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Policy Options to Enhance Markets for Nutrient-Dense Foods in Tanzania

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POLICY OPTIONS TO ENHANCE MARKETS FOR NUTRIENT-DENSE FOODS IN TANZANIA

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List of abbreviations

BCC	behaviour change communication
BRELA	Business Registrations and Licensing Agency
CCP	Cluster Competitiveness Programme
DFID	Department for International Development
GAIN	Global Alliance for Improved Nutrition
IDS	Institute of Development Studies
NGOs	non-governmental organisations
OFSP	orange-fleshed sweet potato
PANITA	Partnership for Nutrition in Tanzania
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SUN	Scaling Up Nutrition
SCF	SME Competitive Facility
SBCC	Social and Behaviour Change Communications
SME	small and medium enterprise
TAPP	Tanzania Agriculture Productivity Program
TAFSIP	Tanzania Agriculture and Food Security Investment Plan
TBS	Tanzania Bureau of Standards
TFDA	Tanzania Food and Drugs Authority
UNIDO	United Nations Industrial Development Organization

Executive Summary

There is an urgent need to reduce alarming rates of undernutrition in Tanzania. This report analyses options for policies and interventions to improve the functioning of markets that deliver nutrient-dense foods. Currently, a set of constraints inhibit businesses from making nutrient-dense foods that reach the poor. These constraints affect businesses across the spectrum, from small enterprises to large corporations, and impact on a range of food products. This report examines the case for why government and development actors in Tanzania should act to overcome these constraints. It asks how these actors might intervene by looking at five broad strategies, including various forms of regulation and public–private partnership. While no single strategy can address all the constraints completely, different interventions can address some of them and benefit certain populations. For any strategy, the first steps should be to identify the primary constraints facing a particular market and assess whether a particular approach will overcome them. The report outlines specific options for each intervention strategy, aimed at national government, donors, private-sector and non-profit organisations working in Tanzania. This analysis is based on evidence collected using multiple qualitative methods, including an extensive desk review and interviews with stakeholders in 17 organisations.

Policy context

As background to the analysis of interventions, the report briefly highlights the state of policies relevant to markets for nutrient-dense foods in Tanzania. Currently, there is considerable momentum behind efforts to improve the policy landscape for nutrition in the country, with high-level political support for a series of reforms aiming to scale up nutrition programmes. This includes a stated willingness on the part of the government to work with the private sector. However, specific sectoral policies do not necessarily support value chains for nutrient-dense foods; some may even represent barriers to these foods. Agricultural policy is currently focused on promoting commercialisation, particularly focused on a small number of staple food crops and export crops. This agenda largely neglects nutrient-dense crops. Meanwhile, food policies and business regulations are complex and largely exclude small enterprises. Regulatory agencies also have very limited capacity to reach these enterprises. In this context, most businesses in agri-food value chains operate in the informal sector outside the formal regulations; and these businesses make up the value chains from which the poor tend to source their food. Despite these various efforts and commitments, overall, it is difficult to predict the outcome of current policy processes, particularly at the local level. Therefore, rather than prescribing overall reforms, this report focuses on specific interventions to enhance the provision of nutrient-dense foods within the current landscape.

Market constraints

Major constraints inhibit markets from providing nutrient-dense food to the poor in Tanzania, as in most developing countries. These problems are beyond the control of individual businesses, both large and small, and make it difficult for them to produce nutrient-dense products on a commercially viable basis. As a result, high quality, nutrient-dense products tend to be targeted towards wealthier consumers, with very few such products affordable to the poor. There are five main constraints. First, most populations have low awareness of nutrition and of the nutritional values of various foods. This means that businesses have few incentives to meet the needs of these groups. Second, low awareness is compounded by the absence of mechanisms to signal to consumers the nutrient content of foods, which tends to be ‘invisible’. In the absence of these mechanisms, businesses cannot differentiate their products from non-nutritious alternatives, and thus cannot earn commercial returns from nutrient-dense foods. Third, supply chains for agri-food commodities in Tanzania tend to be

of low quality and entail high costs for food processors. Fourth, building distribution networks that reach low-income populations is expensive, and this inhibits businesses from targeting these groups. Finally, the business and regulatory environment in Tanzania is characterised by weak formal institutions and inadequate rule of law, exacerbating the risks of business activity in already risky nutrient-dense foods. There are ways to confront these constraints, and experience with a number of strategies reveals ways to bypass or overcome them by intervening at various stages in the value chain.

Intervention strategies

Experience in Tanzania includes a number of policy and programmatic strategies to overcome the problems in markets for nutrient-dense foods. The report reviews five strategies: (1) mandatory fortification by large companies; (2) mandatory fortification by small enterprises; (3) efforts to promote production of and markets for fresh foods such as fruit and vegetables; (4) behaviour change communications to increase demand for nutrient-dense products; and (5) non-profit distribution targeting the poorest and most vulnerable.

Mandatory fortification by large companies. Donors and government in Tanzania are currently strongly supporting a national programme to require all food processors to fortify wheat flour, maize flour and vegetable oil with several key micronutrients. Experience from other countries shows that, under the right conditions, mandatory fortification can circumvent the problems of low demand and competition from lower cost, unfortified products. The logic behind this approach is to provide universal coverage to prevent fortified products competing with unfortified ones, and to target staple foods that are widely eaten by target populations. However, recent research in Nigeria highlights the difficulty of building the commitment, capacity and regulatory incentives for fortification. Furthermore, in Tanzania there is a major split between the products produced by large companies and those produced by small enterprises, with the majority of the poor consuming products from small enterprises or household production. This creates the risk that investments in the fortification programme improve the nutrient content of large industry products, which are easier to regulate, but fail to reach the markets from which the poor buy their products. Policy actors must choose whether to attempt to make centrally produced products more accessible to the poor or to invest in building capacity for fortification among the small enterprises that do reach the poor.

Mandatory fortification by small enterprises. Achieving fortification will be much more difficult among small enterprises. These businesses lack capacity, technical expertise and resources; furthermore, because they are numerous, widely scattered and not registered with government authorities, they are much more difficult for policy actors to reach, both for the purposes of monitoring and regulation and for providing support. Programmes in Tanzania have used a number of strategies to build capacity for small enterprises, including reforming business regulations, providing business development services and building enterprise clusters. All of these approaches, however, have been complex and have required intensive and long-term investment. Actors supporting fortification, therefore, will need to commit substantial resources over the long term to build and organise small enterprises. Alternatively, they will need to consider other strategies for providing nutrient-dense foods.

Promoting fresh foods. One alternative to fortification is to promote production, consumption and markets for fresh food products, such as those derived from vegetables, fruits, milk, etc. With respect to the problems in markets for nutrient-dense foods, fresh foods generally have the major advantage that they are easy to distinguish from less-nutritious ones. However, they are perishable and often have short shelf lives, which make it difficult to increase year-round availability and to transport products over long distances. Interventions to promote fresh foods involve different approaches depending on whether they target farming households themselves (without market distribution) or promote market-based distribution to a wider population. Both of these approaches need to consider how to overcome the extremely limited assets and labour of poor rural households, as well as

competition with cash crops and higher value markets. Overall, focusing specifically on foods and products whose nutrient value is easy to distinguish is vital if this approach is to overcome constraints that inhibit fortification-based approaches.

Other strategies. Compared to fortification and fresh food approaches, there is relatively less experience in Tanzania with **behaviour change communications** and **non-profit distribution**. These are areas for building evidence as they appear crucial to filling the gaps in the other strategies. Behaviour change communications has the potential to increase consumer demand, which is needed to stimulate business involvement in the other areas. Although such communications tools have been used as part of focused programmes, there is a lack of experience of how they can be used to promote consumption of particular foods – and whether this contributes to building markets. Even with this promotion, however, markets are unlikely to work for the most remote and poorest populations; non-profit distribution is one way that policy actors can help reach these populations. Although not widespread in Tanzania, there are a handful of experiments in the country that are subsidising micronutrient products and distributing them through retail channels. Policy actors involved in this area need to understand how non-profit distribution works: crucially, it both provides reliable sources of demand for businesses and also allows for control over product quality (overcoming the signalling problem) through the involvement of public agencies. Attempts to move from non-profit to commercial distribution must therefore consider how they will deal with this issue once public involvement is withdrawn. Although mobilising sufficient funding for non-profit distribution will be a major challenge, this approach will remain necessary to cover the most vulnerable.

Policy and programme recommendations

This review demonstrates that there are various strategies and combinations of strategies that could improve markets for nutrient-dense foods and help overcome the constraints in reaching the poor. It concludes that, without public involvement, businesses both small and large are unlikely to overcome the constraints on their own. Before beginning or upscaling interventions, government, donors and those involved in public–private partnerships must begin by clearly identifying which constraints lead to low access to nutrient-dense foods for a particular population. The potential of various options for addressing these constraints can then be assessed.

1 Overview

This report presents the findings of an analysis of options for policies and programmes to promote nutrient-dense foods to address undernutrition in Tanzania. It was carried out by the Institute of Development Studies (IDS) and partners at the Department of Agricultural Economics and Agribusiness at Sokoine University of Agriculture, as part of the IDS Accountable Grant, funded by the Department for International Development (DFID). The report is structured as follows:

Section 1 situates this report within the larger project of which it is part. It indicates why food-based strategies to reducing undernutrition are a growing global priority, and why such approaches are needed in Tanzania. It then outlines the objectives of this report.

Section 2 introduces the conceptual framework that underlies the analysis in this report, and describes the methods used to gather information.

Section 3 sketches the current policy context, highlighting current trends in agricultural, nutrition, food and business regulation policies.

Section 4 identifies a set of constraints that prevent markets from effectively delivering nutrient-dense foods to people affected by undernutrition. These constraints are the fundamental problems that need to be addressed for food-based approaches to enhance nutrition.

Section 5 presents the results of research, reviewing five different policy strategies that seek to deal with some or all of these constraints. These approaches are: mandatory fortification by large and small enterprises, promoting nutrient-dense fresh foods, behaviour change communications and non-profit distribution.

Section 6 concludes the report by drawing lessons from the various food-based approaches and providing recommendations for policy and programmes.

1.1 Project background

This report forms part of the 'Strengthening Agri-Food Value Chains for Nutrition' project, which aims to help reduce undernutrition by informing evidence-based policy to make food and agricultural systems more 'nutrition-sensitive'. The project identifies opportunities for improving the private sector's involvement in producing nutrient-dense foods, and analyses strategies to overcome the limitations of this involvement. The project contributes to these outcomes through work in three countries: Ghana, Nigeria and Tanzania.

Key outputs examining evidence in Tanzania for this project include:

- **Value chain mapping** to assess the potential of particular products for addressing undernutrition for poor and vulnerable population groups (Temu *et al.* 2014).
- **Case studies of businesses** that have invested in nutritious foods (Maestre *et al.* 2014).
- **Policy options** (this report) to allow donors, governments, private sector organisations and non-profit organisations to overcome the constraints that inhibit food markets from reducing undernutrition.

1.2 The need for food-based strategies to reduce undernutrition

Reducing chronic undernutrition is a global priority in order to address the massive burden it imposes on human health, wellbeing and economic productivity. Undernutrition's toll in Tanzania is staggering and action is urgently needed (see Box 1.1). There have been major policy efforts in recent decades to increase the coverage of a set of health interventions targeted at the populations most vulnerable to the health consequences of undernutrition (the so-called '1,000 days group', consisting of pregnant women, children under the age of two and adolescent girls).¹ A set of direct interventions, including micronutrient supplementation and therapeutic feeding, has been proven to reduce chronic and acute undernutrition (Bhutta *et al.* 2013). The World Bank has argued that scaling up coverage of these interventions is a global priority (Horton *et al.* 2010). Yet in parallel to direct interventions, development agencies and governments are increasingly looking to improve the role of other sectors, including food and agriculture, in helping to reduce undernutrition (DFID 2011; Herforth 2012). One rationale behind this focus is that 'nutrition-sensitive development' could deliver nutritional improvements on a sustained basis and with less long-term cost. It also stems from evidence that improving rural incomes will not by itself be sufficient to address chronic undernutrition (DFID 2012). In sum, there is a general consensus that efforts are needed to improve the links between agriculture, food and nutrition (Herforth 2012).

Box 1.1 The burden of undernutrition in Tanzania

Tanzania has among the world's highest rates of chronic undernutrition in children. Despite some progress since 1999, 42 per cent of children under five are stunted. Meanwhile, 30 per cent of women are deficient in iron. The impact of undernutrition is staggering: it is estimated that vitamin A deficiency will contribute to one out of ten child deaths between 2006 and 2015, while anaemia will contribute to one in five deaths during pregnancy (TFNC 2006). These national figures hide wide disparities between lower and upper income groups, and between people in rural areas and those in towns and cities.

Low access to foods rich in micronutrients appears to be one of the key drivers of undernutrition. Low-income households eat a diet of mostly starchy cereals, with few foods rich in micronutrients. Meanwhile, high stunting rates in the southern regions, the so-called breadbasket of the nation, suggest that high agricultural production has not translated into nutrient-dense food consumption. Of course, diet is not the only factor influencing nutrition status; inadequate child feeding, care and access to health services and sanitation also contribute. Yet it is crucial to improve dietary diversity and consumption of nutrient-dense foods as part of the broader campaign against undernutrition. Especially important targets are women's consumption of iron-rich foods and adequate complementary feeding for children after six months. Programmes need to reach the populations most vulnerable to nutrition insecurity: particularly the poor and those in rural areas.

For a more detailed overview of the undernutrition situation, see Temu *et al.* (2014: 10).

Source: TFNC (2006)² and (National Bureau of Statistics and ICF Macro 2011a).

In the Tanzanian context, evidence on the burden of undernutrition (see Box 1.1) suggests that there is an important need for food-based nutrition approaches in the country. Undernutrition is most severe for people in rural areas, farming households and the very poor. A particular priority is to increase the consumption of key micronutrients (especially iron) by those in the 1,000 days group, although increasing nutrient intake for older children and other groups is also important. Efforts are therefore needed to ensure that foods are accessible to these groups that are rich in micronutrients, including iron, vitamin A and zinc. Although individual programmes will need to target specific groups and focus on particular

¹ It is now established that an effective approach to maternal nutrition should include a focus on the nutrition status of adolescent girls, as their health prior to becoming pregnant is also a determinant of future child development (Bhutta *et al.* 2013).

² www.docstoc.com/docs/116987203/Presentation-Tanzania-Food-and-Nutrition-Centre (accessed 10 July 2014).

micronutrients, this report focuses on a broad range of foods rich in various micronutrients, ranging from fortified processed products to fresh fruits and vegetables, and loosely grouped under the category of nutrient-dense foods.³ Focusing on this broader category makes sense since many of the challenges and solutions facing food markets are common across these foods.

Strengthening food-based nutrition policies and programmes – both in Tanzania and globally – requires a stronger base of evidence. Food-based strategies are extremely diverse in their scope and in the problems they seek to address; they include programmes focusing on agriculture, food fortification, business development and education (Gibson 2011). Further, there are multiple pathways through which interventions in food or agriculture can lead to improvements in nutrition (World Bank 2007). Although evidence on the effectiveness of various approaches is growing (Ruel and Alderman 2013), more research is needed in key areas, such as the impact of agricultural interventions (Masset *et al.* 2012). In addition, analysis is needed to inform decisions about how and under what circumstances to implement particular approaches. This requires understanding how strategies intervene in food value chains (see Section 2.1), as well as their potential within specific market and institutional conditions. In other words, there is a need to understand what makes food-based strategies work and to use this evidence to improve policies and programmes.

1.3 Objectives of the report

In order to address this need for evidence, this report examines how policies and programmes can reduce undernutrition in Tanzania by enhancing markets for nutrient-dense foods. It examines private sector involvement in the development, production and distribution of these foods, and identifies constraints that prevent foods from reaching undernourished populations. The report then examines options for overcoming these constraints, focusing on five food-based strategies. The intended audiences for this report are policy actors seeking to promote nutrient-dense foods in Tanzania, as well as those seeking lessons to apply in other countries. The report focuses on options for donors, the federal and state governments, private sector organisations, non-governmental organisations (NGOs) and civil society.

³ No single food can address overall nutritional needs and an adequate and balanced diet is essential for good nutrition. Yet, for the purposes of understanding how markets shape nutrition outcomes, it is useful to focus on particular foods that play important roles as part of such diets.

2 Framework and methods

2.1 Value chain approach to linking agriculture, food and nutrition

A growing body of research and experience aims to strengthen the linkages between agriculture and nutrition outcomes (Herforth and Harris 2013; IFPRI 2011). As mentioned above, there are multiple pathways through which this link can be strengthened. One common approach tries to maximise the positive impacts of agricultural interventions on the beneficiary farming households by making such interventions more 'nutrition sensitive'. This is the so-called 'pre-farm-gate approach' (discussed in Section 5.3) and often involves complementary initiatives to increase the consumption of nutrient-rich foods produced on-farm. The focus of this report, however, is broader; rather than targeting only households involved in agricultural interventions, it focuses on channels that can provide foods to a wider range of consumers in both rural and urban areas. Because they reach a wider set of populations beyond only those involved in farming, these channels can be called the 'post-farm-gate approach'. Post-farm-gate channels involve commercial markets, as well as various types of involvement by government and/or non-profit actors. The potential of market channels depends on the extent to which households rely on markets to source their food. Available evidence suggests that reliance on markets differs greatly between different populations (with much lower use of markets in rural compared to urban areas) and also for different types of products.⁴ Improving the evidence base on how various categories of households source their food is necessary to better assess the potential of market interventions to reduce undernutrition and to inform decision-making. Yet, even as this evidence is strengthened, the urgency of the problem means that policy interventions are needed to improve the functioning of food markets.

This report assesses the opportunities and constraints in these channels through a focus on the value chains that link farms to markets and consumption. In this report, value chain analysis is used to identify the actors, processes and relationships that have important impacts on the ability of markets to provide nutrient-dense foods for vulnerable populations. By identifying these key elements, this approach allows an assessment of the potential of policy and programmes to improve markets and other channels for nutrient-dense foods.

Post-farm-gate channels from production through to consumption inevitably involve businesses in the collection, processing and distribution of food. These businesses vary considerably by type and size, and they will deliver food through a variety of channels and in a variety of forms. Existing work on value chains and nutrition has highlighted the general conditions that need to be achieved in order for any channel to successfully reduce undernutrition. These conditions can be summarised under four categories⁵ (adapted from Hawkes and Ruel 2011):

1. **Food must be nutrient-dense.** Businesses and other food producers need to provide products that are safe and contain key nutrients, especially the micronutrients and minerals crucial to maternal and child health such as vitamin A, zinc, iron and folic acid.

⁴ The 2010 National Demographic and Health Survey (NDHS) found that 58 per cent of urban households had purchased maize flour, compared to only 18 per cent of rural households. There were also large differences between regions. Reliance on markets was higher for vegetable oil: 95 per cent of urban households and 85 per cent of rural households purchased oil. Because the survey used seven-day recall data, it may not provide an accurate picture of reliance on markets throughout the year.

⁵ These conditions are discussed in greater detail in Anim-Somuah *et al.* (2013).

2. **There must be demand for the food from those at risk of undernourishment.** Except in the case where food is provided free of charge, households have to decide whether to allocate scarce resources towards nutrient-dense foods. They will only do this if they are aware of and value the importance of diet for human health, and also know which foods contribute to a healthy diet. In other words, there must be consumer demand for nutrient-dense foods.
3. **Food must reach key populations.** Products need to reach – and be eaten by – the people most affected by undernutrition. These include the 1,000 days group (adolescent girls, pregnant women and children under two years), particularly those in poor households. This requires that food is affordable, available in places these groups can access and that it is distributed in the household so it reaches women, girls and young children.
4. **Food must be produced through models that are commercially viable.** Businesses need to produce and distribute products in a way that is commercially viable and sustainable for them.

In order to enhance market-based provision of nutrient-dense foods, businesses need to have incentives to build sustainable business models. As will be seen, a number of major constraints make it difficult to form viable business models around nutrient-dense foods, especially at a price that is affordable to the poor (see Section 4).

2.2 Methods

The evidence presented in this report was collected using multiple qualitative methods, including a desk review of relevant documents, interviews with experts and stakeholders and participation in stakeholder fora.

Desk review. The authors reviewed published studies and publicly available documents, including policy documents, press releases and presentations relevant to agricultural, nutrition and food policies by the Government of Tanzania. They also reviewed reports and assessments on specific projects and programmes, as well as published studies and working papers related to food-based strategies for reducing undernutrition. In addition, information was drawn from the accompanying reports on Tanzania (Maestre *et al.* 2014, Temu *et al.* 2014).

Interviews with stakeholders and experts. The principal author conducted in-depth, semi-structured interviews with 32 informants representing a total of 17 organisations during February and March 2014 (see Table 2.1). Informants included researchers, staff in government ministries, departments and institutes, NGOs and donor-funded projects, and staff in public–private partnership organisations. A core set of informants was identified through background research, with input by contacts from previous projects on nutrition or agricultural policy and programmes. Others were added through a ‘snowball technique’ as early interviews identified new key topics and stakeholders.

Table 2.1 Organisations represented by informants

Type of organisation	Number of organisations
Central government agency (Ministry of Agriculture, Food Security and Cooperatives, Presidential Advisor, Prime Minister's Office, Tanzania Food and Drug Authority)	4
Development institutions	
Bilateral donor agencies (DFID, Irish Aid, USAID)	3
Donor-funded project (Mwanzo Bora, NAFKA, Tanzania Agriculture Productivity Program (TAPP), Tuboreshe Chakula)	4
International agencies and NGOs (GAIN, Helen Keller International, World Food Programme)	3
Research institutions (Sokoine University of Agriculture, Tanzania Food and Nutrition Centre)	2
Public-private partnerships Southern Agricultural Growth Corridor of Tanzania (SAGCOT)	1

3 Policy context

The policy landscape relevant to the involvement of business in nutrient-dense foods in Tanzania is exceptionally complex and multi-sectoral; it spans policy domains including agriculture, nutrition, food safety and business regulation. Each of these domains involves a number of ministries, agencies and key stakeholders. This makes coordinating action to achieve effective implementation and monitoring exceptionally difficult. At the same time, there is a growing interest from the government and donors in integrating nutrition and agriculture policies and programmes (Bleggi 2014) alongside high level support for the nutrition agenda in the Tanzanian central government (DPG Nutrition 2013; Ministry of Health and Social Welfare 2011). A review of all relevant policies and frameworks is beyond the scope of this report. Instead, this section highlights the key issues in the relevant policy areas, and briefly considers the potential of coordinated action across them. It prioritises issues that are relevant to the strategies for mobilising business involvement in nutrient-dense foods (these strategies are covered in Section 5).

3.1 Agricultural policy and value chains

Agricultural policy has evolved substantially in recent years, with a trend towards promoting commercialisation of agriculture, working with businesses and attracting private investment. At the same time, the focus on a handful of staple crops (especially maize and rice) has been relatively consistent, as has the political imperative to respond to food shortages by promoting production of these crops and, at times, by restricting food exports or directly sponsoring imports. Of course, agriculture is multi-sectoral and implicates central and local government and major donors. Tanzanian agriculture has received increasing attention from foreign private investors in recent years, including efforts to influence national policies (G8 2012; Cooksey 2013). In 2013, the central government issued a renewed commitment to commercialising agriculture through a new National Agriculture Policy, with the overall aim to:

bring about a green revolution that entails transformation of agriculture from subsistence farming towards commercialization and modernization through crop intensification, diversification, technological advancement and infrastructural development.

(Ministry of Agriculture Food Security and Cooperatives 2013: v)

These policies are promoted by programmes and platforms aiming to attract private investment in agribusiness ventures and to reform policies to support such investment, notably the G8 New Alliance for Food Security and Nutrition and the Southern Agricultural Growth Corridor of Tanzania (SAGCOT). Central to the broad commercialisation agenda are growing private markets for improved seeds and fertilisers, promoting private provision of post-harvest infrastructure such as storage facilities, supporting lending for agriculture and strengthening links between small farmers, food processors and export markets.

Nutrition has been relatively marginal in the current agenda and in past policy frameworks (Table 3.1). The 2013 National Agriculture Policy included the following objectives specifically relevant to nutrition:

- production and utilisation of crops with high nutrient content in areas experiencing nutritional problems shall be promoted;
- knowledge on good nutrition shall be promoted;
- the Government shall strengthen and expand food storage structures to enhance food stability; and

- mechanisms for continuous monitoring and assessment of food security, safety and nutrition at all levels shall be strengthened (Ministry of Agriculture Food Security and Cooperatives 2013: 19–20).

Table 3.1 Major recent agricultural policy initiatives in Tanzania

Policy	Primary objectives	Includes nutrition?
Agricultural Sector Development Programme I	2006–13 Create an enabling environment to increase productivity and profitability Increase farm incomes Ensure household food security	Household food security Focus on single crops may reduce dietary diversity ⁶
Kilimo Kwanza	2009–present Increase agricultural competitiveness Coordinate public and private commitments	Focus on crops consumed domestically
New Alliance for Food Security and Nutrition	2011–16 Supportive policies for investment Reduce taxes Provide land certification Develop seed and input markets Implement nutrition policy Focus on rice, sugar and maize	Support for nutrition policy No objective on nutrition outcomes
Tanzania Agriculture and Food Security Investment Plan (TAFSIP)	2012–17 CAADP ⁷ pillars: Achieve agricultural growth of 6% Attain food and nutrition security Develop regional agricultural markets Integrate farmers into the market economy Achieve more equitable distribution of wealth	National food self-sufficiency Reduced prevalence of micronutrient deficiencies Increased dietary diversity Diversified farming systems*
Big Results Now	2013–present Increase agriculture-driven economic growth; increase smallholder income Increase food security and reduce poverty Commercial farming of rice, sugar and maize	Limited
National Agriculture Policy	2013–25 Strengthen research and extension Increase production Food security Food processing Improve quality Attract private investment Strengthen coordination Promote sustainability	Promote production and use of nutrient-rich crops Improve public nutrition awareness Food storage infrastructure

* See list of indicators in Box 3.1.

Sources: Policy documents, interviews and (DPG Nutrition 2013).

The specific mechanisms for achieving these remain unclear. Current revisions to the Agricultural Sector Development Programme may incorporate nutrition objectives more centrally, but the outcome is not yet clear (Bleggi 2014). The Tanzania Agriculture and Food Security Investment Plan (TAFSIP) appears to be the policy with the most detailed and measurable nutrition outcomes (Box 3.1), but reports indicate that funding for these components has been highly inadequate (Cooksey 2013). Meanwhile, the current frameworks focused on commercialisation do not set out specific objectives for nutrition or food security. Most activities focus on a narrow range of staple crops (maize, rice and sugar),

⁶ DPG Nutrition (2013).

⁷ The Comprehensive Africa Agriculture Development Program.

suggesting nutrient-dense crops may still not feature centrally in policy efforts (DPG Nutrition 2013; Robinson and Humphrey 2014).

Box 3.1 Food and nutrition security objectives under TAFSIP

TAFSIP appears to have the strongest focus on nutrition outcomes among recent national agricultural policy initiatives, including proposed funding targets and measurable outcomes. Yet even here nutrition appears to occupy a relatively minor position among the policy objectives. TAFSIP's investment plan allocates 2 per cent of the total budget of Tsh 8.7 trillion towards food and nutrition security. The largest allocation is towards irrigation development and production and commercialisation. Within the food and nutrition security programme, the balance of priority assigned to caloric food sufficiency vs micronutrient nutrition is unclear. TAFSIP is currently under revision.

Food and Nutrition Security Area milestone indicators for TAFSIP:

- Percentage of national food requirements supplied by domestic production
- Number of rural households with low calorie availability
- Percentage of low birth weights and stunted children under five years
- Percentage of households eating < 2 meals/day
- Percentage of population with anaemia, vitamin A and iodine deficiency
- Percentage of pregnant women and children with nutrient/micronutrient deficiencies
- Percentage of districts reporting food shortages
- Land used for crops of high nutritional value.

Sources: United Republic of Tanzania (2011) and interviews.

3.2 Nutrition policy

Tanzania is regarded as having a conducive policy context and strong political support for achieving nutrition objectives, as signalled by its status as an early member of the Scaling Up Nutrition (SUN) movement, joining in 2011 (Bleggi 2014). Institutionally, the Tanzania Food and Nutrition Centre has been responsible for research and for advocating for and coordinating nutrition activities across government. However, until relatively recently, nutrition was regarded as a minor priority area localised within the Ministry of Health. In 2013, President Kikwete issued a 'Nutrition Call to Action' to declare undernutrition a national emergency and raise the priority of nutrition across government. Policy efforts are also being championed by a group of parliamentarians, major development donors and a network of NGOs known as the Partnership for Nutrition in Tanzania (PANITA).

Political support has led to a number of recent reforms with the aim of improving planning and implementation of nutrition-specific and nutrition-sensitive interventions.⁸ A multi-sectoral High Level National Steering Committee on Nutrition oversees nutrition policy decisions and coordinates implementation across ministries. This aims to expand involvement beyond the Ministry of Health. A dedicated budget category for nutrition activities has been put in place in each of the lead ministries, as well as in local government councils. Focal persons have also been appointed in each of these units, and are responsible for coordinating implementation. Each ministry or council is expected to develop and budget for nutrition activities within its domain of competence. Substantial challenges remain in implementing this framework, especially in convincing ministers and local councils to allocate budget to nutrition activities. Meanwhile, a new National Nutrition Policy is under development, which is expected to cement the administrative structure and provide guidance on integrating nutrition in other sectoral policies. Yet although there are increasing efforts to include nutrition in

⁸ 'Nutrition-specific' refers to the set of (largely health-based) interventions with a strong base of evidence showing their effectiveness in reducing the immediate causes of undernutrition. 'Nutrition-sensitive' interventions are a very broad set of policies and activities that can reduce hunger, poverty, gender inequality and poor access to water and sanitation.

policies and programmes across a range of sectors, it remains especially unclear how nutrition objectives will feature in domains relevant to markets and the provision of nutrient-dense foods.

3.3 Regulation of food products

The regulatory framework governing business in the agri-food sector creates complexities for business involvement in nutrient-rich foods. Although the 2003 Food, Drugs and Cosmetics Act establishes roles for various institutions, Tanzania does not have a single, central national food safety policy. At least ten agencies and ministries are involved (Ndabikunze *et al.* n.d.). While the Tanzania Food and Drugs Authority (TFDA) has the overarching mandate, its functions overlap with those of several sector-focused ministries and departments, as well as local governments (Table 3.2) (Kurwijila *et al.* 2011). For example, food inspection functions are divided between TFDA, Tanzania Bureau of Standards (TBS) and local government, as well as sectoral ministries in the cases of foods such as animal products (Kurwijila *et al.* 2011). These overlaps inhibit coordination, proper enforcement of regulations and efforts to increase public awareness (Ndabikunze *et al.* n.d.). Decentralisation has further complicated regulation, as more regulatory functions have been devolved to local government agents. TFDA is expected to provide guidance and coordination across these units.

The present framework for food regulation affects different types of business in very different ways. In the broadest sense, large businesses are able to comply with requirements and engage with government agencies. In contrast, the framework has the effect of excluding or criminalising the activities of large numbers of small enterprises⁹ involved in food production, processing and retailing (United Republic of Tanzania 2003; Olomi 2006; Nkonoki 2010). Accompanied by the relatively weak enforcement capacity of regulatory agencies, this represents a regulatory gap; many of the food products available in markets are not effectively covered by existing regulations. This creates challenges for food safety and nutritional quality of food. This problem is likely to have a particularly negative impact on low-income groups, since they tend to buy food from these informal enterprises and markets.

⁹ Throughout this report, the term 'small enterprises' is loosely used to refer to businesses with less than 49 employees and capital investments up to Tsh 200 million (US\$120,000). This is the definition used by the Tanzanian government to refer to micro and small enterprises (Ministry of Industry and Trade 2003).

Table 3.2 Institutions and responsibilities over food safety and quality

Institution	Executive branch	Responsibilities
Tanzania Food and Drugs Authority (TFDA)	Ministry of Health and Social Welfare	Registration of products and premises; sanction in collaboration with judiciary; laboratory services; food safety control; audit local council inspection; training of inspectors and food export health certification.
Tanzania Bureau of Standards (TBS)	Ministry of Industry and Trade	Standard setting; training for industries on quality and safety assurance; standard enforcement including inspection of plants and processing of TBS certified products.
Central Veterinary Laboratory (CVL)	Ministry of Livestock and Fisheries Development	Meat hygiene; animal health; abattoir inspection; animal traceability; veterinary drugs control; milk safety and quality.
Directorate of Crop Protection (Plant Protection)	Ministry of Agriculture, Food Security and Cooperatives	Sanitary and phytosanitary issues, including plant health, plant protection, pesticides registration, export certification and control of GMOs.
Local governments	Ministry of Regional Administration and Local Government	Food hygiene control and preparation of food establishment sanitation ordinances; food inspection; building inspection; fire inspection; occupational safety and health inspection.
Tanzania Dairy Board	Ministry of Livestock and Fisheries Development	Milk and dairy products regulation
Meat Board of Tanzania	Ministry of Livestock and Fisheries Development	Meat and meat products regulation
Fisheries Department	Ministry of Livestock and Fisheries Development	Fish inspection; fish regulations; training of fishermen and processors; control of fish export.
National Environment Management Council (NEMC)	Vice-President's Office	Environmental impact assessment
Government Central Laboratories Agency (GCLA)	Ministry of Health and Social Welfare	Food analysis

Source: Kurwijila *et al.* (2011).

3.4 Business environment and regulation

The broader regulatory environment for businesses in Tanzania has an important impact on the involvement of businesses in nutrient-rich foods. A wide range of policies affects enterprise creation, product marketing and the commercial viability of various business models. Assessments of the overall impact of business regulations in Tanzania tend to conclude that the environment is particularly difficult for running formal sector businesses (World Bank Group 2014). This is exacerbated by poor provision of key infrastructure such as roads and electricity. However, not all of these factors have bearings on business involvement in nutrient-rich foods, over and above involvement with other kinds of food. At the broadest level, Tanzanian policy has consistently moved towards liberalised markets and withdrawal of direct state involvement in production since the early 1990s (Temu and Due 2000; Tibandebage *et al.* 2003). In the past decade, efforts in support of private sector development have accelerated, including a range of business regulatory reforms. However, these reforms have affected different classes of business differently: while the climate for larger businesses has improved substantially, results have been more mixed for small enterprises (UNIDO 2012). A number of areas create particular difficulties for small enterprises:

- High costs, delays and complex procedures required for registration and licensing a new business,¹⁰ which costs Tsh 10 million (US\$6,000) (Table 3.3);
- Complex requirements for licensing products, including demonstrating compliance with relevant standards;
- Lack of field officer of relevant agencies, requiring businesses in rural areas to travel long distances to register;¹¹
- The fragmented tax structure creates confusion; the requirement for upfront tax payments when starting a business can be unaffordable to small enterprises;¹²
- Low levels of formal education and low access to information among business owners; and
- Low membership in business associations¹³ and lack of representation for small enterprises in policy processes.

Table 3.3 Regulatory requirements for new food businesses

Requirement	Description	Agency	Involves fees?
Business registration	Provide business name, location, ownership and Memorandum and Articles	Business Registration and Licensing Authority (BRELA)	Yes*
Registration	Simple registration	Local government	Yes
Product registration	Involves inspection of production process and facility, product testing	Tanzania Bureau of Standards (TBS)	Yes
Business licence from local government	Tax assessment and pay estimated tax upfront	Tanzania Revenue Authority	Yes (tax)
Premises inspections (local level, different agencies)	Health inspection	Health Department	Yes
	Health and safety inspection	Occupational Safety and Health Authority	Yes
	Premises inspection and certification	Fire Department	Yes
	Inspection of packaging and weighing equipment	Weights and Measures Department	Yes
	Environmental impact assessment	National Environment Management Council	Yes
Product specific procedures	I.e. Fortification requirements, vehicle inspection	Various	

The requirements and costs of developing an enterprise mean that the majority of small (and medium) enterprises (SMEs) continue to function in the informal sector, avoiding contact with government authorities. This is often due to the cash and time required, rather than a lack of knowledge about the requirements for formalisation (Tibandabage *et al.* 2003). According to one estimate, only 4 per cent of small businesses are registered with the Business Registrations and Licensing Agency (BRELA) (UNIDO 2012). Reforms driven by the 2003 National SME Policy have streamlined the process of registration with BRELA¹⁴ and have established business registration offices in regions across the country. This appears to be encouraging formalisation; the number of businesses registered increased from 1,900 in 1995–6 to 7,000 in 2011–12. There has also been a sharp rise in the certification of new

¹⁰ For example, one interviewee reported a requirement for 16 certificates (and accompanying inspections) to register a milk product.

¹¹ This has improved somewhat with simplified registration procedures with BRELA and greater availability of Small Industries Development Organization (SIDO) services (SIDO is now present in 21 regions).

¹² Provisional tax payments have been removed in law, but appear to continue to be required in practice.

¹³ Less than 10 per cent of SMEs are members of a business association (UNIDO 2012: 11)

¹⁴ Business licensing, however, is provided by a different agency, and reports indicate that it continues to be expensive and cumbersome, particularly for small enterprises (*ibid.*).

products, with 199 receiving the TBS mark of quality between 2003–12, compared to only five products in 1998–2003 (UNIDO 2012: 35).

Yet reform has been hampered by unclear responsibilities, poor integration with local government and lack of funding (UNIDO 2012).

At present, the majority of business activity in the agri-food sector remains outside the purview of government regulators. This poses major challenges for the availability of safe and nutrient-dense foods, and for the capacity of government and other agencies to impact the sector. Unregulated and non-standardised products remain common, even in relatively easier-to-regulate urban centres. The informal nature of these markets is likely to exacerbate challenges with enforcing policies such as the mandatory fortification programme (discussed in Section 5).

Box 3.2 Tanzania SME Development Policy proposed actions

- Enhance implementation of programmes aimed at simplification and rationalisation of procedures and regulations so as to encourage compliance and minimise transaction cost;
- Improve the physical infrastructures and provision of utilities;
- Facilitate access of SMEs to financial and non-financial services;
- Enhance the capacity of institutions providing business training to SMEs;
- Support programmes aimed at increased access of information;
- Facilitate acquisition and adaptation of technologies and enhance networking between R&D institutions and SMEs;
- Improve SMEs' access to market;
- Enhance reforms to liberalise the financial sector and create financial intermediaries to cater for SMEs;
- Facilitate strengthening of institutions and business associations;
- Facilitate manufacturing enterprises in rural areas to add value to agro-products;
- Ensure gender mainstreaming in all initiatives; and
- Consider environmental impacts and HIV/AIDS prevention.

The policy set out a number of objectives under each of these areas for the timeline 2003–08. The extent to which these programmes were implemented or targets met is unclear.

Source: Ministry of Industry and Trade (2003).

3.5 Coordination among policy actors

The discussion above has highlighted that the central government has initiated a number of reforms with the potential to improve the environment for producing nutrient-dense foods. Yet, implementing many of these measures is likely to remain a challenge, given the low capacity of public institutions to fund and implement new programmes and to conduct effective monitoring and enforcement, particularly at the local level. This is compounded by the difficulty of coordinating action across the various agencies. Aligning these priorities alongside those of donors and major private sector organisations will add a further level of complexity. Assessing the outcome of present coordination mechanisms is beyond the scope of this report. Based on this brief review, several gaps can be identified with respect to policy support for nutrient-dense foods:

- There is a wide gap between the objectives against which agricultural and nutrition policies are evaluated.
- The focus of agricultural policy remains on increasing yields for staple crops (maize and rice) but largely neglects nutrient-dense crops (such as pulses, leafy vegetables, etc.).

- In agriculture and food, the political prerogative continues to be assuring food security and food sufficiency in terms of calories, rather than tackling undernutrition through targeting improved quality and diversity of diets.
- Current regulatory frameworks for food businesses and products tend to exclude small enterprises from being able to formalise.
- Enforcement capacity for food regulations is low.

Rather than prescribing how to reform the overall policy landscape for agriculture, food and nutrition, this report focuses on programmes that seek to enhance the provision of nutrient-dense foods within the current policy landscape. Given the complexity and uncertainty in the Tanzanian policy environment, this project hypothesises that narrower scopes of action will be more feasible and involve less risk than sweeping changes.

4 Why don't markets deliver nutrient-dense foods to the poor?

Major constraints inhibit market-based provision of nutrient-dense foods in Tanzania, as in most developing countries. A mapping study found that, in several product categories – complementary foods, cowpeas and orange-fleshed sweet potato (OFSP) – few nutrient-dense products were available at prices affordable to poor consumers (Temu *et al.* 2014). Although several businesses make products fortified with micronutrients, these target middle- and upper-income consumers who are willing and able to pay a higher price (for an example, see Maestre *et al.* 2014). Research in Ghana (Anim-Somuah *et al.* 2013) and Nigeria (Robinson *et al.* 2014) has identified five broad constraints that prevent markets from providing nutrient-dense foods for the poor: (1) low nutrition awareness; (2) the absence of mechanisms to signal nutritional quality; (3) poor quality of supplies for food processing; (4) the high costs of distributing to the poor; and (5) a difficult business and regulatory environment. Stakeholder interviews for this report and evidence from the mapping study indicate that these same constraints affect food markets in Tanzania. Each of these constraints is now explained in turn, followed by an assessment of how they affect efforts to fortify processed food products in Tanzania.

4.1 Market constraints to nutrient-dense foods

Low nutrition awareness. Among stakeholders interviewed, there was a widespread perception that the majority of consumers in Tanzania have a low level of awareness about both the nutritional needs of infants and pregnant women, and about the nutritional contents of various foods. Awareness among the rural poor was considered to be especially low. Although only indicative, a recent review led by the USAID-funded Mwanzo Bora project examines the public visibility of nutrition issues through various media, and rated it 'red' (i.e. bad).¹⁵ Large-scale survey evidence is not available to validate these claims, although there is indicative evidence that awareness of health practices important for nutrition (particularly good infant feeding) is low (National Bureau of Statistics and ICF Macro 2011a), which may suggest general low awareness of nutrition needs of children and adults. When a population is characterised by low awareness of and willingness to pay for nutrition, there are few incentives for businesses to produce nutrient-dense products or to distribute them in ways that reach the poor. In other words, even if businesses have the capacity to produce and deliver foods, they don't do so because they perceive that the returns on this investment are insufficient.

Absence of mechanisms to signal nutritional quality. One of the most pressing constraints for nutrient-dense foods is the need for mechanisms to signal their nutritional quality, since this quality is generally 'invisible' to consumers. For example, there is no visible difference between fortified maize flour or vegetable oil and unfortified alternatives (except for claims on the packaging).¹⁶ For this reason, nutritional value is known as a 'credence good', a product trait whose value must be taken on trust. The implication for businesses is that it is difficult to differentiate a nutrient-dense product from cheaper, alternative products that lack nutritional value. As a result, in most markets there is a strong incentive for businesses to reduce the nutritional quality of their products in order to sell them at the lowest possible price. There are ways that businesses work around this problem (discussed below), but these aren't sufficient for getting products to the poor.

¹⁵ www.slideshare.net/LydiaClemmonsMPHPhD/tanzania-sbcc-landscape-analysis-2012 (accessed 10 July 2014).

¹⁶ While this problem is especially prevalent for processed foods, it can also affect others, such as some biofortified foods (e.g. rice) or foods that can lose their nutritional value through storage or cooking.

Poor quality supplies. Supply side issues also contribute to the low affordability of nutrient-dense products. Many agricultural commodities in Tanzania are subject to large price fluctuations, related to low yields and the lack of improved storage technologies. This increases the cost of end-products in some cases; in others, it leads to reliance on cheaper imports. At present, the way value chains are structured is a contributing factor because they tend not to pass on incentives; for example, traders often offer farmers a fixed price, regardless of the quality of the grains being supplied. This ultimately increases the costs of safe, nutritionally adequate end products.

High costs of distribution. Providing nutrient-dense foods to poor populations requires distribution networks that reach the places where they live. For centrally produced products, many small and medium-size businesses cannot reach low-income areas because the transport costs are high, while demand and profit margins are low due to low purchasing power. Only a few large companies and multinationals have the resources and volumes to distribute in these areas. (Agrawal and Dutt 2013; Shukla and Bairiganjan 2011). Smaller businesses generally require partnerships and support from other organisations.

Difficult business and regulatory environment. Both businesses and other actors are faced with an institutional environment in which it is complex and costly to operate. Weak formal institutions and inadequate rule of law lead to distrust among businesses and between businesses and public agencies. The informal nature of many SMEs makes it difficult for either large companies or government institutions to interact with them. Meanwhile, as discussed above, ambiguities and overlaps in business regulations make it difficult to operate. None of these issues necessarily prevents businesses from participating in value chains for nutrient-dense foods. However, given that marketing foods based on their nutritional value and targeting low-income groups already involve more risk and uncertainty compared to conventional ventures, the added complexities of the business environment may tip the balance against investments in this area. Secondly, the difficult environment contributes to consumers' distrust of products that are made in Tanzania and preference for imported products. This exacerbates the problems of low awareness and nutrition signalling described above. Finally, the business environment makes it especially difficult to establish coordination between value chain actors in ways that could improve the quality of domestic food supplies.

In combination, these problems inhibit markets and businesses from providing nutrient-dense foods in a way that makes them accessible to the poor. Furthermore, businesses – acting on their own – are rarely able to overcome them.

4.2 Why can't businesses overcome the constraints without partnership with the public sector? The case of voluntary fortification

Given these constraints, what is the prospect of businesses acting without some support from the public sector to develop nutrient-dense foods that are affordable to poor populations – particularly by voluntarily fortifying their products? The constraints encountered by businesses trying to develop and market fortified products provide a clear example of the challenges involved. While it is possible for individual businesses to get around these constraints, this generally involves incurring costs that make these products unaffordable to the poorest. For example, consider the lack of mechanisms to signal nutrition, one of the most widespread challenges for fortified foods. Some businesses are able to get around this problem by positioning a nutritionally enhanced product as premium quality – through the use of sophisticated packaging, higher prices and placement in up-market shops. By 'bundling' nutrient content along with the other premium traits, these businesses are able to recover

their investment through higher prices¹⁷ (see, for example, the case in Tanzania described in Maestre *et al.* 2014). However, this approach is incompatible with making a product that is affordable to the poor.

There are ways to address the trade-off between affordability and nutritional quality – particularly by introducing market governance mechanisms which can validate products' nutritional quality and communicate it to consumer. There are at least two ways to do this: government-led regulation, such as food labelling requirements; and private sector-led schemes. However, both of these approaches require highly effective monitoring and enforcement systems if they are to be effective. Labelling schemes must prevent false claims on product advertising, while private certification schemes must prevent fraudulent use of their brand.¹⁸ At present, neither public nor private institutions in Tanzania appear to have the capacity to achieve strong enforcement. Stakeholders pointed out that enforcement of current regulations was insufficient and false labelling claims were common. Even in the context of the high-profile mandatory fortification programme (which covers only a narrow range of products), donor support is required for undertaking market checks (see Section 5). Monitoring a wide range of voluntarily fortified products, therefore, would be an overwhelming task. Although observers have proposed a public–private scheme to certify products with adequate nutrient content in the case of Ghana (Masters, Kuwornu and Sarpong 2011), there is no evidence about whether this type of scheme would be effective in Tanzania (see Temu *et al.* 2014). In summary, the constraints facing businesses generally prevent them from making nutrient-dense foods in a way that is accessible to the poor in Tanzania – when they act on their own. Increasing access to these foods will require various policy interventions. The remainder of this report, therefore, examines options for donors and government agencies to improve the functioning of markets for nutrient-dense foods.

¹⁷ The problem with using branding to signal credence good traits is widely discussed in the literature on asymmetric market information (Dranove and Jin 2010; Masters 2012).

¹⁸ For more detailed discussion of private certification schemes, see Masters *et al.* (2011).

5 Policy strategies for enhancing food markets

There are a range of policy and programmatic strategies for overcoming the problems in markets for nutrient-dense foods, and there is substantial experience in Tanzania with several of the strategies. The report reviews five strategies: (1) mandatory fortification by large companies; (2) mandatory fortification by small enterprises; (3) efforts to promote production of and markets for fresh foods such as fruit and vegetables; (4) behaviour change communications to increase demand for and consumption of nutrient-dense products; and (5) non-profit distribution providing food to the poorest and most vulnerable.

5.1 Mandatory fortification: large enterprises

This section examines the potential of Tanzania's national programme to mandate the fortification of wheat flour, maize flour and vegetable oil. Although fortification is only just beginning to be implemented in the country, a number of other countries have long-running programmes, some of which have demonstrated considerable success. The logic underlying mandatory fortification is that by creating an even playing field through regulation, government can simplify the constraints that affect businesses. In order to assess the current situation in Tanzania, this section draws on ten years' experience of mandatory fortification in Nigeria. It argues that two major conditions need to be met in order for the programme to deliver fortified products to the populations most affected by undernutrition: first, the programme must ensure that manufacturers really do fortify products (and that the added micronutrients remain in the product until the point of consumption); and second, it must ensure that the products it covers are in fact the ones the poor eat. As will be shown, achieving both of these – i.e. effective fortification of the products eaten by the undernourished – is exceptionally difficult, and particularly so in the case of Tanzania. One crucial factor is that food markets in Tanzania are sharply divided between two sectors: large-scale, industrial manufacturing on the one hand, and micro- or small-scale processing on the other. Indeed, the fortification programme in Tanzania spans these two markets, with one product (wheat flour) being produced by highly concentrated industries, while maize flour and vegetable oil both include large numbers of small enterprises (Box 5.1).

Box 5.1 Mandatory fortification programme in Tanzania

Regulations mandating the fortification of specific food products in Tanzania were passed in 2011. This was the result of nearly ten years of advocacy, planning, technical support and funding from several donors. Efforts centred around the National Food Fortification Alliance, a stakeholder body that includes representatives of industry, government agencies, donors and NGOs. After providing a buffer period for industry and regulators to build their capacities, regulators will begin enforcing the fortification requirements in 2014. Thus far, mandatory fortification targets three product types: wheat flour, maize flour and vegetable oil¹⁹ (Annex A). Project documents estimate that, if successful, the programme will reach ten million people through consumption of fortified wheat flour and four million through fortified vegetable oil.

Source: Interview.

To explain why fortification is likely to be so challenging, this report examines each of these sectors in a separate section, first focusing on large industry, and second on small enterprises. It argues that, although achieving effective fortification among large industry will be challenging, it is less costly and complex than doing so among small enterprises. Yet, in Tanzania it is small enterprises, not large industries, that provide products to the majority of

¹⁹ The original plan also included sugar, but this was dropped due to resistance from the industry.

the poor. Therefore, if fortification is to succeed for the poor, policymakers must choose between attempting to extend the markets for industrial products so they cover the poor, and investing heavily in building the capacities of small enterprises. The next two sections build this argument.

5.1.1 Advantages and challenges of mandatory fortification

As mentioned, mandatory fortification has had considerable success in a number of countries. The World Bank estimates that fortification is one of the most cost-effective strategies for addressing micronutrient undernutrition (World Bank 1994). But in order to have an impact, mandatory fortification must be implemented in ways that get around the market environment constraints outlined above. When fortification is made mandatory, it can address these constraints in three ways:

- **Distribution.** By targeting products that are already widely consumed, mandatory fortification can tap into existing distribution systems that reach large sections of the population. This can avoid the high cost of establishing distribution systems to reach the poor.
- **Targeting.** If fortification targets products that are eaten by all social groups, there is no need for special measures to reach those most vulnerable to undernutrition. This requires assessing whether undernourished populations, especially the poor, really do consume the targeted product(s).
- **Demand issues.** By focusing on foods that people are already accustomed to, and by requiring all producers to fortify, mandatory fortification bypasses the need to raise consumer awareness. If all products in the market are covered, consumers do not even need to know that the product they purchase is fortified, and there is no problem with signalling nutritional value.

Table 5.1 Market characteristics of fortified products in Tanzania

Food type	Market concentration	Participation in fortification	Sourcing
Wheat flour	<i>Concentrated</i> 2 firms control 94% ²⁰	6 companies participating ²¹	98% imported
Maize flour	<i>Diffuse</i> ²² 10 firms; control around 5% ²³ Large informal market	None	Nearly all domestic
Vegetable oil (especially sunflower and groundnut oil)	<i>Mixed</i> 2 firms control 80% of formal market ²⁴ Large informal market ²⁵	3 companies participating ²⁶	60% of formal products imported. ²⁷ The poor rely on informal operators that source locally

²⁰ Source: Sutton and Olomi (2012).

²¹ Source: Interview.

²² There are ten large manufacturers of maize flour with capacity of at least 50 MT/day (Temu, Manyama and Temu 2010). There are also a number of medium-size producers.

²³ Source: McKee (2009).

²⁴ The formal market is predominantly for sunflower oil (Gradl 2012).

²⁵ Nationwide data are not available. One survey in four regions (Dodoma, Kigoma, Mbeya and Singida) found that 83 per cent of firms identified were micro, while 17 per cent were small (Mutambala 2012). Stakeholder reports indicate that most households source from local, small-scale presses that make unrefined cooking oil. Only two large firms appear to provide refined oil (Gradl 2012).

²⁶ Source: Interview.

²⁷ Most imported vegetable oil is reportedly consumed by wealthier urban consumers (SAGCOT n.d.).

However, mandatory fortification also commonly faces a number of challenges. First, there are technical issues in the type and dosage of micronutrients that are added to products.²⁸ Yet the solutions to these technical problems are well known and relatively straightforward. In contrast, challenges related to institutions and incentivising behaviour changes are much more complex, and solutions depend on the political and institutional context. Rather than focus on technical problems, this report aims to assess the prospect of addressing the institutional challenges facing fortification.

As mentioned above, successful fortification must both be *effective* in practice and *cover the products consumed by the poor*. This section will address each of these issues in turn. First, it examines several institutional challenges to effective fortification, which can be described as ‘commitment’, ‘capabilities’ and ‘enforcement’:

- **Commitment.** There must be sufficient commitment to fortification on behalf of both individual leaders and institutions, including both industry bodies and government regulators.
- **Capabilities.** A number of factors both within a given organisation and in the market context can make it easier or more difficult for businesses to implement fortification. Policy interventions can try to enhance the capabilities of businesses and regulators, and to make markets and value chains more supportive.
- **Enforcement.** Even if actors are committed to and capable of implementing fortification, businesses need to be incentivised to comply with the standards. Key to this is effective monitoring and enforcement.

To be successful, fortification needs not only to meet these three challenges, but to do so in the markets *from which the poor buy their products*. The remainder of this section considers how Tanzania is likely to perform against these three challenges, and then the likelihood for success in the markets that reach the poor.

5.1.2 Commitment to fortification

Whether industry and regulators are committed and will play their roles on an ongoing basis is a central concern for mandatory fortification. Thus far, it has taken considerable effort and funding from outside donors to initiate this programme in Tanzania. Indeed, the process nearly stalled during the development of standards; funding from donors was key to motivating important players to participate (Gradl 2012). There is no evidence to indicate how well implementing institutions – particularly government regulators – will be able to maintain institutional commitment once outside funding ends.

Commitment on the part of large industry is likely to depend on companies’ positions on social responsibility for addressing problems like undernutrition, as well as their core business interests (particularly higher product sales). These conditions are present to different extents in Tanzania: much of the public messaging from the central government and from donors has emphasised the importance of addressing undernutrition for ensuring long-term economic growth (e.g. TFNC 2006), and the importance of the private sector’s contribution to these efforts. This has been led by strong support from President Kikwete, which has helped attract the attention of industry decision-makers. In contrast, commitment issues related to core business interests have been less publicised. However, in principle several factors could help incentivise industry compliance with fortification requirements. The first is an export orientation in the East Africa Region. Efforts are under way to harmonise national fortification standards in the region, which should strengthen incentives to comply in

²⁸ These issues are important because the dosage must be set based on the quantities of products consumed on average by the population, which differ between countries and regions. There is also a risk that some people consume certain nutrients (i.e. iron) in excessive quantities, and this can have negative health consequences. Finally, the specific compound used in fortification may affect how bioavailable the nutrients are and how long they remain viable after being added to the product.

order to access the regional markets. Several promising signs of commitment on the part of industry have emerged; two manufacturers have voluntarily declined donor-funded subsidies for premix and begun purchasing it themselves, while one firm has purchased its own fortification equipment.²⁹ Yet experience so far suggests that fortification is still not on the primary agendas of industry decision-makers; for example, the National Food Fortification Alliance has not been able to meet with industry representatives at the director general level, except during Presidential visits.³⁰ In summary, it remains unclear whether commitment to fortification will be deep and sustained by key large food processors. Commitment by small industry is much lower, as discussed in Section 5.2.

5.1.3 Capabilities

The capability of the business to undertake fortification relates to a range of aspects in its business model, including knowledge, staff and technology. In general, large industries are best placed to develop the capabilities for fortification. They often already have the expertise and resources to be able to acquire fortification systems and put them into use. In Tanzania, the National Fortification Programme aimed to help build these capacities by purchasing dossifiers for the major manufacturers. In contrast to large industry, capability issues are likely to be a much greater hindrance for small enterprises. However, several issues related to sourcing inputs for fortification appear to have an impact on large manufacturers.

Problems with sourcing high-quality inputs for fortified products can reduce the efficacy of fortification programmes, especially since the quality of the food vehicle can affect its safety for human consumption and its ability to retain added micronutrients. Currently, large industries often get around sourcing challenges by importing supplies that are of predictable quality. For example, millers of wheat flour in Tanzania are able to control the quality of wheat because the overwhelming majority is imported. This ultimately reduces the cost and complexity of fortification for this industry. In contrast, it is more difficult to source reliable quality maize produced in Tanzania. In particular, the majority of maize producers (who are small farmers) have limited or no access to improved storage facilities (Temu *et al.* 2010) and this creates risks of aflatoxin contamination (Abt Associates 2013). On the whole, importing supplies provides a shortcut to avoid some of the technical problems with fortification. Of course, reliance on imports conflicts with the policy objective of national-level food self-sufficiency.

Another problem affecting businesses' capabilities to fortify relates to supplies of micronutrient premix.³¹ Premixes are chemical additives, and so require relatively sophisticated laboratory testing to ascertain their real nutrient content. This means that the signalling problems discussed above in the case of consumers also apply to manufacturers that source premix. Not all manufacturers have the technical capacity to test the premix or identify reliable suppliers. Donors have played a role in addressing this challenge. During the initial years of the fortification programme, donors provided premix for free to food processors.³² At the same time, the Global Alliance for Improved Nutrition (GAIN) has set up a global premix facility in order to reduce the costs and avoid signalling problems faced by manufacturers when sourcing premix. The facility pre-certifies premix suppliers in order to guarantee buyers that the products are legitimate and contain the correct level of micronutrients. These programmes appear to have reduced the main problems with sourcing premix, at least for the large manufacturers.

²⁹ Source: Interviews.

³⁰ Source: Interview.

³¹ Premix refers to specially formulated micronutrient-containing compounds that can be added to food.

³² In addition, to address a separate challenge of unsupportive policies, donors have advocated with the Tanzanian government to classify premix as an essential drug, exempt it from import duties and accelerate delivery through the port.

5.1.4 Enforcement

Because the fortification requirements have only just come into force, there is no evidence about the effectiveness of enforcement in Tanzania. However, preliminary lessons can be drawn by considering the structure of the relevant industries, and the planned structure of monitoring and enforcement. At present, monitoring and enforcement are the responsibility of regulatory agencies, led by the Tanzania Food and Drugs Agency (TFDA). TFDA has developed a protocol for factory-level and point-of-sale monitoring of products covered by the programme, with support from Helen Keller International. Donors will fund the first round of monitoring; in subsequent years, TFDA will be expected to allocate its own budget for inspections.³³ Enforcement of the system has been scheduled to begin in 2014. TFDA provides tools, including inspection checks, registration forms and receipts. The actual point-of-sale inspections and sampling will be undertaken by health officers and other staff at the district level, where training and access to equipment are often very limited.

Lessons can be drawn by comparing this structure with experience in other countries where mandatory fortification has been in effect for a longer time; in particular, this project has examined the experience of a similar programme implemented in Nigeria (Box 5.2). Similar to Tanzania, Nigeria has received substantial donor support for its mandatory fortification programme, which went into effect in 2002. However, recent research found that levels of fortificants in products at the point-of-sale were much lower than expected, with less than one third of most products meeting the requirements (Ogunmoyela *et al.* 2013). This has revealed two key lessons: first, reports of compliance at the factory level are not an accurate estimate of actual levels in the market (Busari 2013; Ogunmoyela *et al.* 2013), indicating that large manufacturers have an incentive to under-dose products while taking steps to conceal this from regulators. Second, public statements of high levels of commitment to fortification among industry and government are not enough to ensure fortification is effective in practice. This suggests that establishing the right structure and capacity of enforcement systems are key.

Box 5.2 Enforcement of mandatory fortification: Lessons from Nigeria

Experience indicates that achieving high levels of compliance for fortified products can be a major challenge. In Nigeria, fortification of wheat flour and vegetable oil has been mandatory since 2002. In a similar manner to Tanzania, donors provided funding and technical support to regulatory institutions and industry bodies, and the programme is coordinated by a National Food Fortification Alliance. Yet despite substantial investments to increase enforcement capacity, a recent study³⁴ found that levels of compliance were very low in products covered by the programme:

Wheat flour / vitamin A:	10 per cent
Wheat flour / iron:	38 per cent
Vegetable oil / vitamin A:	24 per cent

This evidence suggests that even in cases where there appear to be high levels of public commitment among industry players and regulators, this may not be reflective of actual levels of compliance.

Source: Ogunmoyela *et al.* (2013).

³³ This may well be a challenge. Post market surveillance is considered very expensive, with a single sample costing as much as US\$35 to analyse.

³⁴ This study took samples in markets and shops and used a rigorous testing methodology.

5.1.5 Do centrally processed products reach the poor?

Although meeting the three challenges outlined above is difficult, it is still not sufficient for mandatory fortification to succeed. The products covered must also be eaten by the poor. In other words, even if strong industry compliance can be achieved, this will not help reduce undernutrition if poor populations do not eat centrally produced products in substantial quantities. In the case of Tanzania, evidence about the reach of centrally produced products is scarce, but what is available suggests that the poor rarely eat these products. In the 2011 NDHS, only 18 per cent of rural households reported buying maize flour (as opposed to processing maize they grow themselves). Yet, it appears that a similar trend may affect the urban poor; again, only 18 per cent of consumers in the bottom three wealth quintiles bought flour. Even when poor households do buy centrally produced products, they may do so in much smaller quantities: the 2001 Household Budget Survey found that although 55 per cent of rural households purchased wheat-based foods, those in the poorest wealth quintile consumed 3g of wheat per day, compared to 18g per day consumed by the median Tanzanian household (cited in Jorgensen 2011). That centrally processed products are rarely consumed in rural areas appears to be reflected in the marketing strategies used by large industry, which focus their efforts on urban centres (Mutambala 2012; Temu *et al.* 2010)

Although these results are indicative, the quality and reliability of evidence on the reach of centrally processed products appears to be inadequate for assessing the potential of the fortification programme (Sununtnasuk 2013). The various surveys available show radically different results (Table 5.2): in sharp contrast to the NDHS, the 2001 Household Budget Survey found that a much higher proportion of households purchased maize flour, reporting figures of 59 per cent of rural households and 56 per cent of households in the lowest wealth quintile. These divergent results require further investigation and indicate the need for more rigorous surveys of sourcing and consumption practices by rural and poor households.

Table 5.2 Results of national household purchasing surveys

Product	Household type	Percentage purchasing	
		NDHS 2010	HBS 2001
Maize flour	All rural households	18	59
	Bottom 3 wealth quintiles	18	56
Vegetable oil	All rural households	85 ³⁵	40
	Bottom 3 wealth quintiles	84 ³⁶	31
Wheat flour	All rural households	N/A	13
Wheat-based foods	All rural households	N/A	55

Sources: Jorgensen (2011); National Bureau of Statistics and ICF Macro (2011).

These observations raise doubt, about how much of the low-income population can be reached through fortification via large industry and whether this approach can deliver ‘quick wins’ in reducing undernutrition for the poor. Stronger evidence on how low-income populations source staple foods is needed in order to verify this initial assessment.³⁷ If the indicative data reviewed above are correct, the implications are that stakeholders involved in mandatory fortification need to alter their strategy. The fortification programme will need to choose between two approaches: either to make strong efforts to *extend the coverage* of centrally manufactured products (wheat flour and refined vegetable oil) so they are affordable and available to a large portion of the poor; or to ensure that fortification takes place among

³⁵ 49 per cent of rural households reported purchasing vegetable oil of a known name brand.

³⁶ 46 per cent of households in the bottom three wealth quintiles reported purchasing vegetable oil of a known name brand.

³⁷ The National Fortification Programme has also collected evidence, including a survey of maize and wheat consumption in rural districts (Towo *et al.* 2007). However, the available data have not indicated what percentage of people consumed centrally processed commodities.

the small enterprises that currently sell to the poor (i.e. the portion of the poor that purchases foods, rather than self-provisions). Section 5.2 examines the second strategy, and what would be required for fortification to be effective among small enterprises.

5.1.6 Lessons

Stakeholders involved in mandatory fortification in Tanzania – including donors, government agencies and NGOs – should consider the following lessons from other countries' experiences:

- Mandatory fortification is likely to face substantial challenges regarding enforcement and will require continued investment in capacity building for regulators and sustained institutional commitment.
- Mandatory fortification is much simpler to achieve among large companies. However, the available evidence suggests the majority of the poor may not buy from these companies, although the quality of available data is suspect.
- Much more rigorous evidence is needed on the food sourcing patterns of different populations. Future surveys implemented as part of the fortification programme should disaggregate data on where households source products and how much they consume between different household types (rural vs urban, income levels, etc.)
- If it is indeed the case that the poor are unlikely to be reached by large industry under present conditions, policymakers have a choice: they can seek either to extend the coverage of these industries, or to alleviate the challenges that prevent small enterprises from fortifying (see Section 5.2).
- The performance of large companies is linked to small enterprises. Large companies may find it more difficult to sell fortified products when they face competition from small enterprises that escape regulation, and can thus sell at lower costs. Therefore, success even among large firms may depend on improving compliance of small enterprises.

5.2 Mandatory fortification: small enterprises

The previous section argued that in order to make mandatory fortification contribute to better nutrition for low-income groups, one option is to increase participation and compliance by small enterprises.³⁸ The poor tend to buy from value chains run by small enterprises, and this is particularly the case for maize flour and vegetable oil. But how likely is it that interventions can sustainably catalyse fortification by small-scale enterprises? What conditions would need to be in place for this to succeed? When working with small enterprises, the challenges for fortification become more complex in a number of ways: First, small businesses generally lack equipment, finance and training – making it difficult to introduce technical upgrades such as fortification. Second, in many developing countries, the majority of small businesses exist outside the purview of formal regulations, contracts and dispute resolution mechanisms, and avoid contact with government authorities. Finally, it is more expensive and complex for public agencies, donors and large businesses to interact with and influence their behaviour (whether in the context of enforcing regulations, building technical capacity or incorporating them in value chains). This is because there are tens of thousands of small enterprises, often geographically dispersed and lacking permanent facilities. This creates much higher transaction costs. This section argues that, due to these added complexities, policy actors will need to invest in an additional set of interventions if fortification is to succeed for small enterprises.

³⁸ Throughout this section, the term 'small enterprises' is used to refer to businesses in the agri-food sector characterised principally by the small scale of their operations (with often only one or a small number of employees) and their informality (they are not officially registered with government bodies, although they may interact with various local state institutions outside the purview of formal regulation). This term is used in preference to 'small and medium enterprises (SMEs)' as there is a major gap in Tanzania and many other countries between formalised, medium-scale businesses and those in the informal sector.

Overall, the same three conditions need to be filled in the case of small enterprises as in that of large companies: individual businesses need commitment and capacity, and enforcement is necessary to ensure compliance. Achieving these conditions for small enterprises, however, introduces added complexity:

- **Commitment and incentives.** Owners and managers of small enterprises often have limited understanding of the nutritional implications of the foods they make, and how fortification might be important. They also operate in an environment of high competition, very limited resources and constraints on their decisions. Consumers are highly sensitive to price changes, and it is difficult to recover the costs of fortification.
- **Capacity.** Many small enterprises lack the equipment, skilled labour and technical capacity to undertake fortification. Furthermore, they may lack access to (or the capacity to identify) supply chains that can deliver good quality micronutrient premix at a low price.
- **Enforcement.** Just as in the case of large businesses, some amount of sanctioning is needed to motivate small enterprises to undertake fortification. Enforcement, however, is more difficult because of the large number of small enterprises. It requires linkages between enterprises, regulators and other organisations, as well as low transaction costs – particularly a problem in relation to the low capacity of government regulatory agencies (Box 5.3).

In addition to the enterprises themselves, systems to encourage fortification (whether public or private) require a funding model that pays for training, equipment, monitoring and enforcement.

Box 5.3 Regulatory agencies have low capacity to monitor small enterprises

TFDA, the agency responsible for enforcing mandatory fortification, has very low capacity to monitor and sanction enterprises outside of urban centres. The agency has only four Zonal Offices across the country, each of which must cover several regions. The office in Dodoma Region has only two staff, but is expected to cover an area that includes 1,000–2,000 small maize millers, according to one estimate. TFDA is supposed to be supported by health officers in at the district and local government levels, but these officers themselves have multiple responsibilities and lack resources and training.

Source: USAID Tanzania (2012).

If fortification is to succeed, measures must be in place to address each of these questions, and to do so in a way that is cost-effective. This requires putting in place an additional set of policy actions even *prior to introducing fortification* into the manufacturing process. Options include: **simplifying legal requirements** in order to allow small enterprises to formalise and make it easier for government agencies to interact with them; **providing/subsidising business development** and training services so that small enterprises have the capacity to undertake fortification and interact with regulators; **encouraging small enterprises to organise in clusters**, which will reduce the cost of providing business support services and regulatory control; and **franchising approaches** that link small enterprises to large companies, which can facilitate capacity building and provide incentives for fortification. The remainder of this section reviews each of these approaches in turn; it concludes that there are major challenges in upgrading small enterprises, as is evidenced by the experiences of several donor-funded programmes. If it is to succeed, policy actors will need to commit substantial resources over the long-term to build the commitment, capacity and enforcement in this sector.

5.2.1 Simplify legal requirements

As discussed above, regulatory requirements in Tanzania are complex and often overlapping, making it difficult and expensive for businesses to comply. This is one reason that so many agri-food businesses exist in the informal sector; the costs of formalising are too high to justify the returns. As discussed above, informal enterprises pose major challenges for mandatory fortification since government regulators and other institutions struggle to interact with (or even to identify) these enterprises and their products. In addition, the present regulatory framework effectively makes it impossible for small enterprises to undertake fortification: the recently passed regulations state that, in order to do so, a company must hold a regulatory certificate (which requires being officially registered with BRELA, registering the product with TFDA and passing the required inspections). Because meeting these requirements is beyond the means of most small enterprises, this requirement essentially prohibits their involvement in fortification. Simplifying business regulations, therefore, is a crucial prerequisite for effective fortification. Tanzania has had mixed results in previous attempts to reform these regulations (Box 5.4)

One way to help address this problem would be to develop a streamlined, low-cost registration process for businesses that produce nutrient-rich foods. This would entail very simple requirements for business and product registration, facilities inspection, product standards and testing, etc. These services would need to be provided by an agent in close proximity to the business, probably through the local government. This, in turn, is likely to require major capacity building for local government and adequate budget allocations. At the same time, while streamlined registration could encourage more maize flour and vegetable oil small enterprises to formalise, it would not guarantee that they comply with fortification requirements or meet food safety standards. Monitoring and enforcement of these standards would still require major capacity building. Research is needed to assess the extent of trade-offs in reforms between encouraging more enterprises to register on the one hand and enforcing product standards on the other. This trade-off notwithstanding, registration can likely be streamlined somewhat without compromising safety or nutritional adequacy. Finally, while simplified regulatory procedures are certainly a prerequisite for involving small enterprises in fortification, other measures are also needed to address the other constraints they face.

Box 5.4 Reforms to facilitate small enterprise

Historically, there have been efforts to simplify regulatory requirements in Tanzania. For example, certification of products by the Tanzania Bureau of Standards (TBS) was made free for SMEs, and a fast-track system was created for cases where there is no existing product standard. However, TFDA continues to function largely as a regulator/enforcer, rather than a facilitator to small enterprises.

Source: UNIDO (2012: 35).

5.2.2 Provide business development support

Providing business development support for small enterprises could have a number of advantages for fortification: it could provide the technical knowledge needed to undertake it (see Box 5.5), improve record-keeping and planning and make it easier for enterprises to interact with regulatory bodies and demonstrate compliance. Finally, they could help small enterprises access other services needed for successful fortification, such as finance. In the past, several donor-funded projects have sought to provide business development support to small enterprises and to stimulate private markets for these services. It is far from clear, however, whether these programmes have had a lasting impact on the capabilities of small enterprises. The experiences of one project aiming to build businesses' capacity to undertake fortification highlights some of the challenges in this approach (Box 5.6).

Box 5.5 Technical requirements for small-scale maize flour fortification

Fortification at small scale entails added complexity because commercially available premix is highly concentrated and must be diluted as much as 100 times when it is incorporated into small quantities of maize flour (USAID Tanzania 2012). If done incorrectly, this could lead to underdosing or potentially harmful overdoses. A number of solutions have been proposed to this problem:

- Specialised equipment (known as dossifiers) has been developed to precisely add premix during flour milling. However, this remains too expensive for most small enterprises.
- One project proposed to contract a larger miller to create a packaged mix of fortificants 'diluted' into maize flour, which could then be sold to smaller enterprises.
- Projects have developed simple dosing equipment (i.e. measuring scoops) that could be used by small millers.

In addition, staff in small enterprises need training in order to be able to undertake fortification safely and effectively.³⁹

Box 5.6 The Tuboreshe Chakula food processing and consumption project

Initiated in 2011, Tuboreshe Chakula⁴⁰ is a USAID-funded programme that aims to upgrade agri-food SMEs and facilitate fortification in markets dominated by SMEs (including maize flour and sunflower oil).⁴¹ Working in three regions, the project provides training and business support services (mostly on record keeping and manufacturing processes) and fosters business clusters and associations.⁴² The project targets 'the largest of the small', as well as medium-size enterprises.

At its inception, Tuboreshe Chakula aimed for a large number of enterprises to introduce fortification during the lifespan of the project. However, as of early 2014, none of the participating enterprises had been able to do so (after three years of project operation). A key challenge has been obtaining regulatory certificates from TFDA. Despite receiving business development support, only 15 of the 105 participating maize millers have succeeded in registering with BRELA. Another challenge has been the high staff turnover in small enterprises, which dilutes the impact of training.

In response to the lack of progress on enterprise-level fortification, the project adopted a separate strategy to achieve its nutrition target, by subsidising distribution of micronutrient powders for use at home. A previous donor-funded project⁴³ had similarly struggled to achieve fortification by small enterprises.

Tuboreshe Chakula managers have assessed that until there is higher consumer demand or stringent sanctions for non-compliance, small enterprises will have few incentives to fortify their products. The project's experience demonstrates the difficulty of building the capacity of small enterprises in the current environment, even with adequate donor funding. In order for enterprises to be able to formalise and acquire the capacity for fortification, it appears that sustained support is needed. The project has also invested in organising clusters of maize millers into associations, which will be easier to work with.

Sources: Interviews and USAID Tanzania (2012).

³⁹ The problem is greater in the case of vegetable oil, where products must be refined using high cost equipment (US\$100,000) in order to increase the shelf-life of the added micronutrients. At the time of writing, one project was still assessing whether unrefined vegetable oil could be fortified and delivered to consumers within a short time frame (USAID Tanzania 2012). Otherwise, fortification would require that small oil pressers sell to large companies with refiners.

⁴⁰ Tuboreshe Chakula means 'let's improve food' in Kiswahili.

⁴¹ The project also works with rice processors, although rice is not included in Tanzania's mandatory fortification programme and it deemed that small-scale rice fortification was not viable.

⁴² Other project activities include developing supply chains for premix and fortification equipment, sponsoring social marketing for fortified products and subsidising the development and distribution of micronutrient powders.

⁴³ The other project was the World Vision small-mill maize fortification programme in Tanga Region.

5.2.3 Promote clustering and associations

As discussed, fragmentation is one of the key constraints in small enterprise markets, creating high transaction costs for regulatory agencies, donor programmes and other organisations interacting with these businesses. Business clusters represent one way to reduce these costs. A cluster can be simply a geographic concentration of interrelated businesses operating in a particular sector. Some clusters also involve a coordinating organisation, which seeks to support the businesses and shape their behaviour, and which is sometimes formalised as a business association. In the case of food fortification, clustering could contribute to addressing several of the constraints for small enterprises, including by: providing small enterprises with access to equipment and infrastructure, incentivising the use of shared product standards and manufacturing procedures, providing business development services and enabling access to finance. In addition, from the perspective of outside authorities, organised business clusters would reduce the costs of identifying enterprises, building their capacity and monitoring their activities.

Reducing the costs of engaging with small enterprises is particularly important, since regulatory institutions are under-equipped to effectively monitor small enterprises producing maize flour and sunflower oil (see Box 5.3). Given the inadequate resources for regulatory agencies, monitoring may be virtually impossible if enterprises are not organised into clusters. Further, although simple geographic clustering could facilitate monitoring, coordinating organisations or business associations may go much further in addressing the constraints. In particular, they could facilitate access to training and equipment, and provide a structure that reduces the transaction costs of managing the behaviours of individual enterprises. However, coordinating organisations require viable business models (often through collecting revenues from members) and must be able to deal with collective action problems and prevent free-riding. They must also be incentivised (through a combination of positive incentives, regulatory sanctions and the value they can derive from a shared brand) to monitor and enforce fortification requirements among their members (see Box 5.7).

Box 5.7 Shaping behaviour through business associations: The case of salt producers

Adding iodine to salt has been mandatory in Tanzania since 1992. In the 2010 NDHS, 59 per cent of households were found to be using salt that contained the mandated level of iodine (National Bureau of Statistics and ICF Macro 2011b). UNICEF has provided funding and technical support to salt enterprises through the Tanzania Salt Producers Association. This included establishing a shared revolving fund for purchasing potassium iodide (the key ingredient for iodisation). The principle of this system is that each company contributes to the fund in order to pool risks, reduce sourcing costs and prevent stock-outs. However, some companies have failed to put aside funds to repay the revolving fund, leading to inadequate supplies and stock-outs. This case highlights that, even where business associations exist, centralised sanctioning powers and correctly aligned incentives are necessary for an association to shape firms' behaviours. Otherwise, firms are likely to engage in free-riding behaviour.

Source: Interviews.

Tanzania has experience with a number of clustering programmes aimed at SMEs (Box 5.8). Initial lessons from past programmes suggest that building clusters requires a long-term approach and parallel programmes to provide the other kinds of support discussed above (i.e. business development, infrastructure, etc.). Much more detailed research is needed into the incentives and viability of cluster models in Tanzania's maize flour and sunflower oil sectors. If clusters are to ease the burden on enforcement in mandatory fortification, enterprises will need to have strong incentives to join clusters and comply with regulations, rather than continuing to operate as dispersed units that are 'invisible' to regulators.

Box 5.8 Clustering initiatives in Tanzania

The Cluster Competitiveness Programme (CCP) was implemented by the Tanzania Private Sector Foundation in order to support clustering of SMEs in the food processing, horticulture and tourism sectors. Clustering, it was hoped, would enhance businesses' competitiveness in and access to export markets. In the food-processing sector, CCP supported the construction of two clusters in Morogoro and furnished them with technologies such as milling machines and solar driers. Key challenges included limited access to skilled labour and technology, and difficulties in meeting certification requirements and quality standards for export markets.

Source: www.tpsftz.org/article/cluster-competitiveness (accessed 27 July 2014).

Tanzania's business formalisation programme (MKURABITA) was implemented from 2007–10 and aimed to support SME formalisation through developing clusters by relocating SMEs to areas where facilities could be concentrated, while also aiding enterprises with business and product registration. The goal was to make SMEs eligible and competitive for loans. However, the programme encountered major difficulties. Many of the designated relocation sites were commercially inferior; street traders, in particular, resisted evictions. The programme was also criticised for not providing capacity building to participating enterprises.

Source: Salema (2007); Lyons and Titus Msoka (2010).

5.2.4 Support franchising schemes

Franchising is another institutional structure with potential to increase compliance with fortification and reduce the transaction costs for outside authorities that interact with small enterprises. A franchising model is one in which franchisees, enterprises that are 'close to the customer', are licensed by the franchise owner, a larger company or social enterprise, to use its brand – on the condition that they comply with specific standards. To succeed, franchise models must provide benefits to both parties: the franchise owner expands its market (or, in the case of a social franchise, achieves its social goals), while the franchisees increase their sales and revenues, through gaining access to the owner's systems, knowledge and brand reputation. They may also gain access to the owner's supply chain (e.g. for premix). Meanwhile, customers (and regulators) are assured that the end product meets certain criteria. Since the brand of the franchise owner is linked to the franchisees, the owner has an incentive to monitor their behaviour and ensure compliance. In the case of fortification, the franchisees could be small enterprises involved in maize milling or oil crushing, and the franchise owner could be a large company involved in the National Food Fortification Alliance. Although there are currently few cases of franchise schemes for nutrient-rich foods, a body of evidence on franchises exists in other sectors, particularly health.

Franchising might have the potential to reduce the costs of enforcing fortification among small enterprises by moving key monitoring and sanctioning functions from government agencies to the private franchise owner. This would entail the owner creating mechanisms to monitor fortification by its franchisees and sanction those that do not properly fortify. It would also need to prevent outsiders from using its brand. The approach would be successful only if it was capable of generating additional revenues through enhanced reputation or reduced costs. The additional margins are used by the franchise to pay for the costs of monitoring and enforcement.⁴⁴ If these conditions are met and if the franchise owner monitors more cost-effectively than a government agency, then regulators would only need to monitor the franchise owner, not the individual franchisees.

⁴⁴ Monitoring and enforcement remain key in franchising, since franchisees have an incentive to 'free ride', gaining the benefit of the franchise brand while reducing costs by not complying with franchise standards.

Because any large business entering into a franchise scheme with small enterprises will face high risk – particularly associated with non-compliance – such a scheme is likely to require public support, at least during the initial years. Donor funding could be used to provide initial training on franchising and to develop templates and agreements that simplify the process. As already mentioned, the key to success would be reducing the costs of monitoring; the franchise would only be advantageous if the franchise owner could monitor more cheaply than the regulator.⁴⁵

There are several potential models for franchising of fortified products in Tanzania:

- Franchisees could undertake fortification in their own facilities, but with equipment, training and monitoring from the franchise owner. In-depth assessment would be required to determine whether the franchise owner would be better equipped to enforce compliance than regulators.
- Franchisees (which are currently maize millers and oil crushers) could be incentivised to become retailers for a centrally produced product. This approach would go farthest to facilitate monitoring and enforcement. However, it would require changing the behaviour of low-income consumers, who currently tend to bring their own maize to a 'service miller', rather than buying a packaged product. This is perhaps the most common social franchise model in other sectors (see Box 5.9).
- Franchisees could sell centrally produced fortificants alongside their normal product for home fortification. This would require that consumers were informed and motivated to undertake fortification correctly in the home by mixing the two products. It would also require modifications to the mandatory fortification regulations, since the products would be fortified *after the point of sale*.

Box 5.9 Simplifying controls in franchising schemes

Unilever Indonesia has established a successful franchise of selling personal care products to low-income consumers. This model is successful because products are packaged in such a way that they are easily identified by the consumer and hard to adulterate. The consequence is that Unilever does not have to devote resources to controlling the quality of the product after it reaches the distribution agents (Clay 2005).⁴⁶

Given the extremely limited capacity of government agencies to enforce fortification among small-scale enterprises, franchising models warrant further investigation. In particular, they have the potential to reduce transaction and monitoring costs, and to establish incentives through both sanctions and increased sales. Yet franchising is far from a guarantee. Of particular concern is whether small enterprises that do not participate in franchises would be able to avoid sanctioning and might undercut fortified franchised products. For fortification to work through franchising, the franchises will need near universal coverage. Determining whether franchising will be successful in practice, and which structures and business models would be most effective, will require in-depth analysis and pilot programmes.

5.2.5 High cost of working with small enterprises

Experiences with all of the approaches discussed above show that the challenges of working with small enterprises should not be underestimated. Aware of the costs and risks of working with small enterprises, some organisations undertaking nutrition-oriented business programmes have instead targeted medium-size enterprises (Box 5.10). However, medium-size firms appear to face the same limitations as large ones in terms of reaching poor populations.

⁴⁵ Indeed, simplifying governance mechanisms is key to the success of franchise schemes even when there is no government-mandated requirement such as fortification.

⁴⁶ Report published by Oxfam GB, Novib Oxfam Netherlands and Unilever.

Box 5.10 Business development programmes that have focused on medium-size firms

Donor-funded business development support programmes implemented in Tanzania have tended to target medium-size businesses rather than small enterprises, as it is more straightforward to work with the former, and scale can be achieved more easily. Yet it's unclear whether working with medium-size firms will lead to products that reach the poor.

The SME Competitive Facility (SCF) is a joint project between the Government of Tanzania and the Danish Embassy launched in 2006 to support SMEs to upgrade products, meet standards and access higher value markets, such as hotels, supermarkets and exporters. SCF provides matching grants for branding, production development, market positioning, technology sourcing, staff capacity building, and participation in domestic and international trade fairs. SCF covers six sub-sectors, including edible oils and fresh fruit and vegetables, with an 80 per cent focus on dairy and sunflower oil. Approximately 80 companies participate. The main challenge is that few small enterprises can raise the required matching funds. It thus focuses primarily on medium-size businesses.

GAIN's Marketplace for Nutritious Foods programme (launched in Tanzania in August 2013) functions as a form of challenge fund. Through a competitive assessment process, it plans to provide modest support to a select number of businesses to develop business plans, and ultimately to connect successful businesses with sources of private capital via angel investors. The programme targets medium-size companies that have an explicit nutrition focus to their products. The aim is to enable businesses to make the transition from selling nutrient-dense products to a narrow base of consumers to reaching large numbers of people from mid- and lower-income groups. As presently structured, the Marketplace does not appear to target small enterprises from which the poor purchase food.

5.2.6 Lessons

In order to encourage small enterprises to undertake fortification, donors, the Tanzanian government and partnerships should begin with the following:

- Simplify regulations to make it easier for small enterprises to formalise and to meet the requirements for fortification. At present, regulations intended to achieve formalisation, food safety and good manufacturing practices are actually undermining fortification by small enterprises. Partial solutions that allow businesses to pursue fortification, even if they are not yet able to meet stringent manufacturing standards, would be better than an all-or-nothing approach.
- Promote clusters of small enterprises and support business membership organisations. Better organisation of small enterprises will facilitate engagement with these enterprises, whether by donor projects seeking to build capacity, private firms providing business development services or public agencies monitoring compliance with fortification requirements.
- Explore franchising models. Much better evidence is needed about the potential of franchising to strengthen the capacity of small enterprises and create incentives for fortification. This requires in-depth research to learn from models in other sectors and to pilot these in markets for fortified maize flour and vegetable oil.

Evidence presented in the previous two sections suggests that policy actors face a choice in pursuing mandatory fortification: invest either in extending the reach of products produced centrally by large companies so they are accessible to the poor (for one such approach, see Section 5.5 on non-profit distribution), or in organising and building the capacity of small enterprises. Both of these approaches appear to entail considerable risk and long-term commitment on behalf of donors and government. This section has shown that working with small enterprises is likely to be especially complex and no single approach appears to be sufficient. Instead, multiple approaches are required, learning-while-doing and efforts to

reduce transaction costs in interacting with small enterprises. In combination, this means that very substantial upfront investments will be required. If donors are unwilling to meet these costs, alternatives to fortification will need to be pursued. The remaining sections of the report examine some of these alternatives.

5.3 Promoting nutrient-dense fresh foods

The approaches discussed so far have all focused on fortified foods. An alternative approach is to promote products that are inherently rich in micronutrients, including fruits, vegetables, meat and milk, as well as biofortified crops such as orange-fleshed sweet potato (OFSP). These foods are often the target of campaigns to promote dietary diversity. They can be eaten fresh; some can also be dried, processed or preserved to increase their shelf-life. As a shorthand, this class of foods will be referred to as ‘fresh foods’ throughout this section, since they are often eaten with minimal processing, and since their relatively short shelf-life is a key characteristic. When looking at interventions targeting these foods, it is important to distinguish between efforts to increase their production and consumption and the much broader goal of optimising the nutritional impacts of agricultural activities as a whole. This latter approach is often referred to as ‘nutrition-sensitive agriculture’ (Save the Children 2014), and can include a wide range of actions to increase the nutritional and health benefits (or reduce the harms) of agricultural activities. Doing so generally entails targeting not just the food-based drivers of undernutrition, but also the other drivers. For example, some nutrition-sensitive agriculture programmes introduce technologies to reduce women’s labour in agricultural activities and food processing, with the logic that this will allow women to access health services and provide better care to infants (in turn reducing undernutrition). The holistic perspective of nutrition-sensitive agriculture is clearly important to improving nutrition for farming households. However, consistent with the framework set out in Section 2, the objectives of the current report are narrower. Thus, rather than looking at all the nutrition and health aspects of agriculture, this section focuses on the food-related drivers of nutrition, and the objective of increasing the production and consumption of nutrient-rich fresh foods.

Fresh foods have a number of key characteristics that make them distinctive from the fortified, processed products discussed previously.⁴⁷ First, many fresh foods have the major advantage of not requiring mechanisms to signal their nutritional quality to end-users. This is because, for the most part, people can easily distinguish them from alternative foods (for example, there is no mistaking a mango for a less nutritious fruit; orange-fleshed sweet potatoes are easily distinguished from nutrient-poor white-fleshed varieties). However, fresh foods also have an inherent disadvantage in that they tend to be highly perishable, with shorter shelf lives and susceptibility to damage during storage and transport. This creates a major challenge for increasing the availability and affordability of these products. Efforts are therefore needed to maintain product quality – and to do so at minimum added cost. Finally, interventions involving fresh foods are relatively unique in that they often involve the same households as both producers and consumers, which in turn raises issues about how households allocate their time, energy and resources among productive activities. This issue is discussed in more detail below.

Broadly speaking, interventions aiming to promote fresh foods can be classified as one of two types. First, efforts can focus on farming households, encouraging them to produce nutrient-dense fresh foods for their own consumption (this approach is typified by the promotion of ‘kitchen gardens’). Because it does not deal directly with market distribution, this intervention type can be labelled the ‘pre-farm-gate approach’ (Henson *et al.* 2013). In

⁴⁷ There is a body of nutrition science literature that considers the bioavailability of micronutrients from various foods, and compares micronutrients inherently present in foods or those that are added during processing. This issue is not the focus of this report, but is adequately covered elsewhere, i.e. Brown *et al.* (2007); Martínez-Navarrete *et al.* (2002) and Sandström (2001).

contrast, the second approach promotes access to fresh foods through market channels, with potential to reach both farming and non-farming groups. Because it involves distribution of foods beyond the households that produce them, this can be labelled the 'post-farm-gate approach'. Distinguishing between these approaches is important because they face different sets of challenges, and because one or the other may be more appropriate depending on the households and circumstances involved. The remainder of this section examines the two approaches in turn, and highlights relevant experience in Tanzania and elsewhere.

5.3.1 Pre-farm-gate approach

Pre-farm-gate approaches to fresh foods aim to improve the nutrition of farming households themselves, making them different to the other approaches examined throughout this report. First, there are trade-offs between producing a crop/food for household consumption and selling it on local markets to generate cash. In addition to motivating households and individuals to produce and eat fresh foods (which is somewhat analogous to increasing consumer demand in the case of centrally processed products), pre-farm-gate efforts also need to consider the market value of the food, and the cash needs of beneficiary households. Higher market value and greater need for cash mean households are more likely to sell products rather than eating them themselves. Second, beneficiary households – which are often labour-constrained – face trade-offs between producing, processing and preparing fresh foods and undertaking other important activities. Investing more time and resources in growing and preparing fresh foods leaves less for growing cash crops, pursuing wage labour, caring for children, accessing services, etc. Finally, the challenge of seasonal availability is particularly acute for pre-farm-gate approaches, as it may be more costly for individual households to produce fresh foods consistently throughout the year, particularly in areas with seasonally dry climates. While processing techniques such as drying can increase the period of availability for some foods, these also require labour and technology, and may thus be difficult to undertake, particularly for the poorest households.

Various NGOs have accumulated quite a lot of experience implementing pre-farm-gate nutrition programmes (Herforth 2012). Many of these programmes use behaviour change approaches, and provide messaging and training to encourage people to produce and eat fresh foods (Box 5.11). Yet, even if individuals are convinced of the value of fresh foods, this does not necessarily mean they can and will allocate scarce resources to production. Indeed, people need to perceive producing nutrient-dense food for themselves as more valuable than alternative activities. This is particularly difficult in the highly constrained decision space in which poor rural households (and women-headed households, etc.) operate. Social relations also shape these choices; for example, women may not be able to influence decisions over which crops are planted in contexts where land is controlled by men. Without addressing households' asset constraints and social relations, behaviour change programmes may have limited impacts. They may even risk having negative impacts, by increasing the labour burden on women (Le Cuziat and Mattinen 2011; FAO 2013).

Box 5.11 Using behaviour change communications to promote pre-farm-gate fresh food

The Mwanzo Bora Nutrition Project is a five-year programme funded under USAID's Feed the Future, with the explicit aim of reducing maternal anaemia and child stunting. It aims to achieve this through a combination of behaviour change communications, promoting vegetable gardens and household consumption and building capacity of government institutions and NGOs. Currently in its third year of operation, the project has set up demonstration plots to convince more communities to establish shared vegetable gardening, and funds demonstration activities to show how to grow, harvest and prepare nutrient-dense foods. Alongside this, the project has produced a standardised package of educational materials for use by community-based trainers and also trains rural clinic staff and health workers.

The project trainings teach the importance of nutrition; good child feeding; how to produce nutrient-dense vegetables; how to process, store and cook these foods; and the importance of equitable intra-household decision-making. They also aim to motivate farmers to spend extra income on nutrient-dense foods and health services. The project also provides seeds and equipment for producing vegetables. However, the emphasis is not to increase the supply of foods, but to influence consumption behaviour, infant care and other behaviours that can improve nutritional outcomes.

Source: Interviews.

There is a large body of research on and experience with pre-farm-gate interventions. Indeed, this constitutes much of what is often referred to as the 'agriculture–nutrition' approach. Summarising this work is beyond the scope of this report (for a high-level overview, see Herforth (2012)). Instead, the focus here is on how the pre-farm-gate approach compares to post-farm-gate efforts. In this respect, there are several challenges that are relatively specific to the pre-farm-gate approach:

- Many nutrient-dense foods require specific inputs and agronomic conditions (i.e. in the case of vegetables, adequate rainfall or irrigation). As a result, they cannot be produced in all zones or by all households.
- The households most affected by undernutrition tend to be the poorest and those with fewest assets. They often require more support, training and asset-building in order to produce sufficient food.
- Resources and labour for producing nutrient-dense foods compete with other productive activities (producing staple or cash crops, wage labour, childcare, etc.).
- Many households lack sufficient resources to produce fresh foods year-round. For example, in Mozambique, it was estimated that households could provision themselves with OFSP for only six months out of the year, even when using drying to increase shelf-life (Low *et al.* 2005).

More in-depth research is needed to understand how various categories of households can benefit from pre-farm-gate programmes that support production of nutrient-dense foods. This approach will have very different potential for different households (i.e. asset-poor vs asset-rich), individuals (i.e. women vs men farmers), as well as in different zones (i.e. high rainfall vs seasonal) and market conditions (high vs low access to markets). Given the constraints above, in many areas, the pre-farm-gate approach alone will not be sufficient to address undernutrition. There may be potential to combine this approach with interventions that aim to increase household assets and capacity, and that address the non-food drivers of nutrition. For example, in several of the programmes funded by USAID's Feed the Future in Tanzania, pre-farm-gate components are targeted towards asset-poor and vulnerable households, while cash-generating activities are focused on those who are better-off (Box 5.12). Whether such a bifurcated approach can enable the poorest households to access sufficient nutrient-dense foods needs to be examined in more detail.

Box 5.12 Bifurcated approach to fresh foods: Pre-farm-gate nutrition in Feed the Future projects

Several projects funded through USAID's Feed the Future in Tanzania incorporate pre-farm-gate interventions in the form of community gardens as sub-components of larger commercial agriculture interventions. For example, the Tanzania Agriculture Productivity Program (TAPP) has the primary objective of boosting commercial horticultural production by facilitating access to credit, inputs and market information. It has different strategies for improving the nutrition of better-off and vulnerable households (who are often unable to undertake horticulture). For commercial farmers, the project encourages saving some produce for home consumption and spending some earnings on more nutrient-dense foods. The project has parallel activities for the most vulnerable households, which focus on establishing community gardens and promoting home consumption. Thus the project aims to use a mix of pre-farm-gate interventions and increasing incomes to improve nutrition for better-off households, while using only a pre-farm-gate strategy for the most vulnerable. The NAFKA project, which aims to increase commercial production of rice and maize, has a similar approach, including community gardens targeted at vulnerable households.

Source: Interviews.

5.3.2 Post-farm-gate approach

The second approach to promoting nutrient-dense fresh foods looks beyond home consumption and aims to increase people's access to these foods through markets. This approach could potentially reach a wider population, including other farming households, wage labourers and urban populations. Its rationale is based on comparative advantage; it aims to allow fresh foods to be produced by the households and entities that can do so most efficiently. In theory, this could avoid the need to enable the most vulnerable households to grow and process nutrient-dense foods themselves (since this might require more intensive support). This approach also has the potential to tap into efficiencies of scale at the stages of storing, preserving and processing fresh foods. Yet by involving market exchanges between actors in a value chain, the post-farm-gate model introduces a new set of challenges.

The first challenge to this approach is that value chains must be structured in a way that provides viable commercial opportunities to businesses at each stage. For example, commercial farmers will grow nutrient-dense crops only if they yield high net returns compared to other potential crops. Ultimately, building markets requires a base of consumers with sufficiently high willingness to pay.

A second challenge is ensuring that nutrient-dense fresh foods are ultimately affordable to the poor. This is likely to be difficult in many cases; not only do fresh foods generally entail higher production, storage and transport costs compared to staple foods, they also tend to command high prices in urban areas and export markets. Market mechanisms could therefore lead to products being diverted away from undernourished rural consumers and towards wealthier urban groups. Interventions may be able to minimise this competition by targeting so-called neglected crops – such as OFSP or leafy green vegetables – which tend to have less well developed markets.

A third challenge is that when fresh foods are processed to increase shelf-life, they may face the same signalling problems as do fortified products. This depends on the particular food; for example, when OFSP tubers are mashed and incorporated into baked goods, their orange colour is retained, distinguishing the end product from one that does not contain OFSP. However, when the tubers are dried and ground into flour, the end product does not have an orange colour, and thus consumers may not be able to gauge the product's nutrient content. As discussed in the case of fortification, resolving the signalling problem requires strong enforcement institutions (whether public or private). In markets for fresh foods, which are often localised and poorly covered by central regulatory institutions, strong enforcement

is unlikely to be feasible. Post-farm-gate efforts are therefore most likely to succeed when they focus on products whose nutritional quality can be easily assessed. Box 5.13 examines some of the success factors underlying several widely reported cases where orange-fleshed sweet potatoes have been promoted in East Africa.

Box 5.13 Developing local markets for nutrient-dense fresh foods: OFSP programmes in Tanzania, Mozambique and Uganda

Perhaps the paradigmatic examples of a post-farm-gate approach are a suite of programmes that promoted production and marketing of orange-fleshed sweet potato (OFSP) varieties. OFSP has the advantage of being extremely rich in vitamin A, and has the potential to substitute in place of nutrient-poor white-fleshed varieties of sweet potato. Although several programmes operate in Tanzania, the most developed markets have emerged in Uganda and Mozambique. In these countries, a sequence of projects aimed to motivate existing value chain actors to switch to OFSP. They did this by breeding new varieties, disseminating planting material and running awareness-raising and social marketing campaigns. They also worked with market traders and food retailers, linking them to supplies of OFSP and asking them to promote OFSP to customers.

The successes of these programmes in part relate to the characteristics of OFSP:

- Requires little land and few inputs and can be cultivated by poor households.
- Status as 'poverty food' means there is limited demand for the crop from wealthier consumers in urban areas, making it more affordable to the poor.
- Distinct orange colour avoids the signalling problem and serves as the focus of social marketing campaigns.

However, increasing the seasonal availability of OFSP and incorporating it into value-added products such as bread has been difficult. This is partly because sweet potato can only be added to products when it can be sourced on a regular basis and at a lower price than alternatives such as wheat flour.

Sources: Temu et al. (2014); Coote et al. (2011); Westby, Coote and Tomlins (2011).

5.3.3 Combining pre- and post-farm-gate approaches

As indicated in the boxes examining particular programmes, real-world interventions often combine elements of pre- and post-farm-gate approaches (as well as elements of broader, nutrition-sensitive agriculture). In doing so, programmes should be explicit about the rationale behind the approaches they use. If, for example, a project aims to promote a particular food both for pre-farm-gate consumption and for distribution post-farm-gate, a rationale is needed for how low-income households will be encouraged to eat some of their production, rather than selling all of it. This might be achieved, for example, by segmenting the market between attractive-looking vegetables that achieve high market values and misshapen (but equally nutritious) ones that can be kept for home consumption. Alternatively, if a project intends to promote commercial production among some households and pre-farm gate production/consumption among others (see Box 5.12 above), it will need to consider how it will be able to effectively overcome the asset and labour constraints faced by vulnerable households. Whatever their form, interventions need to consider how they will confront the challenges facing each approach; these are summarised in Table 5.3.

Table 5.3 Challenges facing pre- and post-farm-gate approaches at different stages in the value chain

Value chain segment	Pre-farm-gate	Post-farm-gate
Production	<ul style="list-style-type: none"> • Competing demands for labour and assets from other crops • Competing demands for labour from childcare, etc., particularly for women • Who controls household decision-making on which crops are grown and sold? 	<ul style="list-style-type: none"> • Do nutrient-dense foods provide higher returns than alternative crops?
Processing	<ul style="list-style-type: none"> • Maintaining nutrient content • Low capital and low access to technology • Competing labour demands 	<ul style="list-style-type: none"> • Maintaining nutrient content • Does processing provide sufficient returns to justify investment in technology?
Distribution/Retail	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • Maintaining nutrient content • Susceptibility to damage/spoilage increases costs of transport and storage • Signalling problems (when product not visually different to alternatives)
Consumption	<ul style="list-style-type: none"> • Targeting the 1,000 days group • Low awareness of nutritional needs • Households may sell instead of consuming themselves 	<ul style="list-style-type: none"> • Targeting the 1,000 days group • Low awareness of nutritional needs • High price due to demand in urban/export markets

5.3.4 Lessons

The discussion above highlights a number of key lessons for designing agricultural interventions to increase the consumption of nutrient-dense fresh foods:

- The fact that the nutritional value of most fresh foods can be easily assessed by consumers (based on colours, appearance, etc.) is one of their principal advantages. Efforts should focus on these ‘easy-to-assess’ foods in order to avoid the signalling problems that plague fortified and processed foods.
- Short shelf-life and susceptibility to spoilage are major challenges for fresh foods. ‘Short’ distribution chains and localised markets may be low-cost ways to minimise post-harvest losses. At the same time, interventions will be needed in many places to increase the period when fresh foods are available. Programmes should pilot low-cost technologies and business models that increase the shelf-life of foods, while assessing their commercial viability and affordability. It is crucial to ensure that the nutritional value of processed products is still ‘easy to assess’.
- Programmes need to spell out why pre- or post-farm-gate approaches (or a combination) are most suitable for a particular group and in a particular setting. They often need to incorporate specific measures to reduce trade-offs between home consumption and commercial production.
- Programmes should recognise that the pre-farm-gate approach does not overcome the constraints faced by poor households in terms of cash, asset and labour constraints. They may also risk increasing the burden on women’s labour or creating trade-offs between producing nutrient-dense crops and pursuing income-generating activities, caring for children, accessing services, etc. Efforts are needed to overcome these problems (for example, by introducing low-cost, labour-saving technology or addressing gender inequalities in decision-making and labour).

- When programmes promote markets for fresh foods, they should consider prioritising ‘neglected’ crop varieties or produce that is ‘rejected’ by commercial standards – this can reduce competition with higher value urban and/or export markets, helping ensure affordability to rural populations.
- As with fortified products, increasing consumer demand for fresh foods is essential to both of the approaches.
- Actors who support the nutrition agenda should lobby donors and the national government to provide agricultural policies and funding that support production of fresh foods for local consumption. There is a longstanding policy bias towards staple food crops and cash crops (see Section 3).

5.4 Behaviour change communications and social marketing

The analysis so far has shown that all intervention strategies depend on public nutrition awareness and willingness to pay for nutrient-dense foods. Social marketing and behaviour change communication⁴⁸ (BCC) are broad sets of tools aiming to motivate individuals to change their behaviour in a specific way. They are most frequently employed as part of public health campaigns (i.e. handwashing), but recently their potential has been recognised for shaping people’s eating and purchasing patterns. Globally, there is evidence that BCC paired with distribution of foods for infant complementary feeding consistently improves nutrition outcomes (Bhutta *et al.* 2008: 118). Yet a rigorous evidence base is lacking on whether it leads to sustainable changes in consumer behaviour and how it could contribute to building markets for nutrition-dense foods. There is a long history in Tanzania of public and donor-funded BCC programmes focused on health and nutrition behaviours.⁴⁹ Experience in pairing BCC with increasing the supply of nutrient-dense foods is more recent, although several large donor-funded initiatives are now implementing this approach. At present, there are two broad approaches to BCC and nutrition implemented by programmes in Tanzania:

- Broad BCC focusing on a range of nutrition-related behaviours, including food production and consumption. This approach is being used by the USAID-funded Mwanzo Bora project in order to motivate rural people to cultivate nutrient-dense crops in community gardens, ensure that women and children get access to these foods, and promote exclusive breastfeeding and good infant care practices.
- Social marketing campaigns focused on promoting a specific product or class of products. These include the campaign being designed to support products covered by the mandatory fortification programme, specific campaigns on flour sponsored by Tuboreshe Chakula and various efforts to promote OFSP. In several sub-Saharan African countries, donors have funded social marketing campaigns promoting a generic product, which have run alongside companies’ marketing of their own brands. This may be happening under the Tanzania food fortification programme, although the results are unclear.

Tanzania’s government recently formalised its commitment to BCC through a National Nutrition Social and Behaviour Change Communications Strategy (United Republic of Tanzania 2013). The policy emphasises the importance of building capacity to implement BCC based on evidence and state-of-the-art practices. It also voices scepticism about pairing public BCC campaigns with private sector marketing initiatives (Box 5.14).

⁴⁸ Although they have similar objectives, there are differences between these approaches. Behaviour change communications has tended to feature in public health programmes, with a focus on health behaviours. Social marketing has more often been used when behaviour change is linked to a particular product (i.e. handwashing and soap). For the purposes of increasing consumption of nutrient-dense foods and creating demand for products, the approaches are largely similar, and so used interchangeably in this report.

⁴⁹ Recent initiatives include the Global Service Corps (GSC) Tanzania HIV/AIDS Prevention and Nutrition Education Program and the USAID-funded campaign by the Tanzania Marketing and Communications Company (Ecker and Kennedy 2011).

Box 5.14 National Nutrition Social and Behaviour Change Communications Strategy and the private sector

'There is a distinction between Social and Behaviour Change Communications (SBCC) and social marketing vs for-profit commercial marketing tactics. SBCC and social marketing... cannot cross the ethical line and become a means of coercing or manipulating the audience into buying the product or adopting the behaviour through... deceptive, misleading or exaggerated promises or statements... For collaboration and partnership with for-profit companies... ethical considerations guiding nutrition communications and marketing must be clear.'

Source: United Republic of Tanzania (2013: 16–17).

Public funding plays a key role in social marketing campaigns, since nutritional awareness is a public good. Because no single business will capture the full value of awareness, the private sector on its own will tend to underinvest in this area. Public funding can act as a catalyst to leverage complementary private sector investments in marketing, since it can facilitate companies expanding into new markets. However, BCC campaigns are likely to be expensive and require long-term commitment; it may be difficult for national governments to fund these efforts without donor support. The question of whether public funds can be used to leverage private investments in marketing that includes nutritional messages needs further investigation, although there are cases where this has been successful (Robinson *et al.* 2014: 39). Government can also reform existing regulations to make it easier for businesses to include valid nutritional messages in their advertising. In Tanzania, national regulations drawing on the International Code of Marketing of Breastmilk Substitutes currently forbid private promotion of foods targeting children under five years old (Claeyssens *et al.* 2011). This restricts the possibility for private social marketing around complementary foods.

Given their cost and the relative lack of evidence on increasing demand, piloting BCC initiatives – and designing them in a way that promotes learning – will continue to be crucial in supporting the intervention strategies being tried in Tanzania. In particular, there is a need for evidence on whether broad nutrition behaviour campaigns are more effective and sustainable, or whether interventions should be structured around promoting particular foods and products. Given the crucial importance of nutrition awareness for the success of other interventions, there is a need to improve understanding of the function and design of BCC.

5.5 Non-profit distribution

All of the interventions outlined above highlight the challenge of reaching low-income populations due to low awareness and demand, and high distribution costs. Businesses in Tanzania and elsewhere struggle to distribute to the poor and to motivate consumers to purchase nutrient-dense foods. This is particularly a problem for fortified products: mandatory fortification by large industries do not reach the poorest populations, while successful fortification by small enterprises requires large investments in organising the sector. Thus, all of these interventions entail a certain amount of risk, and require sustained support from government and donors. In the short term, the most straightforward way to avoid these risks is non-profit distribution, in which a non-profit agency arranges for a product to be provided to a target population free of charge or at a subsidised price.⁵⁰ This includes conventional food aid and school feeding programmes, as well as private distribution of subsidised products, and can involve a range of products, from staple foods to fortified products to supplementary micronutrient 'sprinkles'. Examples of non-profit distribution in Tanzania include donor-sponsored school feeding programmes and recently initiated distribution of micronutrient powder subsidised by Tuboreshe Chakula. Experience with public distribution in other

⁵⁰ There are a variety of hybrid arrangements, such as when a non-profit organisation buys a product and provides it to a commercial distributor. The product is then sold to consumers by private retailers at a subsidised rate. There are also cases where publicly funded organisations manage distribution themselves, but require beneficiaries to pay a fee (e.g. for bed nets).

countries highlights how non-profit distribution effectively sidesteps a number of the market constraints identified in Section 4 (see Box 5.15). These systems also have advantages for food processing businesses, for which large non-profit distribution programmes provide a guaranteed source of demand.

Box 5.15 What makes non-profit distribution successful?

- **Avoids awareness problem.** By providing products to people without payment and in situations where the need is evident (severe acute malnutrition), this approach sidesteps the problems of low awareness and un-affordability.
- **Defrays costs of distribution.** Public support covers or defrays the high cost of distribution, allowing businesses to focus on procurement and manufacturing.
- **Targets vulnerable groups.** Programmes can specifically target the programme towards the populations with greatest need – including those too poor or too remote to purchase in markets.
- **Guarantees nutritional quality.** By purchasing and distributing products, public agencies can impose controls and checks that ensure the products are of high nutritional quality.
- **Creates reliable demand for businesses.** Non-profit distribution can provide stable and predictable demand that encourages businesses to invest. This requires that funders guarantee purchasing over several years.⁵¹

Source: Robinson *et al.* (2014).

Based on experience elsewhere, there are several considerations relevant to current and future non-profit distribution initiatives in Tanzania:

- **Free or subsidised products?** At present, several initiatives in Tanzania prefer subsidised distribution of products over providing them for free. The aim is to establish with consumers the expectation that these products must be purchased, and to make possible purely commercial distribution at some point in the future. However, evidence indicates that when consumers are required to pay for a product – particularly an unfamiliar product such as micronutrient powders – the problem of low willingness to pay operates. The question, then, is what proportion of undernourished people is willing to pay the fee required. Evidence from other health products (i.e. anti-malarial bed nets) shows that when users are required to pay even a small fee, use of the product is reduced dramatically. Because of this, some recent reviews concluded that net social benefits are higher when products are provided for free compared to when they are sold for a small fee (Cohen and Dupas 2010; J-PAL 2011). However, there does not appear to be equivalent evidence for a nutrient-dense food product. If consumers are indeed highly sensitive to small prices for these products, this may be a particular challenge for products targeting young children, since they generally need to be eaten consistently and over an extended period of time. High price sensitivity could lead consumers to use inadequate quantities. Evidence on the extent of this problem may become available as experience accrues in Tanzania.
- **Transition from non-profit to commercial distribution?** As previously mentioned, there are hopes in Tanzania that subsidised products could be shifted to purely commercial channels at some point in the future. Experience from elsewhere highlights two potential challenges with this transition: the first is that demand is inadequate when products are sold at commercial prices. For example, in Nigeria one firm found that a fortified product⁵² designed for non-profit distribution was not viable as a retail product (Nwuneli *et al.* 2014). The second potential challenge relates to the

⁵¹ These issues are discussed extensively by Lybbert (2011).

⁵² The product was a fortified porridge flour made from sorghum.

problem of signalling nutritional quality. As highlighted in Box 5.15, non-profit distribution systems facilitate the introduction of market controls and quality assurance. As anticipated by one analysis of potential commercially distributed supplementary fortified foods, it will be much more difficult to prevent competition from fraudulent products when they are sold through purely commercial channels (Lybbert 2011). The signalling problem outlined in Section 4 re-emerges in these circumstances.

- **Sustaining funding.** The greatest challenge to non-profit distribution is mobilising and sustaining public funding, whether from donor agencies or national government. At present, donor support for school feeding programmes in Tanzania is being scaled back, and the national government has been unwilling to cover the funding gap. Political considerations and the interests of key constituencies weigh on funding decisions by governments and donor agencies. Advocacy and coalition-building must take account of the politics of funding decisions. For example, if efforts can demonstrate how sourcing from local chains and domestic industry leads to job creation – in addition to nutritional benefits – this may help leverage government funding.
- **Targeting.** Even if funds can be mobilised to scale up non-profit distribution, it will never be sufficient to address the scale of undernutrition in Tanzania. Under these resource constraints, non-profit distribution is perhaps best seen as a means to specifically target the most vulnerable group, including the poorest rural residents and the 1,000 days populations. In addition to being most susceptible to the effects of chronic undernutrition, these groups are the most difficult to reach through other interventions.

Overall, experience outside Tanzania has shown that non-profit distribution can be effective in increasing access to nutrient-dense foods among the poorest and that it provides concrete incentives for businesses. It is too soon to assess the experience of subsidised distribution being implemented in Tanzania at present. However, evidence from elsewhere suggests there may be substantial challenges in transitioning fortified products such as micronutrient powders from free or subsidised distribution into fully commercial channels. If political will exists to support it, non-profit distribution still appears to be the most assured intervention for reaching the poorest and most vulnerable populations in the short term.

6 Policy and programme recommendations

This report has analysed options for addressing undernutrition in Tanzania by intervening in and improving food markets and value chains. Its starting point has been examining how food markets function and the incentives faced by businesses – both large and small. Markets in Tanzania, like most developing countries, are characterised by a set of constraints that prevent businesses – when they act on their own – from providing nutrient-dense foods in a way that makes them accessible to the poor. These include low awareness, lack of mechanisms to signal which foods are rich in nutrients and the high cost of distributing to the poor. Yet evidence on undernutrition patterns shows that improving markets serving the poor is essential for reducing undernutrition substantially. This report thus concludes that, while businesses in Tanzania can and do engage in value chains for nutrient-dense foods, they will not be able to achieve the conditions necessary to improve access for poor people at a large scale. There is a need for public and non-profit actors to create structural conditions that support delivering nutrient-dense foods to the poor.

Policy and development actors in Tanzania are actively trying to address these constraints – including through partnerships between government, development agencies and private businesses. These partnerships target food fortification, production of nutrient-dense crops and public nutrition awareness, among other approaches. Clearly there is substantial momentum towards mobilising the private sector in reducing undernutrition. Yet, these projects also entail risks. While these partnerships all aim to help reduce rates of chronic undernutrition, they are also remarkably unspecific about precisely how public–private partnership will achieve this. In other words, they tend to lack a well-specified causal model about how intervention by government and development actors will address the constraints facing businesses and lead to lasting change in the way markets function. Further, any intervention must deal with a difficult institutional context in which regulation and market structure make it difficult for both public and private actors to govern the functioning of markets and shape the behaviours of businesses, whether through private certification schemes or government regulation. This report has aimed to provide analytical tools to help to understand how various strategies for intervention can affect market functioning, as well as what enabling conditions are necessary for them to be effective. Table 6.1 summarises the intervention strategies covered in this report and outlines the mechanisms through which they can address (some of) the key constraints and highlights where there is a particular need for research.

At the broadest level, this report recommends that the starting point for policy and programme interventions should be to identify which constraints underlie low access to nutrient-dense foods for a particular population, and to assess the feasibility of overcoming these constraints. At present, many interventions lack a well-specified causal model for how they will affect market change. The report also finds that, in the short term, partnerships and interventions between public actors and individual businesses will be insufficient since they will not address the broader, market-wide failures. Instead, policy actors should aim to create market-wide controls (e.g. mandatory fortification) or find ways to avoid the problem of signalling nutritional quality (e.g. non-profit distribution, promoting fresh foods). It appears that, for any of the strategies reviewed, sustained public funding for food-based programmes is needed in the short and medium terms. Stakeholders need to advocate to strengthen and expand programmes in non-profit distribution and behaviour change communications. If they want to improve the functioning of food markets for the poor and enable a broader contribution from the private sector, government, development partners and other funders need to commit to fund these strategies. At the same time, much more research is needed to assess in detail the mechanisms for change, effectiveness and sequencing of the various

strategies, as well as the best models for implementation. Concerted efforts to build evidence are needed, even as current and new programmes are being scaled up.

Table 6.1 Mechanisms through which food-based nutrition strategies can address market constraints

	Main constraints	Poor quality supplies	Cost of distribution	Absence of signalling	Low awareness
Voluntary fortification	Faces all four market constraints	Use imported products Promote organisation of supply chains*	Possible for large companies with established networks	Branding strategy can succeed, but leads to higher prices Certification schemes have potential but are not currently feasible	N/A
Mandatory fortification – large enterprises	Enforcement Reaching the poor	Use imported products Promote organisation of supply chains*	Target products with existing distribution channels	Mandate industry-wide compliance	Focus on widely consumed foods Mandate industry-wide compliance
Mandatory fortification – small enterprises	Enforcement Organising value chains	Promote organisation of supply chains*	Enterprises located close to consumers	Mandate industry-wide compliance Requires interventions to organise value chains*	Focus on widely consumed foods Mandate industry-wide compliance
Promoting fresh foods	Low household assets Competition with urban markets	Promote organisation of value chains*	Pre-farm-gate approach Short, local value chains*	Use easily identifiable crops (e.g. OFSP)	N/A
Non-profit distribution	Adequate public funding	Use imported products Decentralised sourcing*	Subsidised by public funding Specifically target the most vulnerable	Central agency provides certification Community monitoring*	Provided for free or at subsidised rate
Behaviour change communications	Adequate public funding	None	May lead to greater demand*	Improve consumers' ability to distinguish products*	Increase nutrition awareness and demand for nutrient-dense foods*

*Evidence on the effectiveness of the starred mechanisms is weak; research is needed to establish their validity and context-dependence.

Note: Section 4.1 listed five constraints, the last of which (difficult business and regulatory environment) is not shown in this table. This constraint is excluded because its breadth means that it affects all of the above strategies and cannot be addressed in the case of nutrient-dense foods alone. Broader reform efforts are necessary.

6.1 Programme-specific recommendations

Acting on their own, businesses will not be able to provide nutrient-dense foods at a price affordable to the poor due to the market constraints described in this report. Increasing access to these foods will require government, donors and public institutions to intervene in targeted ways. It is crucial that they begin by clearly identifying which constraints drive low access to nutrient-dense foods and assessing the various options to address these constraints.

Mandatory fortification

- **Compliance and enforcement are major challenges.** As the National Fortification Programme is implemented, policy actors in Tanzania should consider evidence from other countries which suggests that ensuring that small and large enterprises comply with fortification standards will be difficult and will require long-term commitment to strengthening regulatory systems. Compliance is especially difficult in markets with a high presence of micro and small enterprises (i.e. maize flour and vegetable oil). To succeed, compliance needs to have an impact on sales and costs.
- **Focus on markets that reach the poor.** Although products produced by large companies will be the easiest to regulate, these are not the products consumed by the majority of poor and undernourished people in Tanzania. Policy actors face a choice: either to invest in extending the reach of centrally produced products to make them affordable and accessible to the poor, or seek to organise and build the capacity of small enterprises.
- **Organising small enterprises will be costly.** Both policy actors and larger companies incur large costs when working with micro and small enterprises due to the fragmentation of the sector. Reducing transaction costs, building capacity and ensuring good monitoring and enforcement will require multiple approaches and substantial upfront investment. Regulations should be simplified to make it easier for small enterprises to formalise and to meet the requirements for fortification. More research is needed on the potential of options such as promoting clusters and franchising models.

Promoting nutrient-dense fresh foods (fruits, vegetables, milk, etc.)

- **Avoid the signalling problem.** One of the principal advantages of fresh foods such as fruit and vegetables is that their nutritional value is easy for consumers to assess based on colour or appearance. Efforts to promote new crops (including biofortified crops) and processing technologies should focus on products that are easily distinguished from alternatives, and maintain these characteristics throughout the value chain.
- **Understand the choice between pre- and post-farm-gate.** There are major differences between approaches that seek to increase production and consumption by farming households (pre-farm-gate), and those that promote the distribution and marketing of crops (post-farm-gate). Programmes should define why a particular approach is most suitable for a given population and setting.
- **Anticipate potential trade-offs.** Programmes should analyse trade-offs between home consumption, commercial production and other uses of household labour, which could reduce positive or create negative nutrition and health impacts, particularly for women. Explicit measures should be included to reduce trade-offs.
- **Supportive policies.** Stakeholders should lobby donors and government to shape policies that support the production and consumption of neglected nutrient-dense crops; past programmes have been biased towards staple food and cash crops.

Behaviour change communications

- **Pilot and learn from BCC initiatives.** Given their important (but unproven) potential to increase demand for nutrient-dense products of all kinds, BCC initiatives should be designed to promote learning and assess which approaches are most effective and sustainable.

Non-profit distribution

- **Support non-profit distribution.** Experience shows that non-profit distribution is effective because it avoids key market constraints, provides incentives for businesses and specifically targets poor and undernourished populations.
- **Assess different models.** The assumption that selling products at a subsidised rate (rather than providing them for free) will lead to greater long-term use needs to be tested in more detail.
- **Mobilise political support.** Sustaining funding for non-profit distribution will be extremely challenging, but this strategy will remain vital to promoting nutrition of vulnerable groups even as other strategies are pursued.

Annex A

Products targeted by mandatory fortification in Tanzania

Food type	Minimum fortification level required	Median consumption levels ⁵³
Wheat flour	Iron: 30 mg/kg Zinc: 30 mg/kg Folic Acid: 1 mg/kg Vitamin B ₁₂ : 5 µg/kg	18 g/day
Maize flour	Iron: 5 mg/kg Zinc: 20 mg/kg Folic Acid: 0.5 mg/kg Vitamin B ₁₂ : 2 µg/kg	152 g/day
Vegetable oil (especially sunflower and groundnut oil)	Vitamin A: 16 mg/kg	7.7 g/day

⁵³ Source: National Household Budget Survey (2001), cited in Jorgenson (n.d.). These figures differ substantially from those presented in the survey undertaken for the National Fortification Programme (Towo *et al.* 2007).

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