Economic productivity losses related to iron deficiency anaemia among adults is a reflection of decreased capacity to do manual labour. The estimates PROFILES calculates from these nutrition indicators on health, human capital, and economic outcomes are based on impacts demonstrated and established in the scientific literature. For example, stunting, underweight, and wasting are leading causes of child mortality.

Figure 5 shows the nutrition indicators for which PROFILES calculates estimates. For each nutrition indicator listed that is assumed to improve, PROFILES calculates an estimate of a corresponding improvement in a specific health, human capital, or economic outcome in terms of lives saved, human capital gained, or economic productivity gained, respectively.

**Figure 5. Nutrition Problems and Consequences Addressed in Uganda PROFILES 2013**



## Data Sources for PROFILES and Prevalence of Nutrition Problems

To quantify the magnitude of the negative consequences of nutrition problems, PROFILES needs prevalence data for each of the nutrition indicators. For the anthropometry indicators (stunting, wasting, and underweight), the risk of mortality differs by the degree of severity. Discussion among the PROFILES team identified recent data sources to be used in the Uganda PROFILES 2013 (Table 1) and the prevalence of each of the nutrition indicators in the status quo scenario (Tables 2 and 3).

The main data sources used in Uganda PROFILES 2013 are summarized below in Table 1, and further details are provided in Tables 2 and 3 for the nutrition-related indicators (anthropometry, low birth weight, breastfeeding practices, VAD, anaemia, and iodine deficiency).

**Table 1. Indicators and Data Sources for Uganda PROFILES 2013**

Indicator	Source (Year)
<b><i>Nutrition Indicators</i></b>	
Anthropometry (stunting, wasting, underweight) among under-5 children	Uganda DHS (2011)
Low birth weight	Uganda DHS (2011)
Breastfeeding practices	Uganda DHS (2011)
Vitamin A deficiency	Uganda DHS (2011) – Addendum to Chapter 11
Anaemia	Uganda DHS (2011)
Iodine deficiency (goitre)	Bimenya, G.S. et al. 2002.
<b><i>Mortality and Economic Indicators</i></b>	
Education information	Republic of Uganda MOES (2008); Uganda National Commission for UNIESCO (2012)
Employment information	2013 Statistical Abstract (UBOS 2013); Labour Market Situation Report (UBOS, 2006)
Maternal mortality ratio	Uganda DHS (2011)
Mortality in the first 5 years of life	Uganda DHS (2011)

**Table 2. Estimating Reductions in Mortality and Disability Using Uganda PROFILES 2013**

Nutrition problem	Rationale/assumptions	Data sources	Current prevalence (used for status quo scenario) (%)	Targeted reduction in prevalence by 2025 (status quo prevalence will be reduced by this proportion)*	Target prevalence [2025] (%)
Stunting, underweight, and wasting among children 0–59 months associated with under-5 child mortality	<p>PROFILES was updated and expanded in 2008 and calculates mortality estimates for each anthropometric indicator (stunting, underweight, and wasting) by degree of severity. In 2013, the odds ratios were further updated due to new information from Olofin et al. (2013) as cited in Black et al. (2013). These new odds ratios of mortality for each grade of malnutrition related to: stunting (mild 1.5, moderate 2.3, severe 5.5); underweight (mild 1.5, moderate 2.6, severe 9.4); and wasting (mild 1.6, moderate 3.4, severe 11.6).</p> <p>PROFILES uses this information to calculate the population-attributable fraction and the number of deaths (among children 6–59 months) related to each of the three indicators of growth deficit by severity category. Because many children with malnutrition can have more than one form of malnutrition at any given time (e.g., concurrent stunting and wasting or concurrent underweight and wasting), deaths related to each of these indicators cannot be totalled, because some children will be included in more than one indicator of malnutrition/ growth deficit.</p>	<p>Percentages of children in the severe and moderate categories are based on the UDHS 2011.</p> <p>Percentages of children in the mild category are from analysis of the data file from the UDHS 2011.</p>	<p>Stunting: Mild 28.4 Moderate 19.7 Severe 13.7</p> <p>In summary (moderate + severe): 33.4</p>	<p>Stunting: Mild 0.40 Moderate 0.40 Severe 0.40</p> <p>In summary (moderate + severe): 0.40</p>	<p>Stunting: Mild 17.0 Moderate 11.8 Severe 8.2</p> <p>In summary (moderate + severe): 20.0</p>
			<p>Underweight: Mild 28.3 Moderate 10.4 Severe 3.4</p> <p>In summary (moderate + severe): 13.8</p>	<p>Underweight: Mild 0.40 Moderate 0.40 Severe 0.40</p> <p>In summary (moderate + severe): 0.40</p>	<p>Underweight: Mild 17.0 Moderate 6.2 Severe 2.0</p> <p>In summary (moderate + severe): 8.2</p>
			<p>Wasting: Mild 13.9 Moderate 3.2 Severe 1.5</p> <p>In summary (moderate + severe): 4.7</p>	<p>Wasting: Mild 0.05 Moderate 0.20 Severe 0.40</p>	<p>Wasting: Mild 13.2 Moderate 2.6 Severe 0.9</p> <p>In summary (moderate + severe): 3.5</p>
<p>Anaemia during pregnancy related to maternal and perinatal mortality</p> <p>Pregnant women with anaemia (Hb &lt; 11) (%)</p>	<p>Anaemia during pregnancy is an important contributor to maternal mortality, including through an increased risk of death from postpartum haemorrhage. Anaemia during pregnancy also contributes to perinatal mortality, e.g., through increasing the risk of preterm delivery. The PROFILES spreadsheets calculate the contribution of iron-deficiency anaemia to maternal and perinatal deaths based on the work by Stoltzfus et al. (2004), with updated information on the relative risk of maternal death from Black et al. (2013), presuming that 50% of anaemia is due to iron deficiency (an assumption that was also made by Stoltzfus et al.).</p>	UDHS 2011	30.6	0.45	16.8
<p>VAD associated with child mortality</p> <p>Children 6–59 months with VAD (including subclinical) (%)</p>	<p>Vitamin A-deficient children are at risk of blindness resulting from xerophthalmia and corneal ulceration. They also have a higher risk of dying (e.g., from diarrhoea and measles). The PROFILES model that estimates child deaths attributable to VAD uses coefficients from Ross (2008).</p>	UDHS 2011 – Addendum to Chapter 11	32.6	0.60	13.0

Nutrition problem	Rationale/assumptions	Data sources	Current prevalence (used for status quo scenario) (%)	Targeted reduction in prevalence by 2025 (status quo prevalence will be reduced by this proportion)*	Target prevalence [2025] (%)
Low birth weight related to mortality  New-born infants with low birth weight (%)	Low birth weight, defined as a weight of < 2,500 g at birth, can be caused by preterm birth and/or intrauterine growth retardation. Using information from literature on increased risk of neonatal or post-Neonatal mortality among infants with a low birth rate (Alderman and Behrman 2004; Ashworth 1998) and country-specific low birth weight rates and mortality rates, PROFILES calculates the population-attributable fraction and excess number of deaths related to low birth weight.	UDHS 2011	10.2	0.30	7.1
Suboptimal breastfeeding (BF) practices related to infant mortality	Suboptimal BF practices (none, partial, or predominant BF when children are 0–5 months, and no BF among children 6–23 months) are an important contributor to infant and young child mortality due to an increased risk of infection. Using information from literature on increased risk of infant mortality due to suboptimal BF by Lamberti et al. (2011) and Black et al. (2008) and country-specific BF information, PROFILES calculates the population-attributable fraction and the excess number of deaths (among children 0–5 months and 6–23 months) related to suboptimal BF. PROFILES uses the following Relative Risks (RRs): <ul style="list-style-type: none"> <li>• RR all-cause mortality, predominant BF vs exclusive BF (0–5 months): 1.48</li> <li>• RR all-cause mortality, partial BF vs. exclusive BF (0–5 months): 2.85</li> <li>• RR all-cause mortality, no BF vs. exclusive BF (0–5 months): 14.4</li> <li>• RR all-cause mortality, no BF vs. partial BF (6–23 months): 3.68</li> </ul>	UDHS 2011	Breastfeeding practices <sup>1</sup> : Exclusive BF 0–5 mo. 63.2 Predominant BF 0–5 mo. 9.4 Partial BF 0–5 mo. 24.9 No BF 0–5 mo. 2.5 Any BF 6–23 mo. 77.7 No BF 6–23 mo. 22.3	Breastfeeding practices <sup>**</sup> : Exclusive BF 0–5 mo. 90.0 Predominant BF 0–5 mo. 5.0 Partial BF 0–5 mo. 2.5 No BF 0–5 mo. 2.5 Any BF 6–23 mo. 95.0 No BF 6–23 mo. 5.0	
Iodine deficiency associated with brain damage and disability as a result of deficiency in utero  Population with goitre (%)	Iodine deficiency is the main cause of preventable brain damage worldwide. Iodine deficiency among pregnant women and during the first few months of infancy leads to irreversible brain damage of various degrees of severity in the infant.	Monitoring the severity of iodine deficiency in Uganda. Bimenya, G.S. et al. 2002. (was used in Uganda PROFILES 2010, newer information was not available)	5.0	0.40	3.0

\* Proportion reduction applied to current prevalence.

\*\* Breastfeeding targets included both setting targets to increase optimal breastfeeding practices (exclusive breastfeeding 0–5 months and some breastfeeding 6–23 months) and reduce suboptimal breastfeeding practices (predominant, partial, or no breastfeeding for 0–5 months and no breastfeeding for 6–23 months);

<sup>1</sup> ‘Predominant breastfeeding’ refers to infants 0–5 months of age who received breast milk as the predominant source of nourishment during the previous day. Predominant breastfeeding ‘allows’ oral rehydration salts, vitamin and/or mineral supplements, ritual fluids, water and water-based drinks, and fruit juice. Other liquids, including non-human milks and food-based fluids, are not allowed, and no semi-solid or solid foods are allowed (WHO. 2010; [http://www.unicef.org/nutrition/files/IYCF\\_Indicators\\_part\\_III\\_country\\_profiles.pdf](http://www.unicef.org/nutrition/files/IYCF_Indicators_part_III_country_profiles.pdf)). ‘Partial breastfeeding’ refers to a situation where the baby is receiving some breast feeds, but is also being given other food or food-based fluids, such as formula milk or weaning foods.



Table 3. Estimating Losses and Gains in Economic Productivity Using Uganda PROFILES 2013

Nutrition problem	Rationale/assumptions	Data sources	Current prevalence (used for status quo scenario) (%)	Targeted reduction in prevalence by 2025*	Target Prevalence [2025] (%)
Stunting related to future productivity  Stunting among children 24–35 months	Growth deficit early in life is related to productivity loss in adulthood. PROFILES estimates the impact of growth deficit in children on future labour productivity based on the facts that stunting developed during the first 2 years of life is generally maintained throughout life and that the productivity of adults is related to their stature. Reduced adult stature due to stunting is a proxy indicator for various nutritional and other insults that can affect physical and mental development (the issue is not short stature per se). Using coefficients based on published scientific literature, PROFILES estimates reduced adult productivity related to both decreased physical capacity and reduced intellectual ability (affecting school achievement). The calculations use the 'economic activity rate' (the population actually working, as well as those eligible to work, including those categorized as unemployed), discounting future wages at 3% per year, and adjusts for normal mortality. The lifetime discount factor is the sum of all the adjusted annual discounted years from 15 through 64 years of age. The lifetime discount factor is used to calculate the present day value of future economic productivity losses related to childhood stunting, based on the proportion of children 24–35 months old that were classified as stunted. The percentage of children classified as having severe, moderate, and mild stunting are considered, after subtracting the proportion of children expected in each of these categories (according to reference population values).	Percentages of children in the severe and moderate categories are based on the UDHS (2011). Percentage of children in the mild category is from analysis of the data file from the UDHS (2011).	Stunting (24–35 months):  Mild 30.2 Moderate 24.0 Severe 18.7  In summary (moderate + severe): 42.7	Stunting (24–35 months):  Mild 0.40 Moderate 0.40 Severe 0.40  In summary (moderate + severe): 0.40	Stunting (24–35 months):  Mild 18.1 Moderate 14.4 Severe 11.2  In summary (moderate + severe): 25.6
Anaemia among men and women related to productivity losses  Non-pregnant women 15–49 years with anaemia (Hb < 12) (%)	Anaemia among the working-age adult population contributes to reduced productivity for those engaged in physical labour, especially heavy physical labour. The PROFILES model uses the coefficients developed by Ross and Horton (1998) for the effects of iron-deficiency anaemia on reduced capacity to carry out any type of physical labour and heavy physical labour.	UDHS (2011) included anaemia information for two categories of non-pregnant women: lactating and non-lactating.  The Uganda PROFILES team calculated a weighted average to arrive at the anaemia prevalence for all non-pregnant women.  The UDHS 2011 did not include anaemia information for men.	22.1  Data not available	0.45  NA	12.2  NA
Intrauterine iodine deficiency related to future productivity losses  Population with goitre (%)	PROFILES uses information from published literature (including the finding of a community-wide average reduction of 13.5 IQ points in iodine-deficient environments) for the coefficients used to estimate the negative impact of intrauterine iodine deficiency (as reflected in the goitre rate in a population) on future economic productivity. To estimate the future economic productivity losses among children born to iodine-deficient mothers, PROFILES discounts the children's future wages at 3% per year, after adjusting for normal mortality at each year of life (as described for productivity losses related to childhood stunting).	Monitoring the severity of iodine deficiency in Uganda. Bimenya G.S. et al. 2002.	5.0	0.40	3.0

\* Proportion reduction applied to current prevalence.

**Table 4. Estimating Losses and Gains in Learning Ability Using Uganda PROFILES 2013**

Nutrition problem	Rationale/assumptions	Data sources	Current prevalence (used for status quo scenario) (%)	Targeted reduction in prevalence by 2025*	Target Prevalence [2025] (%)
Stunting related to future learning ability  Stunting among children 24–35 months  Primary education: Age at school entry  Number years of school	Several studies have established an association between the early insult of stunting in young children that leads to poorer cognitive development and results in poorer school performance (Grantham-McGregor 2007; Glewwe 2001). Studies show that stunted children perform less well in math and reading tests relative to their peers who were well nourished in childhood. Poor performance on standardized educational tests as a result of poor cognitive development reflects a loss of learning potential that over time also affects actual learning. PROFILES uses 0.8 grade equivalents lost per school year per 1 SD reduction in the height-for-age z-score.  The age at school entry in Uganda is 6 years; it was assumed that the average age at school entry is 6.5 years. There are 7 years of primary school.	Percentages of children in the severe and moderate categories are based on the UDHS (2011)  Rep. of Uganda MOES (2008); Uganda Nat. Commission for UNIESCO (2012)	Stunting (24–35 months):  Moderate 24.0 Severe 18.7  In summary (moderate + severe): 42.7	Stunting (24–35 months):  Moderate 0.40 Severe 0.40  In summary (moderate + severe): 0.40	Stunting (24–35 months):  Moderate 14.4 Severe 11.2  In summary (moderate + severe): 25.6

\* Proportion reduction applied to current prevalence.

The UDHS 2011 provided the input information for anthropometry, low birth weight, breastfeeding practices, and anaemia among women. The anthropometry indicators in Table 2 present information used by the PROFILES spreadsheet models. For each of the three measures of malnutrition - stunting, wasting, and underweight—PROFILES uses the percentage of children with mild (z-scores from  $-2$  to  $< -1$ ), moderate (z-scores from  $-3$  to  $< -2$ ), and severe (z-scores  $< -3$ ) malnutrition. Although there have been some improvements since the 2006 survey, stunting levels are still high (33.4 percent) among children under 5 years of age, and 4.7 percent are wasted. Among new-born babies with a reported birth weight (based on the mother's recall or a written record available at the household level), 10.2 percent weighed less than 2.5 kg and were categorized as having low birth weight. Only 63 percent of children 0–5 months of age at the time of the survey were exclusively breastfed. The PROFILES team used information from the UDHS 2011 to calculate the anaemia prevalence for non-pregnant women. Using the information for lactating women (who were not pregnant) and women who were neither lactating nor pregnant, the team calculated a weighted average to arrive at the anaemia prevalence for both of these groups together (i.e., all non-pregnant women). Anaemia was found among 30.6 percent of pregnant women and 22.1 percent of non-pregnant women. Last, an additional DHS report—an addendum to Chapter 11 of the UDHS 2011—provided information on VAD. VAD (including subclinical deficiency) was found among 32.6 percent of children under 5 years of age.

There was no recent national-level information available for the total goitre rate. The measure of iodine deficiency in the previous Uganda PROFILES in 2010 was again used for the Uganda PROFILES 2013, that is, a goitre prevalence of 5.0 percent (Bimenya 2002).

### **Assumptions Related to Setting Targets for Reduction of Malnutrition**

The estimates that PROFILES calculates are based on several assumptions. In the PROFILES spreadsheets, it is assumed that, in the status quo scenario, the prevalence of various forms of malnutrition do not improve but rather remain unchanged, and consequently there is no improvement in health, human capital, and economic outcomes. This is reflected as lives lost, disabilities, human capital lost, and economic productivity lost. In contrast, in the improved scenario, it is assumed that the prevalences of the different forms of malnutrition are reduced and, for each of these indicators, there is a corresponding improvement in specific health and economic productivity outcomes. To calculate the estimates in the improved scenario, there is a need to set targets for the reduction of the various forms of malnutrition, and the amount by which each form of malnutrition is to be reduced was discussed and agreed upon by the Uganda and Washington, DC, PROFILES team. In setting the targets for the reduction of malnutrition by the end of the time period (2025), participants assumed that evidence-based, effective nutrition interventions would be implemented at scale and would succeed in reaching the targets decided on by the workshop participants by the year 2025.

Therefore, the question raised by Uganda PROFILES 2013 was: By 2025, by how much do we assume that selected nutrition indicators will improve? The 2025 targets for reduction in the prevalences of various nutrition indicators were discussed and agreed upon by the PROFILES team after consulting the Uganda 2040 Vision Statement, the World Health Assembly (WHA) targets, the Health Sector Development Plan, and the UNAP 2011–2016. The PROFILES team agreed that the targets for improvements in nutrition indicators should be realistic, and that they should not only spur greater investment in nutrition but also foster hope for a Uganda free of malnutrition. Based on this vision, team members assumed that, if the necessary investments are

made and evidence-based nutrition interventions are implemented and scaled up over the 13-year time period, the targets set for the reduction in the prevalences of the various nutrition indicators that were agreed to could be achieved.

### Time Period and Targets

As noted previously, the PROFILES team decided on a 13-year time period, 2013 through 2025, to be used for PROFILES. This time period was deemed appropriate, as it is about halfway to the Uganda Vision 2040, and was determined to be long enough for measurable change to occur.

In the improved scenario, a linear reduction (or increase in the case of exclusive breastfeeding) in prevalence levels is assumed, that is, the malnutrition prevalence levels in the spreadsheet models gradually improve from the status quo prevalence levels in 2013 to the 2025 targets.

To arrive at the 2025 target for each of the nutrition indicators, the PROFILES team kept various considerations in mind. Information was sought on whether targets had been stated in official government documents that could inform the targets for the time period selected for PROFILES (e.g., Uganda Vision 2040, the Uganda Health Sector Development Plan, and UNAP 2011–2016). Although Uganda Vision 2040 did not have specific nutrition targets, it did express the desire to improve the nutrition status of the population, especially women and children, which helped set the tone for optimistic estimates. Targets from the 2012 WHA and the UNAP 2011–2016 were considered, and the WHO's Nutrition Landscape Information System provided insights on various prevalence cut-off values and the extent to which malnutrition was of public health significance.

Tables 2 and 3 include the target prevalences for the improved scenario, that is, the prevalences at the end of the chosen time period. These tables also show the proportion to be applied to the status quo prevalence. The PROFILES team also considered trend information for the indicators for which it was available, as well as factors related to potential improvement in interventions.

For the anthropometric indicators (stunting, underweight, and wasting), Tables 2 and 3 show the information separately for the mild, moderate, and severe categories. Summary information for the moderate and severe categories combined is also shown.

For stunting (moderate and severe) among children under 5 years of age, a decrease of 0.40 of the status quo percentage was agreed upon (which is in line with WHA targets); the status quo prevalence of 33.4 would be reduced to 20.0 percent by 2025 in the improved scenario. Stunting among children 24–35 months was also reduced by the same proportion (0.40) from a status quo prevalence of 42.7 percent to a target prevalence of 25.6 percent (this is used to calculate increased economic productivity due to reductions in stunting). For underweight (moderate and severe), the status quo prevalence of 13.8 percent is to be reduced by 0.40 to a target prevalence of 8.3 percent. For wasting (moderate and severe) among children under 5 years of age, the status quo prevalence was 4.7 percent and a target was set at 3.5 percent (moderate and severe). A reduction by 0.45 was agreed upon for anaemia during pregnancy, reducing anaemia in pregnant women from 30.6 percent to 16.8 percent. A reduction by 0.60 was agreed upon for the prevalence of VAD among children 6–59 months, from 32.6 percent in the status quo scenario to a target prevalence of 13.0 percent by 2025. Although the UNAP 2011–2016 set that target for 2016, it was clear that Uganda would not reach that goal by then, but the PROFILES team felt that it was a realistic goal given additional time. A 0.40 reduction was agreed upon by the PROFILES team to reduce a 5.0 percent goitre rate in the status quo scenario to 3.0 percent by 2025 in the improved scenario. The team

felt that with high levels of salt iodization this was a reasonable goal. For low birth weight, a reduction by 0.30 was agreed on (in line WHA targets); with a status quo prevalence of 10.2 percent, the target prevalence for the improved scenario was 7.1 percent. Last, for breastfeeding practices, the PROFILES team agreed on setting a target of improving exclusive breastfeeding among children 0–5 months of age to 90 percent from the 63.2 percent in the status quo scenario. In addition, the team agreed to an increase of ‘any breastfeeding’ among children 6–23 months from 77.7 percent in the status quo scenario to 95.0 percent by 2025 in the improved scenario.

## Demographic and Employment Information

PROFILES requires demographic information with projections into future years that correspond to the time period used in the projections (for Uganda, 2013–2025). Selected information was obtained from the United Nations Population Prospects 2012 online database (United Nations 2012a; United Nations 2012b) and used in conjunction with the estimated total population for 2013 of 35.4 million (Uganda Bureau of Statistics [UBOS] 2013) and a PROFILES calculator tool to obtain the various demographic estimates required by PROFILES for each year.

Necessary employment information included the economic activity rate (the percentage of the working-age population actually working or available for employment, including those who were unemployed), the percentage of working-age persons who did manual labour, the percentage of working-age males who did manual labour, and the percentage of working-age females who did manual labour. Information from the UBOS 2013 Statistical Abstract and the 2006 Labour Market Situation Report (UBOS 2013; UBOS 2006) was used to obtain employment information.

The UDHS 2011 was the source of information on the perinatal mortality rate (40 per 1,000 births), neonatal mortality rate (27 per 1,000 live births), infant mortality rate (54 per 1,000 live births), and under-5 mortality rate (90 per 1,000 live births). The maternal mortality ratio (438 per 100,000 live births) was also from the UDHS 2011.

## 4. Results

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The results from Uganda PROFILES 2013 are presented in Tables 5–7 and Figures 6–8. Figure 6 shows that if stunting levels remain unchanged from 2013 through 2025, the number of deaths related to stunting in children under 5 (567,621) can be expected to actually increase because of the high fertility rate and a resulting increase in the number of under-5 children. However, Table 5 and Figure 7 show that if high coverage of effective nutrition interventions are implemented and succeed in reducing stunting levels to the proposed targets, 118,652 children’s lives could be saved from stunting-related deaths over the time period (2013–2025). Table 5 shows that in the status quo, with no change in the prevalence of wasting, the number of deaths related to wasting would be 272,712. However, if targeted reductions in the prevalence of wasting are reached by 2025, 37,116 children’s lives could be saved from wasting-related deaths.

Table 5 and Figure 8 show that in the status quo scenario, with no change in the prevalence of maternal iron-deficiency anaemia, there would be 14,679 maternal deaths related to pregnancy and childbirth and 70,922 perinatal deaths. Table 5 and Figure 9 show that reaching targeted reductions in prevalence of maternal iron-deficiency anaemia by 2025 could save 6,640 women’s lives and avert 19,773 perinatal deaths over the 2013–2025 time period. Table 5 and Figure 8 also show that if there was no change in the prevalence of low birth weight, there would be 196,083 deaths related to this problem during 2013–2025. However, Table 5 and Figure 9 show that 25,820 infant deaths could be averted by reductions in low birth weight. Table 5 and Figure 8 also show that if there is no improvement in optimal breastfeeding practices, there would be 363,399 infant deaths related to suboptimal breastfeeding. However, if targeted reductions in suboptimal breastfeeding practices are met by 2025, the lives of 101,107 infant lives could be saved (see Table 5 and Figure 9). In addition, Table 5 and Figure 8 show that if there was no change in the prevalence of VAD, there would be 221,430 under-5 deaths related to vitamin A deficiency during 2013–2025. However, Table 5 and Figure 9 show that 60,923 under-5 deaths could be averted by reductions in VAD.

If iodine deficiency remains unchanged, 1.13 million children would be born to iodine-deficient mothers (see Table 6 and Figure 8); these children would have some degree of irreversible brain damage (with a decrease in IQ). However, reaching the target reduction of maternal iodine deficiency by 2025 could result in preventing permanent brain damage in 236,529 children over the 2013–2025 time period (see Table 6 and Figure 9). Globally, brain damage from intrauterine iodine deficiency is a leading cause of preventable brain damage.

Table 7 and Figure 8 show the human capital losses in terms of learning related to stunting. If there is no change in the prevalence of stunting, the losses would amount to 82.1 million equivalent school years of learning. Conversely, if stunting is reduced over the 2013–2025 time period, the gains would be 19.8 million equivalent school years of learning (see Table 7 and Figure 9).

Economic productivity losses related to stunting among young children, anaemia among adult women, and iodine deficiency are shown in Table 8 and Figure 8. If stunting levels remain unchanged during 2013–2025 at the current high level, productivity losses related to stunting would be about 19.3 trillion Ugandan Shillings (US\$7.7 billion). Productivity losses related to adult women anaemia would be about 1.1 trillion Ugandan Shillings (US\$445.3 million) if this problem remained unchanged, and, if there was no improvement in iodine deficiency, there would be related economic productivity losses of about 910 billion Uganda Shillings (US\$363.4 million).

Table 8 and Figure 9 show the economic productivity gains that could be achieved if the prevalence of stunting, anaemia in adult women, and iodine deficiency could be significantly reduced over the 2013–2025 time period. Overall, economic gains through increased productivity as a result of improved nutrition exceed 4.3 trillion Ugandan Shillings (US\$1.7 billion) for Uganda by 2025. The economic productivity gains by reducing each of these nutrition problems would be: stunting – about 4.3 trillion Ugandan Shillings (US\$1.7 billion); iron-deficiency anaemia among adult women – about 272 billion Ugandan Shillings (US\$108.8 million), and iodine deficiency – 190 billion Ugandan Shillings (US\$75.9 million).

**Table 5. Deaths Attributable to Various Nutrition Problems and Lives Saved Related to Improved Nutrition**

Nutrition problem	Number of deaths that would result if the current situation continues <i>Status quo scenario 2013–2025</i>	Number of lives that would be saved if nutrition situation improves <i>Improved scenario 2013–2025*</i>
<b>Anthropometric indicators</b>		
Deaths/lives saved attributable to <b>stunting</b> (severe, moderate, and mild) among children < 5 years of age	567,621	118,652
Deaths/lives saved attributable to <b>wasting</b> (severe, moderate, and mild) among children < 5 years of age	272,712	37,116
<b>Low birth weight</b>		
Infant deaths/lives saved	196,083	25,820
<b>Iron-deficiency anaemia</b>		
Maternal deaths/lives saved	14,679	6,640
Perinatal deaths/lives saved	70,922	19,773
<b>Vitamin A deficiency</b>		
Child deaths/lives saved	221,430	60,923
<b>Breastfeeding Practices</b>		
Deaths/lives saved attributable to suboptimal breastfeeding practices among children < 2 years of age	363,399	101,107

\* These numbers assume that at-scale implementation of effective nutrition interventions will succeed in reaching the stated targets in terms of reductions (or increase in the case of exclusive breastfeeding) in the prevalence of the various nutrition problems.

**Table 6. Iodine Deficiency and Child Disability**

Nutrition problem	Number of children who would have mild to severe permanent brain damage if the current situation continues <i>Status quo scenario 2013–2025</i>	Number of children for whom disability as a result of maternal iodine deficiency would be prevented if prevalence of iodine deficiency is reduced <i>Improved scenario 2013–2025*</i>
Child disability related to maternal iodine deficiency	1,132,428 or 1.13 million	236,529

\* These numbers assume that at-scale implementation of effective nutrition interventions will succeed in reaching the stated targets in terms of reductions in the prevalence of the nutrition problem.

**Table 7. Human Capital Losses and Gains in Terms of Learning**

<b>Nutrition problem</b>	<b>Losses in learning if the current situation continues <i>Status quo scenario 2013–2025</i></b>	<b>Gains in learning if nutrition situation improves <i>Improved scenario 2013–2025*</i></b>
Stunting	82,131,000 or 82.1 million equivalent school years of learning	19,753,000 or 19.8 million equivalent school years of learning

\* These numbers assume that at-scale implementation of effective nutrition interventions will succeed in reaching the stated targets in terms of reductions in the prevalence of the nutrition problem.

**Table 8. Economic Productivity Losses and Gains**

<b>Nutrition problem</b>	<b>Economic productivity losses if the current situation continues <i>Status quo scenario 2013–2025</i></b>	<b>Economic productivity gains if nutrition situation improves <i>Improved scenario 2013–2025*</i></b>
Stunting	19,307,000,000,000 or 19.307 trillion Ugandan Shillings (US\$7.709 billion)	4,257,000,000,000 or 4.257 trillion Ugandan Shillings (US\$1.699 billion)
Iron-deficiency anaemia	1,115,000,000,000 or 1.115 trillion Ugandan Shillings (US\$445.282 million)	272,000,000,000 or 272 billion Ugandan Shillings (US\$108.774 million)
Iodine deficiency	910,000,000,000 or 910 billion Ugandan Shillings (US\$363.379 million)	190,000,000,000 or 190 billion Uganda Shillings (US\$75.898 million)

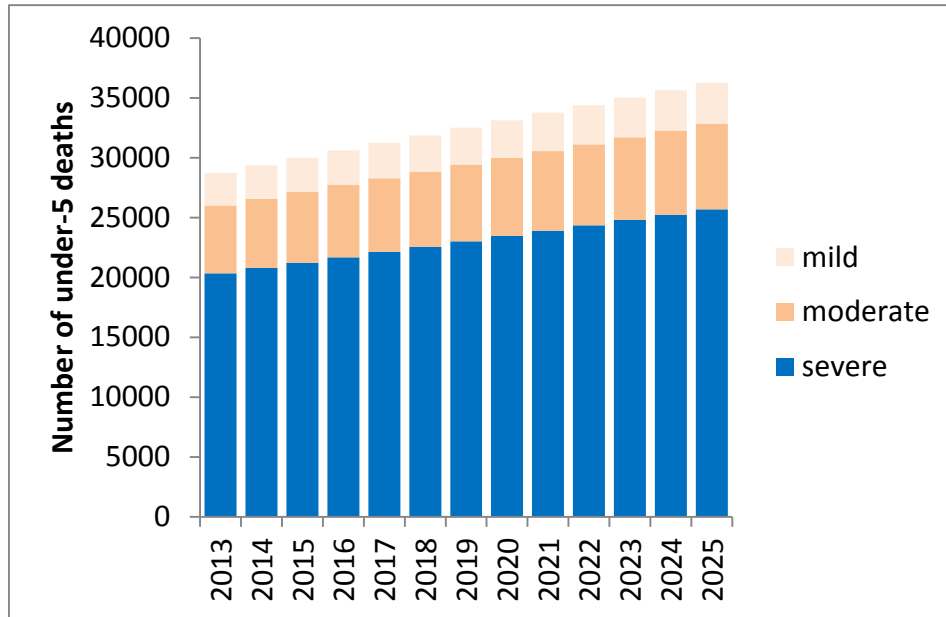
Note: Productivity gains that could result from reduction in stunting related to improvement in the low birth weight indicator is not shown separately (there would be overlap with the productivity gains shown here associated with improvement in stunting). Productivity losses/gains related to anaemia refers to adult women.

Note: Numbers in Ugandan Shillings and US\$ are rounded. Exchange rate used is 2,504.60 Ugandan Shillings = US\$1.

\* These numbers assume that at-scale implementation of effective nutrition interventions will succeed in reaching the stated targets in terms of reductions in the prevalence of the various nutrition problems.

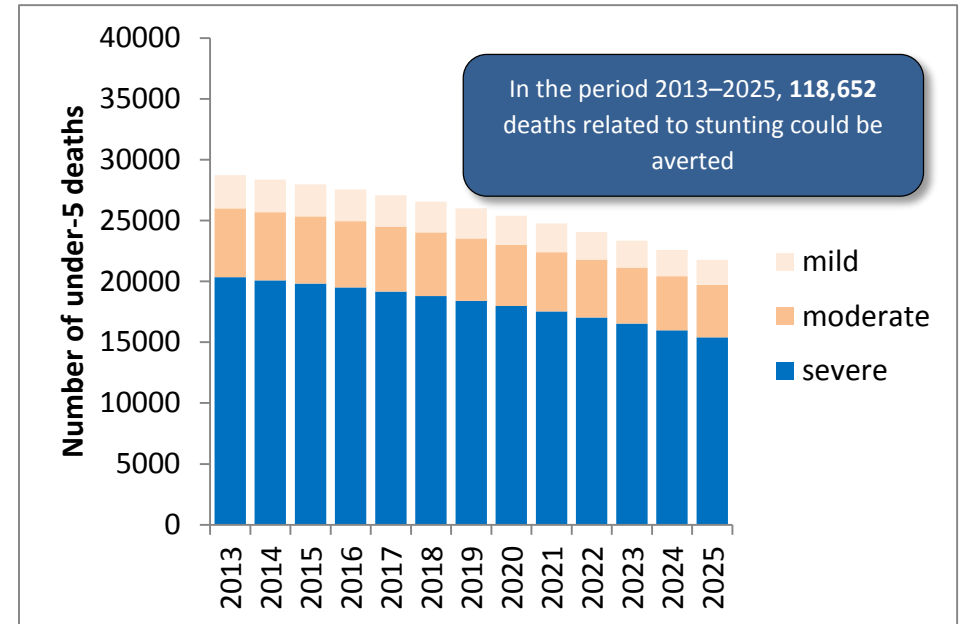


Figure 6. Status Quo Scenario: Number of Deaths for Children under 5 Years Related to Stunting,\* 2013–2025



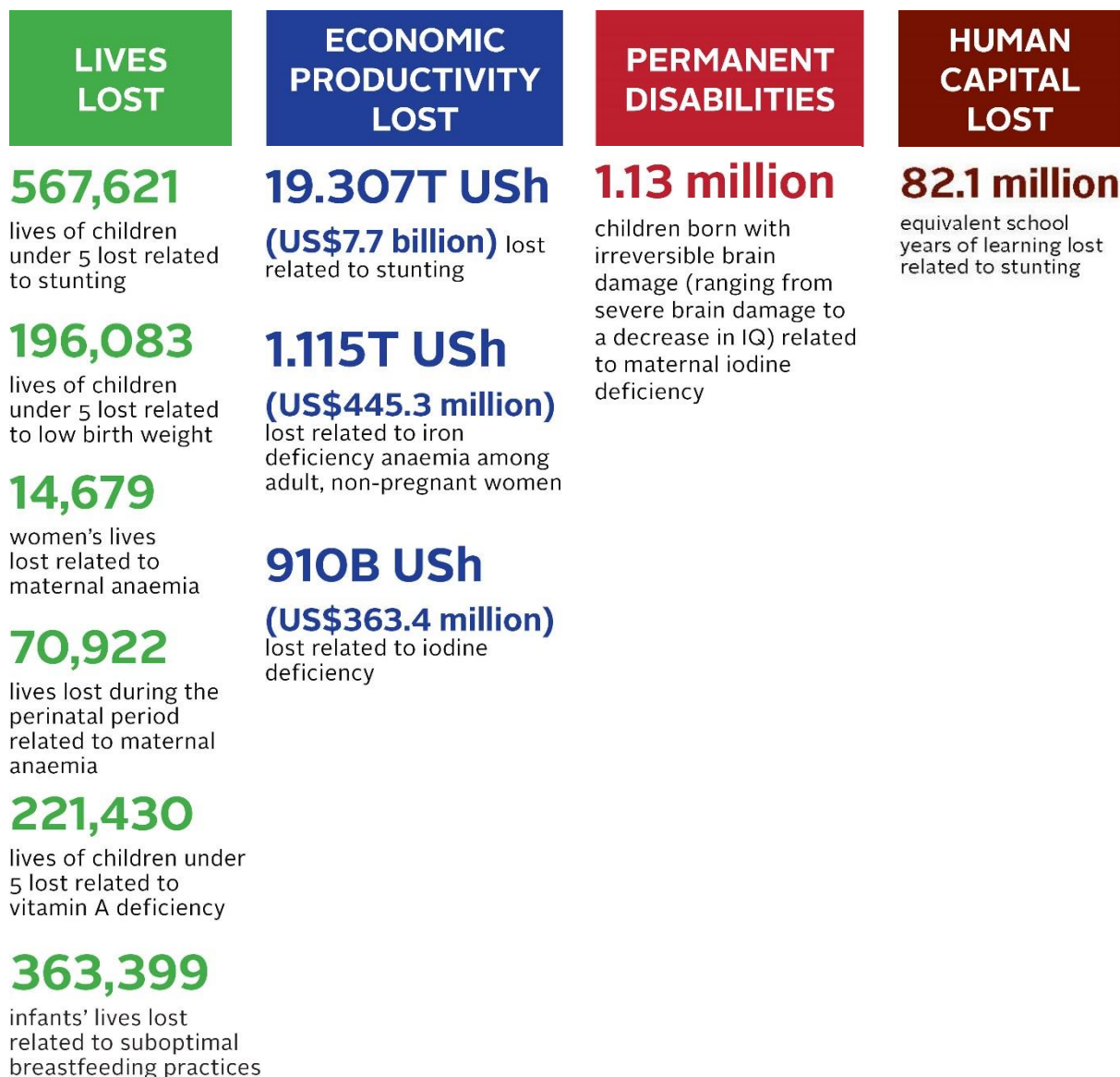
\* Mild, moderate, and severe stunting (low height-for-age)

Figure 7. Improved Scenario: Decreasing Number of Deaths for Children under 5 Years Related to Stunting,\* 2013–2025

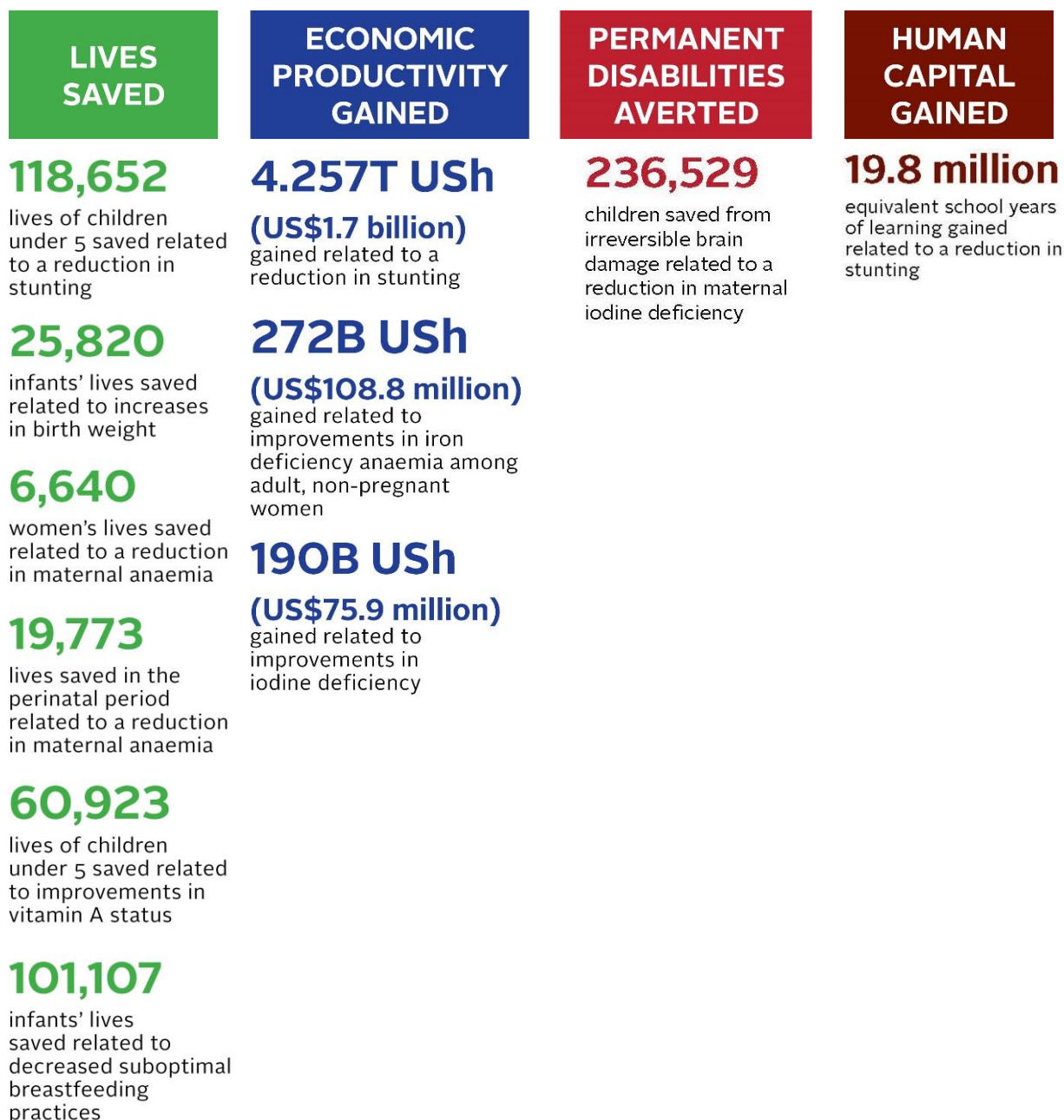


\* Mild, moderate, and severe stunting (low height-for-age)

**Figure 8. Estimates of Future Lives Lost, Economic Productivity Lost, Permanent Disabilities, and Human Capital Lost Associated with Various Nutrition Problems, 2013–2025**



**Figure 9. Estimates of Future Lives Saved, Economic Productivity Gained, Permanent Disabilities Averted, and Human Capital Gained**



## 5. Summary of Nutrition Advocacy Process in Uganda and Way Forward

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Since 2002, FANTA has worked with the Government of Uganda, USAID, United Nations (U.N.) agencies, and other stakeholders in Uganda to facilitate a planned and systematic nutrition advocacy process. In 2010, PROFILES estimates were developed to support nutrition advocacy, along with a nutrition advocacy package targeted to key stakeholders in nutrition. FANTA worked with the Ministry of Health to build an advocacy coalition to expand the set of nutrition champions in Uganda and to leverage resources for nutrition. A task force was established to build political and donor interest in improving nutrition and to advocate for an effective legislative framework for the implementation of nutrition activities.

Working collaboratively helped leverage human and financial resources for the nutrition advocacy campaign, while harmonizing key messages early on ensured that nutrition advocates were speaking in one coordinated voice so that efforts were as effective as possible. At the sectoral level, advocacy efforts resulted in the creation of a nutrition position within the local government structure. Advocacy efforts with the media resulted in increased print and broadcast coverage of nutrition issues.

At the national level, discussions with policymakers and politicians resulted in a statement by the Minister of Foreign Affairs committing the Ugandan government to support the SUN movement. Consultative workshops were held to draft a strategic framework for nutrition—the UNAP. In 2011, a statement of political commitment to improve nutrition, signed by the Minister of Health on behalf of the President, was published in a major daily newspaper. For the first time, nutrition was included in Uganda’s 5-year National Development Plan (NDP). In the fall, the UNAP 2011–2016 was launched by the President. A formal multi-stakeholder nutrition working group was established along with high-level coordination of nutrition activities by the Office of the Prime Minister. In addition, district nutrition committees were established.

In 2012, to support the operationalization of the UNAP, a collaborative and consensus-building workshop with key stakeholders was held to develop a comprehensive National Nutrition Advocacy Plan targeting the media; civil society; parliamentarians; government ministries, departments, and agencies; local government; development partners; and the private sector. In 2013, PROFILES estimates were developed to support the implementation of this plan. In 2014, FANTA worked with partners to develop a package of prioritized nutrition advocacy materials using results from PROFILES and Cost of Hunger in Africa.

These efforts align with the UNAP and support Uganda’s commitment to the SUN movement, in which advocacy to key government and non-government stakeholders is planned to garner greater commitment, accountability, support, and resources for nutrition. The process facilitates a unified and harmonized approach to nutrition advocacy in Uganda that will maximize the effectiveness of the efforts of the Government of Uganda and partners, and is playing an important role in reinforcing the government’s commitment to support the scaling up of evidence-based nutrition interventions.

In 2015, FANTA plans to work with the Office of the Prime Minister, USAID, U.N. agencies, and other partners to continue the nutrition advocacy process, specifically to reach the sub-national level.

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## Acronyms and Abbreviations

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FANTA	Food and Nutrition Technical Assistance III Project
Hb	haemoglobin
NDP	National Development Plan
OPM	Office of the Prime Minister
U.S.	United States
UDHS	Uganda Demographic and Health Survey
UNAP	Uganda Nutrition Action Plan
USAID	U.S. Agency for International Development

## Background

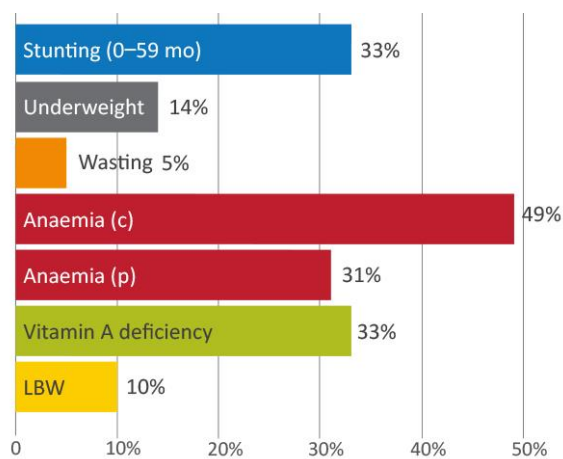
According to the 2011 Uganda Demographic and Health Survey (UDHS), 33 percent of all children under 5 years of age were chronically malnourished (stunted, or low height-for-age), 5 percent were acutely malnourished (wasted, or low weight-for-height), and 14 percent were underweight (or low weight-for-age) (Figure 1). In addition, 33 percent of children under 5 years of age in Uganda were vitamin A deficient, while 49 percent of children under 5, 31 percent of pregnant women, and 22 percent of non-pregnant women suffered from anaemia (UDHS 2011). Ten percent of all births in Uganda were of low birth weight (UDHS 2011). Stunting (or low height-for-age) decreased by 5 percentage points from 2006 to 2011 but, even with this progress, more than 2 million children in Uganda are stunted.

The Government of Uganda has committed to stepping up efforts to substantively reduce stunting and other forms of malnutrition through multi-sectoral action. In addition to including nutrition in Uganda's 5-year National Development Plan (NDP) 2010–2015, the government developed the multi-sectoral Uganda Nutrition Action Plan (UNAP) 2011–2016, which lays out a framework for all sectors to contribute to improving nutrition. A formal multi-stakeholder nutrition working group has been established along with high-level coordination of nutrition activities by the Office of the Prime Minister (OPM). In addition, district nutrition coordination committees have been established in some districts to ensure nutrition services are implemented at the local level.

However, additional efforts are needed to help maximize the effectiveness of the efforts of the government and its partners so that nutrition service delivery can be strengthened and expanded across the country. National-level advocacy must continue and the advocacy process needs to be further decentralized to create momentum for sustained change.

In 2010, PROFILES, an evidence-based tool that was developed for the purpose of nutrition advocacy, was used to estimate the benefits of improved nutrition and consequences if nutrition does not improve in Uganda. Since then, new data have become available through the nationally representative UDHS 2011. The U.S. Agency for International Development (USAID)-funded Food and Nutrition Technical Assistance III Project (FANTA) was asked to support the Government of Uganda to update the PROFILES estimates using the new data from UDHS 2011.

**Figure 1. Malnutrition Rates in Uganda**

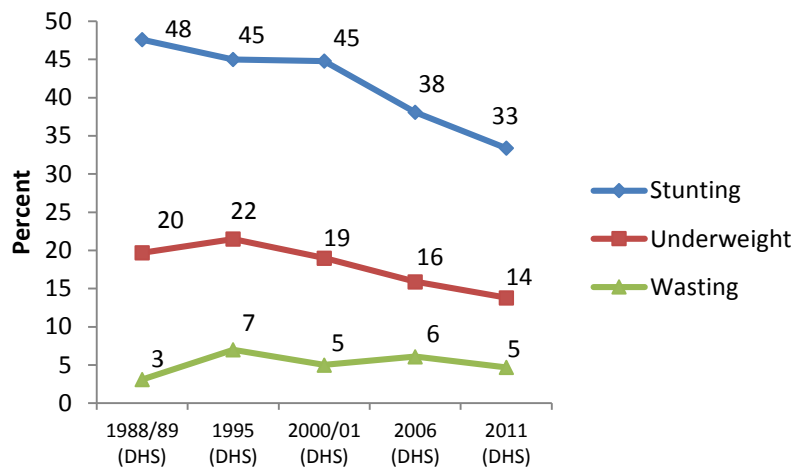


**c = under-5 children; p = pregnant women; LBW = low birth weight**

Source: UDHS 2011 and UDHS 2011 Vitamin A Addendum



**Figure 2. Trends in Malnutrition in Uganda**



Note: For comparison purposes, the 1988/89, 1995, and 2000/01 anthropometric indicators were based on the 2006 WHO standards, to match the indicators from the 2006 and 2011 surveys. The values in the graph indicate percentage of children with z-scores < -2.

Source: UDHS 1988/89, UDHS 1995, and UDHS 2000/01, with additional analysis from the WHO Global Database on Child Growth and Malnutrition [http://www.who.int/nutgrowthdb/database/countries/who\\_standards/uga\\_dat.pdf?ua=1](http://www.who.int/nutgrowthdb/database/countries/who_standards/uga_dat.pdf?ua=1); UDHS 2006; UDHS 2011.

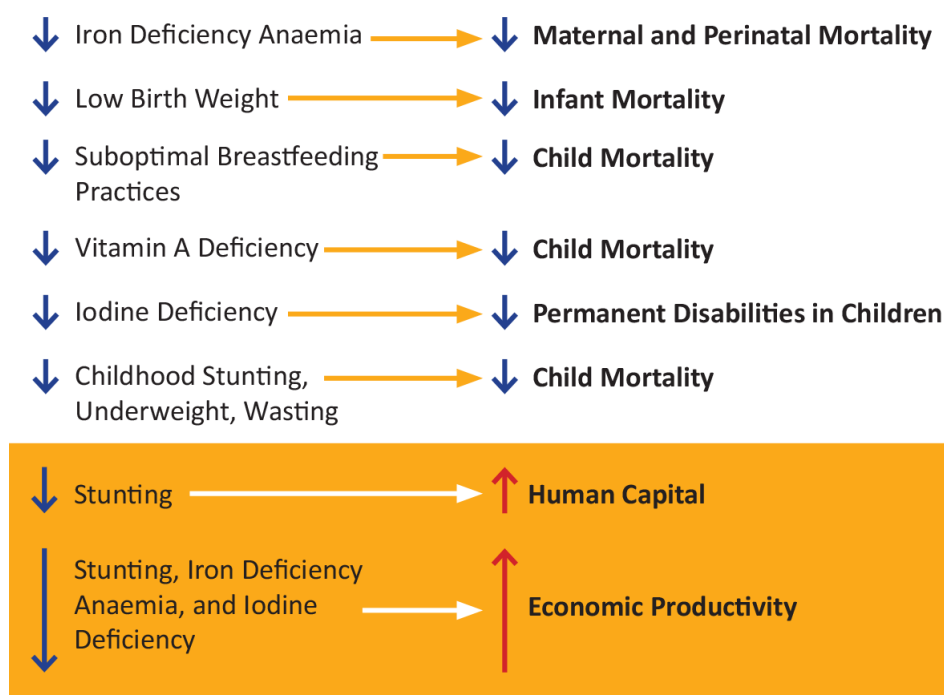
First developed in the early 1990s, PROFILES consists of a set of computer-based models that calculate estimates of the benefits of improved nutrition on health and development outcomes and the consequences if malnutrition does not improve. To calculate estimates, PROFILES requires current country-specific nutrition data. In Uganda, estimates (using the most recent DHS and other relevant sources) were calculated in terms of child and maternal mortality, economic productivity, disabilities, and human capital for the period 2013–2025.

The basic approach in PROFILES is to provide two scenarios: a ‘status quo’ scenario and an ‘improved’ scenario. The status quo scenario assumes that there will be no change from the current nutrition situation throughout a chosen time period (aside from projected changes in population size). The improved scenario—with results estimated for the same time period—assumes that nutrition interventions that are known to be effective are implemented at scale and succeed in reaching the stated targets in terms of reductions in the prevalence of the various nutrition problems. The assumption is that effective interventions would not be implemented at scale from Day 1, but rather would be implemented gradually over the selected time period, and that, hence, improvement in the nutrition indicators and consequently lives saved would be gradual. The targets reflect the proportion by which nutrition problems will be reduced over the chosen time period and are determined and agreed upon through stakeholder meetings and a PROFILES workshop. In the status quo scenario, the negative consequences are expressed, for example, in terms of lives lost, economic productivity lost, disabilities, and human capital lost. When contrasting the results from the status quo and the improved scenarios, the differences reflect the benefits of improved nutrition, expressed as lives saved, economic productivity gained (or, put another way, economic productivity losses averted), disabilities averted, and human capital gained.

In October–November 2013, Uganda- and U.S.-based nutrition experts in FANTA generated PROFILES estimates for use in nutrition advocacy. The specific nutrition indicators from which estimates were

calculated are shown in Figure 3. FANTA shared these estimates with the OPM, who reviewed and approved them.

**Figure 3. Nutrition Problems and Consequences Addressed in Uganda PROFILES 2013**



This document provides a summary of the estimates for Uganda PROFILES 2013 that will be used to develop nutrition advocacy materials. A final report of the Uganda 2013 PROFILES estimates is also available at <http://www.fantaproject.org>.

### Time Period, Prevalence, and Targets Used for Uganda PROFILES 2013 Estimates

For the purpose of the Uganda estimates, the 13-year time period starting in 2013 and running through 2025 was used.

Table 1 shows information on initial prevalence ('Initial Prevalence [2013] (used for *status quo scenario* and for first year of *improved scenario*') and target prevalence ('Target Prevalence [2025]') for each nutrition problem in PROFILES. For the *improved scenario*, a linear improvement is assumed for the time period 2013–2025 unless otherwise noted.

**Table 1. Summary of Prevalence and Targets Used for Uganda PROFILES 2013 Estimates<sup>1</sup>**

	Initial Prevalence [2013] (used for <i>status quo scenario</i> and for first year of <i>improved scenario</i> (%))	Target Prevalence [2025] (%)
<b>Anthropometric indicators<sup>2</sup></b>		
Moderate and severe underweight at 0–59 months (weight-for-age z-score < -2)	13.8	8.3
Moderate and severe stunting at 24–35 months (height-for-age z-score < -2)	42.7	25.6
Moderate and severe stunting at 0–59 months (height-for-age z-score < -2)	33.4	20.0
Moderate and severe wasting at 0–59 months (weight-for-height z-score < -2)	4.7	3.5
<b>Vitamin A</b>		
Population 6–59 months with vitamin A deficiency (including subclinical)	32.6	13.0
<b>Iodine</b>		
Population with goitre	5.0	3.0
<b>Anaemia (including related to iron deficiency)</b>		
Pregnant women with anaemia (Hb < 11)	30.6	16.8
Non-pregnant women 15–49 years with anaemia (Hb < 12)	22.1	12.2
Men 15–64 years with anaemia (Hb < 13)	No data	No data
<b>Low birth weight</b>		
Babies weighing < 2,500 g at birth	10.2	7.1
<b>Breastfeeding practices<sup>3</sup>:</b>		
Exclusive breastfeeding 0–5 months	63.2	90.0
Predominant breastfeeding 0–5 months	9.4	5.0
Partial breastfeeding 0–5 months	24.9	2.5
No breastfeeding 0–5 months	2.5	2.5
Any breastfeeding 6–23 months	77.7	95.0
No breastfeeding 6–23 months	22.3	5.0

Table 2 shows information on the number of deaths that would result if the current nutrition situation continues in Uganda (*status quo scenario*) and the number of lives that would be saved over the time period if the nutrition situation improves and the targeted reductions for each nutrition problem was reached (*improved scenario*).

<sup>1</sup> The UDHS 2011 was the source of information for all indicators in this table, with the exception of goitre. Because there is no recent information, the goitre prevalence was the same as that used in the Uganda PROFILES 2010.

<sup>2</sup> The anthropometric indicators reflect a summary to give an indication of the information used by the PROFILES spreadsheet models.

<sup>3</sup> 'Predominant breastfeeding' refers to infants 0–5 months of age who received breast milk as the predominant source of nourishment during the previous day. Predominant breastfeeding 'allows' oral rehydration salts, vitamin and/or mineral supplements, ritual fluids, water and water-based drinks, and fruit juice. Other liquids, including non-human milks and food-based fluids, are not allowed, and no semi-solid or solid foods are allowed (WHO 2010; [http://www.unicef.org/nutrition/files/IYCF\\_Indicators\\_part\\_III\\_country\\_profiles.pdf](http://www.unicef.org/nutrition/files/IYCF_Indicators_part_III_country_profiles.pdf)). 'Partial breastfeeding' refers to a situation where the baby is receiving some breast feeds, but is also being given other food or food-based fluids, such as formula milk or weaning foods.

## Uganda PROFILES 2013 Estimates (presented in both tables and text)

**Table 2. Deaths Attributable to Various Nutrition Problems and Lives Saved Related to Improved Nutrition**

Nutrition problem	Number of deaths that would result if the current situation continues <i>Status quo scenario 2013–2025</i>	Number of lives that would be saved if nutrition situation improves <i>Improved scenario 2013–2025*</i>
<b>Anthropometric indicators</b>		
Deaths/lives saved attributable to <b>stunting</b> (severe, moderate, and mild) among children < 5 years of age	567,621	118,652
Deaths/lives saved attributable to <b>wasting</b> (severe, moderate, and mild) among children < 5 years of age	272,712	37,116
<b>Low birth weight</b>		
Infant deaths/lives saved	196,083	25,820
<b>Iron deficiency anaemia</b>		
Maternal deaths/lives saved	14,679	6,640
Perinatal deaths/lives saved	70,922	19,773
<b>Vitamin A deficiency</b>		
Child deaths/lives saved	221,430	60,923
<b>Breastfeeding practices</b>		
Deaths/lives saved attributable to suboptimal breastfeeding practices among children < 2 years of age	363,399	101,107

\* These numbers assume that at-scale implementation of effective nutrition interventions will succeed in reaching the stated targets in terms of reductions (or increase in the case of exclusive breastfeeding) in the prevalence of the various nutrition problems.

Table 3 shows information on the number of children with permanent disabilities that would result if the current nutrition situation regarding maternal iodine deficiency during pregnancy continues in Uganda (*status quo scenario*) and the number of children that would be prevented from having permanent disabilities over the time period if the maternal iodine situation improves and the targeted reduction was reached (*improved scenario*).

**Table 3. Iodine Deficiency and Child Disability**

Nutrition problem	Number of children who would have mild to severe permanent brain damage if the current situation continues <i>Status quo scenario 2013–2025</i>	Number of children for whom disability as a result of maternal iodine deficiency would be prevented if prevalence of iodine deficiency is reduced <i>Improved scenario 2013–2025*</i>
Child disability related to maternal iodine deficiency	1,132,428 or 1.13 million	236,529

\* These numbers assume that at-scale implementation of effective nutrition interventions will succeed in reaching the stated targets in terms of reductions in the prevalence of the various nutrition problems.

Table 4 shows information on the human capital losses in terms of learning related to stunting; if there is no change, the losses would amount to 87.7 million equivalent school years of learning. Conversely, if stunting is reduced over the 2014–2025 time period, the gains would be 24.7 million equivalent school years of learning.

**Table 4. Human Capital Losses and Gains in Terms of Learning**

<b>Nutrition problem</b>	<b>Losses in learning if the current situation continues <i>Status quo scenario 2013–2025</i></b>	<b>Gains in learning if nutrition situation improves <i>Improved scenario 2013–2025*</i></b>
Stunting	82,131,000 or 82.1 million equivalent school years of learning	19,753,000 or 19.8 million equivalent school years of learning

\* These numbers assume that at-scale implementation of effective nutrition interventions will succeed in reaching the stated targets in terms of reductions in the prevalence of the various nutrition problems.

Table 5 shows information on the productivity losses related to stunting, anaemia, and iodine deficiency that would result if the current nutrition situation continues in Uganda (*status quo scenario*) and the productivity gains (or, put another way, economic productivity losses averted) that could be made over the time period if the stunting, anaemia, and iodine deficiency situation improves and the targeted reductions were reached (*improved scenario*).

**Table 5. Economic Productivity Losses and Gains**

<b>Nutrition problem</b>	<b>Economic productivity losses if the current situation continues <i>Status quo scenario 2013–2025</i></b>	<b>Economic productivity gains if nutrition situation improves <i>Improved scenario 2013–2025*</i></b>
Stunting	19,307,000,000,000 or 19.307 trillion Ugandan Shillings (US\$7.709 billion)	4,257,000,000,000 or 4.257 trillion Ugandan Shillings (US\$1.699 billion)
Iron deficiency anaemia	1,115,000,000,000 or 1.115 trillion Ugandan Shillings (US\$445.282 million)	272,000,000,000 or 272 billion Ugandan Shillings (US\$108.774 million)
Iodine deficiency	910,000,000,000 or 910 billion Ugandan Shillings (US\$363.379 million)	190,000,000,000 or 190 billion Uganda Shillings (US\$75.898 million)

Note: Productivity gains that could result from reduction in stunting related to improvement in the low birth weight indicator is not shown separately (there would be overlap with the productivity gains shown here associated with improvement in stunting). Productivity losses/gains related to anaemia refers to adult women.

Note: Numbers in Ugandan Shillings and US\$ are rounded. Exchange rate used is 2,504.60 Ugandan Shillings = US\$1.

\* These numbers assume that at-scale implementation of effective nutrition interventions will succeed in reaching the stated targets in terms of reductions in the prevalence of the various nutrition problems.

*Status Quo Scenario: Adverse Consequences of Nutrition Problems if There Is No Change during the Time Period (2013–2025)*

**Estimates of Future Lives Lost, Economic Productivity Lost, Permanent Disabilities, and Human Capital Lost Associated with Various Nutrition Problems, 2013–2025**

LIVES LOST	ECONOMIC PRODUCTIVITY LOST	PERMANENT DISABILITIES	HUMAN CAPITAL LOST
<p><b>567,621</b> lives of children under 5 lost related to stunting</p>	<p><b>19.307T US\$</b> <b>(US\$7.7 billion)</b> lost related to stunting</p>	<p><b>1.13 million</b> children born with irreversible brain damage (ranging from severe brain damage to a decrease in IQ) related to maternal iodine deficiency</p>	<p><b>82.1 million</b> equivalent school years of learning lost related to stunting</p>
<p><b>196,083</b> lives of children under 5 lost related to low birth weight</p>	<p><b>1.115T US\$</b> <b>(US\$445.3 million)</b> lost related to iron deficiency anaemia among adult, non-pregnant women</p>		
<p><b>14,679</b> women's lives lost related to maternal anaemia</p>	<p><b>910B US\$</b> <b>(US\$363.4 million)</b> lost related to iodine deficiency</p>		
<p><b>70,922</b> lives lost during the perinatal period related to maternal anaemia</p>			
<p><b>221,430</b> lives of children under 5 lost related to vitamin A deficiency</p>			
<p><b>363,399</b> infants' lives lost related to suboptimal breastfeeding practices</p>			

**Improved Scenario: Benefits if the Nutrition Situation Improves (That Is if Specified Targets Are Reached) by the End of the Time Period (2013–2025)**

**Estimates of Future Lives Saved, Economic Productivity Gained, Permanent Disabilities Averted, and Human Capital Gained, 2013–2025**

<b>LIVES SAVED</b>	<b>ECONOMIC PRODUCTIVITY GAINED</b>	<b>PERMANENT DISABILITIES AVERTED</b>	<b>HUMAN CAPITAL GAINED</b>
<p><b>118,652</b> lives of children under 5 saved related to a reduction in stunting</p>	<p><b>4.257T USh</b> <b>(US\$1.7 billion)</b> gained related to a reduction in stunting</p>	<p><b>236,529</b> children saved from irreversible brain damage related to a reduction in maternal iodine deficiency</p>	<p><b>19.8 million</b> equivalent school years of learning gained related to a reduction in stunting</p>
<p><b>25,820</b> infants' lives saved related to increases in birth weight</p>	<p><b>272B USh</b> <b>(US\$108.8 million)</b> gained related to improvements in iron deficiency anaemia among adult, non-pregnant women</p>		
<p><b>6,640</b> women's lives saved related to a reduction in maternal anaemia</p>	<p><b>190B USh</b> <b>(US\$75.9 million)</b> gained related to improvements in iodine deficiency</p>		
<p><b>19,773</b> lives saved in the perinatal period related to a reduction in maternal anaemia</p>			
<p><b>60,923</b> lives of children under 5 saved related to improvements in vitamin A status</p>			
<p><b>101,107</b> infants' lives saved related to decreased suboptimal breastfeeding practices</p>			

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