

NUTRITION SENSITIVITY

How agriculture can improve child nutrition



Save the Children

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Cover photo: A kitchen garden in Ruhango district, Rwanda (Photo: Sebastian Rich/Save the Children)

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EXECUTIVE SUMMARY

In 2011, 3.1 million children under the age of five died because they were malnourished – with malnutrition accounting for 45% of all child deaths.¹ These children did not have access to the correct balance of foods, or their bodies were not healthy enough to absorb essential nutrients. Millions more malnourished children are highly susceptible to disease, have poor cognitive development, and stunted growth – all of which limit their ability to escape poverty during childhood and in later life.

Many African countries aspire to achieving middle-income status, with vibrant, dynamic and knowledgeable economies. But this aspiration is being hampered by the damage done to today's generation by a lack of proper nutrition; for example, adults who were malnourished during childhood are likely to earn 20% less than their well-nourished counterparts.

The impact of child malnutrition – on a country's development, its children, and its economy – is unacceptably high. *Food for Thought*, a report published by Save the Children in 2013, showed that good nutrition is a critical factor in the pursuit of economic development; malnutrition represents a significant barrier to economic development and growth, and means children are not able to live healthy and productive lives.

Until recently, malnutrition had neither the profile nor traction needed among policy-makers, planners and decision-makers to get them to stand up and address this global challenge. However, a number of recent initiatives have been launched to address child malnutrition and undernutrition, including the Scaling Up Nutrition (SUN) Movement, the Thousand Days Initiative, The New Alliance for Food Security and Nutrition, and the Nutrition for Growth event in London in June 2013, which agreed some bold targets

to improve nutrition among children and pregnant women by 2020, with funding commitments of \$23.1bn.

The African Union (AU) has declared 2014 as the Year of Agriculture and Food Security; this, together with the joint annual reviews of CAADP (the Comprehensive Africa Agriculture Development Programme), presents an important opportunity to secure significant policy and financial commitments to ensure that agriculture supports and delivers these child nutrition goals.

There is broad consensus on the need to scale up nutrition-specific interventions– ie, direct nutrition interventions such as promoting exclusive breastfeeding, infant and young child feeding, or greater coverage of vitamin A. But the limited evidence base on nutrition-sensitive approaches makes it difficult for agriculture, social protection and other relevant policies to take account of their potential impact on nutrition. There is an urgent need to strengthen the nutritional component of many agricultural policies and investment plans.² A role of agricultural policy is to promote economic development and provide nutrition for a country's population. CAADP plans should include a nutrition strategic objective supported by clearly defined indicators. The indicators should be differentiated by gender and age group (adult and child). Furthermore, throughout the policy and investment plans, when discussing productivity or other issues, the strategic objectives and indicators must refer to nutrition. Ensuring the country's population has **access to good-quality nutrition is a governmental responsibility.**

The Lancet suggests that direct nutrition interventions, even if implemented at 90% coverage in high-burden countries, would only reduce global stunting by 20%. For that reason, in addition to direct nutrition interventions, Save the Children has

long advocated for the need to take a multi-sectoral approach that also employs nutrition-sensitive interventions in order to address the underlying and inter-related determinants of malnutrition, through promoting exclusive breastfeeding, income generation, women's empowerment, good hygiene and social behaviour change.³ Here, social behaviour change is taken to be a process of transforming the way society is organised in a way that leads to changes in basic practices, such as the way food is cooked or consumed.

This report examines the relationship between agriculture and nutrition in developing countries, focusing on how nutrition is currently prioritised within agricultural policy frameworks, from the global to the district level. It suggests ways in which nutrition-sensitive interventions could be implemented through existing government policies and governance structures.

The findings are based on an assessment of agricultural policies in 15 African countries, alongside CAADP plans from 18 African countries. Generally speaking, African agricultural plans are primarily focused on production and give limited emphasis to nutrition. This is not surprising on one level, given the importance of improving food production in the context of economic development and population growth. But the findings also reveal notable exceptions to the rule, which offer some important lessons for countries that want to improve child nutrition now, as well as helping their economies grow in the short and the longer term.

Case studies in Malawi and Ethiopia show how, at the district level, strong leadership is required to embed nutrition within agriculture programmes in order to promote greater dietary diversity at the household level. Two models are suggested, both of which require strong collaboration between relevant ministries.

Discrete policy and programme-level changes can raise the profile of nutrition within the agriculture sector and ensure that agronomists and other stakeholders prioritise (and are held account for) improving dietary diversity and other actions that will lead to improved nutrition. It is not true that increased production of crops will automatically lead to improved nutrition and reductions in stunting.

To ensure that nutrition-sensitive approaches are embedded in agricultural policies, we recommend that the **African Union**:

- commits to ensuring that agricultural investment plans include nutrition objectives and appropriate metrics to monitor progress on nutrition-related goals
 - includes a stunting-specific indicator as part of the CAADP results framework. The indicator should be adopted by national agriculture ministries and be accompanied by actions to ensure impacts
 - establishes a common joint peer review mechanism that assesses the progress of CAADP implementation. The joint annual review of Ethiopia's Policy and Investment Framework (CAADP investment plan) provides a useful quality standard
 - establishes a regional benchmarking process that would enable citizens to see how their country is performing in relation to other countries
- develops institutional links between those responsible for national agriculture plans and Scaling Up Nutrition (SUN) plans.

We recommend that governments in **high-burden countries**:

- include improving nutrition as an explicit policy objective in their agricultural policies and agricultural investment plans (CAADP plans), and more specifically:
 - establish multi-sectoral coordination mechanisms to ensure that policy decisions are owned by all relevant ministries
 - establish a cross-departmental working group to oversee policy implementation and to monitor progress against a set of commonly agreed indicators
 - adapt district-level policy mechanisms to improve coordination and integration of nutrition concerns between agriculture and health ministries
 - where appropriate, explore the possibility of utilising agricultural networks to deliver nutrition interventions – for example, a more unified extension service that delivers both agricultural messages and nutrition messages. A number of government extension services have adopted this paradigm
 - increase the level of agricultural biodiversity by investing in seed markets to generate a more diverse enterprise and cropping base, and thus promote greater diversity of diet.

We recommend that **donors** encourage governments to prioritise nutrition within agriculture plans by taking the following actions:

- Strengthening the nutrition outcomes of initiatives such as the New Alliance for Food Security and Nutrition, by working with participating countries to establish country-specific goals, outcomes, and actions on malnutrition – ensuring that nutrition indicators in the results framework are implemented and integrated within national agriculture plans.
- Developing a tool to enable agronomists and policy-makers to assess the nutrient constituents of crops. Such a monitoring tool, if available in open data format, could enable agriculturalists to consider the implications of the crops and enterprises they promote from the perspective of their impact on child nutrition.
- Ensuring that country-based donor technical committees include civil society representatives to ensure accountability and reflect civil society voices in the planning process.



PHOTO: COLIN CROWLEY/SAVE THE CHILDREN

Martha, pictured here with her daughter Juba, is a member of a group of 200 women farmers in Pagak, South Sudan. They are part of a Save the Children programme that aims to help women grow more food.

“Before, we never grew many vegetables,” says Martha. “Now we’re growing beans, tomatoes, okra, kale and cabbage. After this harvest I will

try to use the knowledge to grow more crops next year.”

Diversification of the agriculture base is an important nutrition-sensitive principle, to improve dietary diversity. Rotation – planting different crops – breaks the build-up of pests and diseases, and improves soil fertility and structure.

I THE RELATIONSHIP BETWEEN NUTRITION AND AGRICULTURE

In 2011, 3.1 million children under the age of five die because they were malnourished, with malnutrition accounting for nearly half (45%) of all child deaths.⁴ For millions of children who survive, malnutrition makes their bodies less capable of resisting disease, and harms their cognitive development. This condition, called stunting, locks millions of children into poverty by restricting their cognitive and physical development and thus their life chances – as children and later as adults.

The first 1,000 days of a child's life – counted from the start of a woman's pregnancy until the child's second birthday – represents a 'window of opportunity' for nutrition, because a child's brain and body develop rapidly during this time. The first 1,000 days are therefore crucial, because even if a child's nutrition status improves after the age of two, any damage done during the first two years is largely irreversible and has a devastating impact on the child's future potential.^{5, 6} When malnourished children reach adulthood, they are likely to earn 20% less than their well-nourished counterparts.⁷ Malnutrition stunts the development of an estimated 165 million children around the world each year; just 14 countries account for 80% of the world's stunted children.⁸

For too long, malnutrition has been the Achilles' heel of development – with insufficient attention paid to its impact on children's health and development, as well as its consequences for national economic growth. This is, however, beginning to change, with high-profile initiatives such as the Scaling Up Nutrition (SUN) Movement, with 47 member countries (as of March 2014), all of which have made commitments to integrate nutrition into their policy frameworks. Similarly, donors are starting to pay much greater attention to nutrition through a variety of initiatives, such as the Thousand Days Initiative and the New Alliance for Food Security and Nutrition. The

Nutrition for Growth event in London in June 2013, moreover, resulted in pledges of more than \$23bn for interventions to improve nutrition among children and pregnant women by 2020.

A large proportion of this investment was committed towards nutrition-sensitive interventions, which are defined by *The Lancet* as "interventions or programmes that address the underlying determinants of foetal and child nutrition and development – food security, adequate care giving, resources at maternal, household and community levels and access to health services and a safe and hygienic environment – and incorporate specific goals and actions."⁹

Despite this increasing attention by policy-makers and donors, the explicit policy links between malnutrition and agriculture have received relatively little attention at the country level. Most African agricultural plans and investment frameworks prioritise increases in yield and productivity over improvements in the nutrition status of children or other vulnerable groups.

While it is right that national agricultural plans are focused on improving economic growth, it is imperative that they also give sufficient attention to helping to address child malnutrition, given its debilitating effects on national economic development and prosperity.

MALNUTRITION HOLDS BACK ECONOMIC AND AGRICULTURAL DEVELOPMENT

The impacts of undernutrition on economic development have implications for the agriculture sector in three ways, each truly debilitating. First, with 45% of child deaths due to malnutrition, this has a significant impact of the number of young people entering the agriculture sector.

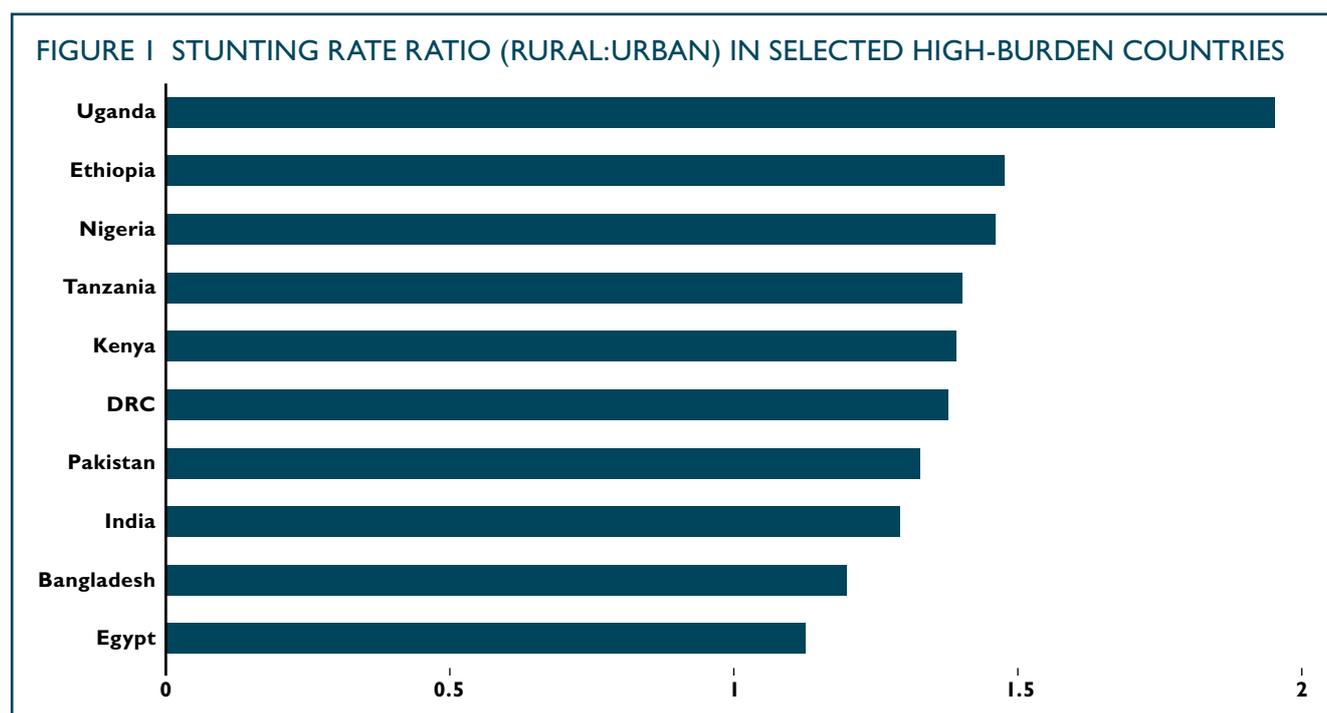
Second, stunting rates are, in most cases, higher in rural areas than urban areas. Figure 1 shows the ratio of stunting in each. This is important because of the impacts of stunting on physical strength – critical to agricultural manual labour. Survey evidence from Guatemala suggests that physical strength is undermined, while susceptibility to disease is increased by undernutrition. This particular study showed statistically significant relationships between stunting and hand strength (as much as 22%) at age 24.

Third, malnutrition is both an outcome and a driver of inequality. In developing countries, children born to the poorest 40% of families are nearly three times more likely to be malnourished than those born to the richest 10%¹⁰ – and are likely to go on to earn less than their better-off (and better-nourished) peers. The gap between the poorest 40% of families and the wealthiest 10% in terms of stunting actually increased in many parts of the world between the 1990s and 2000s (see Figure 2).¹¹ In Ethiopia, the economic impact of poor nutrition appears in the working-age population through the lower schooling achievements, which result in low productivity and lower income earning potential.¹² A significant percentage of those who suffered malnutrition at a young age will be manual workers. In Uganda, stunted children have 1.2 years less education, which will impact earning potential. The estimated economic loss in non-manual activities is estimated to be UGX 241 billion (US \$98 million), equivalent to 0.7% GDP in 2009.

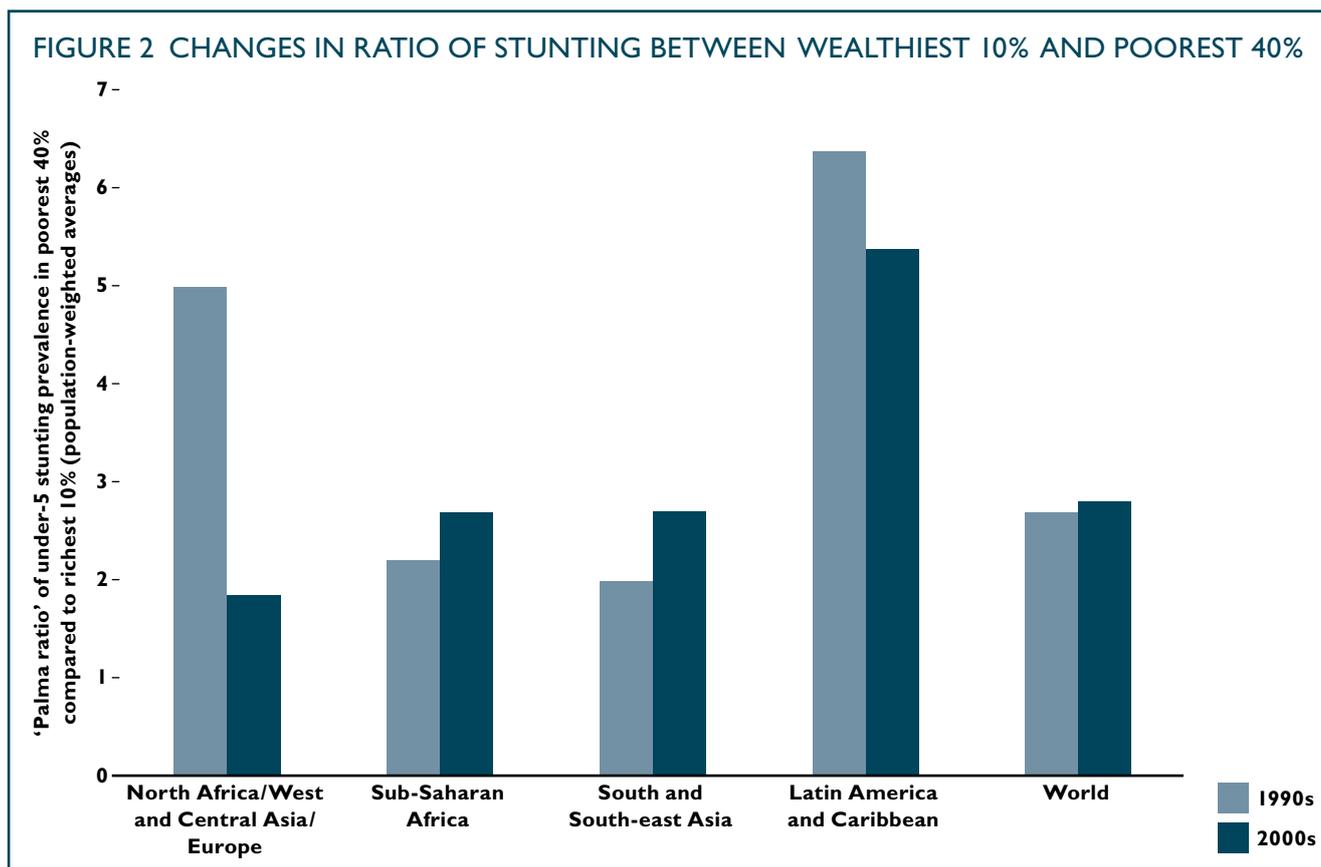
Looking to the future, many country agricultural investment plans seek to increase production, with a view to increasing food supply within their country. An increase in food supply may increase the processing of agricultural produce. Increased agricultural production or processing does not automatically mean increased nutrition, as it is dependent on the agricultural products available. Furthermore, increased production has human resource and labour market implications. Greater production and processing is likely to use more labour. It will also increase the level of management required: the management of these processes is complex, requiring significant managerial time. The availability of management resources and time will require attention.

Save the Children’s 2013 *Food for Thought* report, which focused on unlocking children’s potential and boosting national prosperity through improving nutrition, highlighted the cognitive development impacts of under-nutrition in the first 1,000 days of a child’s life. For example, malnourished children score 7% lower on maths tests, they are 19% less likely to be able to read a simple sentence by the age of eight, and 13% less likely to be in the appropriate school grade for their age.¹³

The lost earning potential from child malnutrition could cost the global economy a staggering \$125bn by 2030.¹⁴ This evidence is corroborated by the Cost of Hunger assessment conducted by the United Nations Economic Commission for Africa (UNECA),



Source: Dobson R: 2007. BMJ V335 (7616): 367 – Urban children healthier than rural children in developing world.



Source: Comparative Health Systems: Global perspectives. Editors Johnson JA and Stoskopf CH Oct. 2010.

which demonstrates that child under-nutrition has debilitating impacts on national economies, reducing gross domestic product (GDP) by as much as 16%.

The distribution and cost of productivity losses in four African countries have been estimated and are outlined in productivity terms. They represent a significant drain on GDP, of 3.9%, 16% and 2.9% respectively for Uganda, Ethiopia and Swaziland (see Table 1).¹⁵ Given that all three countries have a considerable proportion of their populations working in agriculture, the loss

of productivity is significant. (For example, 88% of Uganda's population is engaged in agriculture.)¹⁶

These production losses represent large numbers of people who would otherwise be part of the labour force and contributing to national output (see Table 2). Given that most smallholders are labour constrained, an additional labour force (of potentially 567,000, 175,000 and 3.2 million in Uganda, Swaziland and Ethiopia respectively) could make a substantial difference to production and growth.

TABLE 1 THE COST OF MALNUTRITION TO NATIONAL ECONOMIES (IN LOCAL CURRENCY, US\$, AND AS PERCENTAGE OF GDP)

Country	Losses due to malnutrition (local currency)	Losses due to malnutrition (US\$)	Equivalent % of GDP
Egypt	EGP 20.3 billion	\$3.7 billion	1.9
Ethiopia	ETB 55.5 billion	\$4.7 billion	16.5
Swaziland	SZL 783 million	\$76 million	3.1
Uganda	UGX 1.8 trillion	\$899 million	5.6

Source: Individual cost of hunger assessment reports for Egypt, Ethiopia, Swaziland and Uganda; published by the individual governments in conjunction with UNECA, ADB, AFC, WFP and others. Sept 2013

TABLE 2 COST OF HUNGER STATISTICS FOR THREE SUB-SAHARAN AFRICAN COUNTRIES

Country	Economic loss – non-manual (US\$)	Economic cost of working hours lost (US\$)	Lower productivity in manual activities (US\$)	Total cost (US\$)	% of GDP
Uganda	94,055,459	256,185,869	163,453,861	513,695,189	3.9
Ethiopia	33,066,125	2,120,041,218	680,209,871	2,833,317,213	16.0
Swaziland	25,894,415	12,998,790	35,076,100	73,969,305	2.9

Sources: *Cost of Hunger* reports for Ethiopia, Swaziland and Uganda, Sept 2013

None of these countries can afford to sustain this level of productivity losses. In Ethiopia and Uganda, there have been strong political statements about reducing these losses. In the Ethiopia *Cost of Hunger* report, the foreword by the Ethiopia Minister of Health has hailed the report as “undoubtedly a call to action”. The release of the *Cost of Hunger* report coincided with the launch of the National Nutrition Plan (NNP). The recent Joint Annual Review of the Policy and Investment framework called for greater nutritional prominence. Taken together, these steps demonstrate that nutrition is high on the government of Ethiopia’s agenda. In Uganda and Swaziland, the *Cost of Hunger* assessments have engendered similar levels of priority and urgency.

THE STRONG LINKS BETWEEN AGRICULTURE AND NUTRITION

Agriculture and nutrition are closely inter-connected, providing people – irrespective of their age – with their daily nutrient intake. Agricultural products provide energy, protein, vitamins and minerals (calcium, phosphate and iron) – and are therefore critical to addressing malnutrition, particularly among children and vulnerable groups.

In addition, a large proportion of children and adults who are malnourished live in rural areas and depend on smallholder farming for their livelihoods. An analysis of Demographic and Health Survey (DHS) data shows that people living in rural areas are between 1.3 and 3.3 times more likely to be stunted than their urban counterparts (see Figure 1, page 2).¹⁷ In some countries, such as Malawi, agriculture provides up to 80% of total employment and accounts for 29% of GDP.¹⁸ As such, the outputs from agriculture, alongside interventions to improve the nutritional status of those

engaged in food production, could have a major impact on reducing the prevalence of stunting.

The Lancet’s 2013 series of papers on maternal and child nutrition helpfully outlines a range of channels through which direct and proximate factors can impact nutritional status.¹⁹ Direct factors include (but are not limited to) adolescent health and pre-conception nutrition, dietary diversity, and nutrition interventions during emergencies. Nutrition-sensitive approaches include (but are not limited to) social safety nets, early child development, water and sanitation, and agriculture and food security. Providing a policy environment that prioritises and facilitates the implementation of the direct factors mentioned earlier is equally important.

A starting point for analysing nutrition-sensitive agricultural approaches is to map the various pathways through which agriculture can impact on nutrition. While the literature on nutrition-sensitive agriculture interventions is increasing, the focus tends to be on a very tightly defined kind of evidence, mainly from comprehensive literature reviews. Yet there has been very limited investment in gathering this kind of evidence to date. One systematic review found more than 7,000 relevant research papers, but only 23 qualified for inclusion in the study, due to criteria about the types of evidence that would apply.²⁰

The key challenges in ensuring sustainability of nutrition-sensitive approaches include creating a viable, evidence-based business model that smallholder farmers can follow. It needs to generate enough income for smallholder farmers and their families to earn their livelihood. But such a model also needs to set appropriate nutrition-related goals and targets to ensure that families have and pursue a diverse and nutrient-rich diet; accordingly, agriculture plans need to be designed with appropriate indicators

for measuring progress against these goals and targets. Maintaining the political will to pursue nutrition-sensitive approaches may well be challenging in the face of competing issues and interests. But the potential benefits demand no less. The maintenance and enhancement of political momentum and clear political leadership at the national, region, province, district and local government levels is vital. The gains of improved nutrition are likely be realised and consolidated at the lower administrative levels.

Many factors affect household dietary diversity, including labour requirements, market conditions, agriculture policy, and other influences such as food preferences and consumption patterns. In order to ensure consumption of the recommended daily intake of vitamins and minerals, individuals need

access to enough nutritious foods, social norms that promote good nutrition practices and increased consumption of nutritious foods, as well as adequate income to purchase nutritious foods (if they are not growing or producing them). Ensuring nutritious foods are available at an affordable price at a local level is a first step for the agricultural sector.

The remainder of this report looks at the policy frameworks and governance that guide nutrition and agriculture in 18 African countries (see Appendix 2). We focus on two countries (Ethiopia and Malawi) to review the management of agricultural systems at the local and district levels, highlighting key lessons on the types of support needed to help ensure that CAADP plans meet their objectives in reducing under-nutrition.



PHOTO: JIRO OSE/SAVE THE CHILDREN

Awatash, a mother with three children from Tigray, Ethiopia, received five sheep from a Save the Children programme. She was also trained on how to grow vegetables in her garden during the rainy season.

“Before I got the sheep, I had difficulty feeding my children,” says Awatash. “We had two meals a day only of cereal. My children had health problems – skin diseases, diarrhoea, problems with their eyesight, and they were underweight.”

“Now I give my children milk every day. Their health is better and they are not too thin any more,” she says.

Access to livestock is an important source of nutrition and revenue. But ensuring access to communal grazing and providing animal drinking water are likely have an impact on the demands on women’s labour. Adverse impact needs mitigation.

2 POLICY FRAMEWORKS FOR AGRICULTURE AND NUTRITION

Much of the lack of progress on improving child nutrition to date has been the result of a lack of political will and the absence of strong leadership. Progress is now being made, however, partly due to the efforts of the Scaling Up Nutrition (SUN) Movement and other high-profile initiatives to push nutrition higher up the global agenda.

Many countries are now developing national nutrition plans and are committing resources to implement them. However, despite many of these plans being developed and ‘owned’ by multi-stakeholder platforms, they are yet to be integrated into the plans of all relevant sectors.

Agricultural policies and CAADP investment plans guide the prioritisation of agricultural production. Yet the goal of improving child nutrition is notably absent in half of the plans and policies that Save the Children analysed. In reviewing the national agriculture policies of 15 African countries, Save the Children notes that production or productivity is referred to 22 times in the “strategic objective” outputs, while nutrition or nutrition security is mentioned only five times.

Save the Children also noted how frequently certain key words for nutrition were mentioned in the different components of 18 national CAADP plans, to get a sense of their focus. The words ‘nutrition’ or ‘nutrition security’ were included as part of the ‘goal’ in just four of the 18 plans, and mentioned in the ‘purpose’ of just three of the 18. The plans focus primarily on crop production and prioritise a limited range of staple crops (maize, rice and wheat).

Of course, it is not surprising that the plans focus on productivity, and there is no question that individual countries should set their own priorities. But to make real progress in tackling child malnutrition, it is imperative that nutrition be made a more explicit priority and be better integrated in these plans. From

our analysis, nine²¹ out of 18 of these plans include a nutrition component that can be built on (see Table 3). However, there is a significant variation in the per capita investment anticipated. Some countries are spending more than US\$200 per capita; in contrast, Burkina Faso is investing US\$3.12 per capita and Nigeria is investing US\$8.27 per capita. The purpose of the agricultural investment plans is to enhance agricultural and economic growth and to ensure greater food security. Many countries have predominantly agrarian economies and will require high levels of investment to transform the agricultural economy (or sector). More industrialised economies, such as Nigeria, can probably justify lower levels of investment, but agriculture is still the basis of the industrialisation process, and the need to reduce stunting is a priority.

Ghana’s CAADP Investment Plan (Medium Term Agriculture Sector Investment Plan (METASIP) 2011–2015) identifies micronutrient malnutrition as the ‘silent killer’.²² Its vision is for a modernised agriculture base, leading to a structurally transformed economy, evident in improved food security and reduced poverty. The plan has an outcome indicator to change food self-sufficiency levels, with a target (2015) “to achieve 100% food self-sufficiency”. The vision for the Ghana investment plan seeks a “modernized agriculture, a structurally transformed economy, evident food security, employment opportunities and reduced poverty”. The plan’s mission – “to promote sustainable agriculture and thriving agribusiness” – overlooks nutrition. However, the results framework, which is focused on food security and disaster preparedness, does include an outcome indicator on stunting in children, which is measured annually. Setting a specific child nutrition-related indicator within national agriculture plans is an important and positive first step to improving nutrition outcomes.

Yet in the METASIP results framework, specific sub-programme result areas have targets for a 50% or 25% increase over baseline. The cowpea sub-programme has a 25% increase over baseline indicator. Specific results anticipated are listed by crop (eg, for cowpea, a 25% production increase over baseline). Separate results are also listed for reduced levels of underweight and stunting in children (underweight and stunting reduced by

50% by 2015). The result areas are individual and discrete. What is perhaps missing is linking the achieved agricultural targets with the achieved stunting and/or underweight targets. A more integrated results framework is required, which links agriculture to nutrition results or outcomes.

Kenya's Agricultural Sector Development Strategy (ASDS), which implements the country's CAADP plan priorities,²³ is centred on increasing production

TABLE 3 PROPOSED COUNTRY CAADP BUDGET (PER CAPITA) COMPARED TO STUNTING RATES

Country	CAADP expenditure per capita (US\$)	Stunting rate (%)	Year of measurement
Benin	96.16	44.70	2006
Burkina Faso	3.12	35.10	2010
Burundi	119.00	57.50	2010/11
Ethiopia	191.65	44.20	2010/11
Ghana	28.66	28.60	2008
Kenya	69.67	35.20	2008/09
Liberia	220.70	39.40	2006/07
Nigeria	8.27	36.00	2011
Mali	47.39	38.50	2006
Niger	64.57	54.80	2006
Togo	185.76	29.80	2010
Rwanda	55.86	44.30	2010/11
Senegal	300.12	15.50	2012
Sierra Leone	65.10	32.60	2010
Tanzania	227.66	42.50	2009/10
Malawi	81.32	47.80	2010
The Gambia	160.47	27.60	2005/06
Uganda	29.87	33.70	2011
Seychelles	0.00	7.70	1987/88
Côte d'Ivoire	0.00	39.00	2007
Cape Verde	0.00	21.40	1994
Guinea Bissau	0.00	27.70	2008
Mozambique	0.00	43.10	2011

Source: World Health Organization, Nutrition Landscape Information System

and greater commercialisation, with a subsidiary thematic area on food and nutrition security. It does not appear to include a results framework, so it is not known what indicators are being monitored.

The use of appropriate nutrition objectives is an important factor in determining whether a policy delivers tangible change. Once the objectives have been set, supportive actions need to be integrated into the plan (at every level) to ensure that they will be achieved. Similarly, identifying appropriate indicators will enable the tracking of progress towards achieving these objectives. At the district

and field levels, programme managers will be responsible for delivering positive outcomes on indicators set at the purpose and output levels (“what gets measured gets managed”).

Ethiopia (see box below) and Burundi both represent examples of best practice, as their national agriculture plans include clear purpose- and output-level nutrition targets. Benin, The Gambia, Nigeria and Uganda have a nutrition indicator at the goal level. There is a full analysis of the CAADP logical frameworks and the extent to which nutrition is integrated into the 18 plans in Appendix 2. Nine of

ETHIOPIA: COORDINATING GROWTH AND TRANSFORMATION, AGRICULTURE INVESTMENTS AND NUTRITION

Ethiopia has what is considered a *very high* prevalence of stunting, affecting 44% of all Ethiopian children under five. As noted earlier, in Table I, this is costing the Ethiopian government an estimated US\$4.7bn per year.²⁴ Agriculture is the main focus of Ethiopia’s economy, accounting for 46% of GDP, and providing 85% of total employment. Between 2003 and 2009, Ethiopia spent 13.7% of its budget on agriculture; in 2011, the figure was higher, estimated at 19.7%. Ethiopia is more than meeting its Maputo Declaration targets – a drive to get African countries to invest 10% of national budgets on agricultural development. But despite this, malnutrition remains a persistent challenge that affects the lives of millions of people throughout the country and will continue to do so for a generation or more.

Three policies in Ethiopia are critical to nutrition and agricultural development: the Growth and Transformation Policy (GTP); the Policy and Investment Framework (PIF) (which is Ethiopia’s CAADP investment plan); and the National Nutrition Programme (NNP). While these three frameworks have a different focus and different objectives, there is strong coherence between them. The GTP has a strong focus on poverty alleviation and food security, with a strategic pillar on “maintaining agriculture as a major source of economic growth”. However, it makes no mention of nutrition. The PIF has a development objective to “sustainably increase rural income and national food and nutrition security”. The first strategic objective of the NNP is to “improve the nutritional

status of women (15–59 years) and adolescents (10–19 years)”. The focus on nutrition evident in these two plans is welcomed.

The PIF includes reduced stunting as a development objective and as an indicator (3% annual reduction in stunted and underweight children in rural areas). Despite this, Save the Children’s analysis of the PIF found that its main focus on agricultural productivity affords little room for attention to nutrition. The PIF could provide an opportunity to utilise the investments made in agriculture so that it makes a much greater contribution to reducing malnutrition. The presence of an indicator to measure progress on reducing child stunting within the CAADP investment plan is very useful, and something that could easily be incorporated by other CAADP countries.

Finally, the NNP aims to reduce the prevalence of stunting from 44.4% to 30% by 2015, which is broadly in line with the nutrition indicator of the PIF.

As well as coherence across relevant policies, there is good coordination across ministries at the national and district levels. Coordination is important because it helps to facilitate multi-sectoral programming and shared expertise, with a view to achieving the development objectives identified. For example, Ethiopia’s National Nutrition Coordinating Body fulfils this purpose and has oversight of coordination structures at woreda and kebele levels.

the 18 plans analysed have a stated goal or purpose to improve nutrition. These range from Rwanda (which has a priority of “achieving food and nutrition security for all Rwandans”) to Tanzania (which has a purpose-level indicator for “improving the nutritional status of the country, including children and other vulnerable groups”). Other countries, such as Uganda, have an indicator for “household food and nutrition security improved”. These strategic objectives are a good first step, but could use further definition to ensure a pathway to success is adequately understood and monitored.

Burundi’s CAADP plan states that child stunting is to be reduced by 3% per year, as does Ethiopia’s Agriculture Sector Policy and Investment Framework (PIF). The CAADP investment plan is thus linked to achieving a reduction in stunting. These are specific, quantifiable and time-bound indicators against which progress can be monitored. As a model for other countries, these are positive steps, as their respective ministries of agriculture will be obliged to report progress against these targets. Other countries should specify similar targets and monitor progress against them.

These two examples stand out because of how they prioritise nutrition and its linkages with agriculture. Other national agriculture plans do not provide this level of prioritisation, which is a critical shortcoming.

A FOCUS ON INCREASING PRODUCTIVITY

Often, the best indication of political commitment to an issue is the budget allocated to it. Save the Children analysed the CAADP budgets for five countries, which were selected based on their strategic importance for reducing malnutrition, and availability of data. The analysis shows that 58% of CAADP planned expenditure in these countries is allocated to agribusiness and market infrastructure, 26% on further developing existing agricultural extension services, 9.8% on agricultural research and development, and 5% on strengthening community institutions through capacity building and training (see Table 5). These budget allocations indicate that most investment is going towards developing agriculture as a business. However, these investments could provide an opportunity to address malnutrition if the businesses are successful in generating income for workers and smallholders to buy enough nutritious food for their families, through selling surplus production, generating revenue and enhancing purchasing power.

Most of the CAADP plans have been through a public consultation process with local stakeholders, including civil society organisations, farmers’ associations, and the private sector. However,

TABLE 4 ANTICIPATED CAADP INVESTMENT PLAN ALLOCATION (IN US\$)

Country	Extension systems	Agriculture research and development	Agribusiness and market infrastructure	Strengthening community institutions
Uganda	282,136,000	132,319,000	23,658,000	24,652,000
Ethiopia	0	0	152,000,000	0
Kenya	10,102,179	0	605,085,254	0
Malawi	101,778,500	6,519,850	85,806,500	35,912,000
Rwanda	11,750,000	13,460,157	26,653,637	30,300,000
Total	405,766,679	152,299,007	893,203,391	90,864,000
% of total allocation to agriculture	26.31%	9.88%	57.92%	5.89%

Source: Analysis of CAADP agricultural investment plans for Uganda, Ethiopia, Malawi and Rwanda.

their development and implementation has been led by the ministry of agriculture in the country concerned; as would be expected, most plans reflect that ministry's conventional priorities, principles and funding allocations.

CAADP plans were drafted around 2010 when nutrition was receiving relatively little attention in the policy arena. However, the AU's decision to declare 2014 as the Year of Agriculture and Food Security reflects the growing momentum for integrating nutrition into various sectoral plans in order to achieve overall development outcomes. This presents a prime opportunity to review existing CAADP plans, ensure that they are on track to deliver on the "food supply and hunger" pillar of the CAADP framework, and take corrective actions where needed.

Save the Children believes that hunger and food security objectives cannot be fully realised until adequate nutrition is secured, which requires agriculture plans to prioritise nutrition, and a shared, coherent vision across all relevant sectors.

Another opportunity to encourage nutrition-sensitive agricultural development lies in the priorities set out in each country's Poverty Reduction Strategy Paper (PRSP), as well as in economic recovery or development policies that generally steer the overarching government policy priorities. Integrating nutrition into the objectives of these policies and ensuring that these are translated into specific policies and actions (whether within agriculture or other relevant sectors) is a critical step in improving coherence across government to achieve a reduction in malnutrition.



PHOTO: NYANI QUARNEY/SAVE THE CHILDREN

A garden programme set up by Save the Children in Tessaoua, Niger.

BIODIVERSITY AND NUTRITION

Orange-fleshed Sweet Potato (OFSP) has enhanced β -Carotene, the pre-cursor to vitamin A or Retinol. OFSP has been disseminated by Harvest Plus and through DFID's Research into Use programme in Uganda and elsewhere. There was rapid uptake and vitamin A intake increased significantly among women and children.²⁵

Fortification of foodstuffs is one mechanism that has received attention as an effective way to address nutrient deficiencies and other forms of malnutrition, and investments in this area are critical. The people who are most food insecure often rely on small-scale, local food production for their livelihoods. Dietary diversity can also deliver better nutrition and health, with benefits for livelihoods, human development and productivity over the life course.²⁶

Balanced nutrition requires not only diversity of crops but also diversity within crops, as some lesser-known crops are superior to staple crops in terms of their micronutrient content.²⁷ Emerging evidence shows how such systems contribute in practice to the reduction of micronutrient deficiency. A study shows that increased biodiversity in paddy fields allows aquaculture to be practised alongside rice cultivation, with a fish–rice system increasing net income by between 7% and 65%, compared with paddy monoculture.²⁸

Increased diversity of crops and farming systems is known to support a range of income streams,²⁹ which in turn can increase community resilience to local or global economic shocks that have damaging effects on food and nutrition security.³⁰ Similarly, by supporting the agro-ecological systems on which people depend, biodiversity can improve people's resilience to the harmful effects of climate change – contributing in turn to reduced negative impacts on nutrition.

The concentration of industrial agriculture in the hands of fewer businesses that are producing a relatively small variety of crops threatens the biodiversity within food systems. Of the 10,000 crop varieties that have been used for human consumption,³¹ only 150 are regularly cultivated by large-scale agriculture, and only three (maize, wheat, and rice) supply the bulk of global protein and energy needs.³²

Smallholder producers are well situated to increase biodiversity within agricultural production, and helping them do this could be beneficial in a wide range of areas: encouraging greater community resilience, strengthening livelihoods and income certainty, and reducing carbon emissions and other harmful impacts of climate change.

3 GOVERNANCE OF NUTRITION-SENSITIVE AGRICULTURE

It is important to have nutrition objectives and strategies at the national level, particularly targeted towards children, as these will guide implementation at the district and community levels to deliver better nutrition outcomes for children.

The need for a clearly articulated agriculture policy is crucial, as is a clear understanding of how it will be implemented at the district and community levels. The purpose of this chapter is to outline existing institutional structures at the district and community levels that can be helpful in implementing nutrition-sensitive agriculture approaches.

Many countries are starting to put in place policy frameworks to coordinate nutrition across all relevant government ministries and departments, and to integrate nutrition into various plans, strategies and policies. With a multi-sectoral approach, collaboration between different government ministries will be strengthened. Collaboration within and between ministries will also be further encouraged and developed through joint planning processes and reviews.

Interviews with senior officials in Malawi and Ethiopia about the structure and nature of decision-making on agriculture and nutrition revealed certain challenges in ensuring that national plans on nutrition are interpreted as intended, all the way down to the district or local government level. One lesson that can be drawn is that the different roles and responsibilities of officials involved in implementing joint agriculture and nutrition programmes must be clearly defined by the principal secretary or other senior official who has oversight of the convergence and implementation process. Another lesson is to **develop shared indicators on nutritional improvement across sectors**, which different government departments are required to report on. Lastly, thematic working groups comprised of representatives from different sectors

(including civil society, the private sector, farmers' associations, and women's groups) can be extremely helpful in developing the vision and pathways forward to implementation.

IMPLEMENTING NUTRITION-SENSITIVE AGRICULTURE AT THE DISTRICT LEVEL: A MODEL

Figure 3 outlines a suggested institutional configuration that is closely modelled on Malawi, but which also parallels other ministries of agriculture throughout Africa.

In this model, the District Commissioner (DC) has oversight of all budgets within the district. The DC is the secretariat for the District Executive Committee, which is advised and guided by the District Assembly. The DC is accountable to the Ministry of Local Government for all expenditures.

All the line ministries are answerable to and report to the DC and the District Assembly. Line ministries also report to the Ministry headquarters. In a number of countries, depending on the extent of decentralisation, accountability is increasingly undertaken by district staff, reporting to the District Assembly and to the Ministry of Local Government. Districts have their own development plans, which should reflect local people's needs and wishes. It is therefore critical to provide the DCs with the knowledge and incentives to encourage their staff to drive forward nutrition-sensitive interventions.

In this model, at the district or local government level, the government's agricultural extension service provides a ready-made network of individuals who could 'champion' nutrition-sensitive agriculture. Most governments run agricultural extension services, which are expensive to maintain. It is vital to maximise the benefits the extension service can

FIGURE 3 SUGGESTED MODEL FOR GOVERNANCE OF NUTRITION AND AGRICULTURE AT THE NATIONAL LEVEL

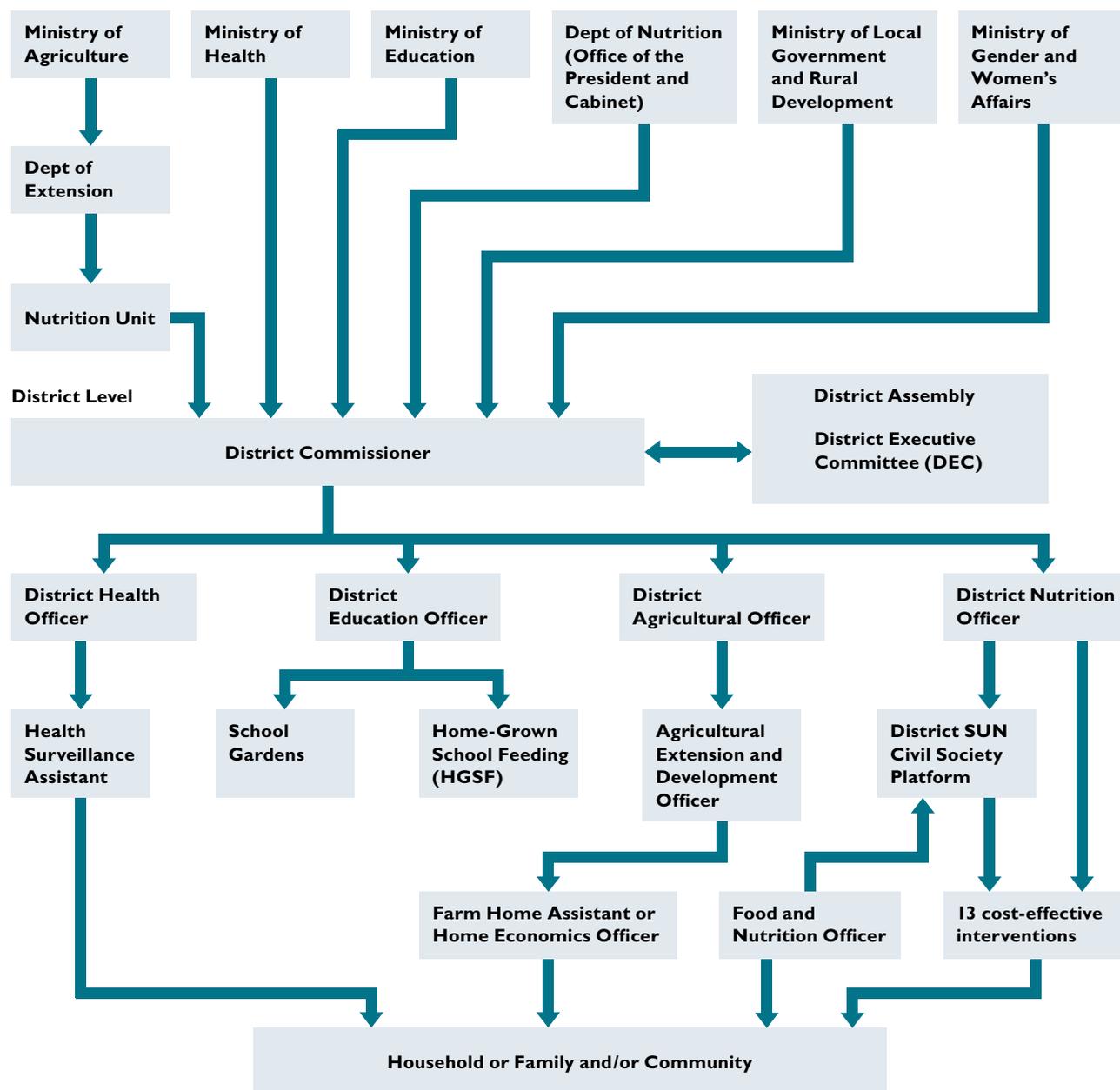


Figure 3 presents a district-level institutional configuration based on the governance structure in Malawi. The nutrition unit reports to the Director of Agricultural Extension. It is completely separate from the Department of Nutrition, which is a nationally based government department, located in the Office of the President and Cabinet (OPC). There are strong links between these two institutions. The fundamental problem is that there is no institutional lead at district level.

bring by broadening the spectrum of subject areas it covers to include not only training in agricultural issues, but in nutrition. If government extension workers were equipped with the right tools – such as Save the Children's *Cost of the Diet* tool (which calculates the cost of the cheapest diet that meets the nutritional requirements of families using just the foods available locally) – they could raise the profile

of nutrition among smallholder farmers, including encouraging greater crop diversity. (See box on page 14 for more on the *Cost of the Diet* tool.) The nutrition messages require re-enforcement and triangulation – with the Ministry of Education, Agriculture and Health at the district level all delivering the same message.

COST OF THE DIET: A TOOL TO IMPLEMENT NUTRITION-SENSITIVE AGRICULTURE WITH SMALLHOLDER FARMERS

A key priority is for agriculture extensionists, nutritionists, and health and community workers to be able to determine the quantities of micronutrients delivered by a ration. A ration is comprised of home-grown foods and purchased foods; the proportion of home-grown food and purchased food varies throughout the year. In a reasonable year home-grown foods may be available for three to four months after harvest, with purchased foods playing an increasingly dominant role in the lead-up to the succeeding harvest. It is critical for the different household advisory staff to know, recognise and understand the micronutrients delivered by a ration. Such information will bring nutrition into stark reality at a community level. In order to measure the nutritional value of crops and help ensure that agriculture is nutrition-sensitive, agriculture extension would benefit from encouragement to use some basic tools. Save the Children's Cost of the Diet programme uses a list of foods produced by the Food and Agriculture Organization of the United Nations (FAO) and generated from samples analysed in six

countries (Senegal, Kenya, India, Egypt, Mexico and Indonesia). It is a small spreadsheet that uses generic nutrient values for different crops and foodstuffs. The tool will also generate information on the cost of the diet to the consumer, enabling the health extension agent to advise on the cheapest nutritious diet and on the diet with the best nutrition available. Diets deficient in critical micronutrients can be modified with the addition of different foods available from home-grown or purchased (market) sources.

The regular use of such a tool, rolled out by district nutrition officers and agricultural officers, in conjunction with other messages and interventions, and other relevant specialists (livestock officers, community development officers and district officers), would raise awareness and encourage agriculturalists and people with other unrelated disciplines or from the private sector to consider the impact and implications of the crops and enterprises they promote on household (and particularly children's) nutrition.

In Malawi at present, in line with agriculture extension policy, the government-funded agricultural extension service provides information to farmers on increased crop, livestock, tree and crop production. The agricultural extension network covers the whole of the country; of all the different ministries, it is the most extensive network. Most extension workers deliver agronomic and animal husbandry advice. A number of countries have a nutrition unit as part of the Department of Extension, within the Ministry of Agriculture (as is the case in Malawi). The purpose of the nutrition unit – or home economics officers (as found in Kenya and Ethiopia) – is to include nutrition messages about the crops cultivated or animals reared. The information will cover how to cook different agricultural products, the types of nutritious food to target and other key nutrition-related messages. The extension service, because of its coverage and expertise, is well placed to provide nutrition information to farmers and their families. The addition of a nutritional component into the extension messaging will provide a more extensive extension package for very little additional training

and costs. The inclusion of nutrition will provide specific nutrition information, permitting the recipient households to make more informed decisions on the mix of crops, animal, tree and fish enterprises that will maximise nutritional impact and micronutrient intake.

Using the agricultural extension services to improve nutrition is a reasonable proposition. However, a number of extension services suffer high vacancy rates. In Malawi, for example, some districts have vacancy rates of upwards of 40%.³³ Capacity and training remains a significant constraint. Much of the messaging delivered by extension agents to smallholder farmers is unsupported by others with specialist knowledge. Frequently, no nutritionist is available at the district level, nor are they fully budgeted. Recruiting both specialists and generalists at a district level is difficult due to remoteness and restricted government staffing levels.

Nevertheless, on a wider scale, there is a need to deliver more integrated and comprehensive advice on nutrition and the micronutrients required for healthy growth and cognitive development. Information on

how to reduce child malnutrition should also be included. District-level coordination committees could be developed with the purpose of coordinating the different Ministry extension messages. These extension messages will come from the different ministries involved in the reduction of child nutrition, and should be coordinated and mutually reinforcing. Thus, the district's population will receive coordinated and mutually reinforcing messages on how to reduce child malnutrition, including the benefits of breastfeeding, nutritious foods, cooking, and good hygiene practices. These tasks are not the responsibility of one ministry, but relate to the work of many ministries. Coordination is therefore vital.

Agricultural extension workers are the most extensive information network in many countries. As such, they offer a potentially powerful platform to deliver multiple messages to help each country reach its goals on agricultural development, productivity, and overall food and nutrition security. It is important, however, to examine each context separately in order to avoid overburdening agriculture extension officers, or to give the impression that agronomists should become nutritionists or vice versa. Rather, the goal is to effectively increase the

coordination of these complementary messages and have them reinforced across ministries.

In the governance model proposed in Figure 3, district officers manage the budget and implement policy, according to the guidelines. They are responsible for staff working in specified disciplines and designated geographic areas. Agricultural extension workers are responsible for providing agricultural training within a given area, while health extension workers cover the disease profile within their assigned geographic area.

The district or local government level is the site of implementation. In the case studies Save the Children investigated for this report, district or local government staff provided the platform for delivery of nutrition-sensitive agricultural messages. However, that platform was constrained by a lack of resources (human and financial), and by a lack of district-level leadership. In some countries, nutrition units governed by the Ministry of Health are connected with the Ministry of Agriculture. The maximum benefit from this arrangement could be achieved with strong coordination, accountability and information-sharing between the different ministries.

HARVESTING NUTRITION

While there is much logic behind the argument that modifications to agricultural practices can improve nutrition, the evidence base remains limited. The concentration of agricultural innovation within a few multinational companies leaves many smallholder farmers unable to improve yields or the nutritious value of their crops.³⁴ It is essential that states and non-state actors support innovative attempts to address this debilitating knowledge deficit.

Save the Children has teamed up with the Global Alliance for Improved Nutrition (GAIN) and the SecureNutrition team at the World Bank to launch a competition intended to gather information and results from projects that successfully bridge the gap between agriculture and nutrition. By inviting applications from agro-nutrition projects from around the world, the Harvesting Nutrition competition³⁵ aims to gather examples from the field, collect knowledge about how to integrate agriculture and nutrition programmes and policies, and identify the key challenges to bridging the gap between the two areas.

The competition emphasises that new thinking will be needed in order to break down the silos between the agriculture and nutrition sectors. Submitted entries are marked not only on how they tackle the links between the two areas, but also on their scalability and impact, as well as the degree to which they show innovative thinking in their design.

Nutrition is recognised as a problematic issue by agriculture ministries in many countries. In Nigeria, the federal Ministry of Agriculture has approved and is beginning to implement a nutrition value chain. In Tanzania, the Ministry of Agriculture acknowledges that it has a key role to play in improving nutrition, and is formulating a national nutrition policy, which over time will be further integrated into its main agricultural policy. Such initiatives will take time to become fully embedded, and the necessary changes to agricultural extension policy and messages will also take time to filter through.

The appointment of a District Nutrition Officer to advise the district head is one option for strengthening the link between nutrition and agriculture (and even water, sanitation and hygiene), and could help create effective, complementary messaging that serves multiple purposes. The ENGINE project in Ethiopia (Empowering New Generations to Improve Nutrition and Economic Opportunities) established a district-level (*woreda* and *kebele*) nutrition steering committee that has succeeded in driving forward coherent nutrition and agriculture messages. The National Nutrition Coordinating Council in Ethiopia has overall oversight of the *kebele* and *woreda* committees.

ENSURING SUSTAINABILITY THROUGH PROFITABILITY

Any nutrition-sensitive agriculture policy must acknowledge that agriculture is ultimately a business.

Smallholder farmers manage their crop and/or livestock enterprises, tree production and fishery, using their labour and management skills to produce foodstuffs or commodities to consume and/or sell. Evaluating the impact of the revenue generated is essential. Determining the return on investment made and assessing the labour required and the return to family labour are essential assessments of profitability.

THE IMPACT OF NUTRITION-SENSITIVE INTERVENTIONS ON WOMEN

While there are a range of views about how targeted agricultural programmes can improve nutrition, there is strong consensus that women are a key part of the pathway to improved child nutrition, as they play a pivotal role in terms of agricultural inputs, intra-household resource allocation, child nutrition and providing labour for agricultural management operations.³⁶ It is important to remember that the most success in improving child nutrition and thus in reducing stunting is achieved through dialogue with women. Thus, activities should be targeted at improving women's social status, empowerment, and access to resources, and should culminate in their inclusion in household decision-making.

National agricultural policies should therefore consider the time and resources available to women farmers, as well as the constraints they face to their agency and empowerment. In many societies, women do much of the work involved in agricultural production and provide significant input into their own enterprises, but have a limited role in decision-making. Programmes and policies should include gender-disaggregated data and indicators to assess the impact of nutrition-sensitive agriculture interventions on women and men, as well as any unintended outcomes.

Ways to empower women have long been identified as key to development, but few examples from the

field offer practical suggestions. In the Haryana Community Forest Project,³⁷ women's groups created a vehicle to provide literacy training (reading and writing), particularly in basic skills and in business skills, through which the women could run and manage their own businesses. The formation of women's groups is a useful vehicle through which to discuss a multitude of other issues, such as nutrition, hygiene and health, as well as discussing product quality, training in new techniques, or village savings and loan schemes. Any policy work and planning must focus on improving the level of women's education and must seek to develop their status within any society, through a process of group formation, and improving their ability and capacity to manage a business. This will ultimately lead to increased empowerment.

Nutrition-sensitive interventions that were analysed in Ethiopia and Malawi for this research showed unintended impacts on women, principally through increasing their work burden (particularly weeding, and carrying water). This reveals why it is so important for policies and programmes to consider impact on women at the design stage, so that appropriate steps to mitigate any negative impacts (such as providing labour-saving devices) can be taken.

Government, the private sector and civil society can promote different types of agricultural enterprises through training extension workers, subsidising certain goods, providing markets, or land use planning. For example, the private sector may establish a value chain to purchase sorghum and cassava of a given quality. Smallholders would require training on the accepted quality standards. All Purchase for Progress farmers (WFP) receive training in quality standards. Once many producers reach the required quality standards, there will be an increase in the quantity purchased by WFP. So, if the price and incentive structure is correct, supply will increase.

PUTTING NUTRITION-SENSITIVE AGRICULTURE INTO PRACTICE

This section demonstrates how the Cost of the Diet tool (see page 14) can be used to monitor the nutritional value of a ration or meal.

At the field level, there is a need to achieve a better match between the crops cultivated and the recommended nutrient intake (RNI) of different family members, based on their age, gender and level of activity. Save the Children has assessed the diet of a family in Ethiopia, using the Cost of the Diet tool (see Table 5).

The family of four (a widow with three children) had received two interventions from the ENGINE project – namely, five sheep (a ram and four ewes) and six chickens (a cockerel and five hens). These animals produced milk and eggs. As a consequence of this diversified production, the family's diet improved. Family members now consumed milk and eggs, and

there was enough produce left over to sell in the local market, which generated a small income that was used to buy other essentials such as iodised salt, oil and cooking oil. All these different products go to make up a meal or a ration. The family's ration changed from barley and a vegetable stew to a more diverse diet containing animal products.

The breakdown of the different diets before and after the intervention is shown in Table 6. **Before the intervention**, the family diet was deficient in energy, protein and fat, with many vitamins not provided at all (vitamin A, C and B12). The absence of vitamins A and C may be due to the absence of fresh vegetables in the family diet, while the absence of vitamin B12 reflects the vegetarian nature of the pre-intervention diet. The calcium and zinc to phosphate ratio was low, suggesting that the children's bone formation may be slow or compromised. Magnesium and vitamin B1 (Thiamine) are the only micronutrients in surplus, in what is otherwise a very poor diet.

After the intervention, protein and energy have attained a dietary surplus. Because animal products are used, the vitamin B12 requirement is satisfied, ensuring cellular metabolism, which is essential for cellular production in the bone marrow, nerve sheath, and for protein production. While the family's diet has significantly improved, it is still deficient in energy, and low in five vitamins and two minerals (calcium and iron). To achieve a balanced diet delivering all the necessary micronutrients and minerals for children's healthy growth, further foods need to be added or substituted to the diet or ration. The diet is constrained by the spectrum of agricultural products produced, and by what a household can purchase (revenue and availability of products).

TABLE 5 DIETARY IMPROVEMENT OF A HOUSEHOLD IN TIGRAY (ETHIOPIA)

Household	Before intervention ration	After intervention ration
Family of 4: 1 adult (widow) and 3 children in Tigray, Ethiopia	1.2 kg barley/day made into Njera 1.0 kg (approx.) vegetable (pulse) stew	2 eggs/day 2 litres sheep milk/day 1.2 kg wheat/day 0.5 kg pulses (beans)

TABLE 6 DIETARY BREAKDOWN OF THE DIET CONSUMED BY DIFFERENT HOUSEHOLD MEMBERS AND THE MICRONUTRIENT CONSTITUENTS, BEFORE AND AFTER THE INTERVENTION

Before intervention																	
Age group	Energy	Protein	Fat	Vit A	Vit C	Vit B1	Vit B2 (Ribf)	Nia Equiv	Vit B6	Folic Acid	Vit B12	Pantoth Acid	Calcium (abs)	Mg	Iron (abs)	Zinc	P:Z Molar Ratio
12-23-month-old	849.60	30.00	5.52	0.00	0.00	1.25	0.62	20.32	0.72	31.20	0.00	0.58	19.80	319.20	0.52	6.72	3.18:0.1
%	95.0%	275.2%	18.5%	0.0%	0.0%	249.6%	124.8%	338.7%	144.0%	20.8%	0.0%	28.8%	13.2%	532.0%	89.4%	163.9%	Low
Rest of family	2336.4	82.5	15.2	0.00	0.00	3.43	1.72	55.88	1.98	85.80	0.00	1.58	54.45	877.80	1.43	18.48	8.75:0.28
%	34.4%	73.3%	6.7%	0.0%	0.0%	100.9%	50.5%	121.5%	52.1%	7.2%	0.0%	10.6%	5.0%	131.0%	24.6%	89.3%	Low
After intervention																	
12-23-month-old	894.00	30.39	45.95	400.00	4.53	0.56	0.83	13.28	0.51	71.30	1.57	2.79	154.87	210.50	0.36	5.97	1.53:0.09
%	100.0%	278.8%	154.2%	100.0%	15.1%	111.9%	166.6%	221.4%	102.0%	47.5%	174.4%	139.4%	103.2%	350.8%	61.7%	145.6%	Low
Rest of family	4536.8	152.6	219.9	1,857.30	22.00	2.97	3.96	70.52	2.66	350.68	7.12	13.62	751.62	1,125.50	1.86	30.77	8.45:0.47
%	73.9%	159.0%	107.5%	116.1%	18.3%	94.2%	125.9%	167.9%	75.1%	31.9%	107.9%	97.3%	83.5%	206.5%	35.4%	167.2%	Low

Deficiency

4 SHAPING NUTRITION-SENSITIVE AGRICULTURE THROUGH GLOBAL FRAMEWORKS

In this chapter we explore some (but not all) of the global and regional frameworks that have been developed in recent years. These frameworks reflect the greater priority accorded to nutrition within international policy circles, suggesting how they can encourage national governments to develop agriculture policies that are more nutrition-sensitive. We then look at some case studies of how to implement nutrition-sensitive agriculture interventions at the district and community levels, highlighting best practice.

GLOBAL FRAMEWORKS

SCALING UP NUTRITION

Perhaps the single biggest step forward for the nutrition sector was the establishment of the Scaling Up Nutrition (SUN) Movement in 2010. This global movement is founded on the principle that all people have a right to food and good nutrition. It works with governments, civil society, UN agencies, donors, businesses and experts to improve nutrition in member countries.

As of March 2014, 47 countries have joined the SUN Movement and 17³⁸ have developed national costed nutrition plans, aiming to secure the necessary financial resources for implementation nationwide. Many of the plans include an agricultural dimension that will be jointly managed by the Ministry of Agriculture and other relevant ministries (covering, for example, water and irrigation, health, and gender and women's affairs). However, it is not clear how these SUN costed plans relate to the CAADP plans that have been developed in many of the same countries, or how the two initiatives are working together. SUN

member countries are encouraged to have a SUN focal point to coordinate efforts across government; one option is for this role to engage with CAADP focal points – where they exist – to ensure that nutrition interventions are integrated into agriculture plans where appropriate.

NEW ALLIANCE FOR FOOD SECURITY AND NUTRITION

The New Alliance for Food Security and Nutrition was launched in 2012, under the United States Presidency of the G8. Its aim is to catalyse responsible private sector investment in support of CAADP.

Of the nine countries that have signed up so far, seven are classified as having *very high* child stunting rates (40% or more), and at least two are experiencing rising prevalence. While poverty is one of the underlying causes of malnutrition, the evidence shows that reductions in poverty or increases in income do not automatically lead to reductions in stunting. This means that the New Alliance goal to lift 50 million people out of poverty will not have a transformative effect on chronic malnutrition, or stunting, without a clearly stated nutrition goal and specific accompanying actions.

If the New Alliance were to set country-specific nutrition goals, it would change the conversation between governments, donors and businesses in a positive way towards ensuring real results on poverty *and* nutrition.

The New Alliance's draft accountability framework, released in May 2013, has the following indicators:

- access to dietary diversity
- food prices relative to income
- prevalence of child stunting under the age of five
- minimum acceptable diet for children aged 0–24 months.

While the inclusion of these indicators is a welcome step, the New Alliance's recent progress report (2013) does not actually measure progress in relation to the indicators.³⁹ This may be because activities are still very much in the start-up phase; but going forward, reporting on these indicators should be a priority. In addition, member countries should establish a distinct, country-specific goal and outcomes aimed at reducing malnutrition (or child stunting rates), and outline the specific actions they will take to achieve that goal.

INTERNATIONAL CONFERENCE ON NUTRITION

The first International Conference on Nutrition took place in 1992 and was jointly organised by the World Health Organization (WHO) and the Food and Agriculture Organization (FAO) of the United Nations. Delegates from 159 countries attended

and agreed a global plan of action for nutrition. This conference brought the health and agriculture sectors together to address the goal of nutritional security for all and, as such, place nutrition in its rightful place in development policy. The second International Conference is due to take place in November 2014, and represents an important opportunity to start to reshape the normative frameworks that govern food security and nutrition, ensuring that nutrition is increasingly integrated into other sectors, including agriculture.

NUTRITION FOR GROWTH

In June 2013, the UK government, the government of Brazil and the Children's Investment Fund Foundation (CIFF) hosted the Nutrition for Growth summit in the UK, with the aim of securing financial and political commitments to tackle malnutrition globally. The event convened 21 heads of state from high-burden



PHOTO: SEBASTIAN RICH/SAVE THE CHILDREN

A kitchen garden, Ruhango district, Rwanda.

countries, alongside donors, multilateral agencies, businesses and NGOs, all of whom committed to a number of ambitious targets. In total, \$23.1bn was committed towards interventions between 2013 and 2020.⁴⁰ This included \$4.1bn for direct nutrition interventions identified by *The Lancet Series*, and \$19bn in proposed existing spending on agriculture, social protection and health – with the purpose of making these sectors more ‘nutrition sensitive’.⁴¹ This presents a huge opportunity to showcase the benefits of nutrition-sensitive agriculture, if invested in the right way, and for tackling malnutrition. An effective accountability mechanism will be essential to ensure that the money spent does result in fewer children affected by malnutrition. Currently, data are not available for many of the appropriate indicators of progress in this area, such as stunting. Investments will also be required to develop robust indicators.

THE ‘ROAD TO RIO’

At the Nutrition for Growth summit, the Brazilian government made a commitment to hold another ‘moment for nutrition’ during the Rio Olympics in 2016. This event will be important for securing the resources required to develop the SUN costed plans currently being formulated (more than 17 countries out of 47 have developed plans that are in the process of being analysed). Rio will present an opportunity for a Southern government that has successfully reduced malnutrition to share its model and experience with high-burden countries.

Brazil has succeeded in reducing levels of malnutrition dramatically, falling from 37% in 1976 to 19% in 1990 and continuing to fall rapidly until 2011. However, this reduction has not been equitable, and malnutrition rates remain high in the poorer north-east region and among certain ethnic groups. For example, among the Quilombola (black communities whose land is in shared use), the rate of malnutrition is 76.1% higher than that of the average general

Brazilian population (nationally), and 44.6% higher than that of the rural population.⁴² At the same time, rates of obesity in Brazil are rising (the country has one of the highest rates of children who are overweight anywhere in the world).⁴³

The reductions in malnutrition that have occurred have been a result of an integrated strategy to reduce poverty and inequality. Brazilian Public Health expert Carlos Montero suggests that reductions in stunting between 1996 and 2007 can be attributed to interventions in four areas: family income (22.5%⁴⁴); maternal schooling (24.6%); maternal and child healthcare (10.4%); and water supply and sanitation (5.8%).⁴⁵ However, Brazil must now focus on tackling its growing overweight and obesity problem, as well as the high rates of malnutrition that persist in some areas and among some groups.

Analysing and identifying the nutrition-sensitive programme interventions, policies and governance structures that have achieved significant reductions in malnutrition will provide lessons for others to learn from. This will provide Brazil with an opportunity to lead a global drive on reducing malnutrition.

THE WAY FORWARD

Following the Nutrition for Growth event and the momentum created by the SUN Movement, the opportunity to advance nutrition-sensitive interventions has never been greater. Country-level ownership, developed through the SUN Movement, has the potential to persuade policy-makers to prioritise nutrition and integrate it with other key sectors. However, once nutrition goals and targets have been set, they must be integrated throughout plans and programmes, with robust metrics and frameworks put in place to ensure that these high-level commitments are translated into real changes at the household level for children.

5 CONCLUSIONS AND RECOMMENDATIONS

In clinics and aid posts all across Africa and Asia, there will be a poster on the wall encouraging a nutritious diet as the basis for children's healthy growth and development. At the same time, the agricultural policies and CAADP investment plans of many African countries prioritise agricultural production and growth. While this is right, the potential for agriculture to be nutrition sensitive, and address the debilitating and long-lasting effects of child malnutrition, also deserves attention.

This report argues that including appropriate nutrition objectives in agriculture policies and investment plans, which are then integrated throughout (and at every level of governance), is the best way to ensure that these plans succeed in promoting agricultural growth and nutrition. The use of appropriate indicators (such as stunting rates) will enable all stakeholders to track progress and make any necessary changes.

If agriculture is to provide the level of dietary diversity needed to contribute to reducing child stunting, producers need access to research and innovation on a wider, more diverse range of crops, tree species and protein options that could also be economically viable. Companies with large supply chains can play a crucial role by including smallholder farmers in the value chain, and by shaping the market in ways that promote accessible and affordable nutritious foods throughout a country, particularly in countries that have the highest stunting and malnutrition rates.

Promoting nutrition-sensitive agriculture presents an opportunity to review how agricultural extension services are functioning; as frontline extension workers could play an important role in delivering coordinated, complementary messages, not just on agricultural productivity, but on dietary diversity, food hygiene, and the benefits of different foods.

Bearing in mind the increased level of political decentralisation in many African countries, there is a need to consider how the activities of different

ministries are coordinated so that their extension messages are coherent. For example, agricultural extension workers could provide information on the nutritional and agronomic benefits of different crops and animal enterprises, and on how to cook foods and preserve their nutritional value. Extension workers from other related ministries could deliver messages on the benefits of exclusive breastfeeding (at least for the first six months of life), optimal child feeding practices (including cooking methods that retain more nutrients), and good hygiene practices.

At a district level, health, agriculture and education ministries will be delivering nutrition-related messages. The challenge is how these different messages can be mutually reinforcing. Ethiopia's experience, highlighted earlier, saw the development of a local-level nutrition steering committee that coordinated the activities of these three principal ministries in respect to nutrition. But how could this positive experience be scaled up and rolled out in different countries?

Many of the debates on nutrition-sensitive agriculture focus on bio-fortification and on market gardens. Bio-fortification is an important element of the policy mix, but it is just one aspect of ensuring local availability, access and utilisation of nutritious foods.

The determinants of household nutrition are complex and cut across the responsibilities of various government ministries. Therefore, nutrition-sensitive goals, outcomes and activities must be built into various sectoral strategies and coordinated at the national and district levels. Given the key role of women in the pathway to improved child nutrition, nutrition-sensitive approaches should be gender-sensitive and promote women's empowerment.

To ensure a countrywide approach, each country's Poverty Reduction Strategy Paper (PRSP), economic recovery plan or development policies should consider including nutrition indicators. Stronger collaboration within and between ministries needs to be encouraged and developed through joint planning

processes and reviews. Without this multi-sectoral approach, links between different government ministries will remain weak, undermining what nutrition-sensitive approaches can achieve.

Many districts, irrespective of country, lack the administrative structure to have good oversight of the nutritional effort, as well as capacity and knowledge of nutrition at all levels (senior district officials through to extension agent levels). However, the district level is frequently overlooked by policy-makers, despite the fact that many African countries have decentralised their sector implementation processes. Strong leadership, collaboration between sectors, and clearly defined roles and responsibilities are crucial to ensure that nutrition is embedded in district-level agricultural strategies.

This should be underpinned by an approach that monitors the extent to which micronutrients are accessible to households at the local level. Tools are readily available for this, such as Save the Children's Cost of the Diet tool, which enables policy-makers, district officers and families themselves to calculate the micronutrients provided by different crops.

To promote the adoption of nutrition-sensitive agriculture, through a multi-sectoral approach, as the most effective way of meeting the joint goals of delivering agricultural growth and reducing child malnutrition, Save the Children makes the following recommendations.

To ensure that nutrition-sensitive agriculture is embedded in agricultural policies and becomes a reality on the ground, we recommend that the **African Union:**

- commits to ensuring that agricultural investment plans include nutrition objectives, and appropriate metrics to monitor progress on nutrition-related goals
- includes a stunting specific indicator as part of the CAADP results framework. The indicator should be adopted by national agriculture ministries and be accompanied by action to ensure impacts
- establishes a common joint peer review mechanism that assesses the progress of CAADP implementation. The joint annual review of Ethiopia's Policy and Investment Framework (CAADP investment plan) provides a useful quality standard

- establishes a regional benchmarking process that would enable citizens to see how their country is performing in relation to other countries
- develops institutional links between those responsible for national agriculture plans and Scaling Up Nutrition (SUN) costed plans.

We recommend that governments in **high-burden countries:**

- include improving nutrition as an explicit policy objective in their agricultural policies and agricultural investment plans (CAADP plans), and more specifically:
 - establish multi-sectoral coordination mechanisms to ensure that policy decisions are owned by all relevant ministries
 - establish a cross-departmental working group to oversee policy implementation and to monitor progress against a set of commonly agreed indicators
 - adapt district-level policy approaches to improve coordination and integration of nutrition concerns between agriculture, health and other key ministries
 - increase the level of agricultural biodiversity to generate a more diverse enterprise and cropping base, as the foundation for a more diverse diet.

We recommend that **donors** encourage governments to prioritise nutrition within agriculture plans by taking the following actions:

- Strengthening the nutrition outcomes of initiatives, such as the New Alliance for Food Security and Nutrition, by working with participating countries to establish country-specific goals, outcomes and specific actions, ensuring that nutrition indicators in the results framework are implemented and integrated within national agriculture plans.
- Developing a tool to enable agronomists and policy-makers to assess the nutrient constituents of crops. Such a monitoring tool, if available in open data format, could enable agriculturalists to consider the impact and implications of the crops and enterprises they promote from the perspective of their impact on child nutrition.
- Ensuring that country-based donor technical committees include civil society representatives, to ensure accountability and to reflect the views of civil society in the planning process.

APPENDIX I

METHODOLOGY FOR FIELD CASE STUDIES

A literature review was conducted using the usual mechanisms of searching for key words, of following up papers cited in bibliographies, undertaking searches using the web, and through contacts. Other methods employed include interviewing field contacts, and finding out what reports they have used.

Given the diverse interpretation of nutrition-sensitive agriculture, the methodology for this research was strongly based around semi-structured interviews, using a wide-ranging checklist that was divided into five components:

- general questions
- economic questions
- agronomic questions, including on environmental factors and climate change impact
- policy-level questions and nutrition
- social questions.

An assessment matrix was compiled, outlining the question, expected information source (or sources), and who (if anyone) would be best placed to answer these questions.

Given the time and budget available and the experience of the authors, it was decided that a questionnaire survey would be inefficient and inappropriate. Notwithstanding, many governments and farmers have a negative attitude towards questionnaire surveys.

The assessment matrix was an essential tool for recording data from interviews with a wide range of government officials, civil society representatives, development partners, international organisations, and private sector respondents at the national level. At the district level, a range of farmers were interviewed, including widows, widowers, female-headed households and other types of household, as well as households from different wealth groups. District officials were also interviewed to establish what they understood by nutrition-sensitive agriculture.

Fieldwork was undertaken in Ethiopia (Tigray, Oromia and SNNRP⁴⁶ regions) and in Malawi (Zomba and Chiradzulu districts).

APPENDIX 2

STUNTING RATES IN CAADP AND/OR SUN MOVEMENT COUNTRIES, AND STATED COMMITMENTS TO REDUCING MALNUTRITION

Country	Does it have a CAADP Compact?	Joined SUN	Stunting rate (% under five) (year)	Nutrition indicators or targets taken from CAADP plan logical frameworks
Bangladesh		Yes	41.4 (2011)	
Benin	Yes	Yes	44.7 (2006)	Poverty level mentioned at goal level; in CAADP output 1 – indicator for the rate of coverage of food and nutrition needs
Burkina Faso	Yes	Yes	35.1 (2010)	Text about food security; nothing on nutrition
Burundi	Yes	Yes	57.7 (2005)	Yes, stunting annual reduction of 3% a year
Cameroon	Not yet signed	Yes	32.6 (2011)	
Chad	No	Yes	44.8 (2004)	
Dem Rep of Congo (DRC)	Not yet signed	Yes	45.8 (2007)	
Côte d'Ivoire	Not yet signed	Yes	39.0 (2007)	
El Salvador		Yes	20.6 (2008)	
Ethiopia	Yes	Under discussion	44.2 (2010/11)	Yes, 3% annual reduction of stunting
The Gambia	Yes	Yes	27.6 (2005/06)	Goal: increase in overall national food and nutrition security sustainable levels of self-sufficiency in food production by 25%. Purpose level: improved national and household food security and adequate nutritional levels
Ghana	Yes	Yes	28.6 (2009)	Outcome indicator: increase in food self-sufficiency levels by 100%
Guatemala		Yes	48.0 (2008/09)	
Guinea	No	Yes	40.0 (2007/08)	

Country	Does it have a CAADP Compact?	Joined SUN	Stunting rate (% under five) (year)	Nutrition indicators or targets taken from CAADP plan logical frameworks
Haiti		Yes	29.7 (2005/06)	
Indonesia		Yes	39.2 (2010)	
Kenya	Yes	Yes	35.2 (2008/09)	No nutrition targets set in CAADP plans
Kyrgyz Rep.		Yes	18.1 (2005/06)	
Lao PDR		Yes	47.6 (2006)	
Liberia	Yes	Yes	39.4 (2007)	Dietary diversity scores and consumption expenditure on food
Madagascar		Yes	42.9 (2008/09)	
Malawi	Yes	Yes	47.8 (2010)	Proportion of household consuming diversified diet and micronutrients met
Mali	Yes	Yes	38.5 (2006)	Global objective: improve nutritional state through information dissemination and education. Output 1: poverty rate decreased
Mauritania	Not yet signed	Yes	23.0 (2008)	
Mozambique	Not yet signed	Yes	43.7 (2008)	
Myanmar (Burma)		Yes	35.1 (2009/10)	
Namibia	Not yet signed	Yes	29.6 (2006/07)	
Nepal		Yes	40.5 (2011)	
Niger	Yes	Yes	54.8 (2006)	No outcome indicators cited
Nigeria	Yes	Yes	41.0 (2008)	Goal level: secured food and feed needs of the nation, but no other nutrition indicators
Pakistan		Yes	43.0 (2011)	
Peru		Yes	28.2 (2007/08)	
Rwanda	Yes	Yes	44.3 (2010/11)	Absolute government priority – achieving food and nutrition security for all Rwandans and halving poverty
Senegal	Yes	Yes	28.7 (2010/11)	No logical framework (cadre logique)

Country	Does it have a CAADP Compact?	Joined SUN	Stunting rate (% under five) (year)	Nutrition indicators or targets taken from CAADP plan logical frameworks
Sierra Leone	Yes	Yes	44.9 (2010)	No goal or specific objective (purpose) indicator on nutrition
Sri Lanka		Yes	19.2 (2009)	
South Sudan				
Tanzania	Yes	Yes	42.5 (2009/10)	Purpose level indicator: improving the nutritional status of the country, including children and vulnerable groups
Togo	Yes	Yes	26.9 (2008)	Goal-level indicator on rate of prevalence of child malnutrition
Uganda	Yes	Yes	33.7 (2011)	Goal-level indicator: household food and nutrition security improved
Yemen		Yes	57.7 (2003)	
Zambia	Not yet signed	Yes	45.8 (2007)	
Zimbabwe	Not yet signed	Yes	32.3 (2010/11)	

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NUTRITION SENSITIVITY

How agriculture can improve child nutrition

In 2011 it is estimated 3.1 million children under the age of 5 years died because of malnutrition. Many more were stunted and suffered poor cognitive development. The economic loss from malnutrition is enormous – around 16% of GDP in some countries.

Agriculture provides food to a country's population and comprises a large proportion of the economy in many developing countries. Yet for too long, agronomists have neglected the critical role of diverse diets, adequate income and education in supporting healthy populations and improving nutrition. Instead, many countries' policies have focused on increasing the productivity of staple crops.

The African Union has declared 2014 the year of family farming. The opportunity to seize this moment to transform the way agriculture is managed across the continent should not be missed.

Nutrition Sensitivity examines and explores how nutrition can be prioritised within agricultural policies, strategies and investment plans, and demonstrates the power of agricultural bio-diversity, social behavioural change, enterprise diversification, and women's empowerment in improving nutrition in rural areas. It profiles district-level coordination mechanisms, which could result in better communication and coordination – and better nutrition – at a household level.

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