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

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The IDS programme on Strengthening Evidence-based Policy works across seven key themes. Each theme works with partner institutions to co-construct policy-relevant knowledge and engage in policy-influencing processes. This material has been developed under the Reducing Hunger and Undernutrition theme.

This report is dedicated to the memory of Professor Isaac O. Akinyele. It was an honour to work with him. He will be remembered.

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

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List of Abbreviations

ACF	Action Contre La Faim [Action Against Hunger]
ACTION	AIDS Care and Treatment in Nigeria
ATA	Agricultural Transformation Agenda
BCC	Behaviour change communication
BOP	Bottom of Pyramid
CAADP	Comprehensive Africa Agriculture Development Programme
CAB	Commonwealth Agricultural Bureaux
CPC	Consumer Protection Council
DFID	UK Department for International Development
FAO	Food and Agriculture Organization
FMARD	Federal Ministry of Agriculture and Rural Development
GAIN	Global Alliance for Improved Nutrition
ICF	Inner City Fund
IDS	Institute of Development Studies
IFPRI	International Food Policy Research Institute
IU	international units
IYCN	Infant and Young Child Nutrition Project (USAID)
MAFAP	Monitoring and Analysing Food and Agricultural Policies
MARKETS	USAID-funded agricultural development programme (no definition of acronym)
NAFDAC	National Agency for Food and Drug Administration and Control
NEPAD	New Partnership for Africa's Development
NGO	non-governmental organisation
NPAFN	National Plan of Action for Food and Nutrition
OFSP	Orange-fleshed sweet potato
PEPFAR	US President's Emergency Plan for AIDS Relief
RUTF	Ready-to-use therapeutic foods
SAM	Severe Acute Malnutrition
SME	Small and Medium-Sized enterprise
SON	Standards Organisation of Nigeria
SUN	Scaling Up Nutrition
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
WFP	World Food Programme

Executive summary

This report analyses policy options for reducing undernutrition in Nigeria by improving the functioning of markets and the private sector in providing food. The report identifies specific constraints that inhibit businesses from providing these foods, and reviews experiences with five policy strategies to address this problem. The analysis reveals that particular food-based strategies have been successful when they have overcome or circumvented key market constraints. Identifying which the main constraints affecting a particular market or population are and assessing whether a particular approach will overcome them, should therefore be the first steps in developing food-based policies and programmes to reduce undernutrition. The report outlines options for strengthening these strategies in Nigeria, aimed at donors, federal and state governments, private sector organisations and non-profits.

Analysis framework

There is an urgent need for food-based interventions to reduce undernutrition in Nigeria, as well as to support relevant policies and programmes. The objective of this report is to inform how and under what circumstances to implement particular strategies, using an analysis of agri-food value chains. The framework used in this report focuses on channels that provide food to low-income rural and urban populations, including the involvement of private businesses, as well as government and non-profit actors. Focusing on value chain actors and the relationships between them allows the report to assess policy and programmatic options for improving the capacity of markets and other channels to provide nutrient-dense foods. Evidence was collected using multiple qualitative methods, including an extensive desk review, interviews with 25 key experts and participation in stakeholder fora in Nigeria.

Policy context

The current policy context for food-based nutrition strategies in Nigeria is exceptionally complex, and it is difficult to assess the extent to which current policies are being implemented. In the area of agriculture, the federal government is leading an ambitious policy agenda with the aims of promoting industrialisation and private investment, and increasing domestic food supplies. This approach has attracted support from donors and private investors. However, the broad focus of these investments continues to be on nutrient-poor staple crops, and it is unclear whether reforms will promote the supply of nutrient-dense foods or make them accessible to poor people. Meanwhile, nutrition is a growing policy priority, but continues to lack strong funding and political will. Current nutrition programmes focus on direct interventions, with less attention to and funding for food-based approaches, with the exception of mandatory fortification. Although institutional structures have been established to coordinate across nutrition and agricultural policies, their effectiveness is unclear. In the area of food regulation, major gaps persist in implementation and enforcement of current rules, despite reforms in the relevant federal agencies. Regulators' coverage of the informal sector is especially low. Overall, the current environment does not appear to support integration and coordination across the policy areas. Due to this complexity and uncertainty, this report – rather than prescribing broad reforms – focuses on ways to enhance the provision of nutrient-dense foods within the current policy landscape.

Market constraints

Major constraints inhibit markets from providing nutrient-dense food to poor people in Nigeria, as in most developing countries. These problems are beyond the control of individual businesses, and make it difficult for them to produce nutrient-dense products on a commercially viable basis. As a result, few such products are available at prices affordable to

poor people. There are five main constraints: first, low-income 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 Nigeria tend to be poorly organised, resulting in low-quality supplies and higher prices. Fourth, building distribution networks that reach low-income populations is expensive, and this inhibits businesses from targeting these groups. Finally, the difficult business environment in Nigeria, along with low levels of trust in private and public institutions makes it difficult to introduce institutional solutions to other constraints. 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.

Food-based strategies

Experience in Nigeria highlights food-based policy and programmatic strategies that have had various levels of success in overcoming the constraints to nutrient-dense foods. The report reviews five strategies with which there is substantial experience: mandatory fortification of staple products, voluntary fortification, nutrition-sensitive agriculture, non-profit distribution of products and behaviour change communications.

Mandatory fortification: Nigeria was an early leader in introducing legislation requiring the fortification of staple foods such as wheat flour, vegetable oil and sugar. This strategy works because it focuses on foods that are eaten by rich and poor populations alike, and because it mandates compliance by all producers. In theory, this eliminates the problem of fortified products competing with cheaper, unfortified alternatives. In practice, the greatest challenge to this strategy has been motivating manufacturers to comply; recent evidence indicates that, despite major investment by donors, compliance remains low for most product types. To improve this strategy, stakeholders need to continue to build regulators' capacity to monitor and enforce. At the same time, parallel investments in public nutritional awareness – in order to generate consumer responses to non-compliance – would increase incentives for manufacturers to comply. Furthermore, evidence is needed on the extent to which fortified products reach poor and vulnerable populations, since it is possible that levels of compliance will be even lower in the markets from which poor people purchase food.

Voluntary fortification: For voluntary fortification to be effective, businesses must be able to make profits from nutrient-dense foods in the presence of competition from non-nutritious alternatives. Although this strategy is widely used by businesses in Nigeria, the products they produce tend not to be affordable to the poor. When mechanisms to signal nutritional quality are absent, businesses rely on branding-based strategies to market fortified products, resulting in high prices. The exceptions are a small number of multinational corporations that have introduced fortification for market-leading products. Although there are institutional solutions that can overcome the signalling problems – including government regulation and private sector-led certification schemes – neither of these appears feasible in Nigeria, because they both require strong monitoring and enforcement, and there appear to be no institutions with sufficient capacity. At present, voluntary fortification does not appear to be the most promising strategy.

Nutrition-sensitive agriculture: Experience with nutrition-sensitive agricultural interventions is relatively limited in Nigeria, and policy has tended to favour cash and staple crops. Recently, interest has been growing in two areas: promoting nutrient-dense crops, and building domestic supply chains to replace imported commodities. The first strategy has begun to attract attention with the introduction of biofortified varieties of cassava and orange-

fleshed sweet potato. In the current context, encouraging households to grow these crops for their own consumption may be beneficial, since farming households are among the groups most vulnerable to undernutrition. In contrast, the second strategy, as currently implemented, could pose substantial risks to nutrition programmes. By restricting imports before domestic value chains have been sufficiently strengthened, this strategy may endanger the gains made by programmes such as mandatory fortification. Efforts are needed to promote organisation in domestic value chains and improve on the track record of sourcing schemes such as contract farming.

Non-profit distribution: Development agencies and government bodies operate a number of programmes in Nigeria that procure nutrient-dense products and distribute them to vulnerable populations for free. By covering the costs of distribution and avoiding the need to motivate people to buy a product, this approach bypasses several market constraints. Reviewing experiences with ready-to-use therapeutic foods, school feeding programmes and mid-size Nigerian manufacturers shows that, when funding is sustained and effective public institutional structures are established, this approach can be successful. However, it also has risks: preventing corruption and establishing sustained political commitment are key challenges. Although this approach will never cover all those affected by undernutrition in Nigeria, it will remain essential to reaching the most vulnerable populations.

Behaviour change communications: Raising nutritional awareness is key to all four of the food-based strategies discussed above. Although behaviour change communications (BCC) techniques are being promoted to influence a population's eating and purchasing behaviours, there is a lack of evidence on the effectiveness of BCC for this purpose. In Nigeria, experience with BCC for food and nutrition has been limited. However, interest in the approach is growing, with stakeholders in the mandatory fortification programme currently developing a national BCC campaign. Models for BCC programmes include broad public awareness campaigns, as well as partnerships designed to promote particular products. Experience suggests that sustained public funding is crucial for the success of BCC, and that under some circumstances it can catalyse complementary private sector investments. There is an urgent need to improve the evidence base and identify and scale up successful BCC models in order to address the constraints caused by low nutritional awareness.

Policy and programme recommendations

This review demonstrates that there are various ways to overcome the constraints inhibiting markets from providing nutrient-dense foods. The starting point for policy and programme interventions needs to be to clearly identify what constraints are driving low access to nutrient-dense foods for a particular population. The potential of various options for addressing these constraints can then be assessed. This report concludes that, of the five strategies reviewed, voluntary fortification appears least likely to be effective, sustainable and scalable under current conditions. Mandatory fortification and non-profit distribution appear to have better potential for reaching the populations most vulnerable to undernutrition, since they avoid key problems with distribution and demand. Sustaining public funding for these strategies will continue to be a challenge. Further, because low nutrition awareness impairs nearly all other approaches, behaviour change communications appears to be a crucial priority. However, the evidence base needs to be built to identify effective models. The report concludes by making recommendations specific to the various food-based strategies, and identifying where research is most needed.

1 Overview

This report presents the findings of an analysis of policy options for promoting nutrient-dense foods to address undernutrition in Nigeria. It was carried out by the Institute of Development Studies (IDS) and partners, 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 Nigeria. 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 and food 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 key results, reviewing five different policy and programme approaches that seek to deal with some or all of these constraints. These approaches are: mandatory fortification, voluntary fortification, nutrition-sensitive agriculture, non-profit distribution and behaviour change communications.

Section 6 concludes the report by drawing lessons from the various food-based approaches and provides 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. Once all country studies are completed, an overarching analysis will synthesise the lessons learned.
Key outputs from this project include:

- **Value chain mapping** to assess the potential of particular products for addressing undernutrition for poor and vulnerable population groups (Robinson *et al*. 2014).
- **Case studies of businesses** that have invested in nutritious foods (Nwuneli *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 Nigeria 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 (the so-called 'direct 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 2 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 implementation 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 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 growing consensus that efforts to improve the links between agriculture, food and nutrition are needed (Herforth 2012).

In the Nigerian context, evidence on the burden of undernutrition in Nigeria (see Box 1.1) suggests that there is an important need for food-based nutrition approaches in the country. Interventions are needed to increase the consumption of key micronutrients (vitamin A, iron, zinc) by those in the 1,000 days group. Undernutrition is most severe for the social groups who are least served by food markets: the poorest, those in the north, and those in small towns and rural areas. Even as direct nutrition interventions are scaled up to reach these populations, parallel efforts are needed to improve the functioning of food markets to address high rates of chronic undernutrition.

Strengthening food-based nutrition policies and programmes – both in Nigeria 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 agricultural interventions, fortification programmes and education initiatives (Gibson 2011). Further, there are multiple pathways through which interventions in food or agriculture can lead to improvements in nutrition (World Bank Agriculture and Rural Development Department 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] 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 a*l. 2013).

Box 1.1 The burden of undernutrition in Nigeria

Rates of acute and chronic undernutrition in Nigeria are alarmingly high and have remained stagnant over the past few years, mirroring failures to reduce national rates of poverty. Between 1999 and 2008, national rates of underweight and stunting in children under the age of 3 hovered around 25 per cent and 40 per cent, respectively (National Population Commission and ICF Macro 2009). Preliminary results of the 2013 NDHS indicate stunting has since fallen to around 35 percent (National Population Commission and ICF International 2013). These rates hide major disparities: in 2008, stunting among the poorest 20 per cent of the population was double that among the richest, while rates in rural areas were 50 per cent higher than in urban areas. There are massive disparities between different parts of the country: stunting rates in the poorer north-west and north-east zones were 69 per cent and 56 per cent higher than in the wealthier south-west, respectively. Rates of micronutrient deficiencies in vitamin A, iron and zinc are high countrywide, especially among the poorest households and among children and pregnant women.

Micronutrient deficiencies exact a very high toll on human health, with vitamin A deficiency contributing to 25 per cent of child and maternal deaths nationally. Anaemia rates are very high among pregnant women and infants, contributing to almost 20 per cent of maternal deaths. Zinc deficiency is also widespread. While salt iodisation programmes have been very successful in Nigeria, and cover the vast majority of households, iodine deficiencies prevail, especially in the north.

Food and diet is a central driver of nutrition outcomes, according to the widely-accepted UNICEF framework (Black *et al*. 2008: 244). Although a majority of Nigerians eat foods from a diversity of food groups, the diets of the poor tend to be dominated by nutrient-poor cereals and tubers. Indeed, studies show that income is the main factor driving whether households have a diverse diet, followed by education and family size (Kuku-Shittu *et al*. 2013). In urban areas, there is evidence of a dietary transition and increasing consumption of foods high in sugars and salts; this is reflected in growing levels of obesity, although the overall rate remains low (ten per cent).

Other health practices also affect nutrition. Infant care practices – particularly exclusive breastfeeding until six months – are inadequate in nearly all social groups. Food becomes critical for infants during the weaning period after six months. Only 55 per cent of infants receive complementary foods from a sufficient diversity of food groups, with most diets dominated by grains (National Population Commission and ICF Macro 2009). Access to nutrient-dense diets is related to household wealth: while 81 per cent of children among the richest households are fed iron-rich foods, this figure is only 37 per cent among the poorest households.

No studies are available analysing the relative importance of food in Nigeria compared to other drivers of undernutrition (access to health services, clean water and sanitation, and childcare practices). Available research indicates that wealth status explains the majority of socioeconomic inequality in nutrition outcomes, while health care, maternal education, proper sanitation, breastfeeding and regional differences also play important roles (Ajieroh 2009; Uthman 2009). Despite this gap in the evidence, the state of undernutrition highlights the need for food-based approaches, in order to address insufficient dietary diversity, high prevalence of micronutrient deficiencies and major growth setbacks experienced by infants during the weaning period. Interventions particularly need to reach women and children in the 1,000 days group, as well as low-income populations. Improving the quality of complementary foods and providing iron-rich foods to young women and pregnant mothers appear to be crucial priorities.

Source: Authors' own.

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 Nigeria 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 Nigeria, 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, NGOs and civil society.

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 is to maximise the impacts of agricultural interventions for beneficiary households, the so-called 'pre-farm-gate approach' (this approach is discussed in Section 5.3). 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 people 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. Given that undernutrition in Nigeria affects a broad spectrum of populations (many of whom access food through markets), policy interventions to reduce undernutrition need to improve the functioning of markets and other off-farm channels.

This report assesses the opportunities and constraints in these channels through a focus on value chains. Value chains are the sets of actors and activities involved in producing products and delivering them to end consumers. Value chain analysis comes in many forms. In this report, it 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. Box 2.1 outlines the advantages of the value chain approach.

Box 2.1 Advantages of the value chain approach

The value chain approach highlights the fact that food products are produced by a series of linked activities and actors. The approach has a number of advantages:

- identifying the different activities and agents required to bring products to market;
- recognising that what happens at one point in the chain has consequences for activities and agents at other points;
- paying attention to the capacity of the chain to deliver desired outputs, including the qualities delivered and the populations reached;
- emphasising that incentives have to be established for different actors along the chain;
- helping to identify at which point in the chain, and with which actors, policy interventions can be most effective at improving the functioning of markets.

Source: Authors' own.

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 categories[2] (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.
2. **Demand and nutrition awareness**: When households need to decide which foods to purchase (i.e. when food is not provided free of charge), household decision-makers need to be aware of the importance of eating a nutrient-dense diet for human health; they also need to know which foods contribute to a healthy diet.
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, children under 2 years), particularly those in poor households. This requires that food is available in places these groups can access and at prices they can afford.
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 common market constraints make it difficult to create viable business models around nutrient-dense foods, and it is especially difficult to produce nutrient-dense foods 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: authors reviewed published studies and publicly available documents, including policy documents, press releases and presentations relevant to agricultural, nutrition and food policies by the Federal Government of Nigeria. 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 Nigeria (Nwuneli *et al*. 2014; Robinson *et al*. 2014).

Interviews with stakeholders and experts: The principal author conducted in-depth interviews with a total of 25 informants during October and November 2013 (see Table 2.1). Informants included researchers, staff in federal agencies, NGOs and donor-funded projects, and managers in several medium- and large-sized food processing businesses in Nigeria.

[2] These conditions are discussed in greater detail in 'Policy Guidelines for Enhancing Markets for Nutrient-Dense Foods in Ghana' (Anim-Somuah *et al*. 2013).

Table 2.1 Institutional affiliation of expert informants

Type of institution	Number of participants
Federal government ministry	6
Private sector	
Mid-size businesses	5
Large/multinational businesses	1
Development actors	
International development organisations	2
International NGOs	8
Research institutions	3

Source: Authors' own.

Participation in stakeholders' fora: Authors also attended stakeholder fora, including business alliance meetings organised by the Global Alliance for Improved Nutrition (GAIN) and Lagos Business School, and the annual meeting of the Nigerian Institute of Food Science and Technology. Information was also collected during workshops and brief meetings at these fora.

Partners' experience: In addition to these methods, this report draws on extensive discussions and support from staff at GAIN, Nigeria office. Expert input was also provided by Sahel Capital Partners and Advisory Ltd., a Nigerian firm with extensive experience in the agri-business sector, through their work on the accompanying reports (Nwuneli *et al*. 2014; Robinson *et al*. 2014). The opinions and analysis expressed in this report are the authors' own.

3 Policy context

Nigeria has a complex and multi-sectoral policy landscape in the areas of food and nutrition. The complexity stems in part from the multiple levels of government (federal, state, local government area), the large number of public agencies and the parallel programmes implemented by development partners. Because these multiple layers of policy are often poorly coordinated, assessment of policy implementation is especially difficult. However, there is a widespread perception that funding is generally insufficient, and that there are very low levels of implementation in many policy areas. A number of recent reports examine the policy context for reducing undernutrition in Nigeria (Akinyele 2009; Sahel Capital Partners and Advisory 2012), especially in the north (Longhurst and Cornelius 2013; Longhurst 2013). There have also been reviews of agricultural policies (IFPRI 2008; Olomola 2013). This report presents a brief overview of prominent policy trends in three areas: agriculture, nutrition and food regulation, as well as an assessment of coordination among these areas.

3.1 Agricultural policy and value chains

The current orientation of agricultural policy is dynamic and extremely ambitious. Since the appointment of Minister Akinwumi Adesina in 2010, the Federal Ministry of Agriculture and Rural Development (FMARD) has pursued a set of policies and programmes under the Agricultural Transformation Agenda (ATA). Targeting a diverse range of agricultural

commodities,[3] the Agenda promotes import substitution and private investment to agriculture. Its objectives are to achieve domestic self-sufficiency in major food crops, create more value added products and (ultimately) increase Nigeria's agricultural exports. According to the federal government, the Agenda had attracted financing totalling US$2 billion from development institutions and US$4 billion from private investors (Federal Government of Nigeria 2013b). In interviews, several stakeholders point out that agricultural policy is enjoying renewed attention and priority in Nigeria. Nonetheless, at this stage little evidence is available about the implementation of the ATA programmes,[4] and it is unclear whether they will be accompanied by actions by states and local government areas. Based on interviews, some stakeholders expressed uncertainty about whether the federal government will sustain the current priorities, as agricultural policy has undergone frequent shifts in recent decades (Akinyele 2009).

For the most part, nutrition has not been a central focus of the ATA. Instead, the focus has been on staple and commercial crops with potential for import substitution. FMARD is attempting to introduce nutrition into the Agenda by adding a few nutritious crops to the list of targeted commodities (i.e. orange-fleshed sweet potato, OFSP), and by appointing nutrition advisors in each of the focus value chains.

Box 3.1 Key components of the Agricultural Transformation Agenda (ATA)

- Focus crops in each region (these are mostly food crops in the north and export crops in the south), each of which is to be coordinated by a working group.
- Import duties and bans, including 100 per cent levies on rice imports and a total ban in 2015.
- Legislation mandating minimum 40 per cent content of cassava in bread by 2014.
- Commodity marketing corporations, run as public-private partnerships, to replace former state-run marketing boards.
- Creation of voucher system to replace public fertiliser distribution and facilitate private markets for fertilisers.
- Remove restrictions on foreign equity ownership, as well as exchange controls and restrictions on repatriation of profits; provide a constitutional guarantee against nationalisation. Tax breaks and holidays for investors and processors targeting the priority crops.
- Risk sharing and insurance facilities to incentivise banks to make long-term commitments to agricultural lending.
- Promote food processing and storage, focusing on designated Staple Crop Processing Zones.

Source: Adesina (2012a,b,c).

The ATA is motivating policy coordination with other large agricultural initiatives. For example, the G8 New Alliance for Food Security and Nutrition, launched in Nigeria in 2013, intends to support the implementation of the ATA. Donors have pledged that they will align their support behind the Agenda's objectives, including a focus on domestic food crops and industrialisation of value chains. For its part, the federal government commits to actions to encourage private investment in agriculture. The majority of policy actions and objectives are not directly relevant to food security or nutrition, and none of the indicators used to evaluate

[3] In 2012, the ATA focus commodities included rice, cassava, livestock, fisheries (priorities nationwide), as well as a set of commodities targeted in particular regions: cotton, onion, tomatoes, sorghum, maize soya, palm oil and cocoa. At present, FMARD is introducing new value chains in order to bring the total to 22 (interview).

[4] The exception is reforms to the federal programme of fertiliser subsidies, which has shifted to a voucher-based system. The Ministry of Agriculture and Rural Development reports this has increased the rate of reaching target farmers from 11 per cent to over 90 per cent (Adesina 2012a).

the initiative relate to nutrition. However, the New Alliance Cooperative Framework does set out three policy objectives related to food security:

- 'Extend existing legislation on fortification and bio-fortification to other important food staples not covered by existing policies and regulations,
- Develop a fully costed, National Nutrition Plan under the Ministry of Health 'Saving One Million Lives Initiative' and update the National Policy on Food and Nutrition,
- Economic Management Team and National Council of States provide funding to expand school feeding program with 25% of food purchased from local farmers' (Federal Government of Nigeria 2013a).

In addition to policy reforms, the New Alliance Framework groups a set of investment pledges from private companies, including 29 related to specific food crops. The crop receiving the largest number of investments is cassava (a micronutrient-poor staple), but the list also includes 16 pledges targeting foods that are high in protein or micronutrients. As currently framed, the impact of these investments on the diets of the poor is unclear. The pledges do not specify whether products are aimed at export or domestic markets, or whether they target high- or low-income consumers within Nigeria. In other countries involved in the New Alliance, pledges have tended to favour staple and export crops. An analysis of the seven Cooperative Frameworks available in early 2013 showed that, of the 32 pledges that mention nutrient-dense foods, 12 were specifically for export, while only four specified products that might be targeted towards low-income populations.[5]

In summary, two major agricultural policies in Nigeria, the New Alliance and the ATA, place nutrition as a policy objective; however, they do not provide sufficient information to assess whether they will promote investments and activities that improve nutrition outcomes for low-income populations. Overall, the primary focus of these agricultural policies is clearly increasing crop yields, farmer incomes and economic growth. There has only been limited attention to the production of nutrient-dense foods, and less still on how to distribute these foods to populations affected by undernutrition.

3.2 Nutrition policy

Undernutrition is a growing policy priority at the federal and state levels. However, in practice, implementation remains weak. In 2009, an analysis initiated by the UN Standing Committee on Nutrition found that Nigeria had relatively strong nutrition governance, but that institutions lacked political will, funding and coordination for key nutrition policies (Nishida *et al*. 2009). The primary focus of policy has been the set of core 'direct interventions' that are demonstrated to be effective in reducing undernutrition (Bhutta *et al*. 2008). Although a number of policies refer to the food-based drivers of undernutrition, the available evidence suggests that very few activities have actually been implemented (Longhurst and Cornelius 2013).[6]

[5] www.globalisationanddevelopment.com/2013/06/how-much-is-new-alliance-doing-for-food.html.
[6] Despite being a higher priority with the Nutrition Division, even the direct interventions have been implemented only on a small scale.

Box 3.2 National Plan of Action for Food and Nutrition

Intended to support the implementation of the Food and Nutrition Policy for Nigeria, the 2005 National Plan of Action for Food and Nutrition (NPAFN) aimed to clarify responsibilities among institutions, improving coordination and ensuring that food and nutrition were incorporated in other development plans. The overall goals focused on improving household food and nutrition security, improving child feeding and caring practices, and building capacity of institutions (Longhurst and Cornelius 2013). Implementation of the current policies appears to be the most critical challenge. A recent audit of the level of government commitment to nutrition in northern Nigeria (Longhurst 2013) found that there was extremely little data publicly available, especially on actual budget allocations. Based on expert opinion, the report posited that in practice, commitment is very low. The Nutrition Division is politically weak within the Ministry of Health; its budget allocation is not guaranteed year-on-year and the proportion of budgeted funds that actually arrive at rural health centres is exceptionally low. A national summit in 2012 concluded that the Food and Nutrition Policy had not been implemented due to a lack of adequate and dedicated budget (Longhurst and Cornelius 2013: 81).

Source: Authors' own.

Given that long-term commitment to and funding for nutrition by the federal government remain uncertain, the leadership of the Nutrition Division is currently focusing on scaling up direct nutrition interventions and supporting the National Fortification Programme. Although there is interest in other food- and agriculture-related approaches to improving nutrition, these are seen as a secondary priority.

3.3 Regulation of food products

The regulation of food safety and quality is a critical part of signalling nutrition to consumers. Labelling and food safety standards may provide assurance to consumers about what they are buying. At the federal level, the agencies responsible for food regulation are the Standards Organisation of Nigeria (SON) and the National Agency for Food and Drug Administration and Control (NAFDAC). Broadly, SON is charged with setting standards for specified categories of products[7] and certifying compliance with some of these standards; NAFDAC is responsible for enforcing national and international standards and guidelines. NAFDAC oversees registration of all processed foods, provides technical advice to manufacturers and undertakes inspections and testing. These two agencies play prominent roles in food and nutrition policies. Nigeria also has a Consumer Protection Council (CPC), which was designed to represent the interests of consumers by issuing guidelines and providing redress to grievances. However, the CPC does not have sufficient budget and is considered ineffectual. While the federal agencies are responsible for packaged and imported products, locally sold perishable food is supposed to be regulated by local government councils.

Low enforcement capacity is a key challenge to the regulation of food products by the above organisations. Recent restructuring within NAFDAC and SON, along with the establishment of a National Food Safety Management Committee, have aimed to increase technical expertise and clarify roles and responsibilities. The agencies have also begun to undertake stakeholder consultation and incorporate feedback when establishing standards and guidelines. Private sector organisations have a growing voice in these consultations. However, agencies' capacity to monitor and enforce regulations at points of production and sale remains vastly inadequate to ensure compliance with regulations. Even at the stage of product registration (a responsibility of NAFDAC) a huge number of businesses produce or import food without officially registering their activities. Even among products that are

[7] SON's responsibility is not limited to food products, but only its roles with respect to food are considered here.

registered, there are frequent infringements of regulations on labelling and on good manufacturing practices. Low enforcement capacity stems from a number of factors. First, agencies have very limited staff at state and local government area levels, and these staff are often inadequately trained and equipped. Secondly, small businesses tend to be wary of regulatory agencies, and to avoid contact; they perceive the agencies as imposing complex requirements and fees, without offering support or training. Finally, coordination between the federal agencies and local government councils tends to be poor, with local authorities rarely reporting infractions to the relevant federal agency. Most councils have insufficient resources and staff; they are also subject to corruption and abuses of authority. Low enforcement capacity across the regulatory agencies has important effects on the marketing of nutrient-dense foods; these will be discussed in Section 5.2.

3.4 Coordination among policy actors

At present, federal agricultural, food and nutrition policies are poorly integrated, and there is relatively little coordination among ministries, government agencies and development partners. The discussion above suggests that – even within a single policy area – coordinating the activities of multiple institutions and implementing policy consistently have been major challenges. In certain areas, agencies appear to act in parallel or even to compete for authority. Although the National Planning Commission is officially charged with coordinating food and nutrition policy across all agencies, current nutrition and agricultural policies do not necessarily support one another. In some areas, they appear to be at odds. Recently, there have been attempts to enhance coordination, notably through the Scaling up Nutrition (SUN) movement. FMARD has also established a Nutrition Unit led by a high-level appointee, and is hiring nutrition advisors under the ATA. These efforts may enhance the capacity of the ministry to incorporate nutrition objectives into its programmes and to engage with other ministries. However, it is unclear whether the ATA can harmonise the objectives pursued by agricultural, food and nutrition policies or lead to durable institutional change.

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 (rice, cassava, maize, sorghum, etc.), but largely neglects nutrient-dense crops.
- Policies focused on increasing agricultural production do not necessarily link up with channels that can deliver these foods to consumers.
- Nutrition policies focus on direct interventions, and largely neglect food-based approaches, with the exception of mandatory fortification.
- Enforcement capacity for existing food regulations is very low.

Rather than proscribing 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 Nigerian policy environment, this project hypothesises that relatively limited actions will be more feasible and involve less risk than sweeping changes.

4 Constraints in markets for nutrient-dense foods

Major constraints inhibit market-based provision of nutrient-dense foods in Nigeria, as in most developing countries. Few nutrient-dense products are available at a price that is affordable to poor consumers. Products produced by formal sector businesses in particular tend to be unaffordable (Robinson *et al*. 2014; Sahel Capital Partners and Advisory 2012). Although many businesses produce products fortified with micronutrients that could help address undernutrition, these products tend to target middle- and upper-income consumers who are willing and able to pay a price premium (for examples, see Nwuneli *et al*. 2014). Very few businesses are able to sell nutrient-dense products that reach the poor and are affordable to them. This section briefly highlights the constraints that prevent the private sector from providing these foods, drawing on the findings of the accompanying value chain report (Robinson *et al*. 2014) and case study of Nigerian firms (Nwuneli *et al*. 2014).

4.1 Low nutrition awareness

Among stakeholders interviewed, there was a widespread perception that the majority of consumers in Nigeria have low awareness about human nutritional needs and the nutritional contents of various foods. Large-scale survey evidence is not available to validate this claim, but low awareness of other health issues provides an indicator. A 2002 survey found that only 45 per cent of nursing mothers were aware of the importance of exclusive breastfeeding (Maziya-Dixon *et al*. 2003: 46), although a number of public health campaigns have promoted exclusive breastfeeding in the past. Evidence is available to show that starchy staple foods dominate in the diets of Nigerians (Maziya-Dixon *et al*. 2003), reflecting the fact that these micronutrient-poor foods are generally considered the most important element of a meal. Stakeholders frequently asserted that only consumers from educated and wealthier groups specifically purchase products based on their nutritional qualities, although again rigorous evidence is not available. The fact that inappropriate infant feeding remains widespread suggests that knowledge of the special nutritional needs of infants is particularly low. Furthermore, even when consumers are aware of the health benefits of nutrient-dense foods, they may not be willing and able to pay for them—especially since nutrient-dense products often come at a higher price than nutrient-poor alternatives. For example, one study (Oparinde *et al*. 2012) compared consumer willingness to pay for biofortified cassava (which contains pro-vitamin A) and for nutrient-poor conventional cassava. Although consumers in some areas were willing to buy the biofortified variety, in others they would not pay more even when they were aware of its health benefits.

Low consumer awareness and willingness to pay for nutrient-dense products means that there are few incentives for businesses to produce these products or to invest in distribution systems. Even if they are able to produce and deliver them, businesses perceive that they will not be able to earn commercially viable returns. Federal agencies, donors and NGOs have responded to this problem by sponsoring campaigns to increase public nutritional awareness. These efforts are discussed in Section 5.5. Yet nutrition awareness alone is not sufficient to incentivise private sector involvement in nutritious foods, due to widespread problems with signalling nutrition quality.

4.2 Absence of mechanisms to signal nutritional quality

Nutrient-dense foods are generally more expensive to produce than the equivalent products with low nutrient value. Accordingly, their prices tend to be higher. As a result, consumers will only purchase them if they are confident that they really do provide the nutrients and health benefits that are claimed for them. Unfortunately, the nutritional value of many foods (particularly fortified foods) is impossible for consumers to establish. There may be no visible difference between, for example, a fortified flour or oil and an unfortified alternative (barring claims on the packaging).[8] Because of this invisibility, nutritional value is known as a 'credence good'; purchasers have to take it largely on trust, or on the basis of endorsements by third parties. Said another way, firms have difficulty *signalling* to the consumer that their products have nutritional benefits. They often struggle to differentiate their nutrient-dense products from competitors, which can make products that appear similar – but lack nutrient content – and sell them at a lower price. This is known as the 'free rider' problem. This situation creates a strong incentive for all businesses to reduce product quality in order to sell at the lowest possible price. While some businesses find ways of signalling the superiority of their products, this is usually through branding, packaging or choice of retail outlets. These factors differentiate a product as 'premium', but also make it substantially more expensive. To address this problem, institutional mechanisms need to be put in place that independently signal nutritional quality in a way that is trustworthy, allowing consumers to differentiate between products (Dranove and Jin 2010). Current food regulation in Nigeria attempts to provide such a mechanism by validating nutrition claims on food packaging. However, these policies are generally deemed ineffective. The potential of various approaches for improving nutritional signalling in Nigeria is discussed in Section 5.2.

While signalling issues arise with nutrition claims in all markets, the problem is exacerbated by the difficult legal and institutional environment in Nigeria (discussed in Section 4.5). Fakes and counterfeits are widely available, and neither government regulation nor the legal system provide effective remedy. One mid-size Nigerian business consulted as part of this project estimated that up to 50 per cent of products marked with its brand were actually counterfeit products. In this context, it is hardly surprising that Nigerian consumers appear to distrust claims made about the benefits of food products.

4.3 Poor quality supplies

Supply side issues contribute to the problem of affordability of nutrient-dense products. Many agricultural commodities in Nigeria are subject to large price fluctuations due to low yields on-farm and the lack of improved storage technologies. This contributes to higher cost end products in some cases; in others, it results in reliance on imported supplies. Existing value chains provide few incentives to producers to upgrade their practices or improve the quality of their products. For example, in the value chain for cowpeas, simple and low-cost technologies are available that can prevent post-harvest losses (the technology is an improved storage bag). However, improved storage bags have not been taken up throughout the value chain, because farmers who used them were not able to gain higher prices when selling to intermediaries. This undermined the incentive to use the technology. Further details of these production issues can be found in the accompanying value chain mapping report (Robinson *et al*. 2014). Overall, poor quality and unreliable domestic supplies increase the costs of end products.

[8] This problem is also faced by manufacturers themselves, who often do not have the capacity to assess the quality of the inputs they purchase to add to their products, including the micronutrient premix used for fortification.

4.4 High costs of distribution

Providing nutrient-dense products to undernourished populations entails creating distribution networks that reach places where these populations live (for examples, see Nwuneli *et al*. 2014). At present, few such networks exist. Only very large companies and multinationals have the resources to establish such networks on their own. Small and medium businesses must rely on third-party distribution companies, and these companies are often unwilling to work in low-income areas. Transporting to distant locations and to areas with low levels of demand increase distribution costs; unfortunately, these are precisely the characteristics of the areas where the poorest populations live. They often live distant from centres of production; demand is low due to low population density and very limited spending power. The high costs of distributing to poor populations – along with the low profit margins on products targeted at low-income consumers – pose a challenge for businesses (Agrawal and Dutt 2013; Shukla and Bairiganjan 2011). The result is that when mid-size businesses produce nutrient-dense products, these products are not distributed to low-income areas (for examples, see Nwuneli *et al*. 2014). The exceptions are the products of market-leading multinationals. For example, in the market for packaged complementary foods, Nestlé's Cerelac is by far the most widely available (Sahel Capital Partners and Advisory 2012). Only large companies with established distribution networks may have the capacity to undertake this on their own; SMEs will require partnerships and support from other organisations.

4.5 Difficult business environment

The current business environment in Nigeria mitigates against the production of nutrient-dense foods.[9] It is characterised by distrust among private sector actors, linked to weak institutions and inadequate rule of law. Infringements of contracts such as purchasing agreements are very common and difficult to rectify, since pursuing cases in the courts requires paying large legal fees and often bribes. The World Bank estimates that on average the costs of litigating a claim represent 92 per cent of the claim's value; this compares with an average of 51 per cent for sub-Saharan Africa as a whole (World Bank 2013). Mirroring distrust among private actors, distrust of public institutions is also widespread. Ambiguities and overlaps in the functions of regulatory agencies make it difficult for many businesses to comply with regulations. Policy changes are frequent at all levels of government, and this decreases the incentives to comply. All of these problems have disproportionate impacts on small- and mid-size businesses, compared to large businesses and multinationals. There are also well-known systemic problems with electricity, lack of access to finance, poor infrastructure and insecurity. However, the focus here is issues that specifically inhibit the capacity to produce nutrient-dense foods *more so than other foods*. Although problems with electricity and infrastructure are real barriers to business in Nigeria, there is no reason to believe they disproportionately affect nutrient-dense foods.

The implications of the negative business environment for nutrient-dense foods are clear.[10] Poor enforcement of contracts decreases the incentive to produce innovative products, including fortified foods. It also makes it more difficult to expand in new markets, including low-income populations. Secondly, the difficult environment contributes to consumers' distrust of products that are made in Nigeria 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 (see Section 5.3).

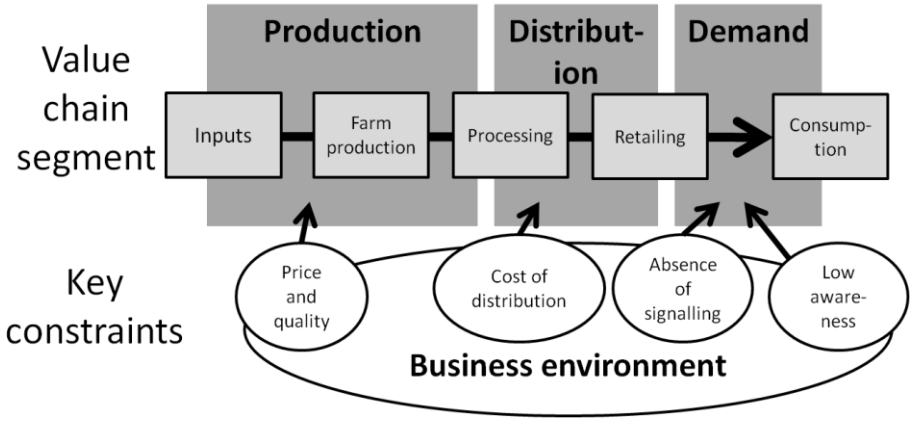
[9] Characterising the national business environment is deeply complex and beyond the scope of this report. Rather, this section highlights several dimensions of the business environment in Nigeria that have an especially negative impact on nutrient-dense products.

[10] It should be noted that there are reasons to believe that some problems are *less likely* to affect products aimed at the poor. For example, trademark infringements are a bigger problem for premium products. Overall, however, business environment problems create a systematic bias against nutrient-dense products.

4.6 How do these constraints fit together?

The constraints discussed above impact different stages of the value chains for food products. For the purposes of these policy guidelines, value chains can be split into three broad stages: production, distribution and consumption, allowing the constraints to be grouped accordingly (see Figure 4.1).

Figure 4.1 The different market constraints have an impact on different segments of food value chains: production, distribution and demand



Source: Authors' own.

The constraints affecting each segment of the value chain are as follows:

1. **Production**: The price and quality of domestically-produced commodities impacts their potential to be used in nutrition programmes. The relative cost and quality of imported commodities is also important. As will be seen, production constraints are more problematic for certain food-based approaches, and less important for others. This depends on whether inputs are sourced domestically or imported, as well as whether the strategy seeks to increase consumption of foods that are already nutrient-dense (i.e. vegetables, biofortified cassava) or to fortify products during food processing.
2. **Distribution**: As was discussed above, the big challenge for distribution is reaching the people who suffer most from undernutrition. Because distributing to these populations is more expensive, businesses tend to find it more profitable to sell into urban markets and to higher income consumers. Strategies that can overcome this challenge are discussed in Section 5.
3. **Demand**: If food is sold through markets, people need to be able to make informed decisions about which products to buy. Consumers cannot make rational decisions if they have low nutrition awareness or if they cannot assess the nutritional quality of products or trust the claims made about them. Certain food-based strategies can bypass these demand issues, as discussed in Section 5.

This brief discussion shows that market constraints impact different stages of value chains. This has important implications for how food-based strategies can overcome them, as will be seen in the discussion that follows.

5 Food-based nutrition strategies in Nigeria

This section of the report uses the value chain framework to review experiences with five food-based strategies for addressing undernutrition, and assess how they have overcome the market constraints identified in Section 4. The strategies represent the main approaches to addressing undernutrition through food for which there is substantial experience in Nigeria at the national or sub-national level. They attempt to address different sets of constraints and represent interventions at various points in value chains. The strategies examined are:

- Mandatory fortification of staple products
- Voluntary fortification of staple products
- Agricultural production of nutrient-dense crops
- Non-profit distribution
- Behaviour change communications

This section considers available evidence on how successful these approaches have been in reducing undernutrition, and provides the basis for the policy recommendations presented at the end of the report. The underlying argument is that some food-based approaches are more successful because they bypass or overcome some or all of the constraints discussed above.

5.1 Mandatory fortification

Thus far, legislation and government regulation mandating that staple foods be fortified has received more attention and investment than any other food-based nutrition strategy in Nigeria (as well as in many other countries).[11] Globally, the World Bank estimates that fortification is one of the most cost-effective strategies for addressing micronutrient undernutrition (World Bank 1994). There are three reasons for this:

- **Distribution:** Using widely-consumed products as a vehicle for provision of nutrients means that distribution systems that reach large sections of the population will be in place.
- **Demand issues**: By focusing on staple foods that are widely consumed, and requiring that all producers fortify their products; this approach does not rely on raising consumer awareness. Similarly, if all products available in the market are fortified, there should be no need to signal the difference between one product and another.
- **Targeting:** If the products are eaten by all social groups, programmes do not need special measures to target them to those most vulnerable to undernutrition.

In other words, mandatory fortification should address three of the four constraints discussed in Section 4. The approach does have limitations, including technical issues related to ensuring that levels of nutrients are maintained during storage and transport, and that the nutrients are present in forms available to the human body. Mandatory fortification may also lead to some people consuming nutrients like iron in excessive quantities, which can have negative health consequences. However, there are known approaches to addressing these technical problems, so they will not be the focus here. Instead, this discussion focuses on the value chain dimensions of mandatory fortification, based on the Nigerian experience.

[11] Globally, 75 countries have programmes mandating fortification of wheat flour with iron and/or folic acid. Other commonly fortified products include maize flour, salt, vegetable oil and sugar.

Nigeria was an early leader in mandatory fortification efforts in West Africa. Momentum began following the World Summit for Children declaration on child survival in 1990, and the government of Nigeria launched the universal salt iodisation programme in 1993. In 2002, the National Policy on Food and Nutrition introduced mandatory fortification for other staples (Busari 2013). The policy required addition of vitamin A to wheat flour, maize meal, vegetable oil and sugar, as well as addition of iron, B vitamins, niacin, thiamine and riboflavin to wheat flour. Most recently, requirements for zinc and folic acid in wheat flour have been added. Since 2002, mandatory fortification has been coordinated by the National Fortification Alliance, a partnership that includes private sector manufacturers and industry associations, along with public agencies. Table 5.1 summarises these fortification requirements, and also characterises the market for each product in terms of whether the product is imported and the degree of organisation among producers.

Table 5.1 Characteristics of fortified staple foods and producing firms

Staple food	Consumption per capita	Mandatory fortification level[12]	Percentage imported[13]	Market concentration	Industry organisation
Salt	2.2–6.3g[14]	Iodine: 50 ppm in factory 30 ppm at retail	100%	Eight firms hold 98%	Strong industry association
Vegetable oil (groundnut, palm oil, soya, etc.)	18.5g	Vitamin A: 20,000	Soya: approx. 50% Groundnut: n/a Palm: n/a	• 52 industrial processors across all oil types • Major portion is processed in informal sector (Gourichon 2013)	Weak industry association
Sugar	19.2g	Vitamin A: 25,000	100%	• Two firms control <90%	No industry association
Wheat flour	50g (all cereal flours)	Vitamin A: 30,000 Iron: 40.7	100%	• Six millers control 80% (Lyddon 2011) • Two very large firms dominate	Strong industry association
Maize flour		Vitamin A: 30,000	<.01% (Cadoni and Angelucci 2013: 10)	• Major portion of market is informal sector (Cadoni and Angelucci 2013) • Six industrial millers present	No industry association

Source: Busari (2013), except where otherwise noted.

[12] Units are parts per million, IU per kilogramme, mg per kilogramme for iodine, vitamin A and iron, respectively.
[13] Includes where raw materials are imported and processed in Nigeria. 'An estimated 7,795,100 MT of wheat grain, 1,450,000 MT of raw sugar, 300,000 MT of vegetable oil, 687 MT of maize grain, 20 MT of wheat flour, 2567 MT of maize flour, and 100,000 MT of raw refined sugar is imported annually' (Busari 2013: 13).
[14] www.thenationonlineng.net/2011/index.php/business/17291-%E2%80%98nigeria-spends-$2.3b-on-salt-importation-annually%E2%80%99.html.

5.1.1 How effective is mandatory fortification?

The critical challenge for mandatory fortification programmes is enforcement. Given that fortification increases production costs for food processing companies, there will be an incentive to economise through under-dosing products. In Nigeria, the enforcement challenge for mandatory-fortified foods should, in principle, be simplified by the high import content of such foods. The staples that are fortified include salt, sugar, and wheat flour, all of which are 100 per cent imported. This means that a small number of firms are involved in importation and food processing, and this should make it easier to incentivise and monitor behaviour. It should also simplify the work of the National Fortification Alliance.

Recognising the importance of compliance, a number of organisations involved in the National Fortification Alliance – most notably GAIN, UNICEF and Helen Keller International – have attempted to strengthen the capacity of regulatory agencies and manufacturers by:

- Revising legal standards on premix formulations to reflect international best practice;
- Equipping regulators and the industry with testing technology such as high performance liquid chromatographs, field testing kits, etc.;
- Providing shared training workshops to regulators and industry, and promoting mutual understanding among government and private sector employees;
- Supporting the restructuring of NAFDAC to place greater emphasis on food regulation and to promote professionalisation;
- Soliciting media coverage on the negative consequences of undernutrition and the importance of fortification, in order to generate political support and pressure industry to comply.

Despite these efforts, a recent study[15] demonstrated that compliance remains very low for all fortified staples (Ogunmoyela *et al*. 2013). Based on a rigorous testing methodology,[16] the study provides a reliable estimate of compliance levels in Nigeria across all the commodities covered by the fortification programme. It shows low levels of compliance. For example, only 50 per cent of wheat flour samples contained the acceptable level of iron, while 43 per cent of vegetable oil had no detectable vitamin A. Thus, although fortification has been mandatory for ten years, and efforts have been made to boost the capacities of industry and government agencies, mandatory fortification has thus far not been able to guarantee that consumers are consuming products with the mandated levels of micronutrients.[17] Achieving compliance is difficult because of low monitoring capacity by regulating agencies, lack of technical capacity by industry, low access to technologies and laboratories testing, and difficulty monitoring products once they leave the factory and enter distribution and retailing. These challenges are compounded by the nature of markets for processed staple foods, where competition is intense, and consumers are sensitive to even small changes in price.

[15] Although there have been a number of compliance studies since fortification began (Busari 2013), their validity is unclear, especially those based on product samples taken from factories.
[16] This study improved on previous ones by taking product samples in markets and shops (point of retail), rather than in factories (point of production).
[17] Other factors include storing products inappropriately, which causes micronutrients to break down.

Table 5.2 Levels of compliance with fortification standards at retail level

Staple type		Micronutrient content[18]		Percentage of samples meeting or exceeding standard
		Minimum acceptable	Median in market samples	
Vegetable oil	Vitamin A	10,000	1,100	24.2%
Sugar	Vitamin A	12,500	4,500	26.2%
Cereal flours (wheat, semolina, maize)	Vitamin A	15,000	7,100	10.2%
	Iron	34.6	27.4	37.8%

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

Cost is clearly an issue, since the flour milling industry face narrow profit margins (Aaron *et al*. 2012) and stiff competition. Even though micronutrient premix (the key input for fortification) is relatively low cost,[19] it is difficult for manufacturers to pass on this added cost due to intense competition and price sensitivity among consumers.[20] Manufacturers have a strong incentive to under-dose products, and to seek to disguise their non-compliance from regulators. One interviewee with experience in a leading food manufacturer asserted that commitment to meeting mandated fortification levels is low among decision-makers in industry. Although the National Fortification Alliance has succeeded in involving representatives of industry, top management has not been active. Among the major millers, management has appeared to make decisions based on 'bottom-line' issues of cost and revenues, and to de-prioritise fortification. The lesson is that if non-compliance does not impact sales, top managers are unlikely to make it a priority.

At the same time, government agencies have limited capacity to monitor and enforce the regulations. NAFDAC and other agencies are not able to undertake frequent market tests, despite recent improvements. Furthermore, there are reports that public bodies are susceptible to lobbying from businesses to prevent sanctions being applied in cases of non-compliance. Members of the National Fortification Alliance indicated that consistency has improved in recent years. However, the regulatory environment remains relatively weak, and does not provide sufficient motivation for manufacturers to comply.

These observations suggest that mandatory fortification does not entirely get around the issues of nutrition awareness and signalling of nutritional quality to consumers. The industry interviewee mentioned above asserted that compliance would be more effective if there was increased public awareness of the benefits of fortification and greater information about companies that do and do not comply with mandatory fortification. This would entail regulators and NGOs running awareness campaigns to inform consumers of which brands fail to comply. If consumers then avoid these brands, this would reduce sales and provide a strong incentive among top-level management to comply. At present, a group of NGOs led by GAIN are piloting a public awareness campaign on mandatory fortification. NGOs and regulatory agencies are also promoting field testing and encouraging industry to improve its information management system. These actors hope that these changes will make inspections and monitoring less burdensome for both parties. The aim is to move towards a model based on industry self-regulation.

[18] Units are parts per million, IU per kilogramme, mg per kilogramme for iodine, vitamin A and iron, respectively.
[19] Premix adds approximately US$1.2 per MT to the cost of flour when fortifying with iron, and approximately US$5.0 per MT when vitamin A is also included (Aaron *et al*. 2012).
[20] One study conducted in south-west Nigeria found that consumers were aware that vegetable oil was fortified and were hypothetically willing to pay more for fortified products. However, in practice, they were unable to afford this additional cost (Oni 2012).

5.1.2 Lessons

Mandatory fortification focuses on widely-consumed foods and mandates compliance by all producers; in theory, this should allow it to avoid some major constraints with delivery of nutrient-dense foods through markets. Experience, however, shows that results have been mixed. The greatest success has come in markets controlled by a small number of lead firms (e.g. salt,[21] wheat flour). Yet widespread and persistent non-compliance by the industries has limited the impact of this approach on undernutrition.

In addition, there are reasons to believe that the programme impacts are particularly low for the poorest and most vulnerable populations. Experience shows that compliance is lowest in the market segments where products tend to be sourced locally and produced in the informal sector (e.g. palm oil, groundnut oil). These are precisely the markets where a substantial portion of the poor buy their food. Low coverage of these markets thus reduces the impact of the National Fortification Programme for the poorest populations. More rigorous evidence is needed to assess the degree of access to fortified products among the poorest households. However, it should be anticipated that achieving compliance in these markets will require intensive investment. This problem may be exacerbated by the import substitution policy of the Nigerian government (see Box 5.4). To the extent that import substitution may increase the complexity of distribution channels for staple foods, this may further hamper the enforcement of fortification regulations.

Finally, the difficulties in motivating compliance suggest that nutritional awareness and signalling mechanisms remain crucial to the success of mandatory fortification – even though the approach incorporates elements that specifically seek to get around these demand-side constraints. In the weak regulatory environment, broad public awareness about fortified products (and consumer responses to non-compliance) are necessary to incentivise industry to comply. Indeed, the National Fortification Alliance is now pursuing social marketing activities in efforts to overcome this constraint. Evidence on these approaches is examined in more detail in Section 5.5. The next section examines the potential of voluntary fortification in Nigeria.

5.2 Voluntary fortification

In contrast to mandatory fortification, voluntary fortification relies on businesses being able to make profits from producing and selling nutrient-dense foods – in the context of competition from non-fortified products. Businesses need to be able to sell fortified products at a price premium that covers the added costs of fortification. Experience in Nigeria shows that this strategy is fairly widespread; many businesses undertake voluntary fortification and use a brand-based strategy to differentiate their products from those of competitors. An example of a company that does precisely this is shown in Box 5.1.

[21] In the case of salt, the fortification programme contributed to drastically curtailing production in the informal sector. Marketing by businesses and strict enforcement by regulators succeeded in drastically reducing the market held by small-scale, informal producers.

Box 5.1 Lisabi Mills: voluntary fortification of a premium brand

Established in 1939, Lisabi Mills (Nigeria) Limited is one of the oldest indigenous food processing companies in Nigeria, and the first to introduce fortified products in 1984. The company's core business is producing packaged versions of traditional foods such as pounded yam, as well as convenience foods such as custard. Today, the company fortifies its product lines with micronutrients including iron and vitamins A, B, C, D and E. Lisabi Mills' success has been built on a reputation for premium quality, solidified in the company's strong brand. However, by focusing on premium quality, the company has largely made its products unaffordable for low-income consumers.

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

From the point of view of combating undernutrition, however, brand-based initiatives like this one have limited effect. These fortified products signal the superior characteristics of their product by relying on the power of a premium brand to distinguish them from non-fortified alternative foods. This solution makes the price of fortified products unnecessarily high; the added costs of incorporating fortificants is exacerbated by the costs of promoting the brand (Sanogo and Masters 2002). This problem is further exacerbated if products are packaged and marketed in such a way that they target middle- and upper-income consumers. Beyond the case examined in Box 5.1, an established body of research gives us good reason to expect this bias towards premium brands in the absence of mechanisms that signal nutritional quality (Dranove and Jin 2010).

These findings suggest that there is limited scope for using voluntary fortification of products as a strategy for reducing undernutrition. However, there are exceptions, and one is shown in Box 5.2. This provides an example of how some of the problems associated with marketing fortified products can be overcome by a market-leading company. Initiatives of this sort require a brand that is well established with low-income consumers, an existing distribution network and long-term commitment from the company.

Box 5.2 Nestlé: voluntary fortification of a low-cost product

Since 2012, Nestlé has fortified its bouillon product Maggi with iron in Nigeria and the Central and West Africa region. Maggi is used by nearly every category of consumer as a flavour enhancer in a wide variety of dishes. In Nigeria, it is not mandatory to fortify this type of product; Nestlé's action is purely voluntary. According to the company, fortification has contributed to a 30–40 per cent increase in market penetration among poor populations for its products.

Nestlé's motivations for fortifying Maggi are unclear. However, the company's strong market presence makes it easier for it to introduce fortification, compared to companies with less market share. (The Nigerian bouillon market is approximately evenly split between Maggi and its competitor, Unilever's Knorr.) In producing fortified Maggi, Nestlé need not convince consumers to purchase a new product; they simply begin to receive micronutrients from a product they have always bought. Furthermore, the scale of Nestlé's operations means that the company faces a lower marginal cost for fortification, compared to smaller companies.

Several other multinational manufacturers also fortify low price products, including IndoMie noodles and Promasidor powdered milk. Fortifying products may be a way to gain endorsements from professional associations.

Source: www.nestle.com/csv/case-studies/AllCaseStudies/MicronutrientfortificationofMaggi.

These examples imply that voluntary fortification is only open to large companies. But is this necessarily the case? As previously discussed, one of the major challenges for voluntary fortification is signalling a product's nutritional quality to consumers. The literature on

signalling (Dranove and Jin 2010; Masters 2012) shows there are ways to address this challenge by introducing mechanisms that validate product characteristics and quality. There are at least two ways to achieve this: first, government-led regulation, such as food labelling requirements; and second, private sector-led certification schemes to differentiate products that are nutritionally adequate.

The problem with both of these approaches is that monitoring and enforcement is extremely challenging. Stakeholders in regulatory agencies widely acknowledge that, at present, false labelling claims are rife in the Nigerian market. For example, manufacturers frequently provide acceptable and validated claims at the time of product registration; however, later when products are distributed to retailers, manufacturers may add unauthorised statements to the packaging in order to improve sales. NAFDAC (the federal agency responsible for monitoring and enforcing these claims) often fails to identify these infractions,[22] because it does not have the capacity to undertake regular market checks. Indeed, the agency admits that regular market checks of registered products are beyond its capacity; it struggles to undertake these checks even for the smaller set of products covered by the National Fortification Programme. Monitoring the much wider set of products subject to voluntary claims would be an overwhelming task. Thus, barring major institutional changes, effective enforcement of nutritional claims on packaging by public agencies seems unfeasible.

An alternative approach would be to develop private sector-led certification schemes.[23] A model of how such schemes might function can be taken from one proposed in Ghana for complementary food products.[24] In this model, an independent body would be established with donor seed money, and with the participation of government agencies and research centres. Businesses that produce complementary foods would choose whether to submit their products for testing and certification; those that did would pay membership fees to the certification body. In this manner, the scheme would aim to become commercially sustainable over time. It would provide technical advice to companies producing complementary foods, inspect facilities, commission laboratory tests and provide a labelling system that identifies approved products (Masters, Kuwornu and Sarpong 2011: 19–20). The motivation for businesses to participate would be that products that included the certification logo would fetch a higher price.

Once again, such an initiative in Nigeria would face substantial barriers. It would need to overcome widespread distrust among businesses, and between businesses and government institutions. In this context, it appears highly unlikely that a certification body – no matter how it was structured – would be able to effectively monitor the marketplace, and prevent unauthorised use of its logo. Existing private sector organisations already struggle with this; fraudulent use of brands is extremely widespread, with one mid-size business reporting that as much as 50 per cent of the products that use its branding are actually counterfeits (Nwuneli *et al*. 2014). NAFDAC has been unable to respond to the scale of this problem. These experiences indicate that, even with the cooperation of federal regulators, a private sector-led certification scheme would be unlikely to function due to problems with enforcement and distrust. Although there is no practical experience with private sector-led certification in Nigeria, this report concludes that this approach is unlikely to be feasible under present conditions.

[22] At present, SON does not cover voluntary label claims; NAFDAC is responsible for verifying claims at the time of product registration.
[23] While third-party certification is used widely as part of standards such as Fairtrade and organic, aimed at developed country markets, there is a lack of evidence in developing countries, particularly for markets serving poor populations.
[24] For details on this proposal, see Masters *et al*. (2011).

5.2.1 Lessons

Overall, voluntary fortification in Nigeria has provided nutrient-dense products for middle- and upper-income populations, but for most businesses it is not a viable way to deliver products to the poor. The exceptions to this trend are large companies that dominate a particular market. These companies can introduce fortification for products that are already popular with lower income consumers. This strategy works because it gets around the demand-related constraints outlined in Section 4.6: consumers are not asked to buy a fortified product instead of a non-fortified one; they simply receive nutrients through the products they already purchase.

The lack of mechanisms to signal 'invisible' nutritional quality to consumers is the key barrier to voluntary fortification. Without these mechanisms, the only way for businesses to recover the costs of fortification is through premium brands. Both public- and private sector-led approaches exist to signal nutritional value. However, all of these approaches depend on strong and effective enforcement to prevent fraudulent claims. Achieving effective enforcement is simply unrealistic in Nigeria at present, given low levels of trust of private and public institutions, and weak regulatory capacity. Given the difficulty of achieving the conditions necessary for voluntary fortification to be widely effective, the other strategies examined in this report are more likely to yield success.

5.3 Nutrition-sensitive agricultural interventions

While the above strategies impact behaviour at the stage of food processing (by introducing fortification), an alternative strategy focuses further upstream in the value chain, at the stage of agricultural production. Although there is no one authoritative definition of what constitutes 'nutrition-sensitive agriculture', a recent review defines it as an approach that 'explicitly incorporates nutrition objectives into agriculture and addresses the utilisation dimension of food and nutrition security, including health, education, economic, environmental and social aspects' (Jaenicke and Virchow 2013). Within this broad field, the programmes examined in this report focus on the narrower objective of promoting the production of particular crops, and channelling these crops into value chains that reach the poor. The discussion in this section is divided in two parts: the first focuses on production issues, and efforts to promote the cultivation of particular crops. The second part examines efforts to establish domestic supply chains to meet existing sources of demand for nutrient-dense products (often for the National Fortification Programme, non-profit distribution, etc.).

5.3.1 Promoting nutrient-dense crops

Agricultural interventions that aim to improve nutrition can be divided into two categories based on their intended beneficiaries: the first approach aims to improve nutrition for farming households themselves, especially by encouraging them to cultivate (and eat) nutritious crops. This is referred to as the 'pre-farm-gate approach' (Henson, Humphrey and McClafferty 2013). The second approach looks at how nutrient-dense crops can reach a broader population through markets or other channels. This can be called the 'post-farm-gate approach' (*ibid*.). Thus far, most efforts by donors and NGOs to strengthen the link between agriculture and nutrition have employed the pre-farm-gate approach (Herforth 2012).

In Nigeria, experience with both the pre- and post-farm-gate approaches is relatively limited. Despite incorporating nutrition as part of their objectives on paper, the major agricultural policy initiatives, including the ATA, largely neglect nutrient-dense crops in favour of staple crops. At present, there are efforts to change this by adding new crops to the ATA, and advocating for funding from the federal government and donors. Meanwhile, several recent initiatives are promoting nutrient-dense crops for on-farm consumption, while aiming to encourage their distribution via local markets. These projects remain at an early stage, and

their reach is limited at present. Box 5.3 outlines two of these projects that have attracted substantial attention from policymakers.

Box 5.3 Projects promoting nutrient-dense crops

Orange-fleshed sweet potato: Reaching Agents of Change is a three-year project funded by Gates Foundation in five countries, including Nigeria. The objective is to increase the profile of orange-fleshed sweet potato (OFSP) in agricultural policy and attract more funding from national governments and donors. Crop is a key priority because of its very high levels of beta-carotene (precursor to vitamin A), and because it can produce high yields at a low cost under the right conditions. At present, OFSP is not a major crop in most regions of Nigeria; in the south-west zone only 16 per cent of consumers were aware of the crop (Fetuga *et al*. 2013). In addition to policy advocacy, the programme also promotes production of OFSP through local advocates and extension agents, as well as sale of the crop in local markets. The programme has also supported research institutions to develop new cultivars. The project has seen some success in generating government interest in OFSP in Nigeria. Following an investment seminar in 2012, the Federal Ministry of Agriculture and Rural Development signalled its intent to allocate N196 million to promote OFSP value chains, within the ATA. However, there is no evidence on whether the project has yet had an impact on OFSP cultivation.

Source: Reaching Agents of Change (2012); interview, Helen Keller International Nigeria.

Vitamin A-biofortified cassava: Research has been underway in Nigeria since 2005 to develop transgenic varieties of cassava that contain high levels of pro-vitamin A. Three varieties were released in late 2011, and are currently being distributed to limited numbers of farmers. HarvestPlus plans to distribute the crop to 25,000 farming households in 2013, and hopes it will reach 100,000 people by 2014 and 10 million by 2018. Currently, however, the reach of the project is limited and biofortified cassava is not present in most markets. Uptake of the crop may be limited by acceptability issues for both farmers and consumers. A 2011 study in two states in southern Nigeria found that preferences varied, with rural consumers in one state preferring biofortified cassava over conventional varieties, while in the other, they strongly preferred conventional cassava (Oparinde *et al*. 2012). Efforts may be needed to generate demand for the new varieties before there is wider uptake by consumers; at present, it is unclear what BCC and social marketing activities are planned. Since the biofortified varieties have only recently been released to farmers, it is too soon to evaluate the success of this approach. However, experience from other crops suggests that there are often unforeseen challenges with farmer uptake (Sahel Capital Partners and Advisory, personal communication).

Source: www.harvestplus.org/content/vitamin-cassava-dissemination-officially-launched-nigeria.

Experience with the promotion of nutrient-dense crops in Nigeria is too limited to allow for detailed assessment of this approach. However, the constraints highlighted in Section 4 have implications for the potential of this approach insofar as crops are distributed through markets. First, while some agricultural products signal their nutritional quality through their appearance (for example, vitamin A-rich crops such as OFSP and biofortified cassava are clearly orange-coloured), other products are indistinguishable from less nutritious alternative foods (for example, there is no visible difference between rice biofortified with zinc and unfortified rice). Due to the signalling problem, interventions that promote distribution of crops through markets are much more likely to be successful for the crops that are visibly different, than for those that appear the same as alternatives.[25] Second, nutrition awareness problems remain an issue for agriculture-based approaches, and it is widely recognised that pre-farm-gate approaches are best combined with nutritional awareness campaigns (ACF International, Le Cuziat and Mattinen 2011: 84; Bonnard and FANTA 2001). One clear advantage of the pre-farm-gate approach is that it is very effective in targeting poor farming households, which include many of the people most affected by undernutrition. In the medium term, incentives will likely remain low for businesses to market foods to these

[25] The signalling problem may be less of a constraint when crops are promoted for home consumption, provided there are ways to differentiate the seeds of different crop varieties.

groups, due to their low purchasing power and the high costs of reaching them. For these reasons, pre-farm-gate approaches may be an effective and low-risk means to improve their diets. Due to the difficulty establishing commercial models in this area, action is likely to be led by donors and NGOs, with support from agricultural extension agents.

5.3.2 Building agricultural value chains

Improving the quality of fresh food markets and of inputs for food processing is another form of nutrition-sensitive agriculture intervention. At present, government policy and donor programmes are strongly supporting these aims. For example, the federal government's Agricultural Transformation Agenda is working to increase domestic production of key food crops to substitute for imports; meanwhile donor agencies are seeking domestic sources for inputs into RUTF and other products used in nutrition programmes (see Section 5.4). Yet there appear to be important trade-offs between the objectives of domestic sourcing and maximising nutritional outcomes. Domestic sourcing may help stimulate economic growth, create jobs in the agricultural sector and promote upgrading in domestic value chains. However, it does not necessarily lead to supplies of high quality, nutrient-dense inputs. This trade-off arises because domestic substitutes are often lower quality and less nutrient-dense than imported commodities. Further, even when nutrient-dense commodities are available locally, the fragmented nature of agri-food value chains in Nigeria mean that it is usually easier to guarantee the nutritional quality of imported products. An example of this problem and how it affects the National Fortification Programme is discussed in Box 5.4. In this case, the consistent quality of imported wheat makes it easier for flour millers to comply with fortification requirements, compared to using domestically-sourced cassava starch.

Box 5.4 Conflicting policy objectives? Fortification and import substitution

Because the mandatory fortification programme relies on imported products, the current policy focus on import substitution in key food markets in Nigeria will pose a substantial challenge. In order for these objectives to be pursued in tandem, fortification will need to be introduced for domestically-sourced foods. However, domestic value chains are more difficult to govern than imports, and, as a result, these markets will be more expensive to regulate.

The Agricultural Transformation Agenda aims to promote cassava as a substitute for wheat, in part by increasing the proportion of cassava that must be incorporated into flour for bread and confectionary products.[26] At present, there is no requirement to fortify cassava starch. If the cassava substitution policy is sustained, it may be necessary for the National Fortification Alliance to extend coverage to cassava starch.[27] However, fortifying cassava starch would pose greater regulatory challenges than wheat flour. Thus far, cassava starch markets have been hampered by major price fluctuations and problems sourcing high quality tubers.

Fortification may become more feasible if the ATA succeeds in concentrating the processing of cassava in a few large manufacturers, while also increasing the cost of imported wheat flour. A more complete assessment of the potential effects of import substitution on the National Fortification Programme is beyond the scope of this report. This is an area for further research and advocacy to promote the coordination of these policy areas.

Source: Authors' own.

[26] Currently the policy requires that ten per cent cassava is incorporated into wheat flour, and this proportion is planned to increase to 40 per cent by 2014.

[27] In interviews, stakeholders in the National Fortification Alliance stated that the policy on incorporating cassava starch was not a concern at the moment, because the required levels remain low (20 per cent). Stakeholders predicted that it would be difficult for the policy to be effective at higher cassava levels, since consumers have a strong preference for wheat flour. From stakeholders some noted that the policy might increase the cost of bakery products (which, insomuch as they contain wheat flour, are fortified), which would lead consumers to switch to unfortified substitutes.

As part of efforts to promote domestic sourcing, a number of businesses and donors have attempted to establish value chain linkages between food processors and agricultural producers, including contract farming schemes.[28] Although there are examples of success, anecdotal reports tend to emphasise that many of these efforts have not been sustainable. In particular, the business environment makes it very difficult to enforce contracts. Box 5.5 reviews experience with contract farming schemes for soya and cassava.

Box 5.5 Contract farming schemes

Several manufacturers, often in partnership with donors, have attempted to establish contract farming schemes, especially for soya and cassava. Companies such as Nestlé, Grand Cereals and AACE Foods source soya from farmer clusters, providing a guaranteed market in exchange for farmers selling at fixed prices and meeting company standards. Nestlé currently sources its products from over 4,000 trained farmers,[29] and provides extensive training on cultivation practices.

For many businesses – particularly mid- and large-size Nigerian firms – these schemes have not been sustainable (Hartwich *et al*. 2010). For example, the DFID-funded PropCom MaiKarfi project partnered with soya oil manufacturer Karma Foods to establish a contract farming scheme, through which the manufacturer would provide credit to farmers in return for a guaranteed supply. However, after one year of operation, the business faced cash flow problems and decided to no longer provide credit. Other soya products manufacturers have faced similar cash flow problems. Side-selling and contract enforcement are also problems. When two mid-size food processors set up contract farming for cassava and sorghum, they found that farmers participated in order to access credit and inputs, but sold their production on conventional wholesale markets after harvest. As a result, both manufacturers closed the schemes after one year (Nwuneli *et al*. 2014).

Based on this small number of cases, it seems that large manufacturers have successfully run contract farming schemes by investing intensively in capacity building and monitoring; mid-size businesses, however, are not able to undertake intensive oversight. Stakeholders pointed out that Nigeria's difficult business environment makes contract farming more risky than in neighbouring countries. This higher degree of risk contributes to the trade-off between sourcing domestically and ensuring the quality of end products.

Source: Authors' own.

5.3.3 Lessons

Experience with nutrition-sensitive agricultural interventions remains limited in Nigeria, despite recent interest in this area. For several decades, major agricultural policies and investments have primarily neglected nutrient-dense crops. Given that interventions to promote nutrient-dense crops began recently, it is too soon to assess the effectiveness of these approaches. However, it can be noted that programmes focused on OFSP and biofortified cassava have focused primarily on increasing nutrient content in crops, along with yields and cultivation traits; they have thus far done less to consider how to build commercially viable value chains. In the absence of further evidence, the pre-farm-gate approach to nutrition-sensitive agriculture warrants further investigation, since it avoids the key problems in food markets and targets some of the most vulnerable households. Meanwhile, although promoting domestic sourcing and import substitution are major policy priorities, experience thus far shows that there are substantial challenges in assuring the quality of domestic supplies, especially their nutritional quality.

[28] Contract farming involves an agreement between a buyer (such as a food processor) and farmer(s) on how agricultural products should be produced and marketed. Generally, this allows the buyer to secure a guaranteed price and quality supply, and provides the farmer a guaranteed market, as well as other services. According to the FAO: 'Typically, the farmer agrees to provide agreed quantities of a specific agricultural product. These should meet the quality standards of the purchaser and be supplied at the time determined by the purchaser. In turn, the buyer commits to purchase the product and, in some cases, to support production through, for example, the supply of farm inputs, land preparation and the provision of technical advice.' *Source*: www.fao.org/ag/ags/contract-farming/faq/en/.

[29] *Source*: www.dailyindependentnig.com/2012/06/we-have-trained-4000-farmers-through-unaab-nestle-boss.

5.4 Non-profit distribution

The food-based approaches reviewed so far encounter major constraints in distributing products and targeting poor populations in the context of low awareness and demand. As has been shown, businesses struggle to distribute to the poor and to motivate consumers to purchase nutrient-dense foods, due to low awareness and signalling problems. Non-profit distribution seeks to overcome these constraints by undertaking the distribution and demand functions on a non-commercial or subsidised basis. Non-profit distribution includes any publicly-funded or non-profit agency that purchases a product and arranges for it to be provided to a target population free of charge,[30] including conventional food aid programmes, distribution of ready-to-use therapeutic food and school feeding programmes. This section looks at several examples and analyses how non-profit distribution overcomes the constraints identified above.

5.4.1 Distribution of ready-to-use therapeutic foods

Ready-to-use therapeutic foods (RUTF) are used to treat people suffering from severe acute malnutrition (SAM) and wholly replace consumption of other foods. In this respect, RUTF differs from other products examined in this report: while products such as fortified flours are intended to reduce *chronic* micronutrient deficiencies, RUTF is intended to treat those suffering not only micronutrient deficiencies, but an extreme deprivation of calories. The focus of this section is not so much how to improve distribution of RUTF, but rather what lessons can be learned from RUTF, and how they can inform efforts to distribute other products (which may target chronic or more acute malnutrition).

There is a large RUTF distribution programme in Nigeria, overseen by UNICEF's country office, along with state-level governments. The following examination of this programme is based on a detailed assessment[31] by the DFID-funded PropCom MaiKarfi programme[32] (Seely and Boateng 2012: 1–16). UNICEF imports the entire supply of RUTF in Nigeria from manufacturers in India, South Africa, USA and Niger. Importation poses important logistical challenges, with 2.5 to 3 months between order and delivery to rural health centres. These delays mean that UNICEF periodically runs out of stock, and rural health centres are unable to provide RUTF to mothers. In response to problems with importation, PropCom MaiKarfi identified a multinational food processing firm with operations in Nigeria[33] that expressed interest in producing RUTF for the domestic market. This business opportunity would combine private manufacturing with public distribution. For the manufacturer, this arrangement would provide a large and potentially stable source of demand, but it would also necessitate large investments in new manufacturing facilities. Therefore, the company insisted that donors provide advance purchase guarantee before it would invest. PropCom MaiKarfi is trying to address these barriers by advocating with DFID and other donors to make multi-year commitments to funding RUTF distribution in Nigeria. It is also asking DFID to urge Nigerian state governments to purchase RUTF. The programme hopes that funding

[30] In practice there are a variety of hybrid arrangements, involving private and non-profit organisations. For example, a publicly-funded organisation might subsidise a product that is then sold to consumers by private actors. The organisation might purchase the product and provide it for free to a private company that distributes it to retailers, who sell it at an agreed price. There are also cases where publicly-funded organisations manage distribution themselves, but require beneficiaries to pay a given fee (for example, for bed nets), based on the logic that this will promote efficient use. However, no examples of these cases were identified for food products in Nigeria.

[31] The analysis and interpretations in this report belong to the authors, and do not necessarily reflect the views of PropCom MaiKarfi.

[32] PropCom MaiKarfi is a DFID-funded rural development programme aiming to increase 'incomes for the poor through enhanced employment opportunities in northern Nigeria with an outcome of increased employment and improved productivity in selected agricultural and rural markets in northern Nigeria'. The programme evaluated the RUTF market in the context of a business case for encouraging RUTF production in Nigeria.

[33] The proposal entails a Nigerian firm processing, combining and packaging the product; the ingredients themselves would still be imported due to concerns such as aflotoxin contamination. Propcom MaiKarfi points out that a domestic manufacturer might also be positioned to produce a parallel line of *supplementary* products for sale to consumers (Seely and Boateng 2012: 1–16), but there are major barriers to making this transition (Nwuneli *et al*. 2014).

guarantees would incentivise the firm to invest in RUTF production. At present, the outcomes of these efforts are unclear.

The RUTF has a number of advantages for overcoming the value chain constraints outlined in Section 4. RUTF targets the populations most severely affected by undernutrition. This overcomes the low spending power of vulnerable populations, their low awareness about (and demand for) nutrient-dense products, as well as the high cost of developing distribution channels that reach them. In fact, people suffering with severe acute malnutrition are in a position where they have no choice but to accept the RUTF being offered to them. In addition, this model enables organisations such as UNICEF to control the nutritional quality and safety of products, since they oversee the entire production and distribution in a centralised manner. Finally, the combination of strict licensing conditions and tightly controlled distribution channels prevent problems with fraudulent products and imitations. These products have been effective precisely because they are distributed through centralised, non-profit channels. Another value chain analysis has posited that if RUTF or similar products (such as lipid-based nutrient supplements) are distributed on a commercial basis, they will face the same market constraints as other products: low consumer awareness, poor signalling and fraudulent imitation products (Lybbert 2011). The key challenge for the current RUTF model – as for other non-profit distribution approaches – is securing sufficient funding. This is examined in more detail at the end of this section.

5.4.2 School feeding programmes

Unlike donor-managed distribution of RUTF, school feeding programmes in Nigeria are managed by state government agencies. Initiated in 12 states by President Olusegun Obasanjo in 2005, the various programmes adopted different sourcing strategies and had very different outcomes. Nonetheless, they provide important lessons for non-profit distribution. The federal government initiative originally planned to launch school feeding programmes in all states. However, when President Obasanjo left office in 2007, federal funding ended. At the same time, a number of the state programmes were plagued by corruption. By 2008, all but one had closed. The exception was Osun State, where the government has continued to run the programme relatively uninterrupted until the present. Based on the success in Osun, Kano State has recently re-launched its school feeding programme, while Rivers, Ogun, Ekiti and Lagos States are considering reviving theirs. This section looks at the experiences in school feeding programmes in two states: Osun and Nassarawa, which adopted different sourcing models. The aim is to draw lessons on the role of federal and state governments in supporting non-profit distribution. The school feeding programmes reveal the challenges involved in government-managed distribution systems, particularly preventing corruption and maintaining funding and political commitment. The case of the Osun State programme also highlights the potential for decentralised distribution systems, and the involvement of localised value chains and the informal sector.

Osun State school feeding programme

The Osun State school feeding programme was modelled on the ‘home-grown school feeding’ approach developed by NEPAD and WFP (Espejo, Burbano and Galliano 2009). Other states adopted similar designs, but the Osun programme is considered the most successful. After federal funding ended in 2007, the state continued to fund the programme, providing 40 per cent of costs, and asking local government authorities to provide 60 per cent. In 2010, the programme was providing one meal a day to nearly 130,000 primary school children. Although the cost per student (US$45) represents 43 per cent of average expenditure on education per student in Nigeria (Shaad, Jaisinghani and Gelli 2010), this is comparable to similar programmes in other countries (Bundy *et al*. 2009).

The Osun programme is run in a highly decentralised fashion. The state-level office facilitates communities to hire cooks, and pays cooks a flat fee per student per meal. Cooks

source ingredients themselves. This eases the logistical burden for the state government and reduces the likelihood of corruption. Regulating the quantity and quality of meals is a key concern. Cooks are trained by the programme. There are no specific quality standards, but cooks are required to follow a menu based on national nutritional guidelines (Shaad *et al*. 2010). The programme relies on teachers, students and parents to monitor cooks and make sure they follow guidelines. Since the cooks are themselves local residents, observers posit that they may be more accountable to beneficiary households, although this has not been formally assessed. In addition, in some localities, NGOs are involved in setting up farmer groups, training cooks and conducting measuring project impacts.

The key challenge for the Osun programme, like in other states, has been funding (Shaad *et al*. 2010). Initially, the programme benefited from direct support and funding from the governor's office. By 2010, however, the programme was under pressure to reduce its budget. This was exacerbated by rapidly rising food prices. This could have led to a decline in the quality and quantity of meals, but no measurements were taken. Funding for the programme lapsed when the governorship changed in 2010, but the programme was re-launched in 2012, and funding per student has reportedly increased by five times (Government of Osun State 2012).

Formal monitoring procedures have been poor, due to insufficient funds. There is no quantitative evidence of programme impact on nutrition, although anecdotal reports suggest it has contributed to increased school attendance and learning (Shaad *et al*. 2010). Yet the sheer endurance of the programme over eight years and across two administrations provides lessons about the conditions that support government commitment. Key elements that contributed to the longevity of the Osun programme include:

- Sustained funding and political commitment from the state governor;
- Decentralised procurement of common ingredients from the informal sector;
- Decentralised processing and distribution system.

Nassarawa State school feeding programme

Although initiated at the same time as in Osun State, Nassarawa State's school feeding programme employed a different model. The state government partnered with private manufacturer Tetra Pak to distribute Nutri-Sip, a maize and soya product developed in South Africa (Ionescu-Somers and Steger 2006). The programme was initially supported by the governor and, with substantial technical and managerial support from a Tetra Pak office, continued until 2008 (most of the other feeding programmes closed in 2007). However, the Nassarawa programme was plagued by difficulties with sourcing, ineffective management and transport problems, and lagged behind its targets for the number of students covered. One of the principle problems for the programme was developing a locally-sourced product to replace the imported Nutri-Sip. This was a major political priority for the governor (David-West 2011). The programme made efforts to develop products based on locally-sourced milk or cassava starch, but both would have cost more than double the imported product. More recently, CHI Group, a large Nigeria-based manufacturer, expressed interest in producing a product for the programme, but required a guarantee of future funding levels (David-West 2011). Indeed, the end of support from the state government in 2008 demonstrates why the company was wary of investing.

The failure of the Nassarawa programme provides lessons about the potential risks of centralised distribution systems. Managing procurement and transport to remote rural schools increased the costs of programme administration. The failure to establish domestic sourcing may have contributed to the programme's termination. Although there is no specific evidence in Nassarawa, reports from other states suggest that creating employment is a central objective of state governments' support. Finally, the case indicates that even with strong technical support (in this case from Tetra Pak), public-private partnerships in the area

of distribution can fail if they are not carefully designed and reflect the interests of both parties.

5.4.3 Non-profit distribution and mid-size businesses

The programmes above have demonstrated how non-profit distribution systems can be structured, primarily from the perspective of public agencies. But these systems also have advantages for mid-size businesses, many of which are interested in selling their products to non-profit distribution systems (Nwuneli *et al*. 2014). Non-profit systems have the advantage of providing relatively large and reliable sources of demand, which reduces the risk of investment for these firms.

In working with businesses, donor-funded distribution programmes often aim to encourage them to transition to selling products through retail channels, once donor funding ends. In this way, donors hope to contribute to business models that are sustainable in the absence of public funding. However, experience in Nigeria indicates that it is very difficult to transition from non-profit distribution to a purely commercial model. The commercial model once again faces the constraints of low demand and high costs of distribution. In addition, the kinds of products that work well for non-profit distribution (fortified functional foods, designed to meet donor standards) do not necessarily appeal to consumers. The experiences of two Nigerian manufacturers highlight these challenges (Box 5.6). These experiences reinforce the analysis of therapeutic foods discussed above (Lybbert 2011); when a product is distributed through commercial channels, rather than non-profit ones, demand issues pose serious constraints.

Box 5.6 Challenges transitioning from non-profit to commercial distribution

Between 2009 and 2012, the PEPFAR-funded ACTION programme purchased 135 MT of a fortified cereal mix from Dala Foods, a mid-size food processor in Kano. The programme distributed the product in northern Nigeria to help people recovering from severe acute malnutrition. Although Dala Foods hoped to produce a fortified product for retail, it has been unable to do so. The company requires production on a large scale in order to cover the costs of production, but demand for fortified products among consumers in northern Nigeria is uncertain. Similarly, another institutional buying programme implemented by the USAID-funded MARKETS programme also encountered challenges. This programme purchased 137 MT of a fortified soya-maize-wheat product from Grand Cereals, a large manufacturer of oils and animal feeds. When USAID purchasing ended, Grand Cereals stopped production. Although the company expressed interest in developing a retail product, it has yet to do so, and consumer food products are not its core business.

Source: Nwuneli *et al*. (2014); Sahel Capital Partners and Advisory (2012).

5.4.4 Lessons

Overall, non-profit distribution has been effective in increasing access to nutrient-dense foods among the poor and has attracted substantial interest from businesses. The strategy works because it bypasses problems of low awareness, the absence of signalling and the costs of distributing to the poor. The approach also specifically targets the groups most in need. Not all programmes have been successful; failures in the school feeding programmes indicate that – when protections are not in place – government institutions can mismanage non-profit distribution. But where effective institutional structures have been established and funding has been sustained, the approach has been successful. This approach can also have advantages for businesses that have the capacity to produce nutrient-dense foods, but are unable to reach the poor through commercial channels.

Box 5.7 Why is 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 unaffordability.
- **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 on 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.[34]

Source: Authors' own.

At the same time, non-profit distribution also involves risks and challenges. First, as with any public service provision involving valuable goods or services, there is a risk of misuse, unofficial user fees and corruption. These outcomes were seen in some school feeding programmes. Non-profit distribution systems need to be carefully structured in order to minimise these risks. Yet the greatest challenge to non-profit distribution is finding and sustaining public funding. For nutrition stakeholders, building support from donors and the government is an immediate priority, given the severity of undernutrition in Nigeria. Sustaining commitment over time is also a challenge; it may decline as donor priorities shift or government administrations change. As was seen in the cases of RUTF and school feeding, 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. In particular, sourcing from local chains and industry may help leverage public support.

Although non-profit distribution needs to be scaled up, it will never be sufficient – even under the most optimistic scenarios – to address the scale of the problem, with chronic undernutrition affecting over 11 million children. Given limited funding, non-profit distribution will have to target the populations most vulnerable to crises and severe malnutrition, as well as those most susceptible to the effects of chronic undernutrition (infants and pregnant mothers). In order to cover the gap left by public funding, other strategies and other types of public-private partnerships also need to be explored. Yet how to achieve other forms of partnership is far from clear. Although donors are eager to support non-profit distribution as a pathway to distribution on a sustainable commercial basis, experience in Nigeria indicates that this is difficult to achieve under current conditions.

5.5 Behaviour change communications and social marketing

The analysis so far has shown that, for nearly all of the food-based strategies, raising nutrition awareness is critical to success. This section examines efforts to address the awareness problem directly. Social marketing and behaviour change communication (BCC) are broad sets of tools for influencing the behaviour of consumers and populations. There are minor differences between these approaches, but their objectives are the same. For this reason, the report does not distinguish between the two, and uses 'BCC' as a shorthand to refer to the aspects the approaches have in common. In the area of nutrition, most BCC campaigns tend to promote good health seeking, sanitation practices and infant care; some also promote consumption of diverse diets or particular foods. BCC techniques can be

[34] These issues are discussed extensively by Lybbert (2011).

employed by both public agencies and private businesses, and can encourage broad nutrition awareness, consumption of generic types of food (i.e. biofortified cassava, fortified flour), or promote specific private brands. There is strong evidence that BCC to promote good infant complementary feeding practices, accompanied by providing nutrient-dense foods, consistently improves nutrition outcomes (Bhutta *et al*. 2008: 118). However, there is a lack of evidence on the effectiveness of BCC in motivating good nutrition behaviours in broader contexts – and in particular in affecting purchasing patterns. Piloting BCC initiatives – and designing them in a way that promotes learning – is essential to nearly all the food-based nutrition strategies. BCC appears to be the best hope of increasing awareness and shaping consumer behaviour.

In Nigeria, experience of using BCC to promote foods has been limited. A number of federal policy documents, including the Food and Nutrition Policy, lay out BCC as a key objective; however, it is unclear what activities, if any, have been implemented. In parallel, a number of NGOs and donor-funded projects have implemented nutrition-focused BCC activities at national and sub-national scales, including the following programmes:

- **Social marketing for mandatory fortification**: GAIN is funding a social marketing strategy to support the National Fortification Programme. Messages will be communicated via billboards, radio and TV, as well as theatre performances. The campaign is being run in Lagos and Kano over the next two years. GAIN hopes that manufacturers of products covered by the National Fortification Programme will contribute to the monitoring of the campaign, and that they might eventually be willing to fund BCC themselves, as a way to promote their products and enhance their reputation. GAIN is also planning a social marketing campaign to accompany micronutrient powder distribution.
- **Radio programmes:** Radio has been used to disseminate nutrition and health messages in certain areas. Food Basket Foundation International, an NGO, provided funding to sponsor a weekly radio programme on nutrition and health broadcast in south-west Nigeria. The target audience were rural mothers, and topics covered included exclusive breastfeeding, infant care practices and complementary feeding (see Box 5.8).
- **Extension and outreach**: For several decades, various public institutions have provided outreach messages on infant and child care and feeding. For example the Federal Ministry of Agriculture's Women in Agricultural programme collected recipes for locally-sourced nutrient-dense complementary foods and promoted them through cooking demonstrations in rural areas. Currently, GAIN is supporting rural health centres in Benue State to provide messages on complementary feeding to accompany the distribution of micronutrient powders.
- **Person-to-person BCC:** Over the last decade, NGOs including Helen Keller International implemented behaviour change campaigns using person-to-person learning. They trained community members to promote nutritional messages with other residents. These programmes were generally considered effective in motivating behavioural change. However, they were also expensive. Stakeholders were not aware of any organisation currently using this approach.

Box 5.8 Radio programme on nutrition and health in south-west Nigeria

Food Basket Foundation International, an NGO based in Ibadan, provided funding for a radio programme on nutrition and health aimed at rural audiences in south-west Nigeria. The NGO provided advice on content; the programme also solicited input from listeners and created content in response to their requests. This feedback suggested that mothers appreciated the programme, although no formal evaluation was conducted. The programme was closed after two years when the NGO was no longer able to provide funding.

One topic covered was preparing complementary foods in the home, through which rural residents shared recipes for nutritionally-enhanced complementary foods using local ingredients such as palm oil, groundnut oil and fish powder. During a programme on exclusive breastfeeding, women called the radio station to complain that they were not given enough maternity leave at work to exclusively breast-feed for the first six months. The radio programme was subsequently involved in an advocacy effort to increase the legal maternity leave from three to four months.

Source: Stakeholder interviews.

Some BCC programmes have been more targeted. Since at least the 1980s, institutions including the Federal Ministry of Health, state health agencies and NGOs have encouraged people (especially women) to fortify foods in their homes, using locally-available ingredients. These programmes often provided outreach messages to women on how to source and process ingredients in order to make nutritionally adequate complementary foods, since these foods are especially important for child nutrition. For example, the Women and Health in Development project organised women into cooperatives to produce nutrient-dense complementary foods. The best known of these recipes in Nigeria is 'Tom Brown', a mix of soya and maize flour, although a wide variety of other mixes have also been developed. At present, many nutrition professionals prefer the home fortification approach over packaged products, because home fortification is seen to be lower cost and to target rural households, who suffer high rates of child undernutrition. The advantages of this model are that it provides a route to securing products at low cost (as long as there are low-cost ingredients and low constraints on labour), and home production means that households have some control over nutritional quality. The disadvantages are that it may impose a high labour and time burden on rural households, especially women, and it depends upon the local availability of affordable inputs.

There is also experience in using BCC approaches as part of public-private partnerships involving packaged products. Public funding plays a key role in these cases, since nutritional awareness is a public good. Public funding can act as a catalyst to leverage complementary private sector investments in marketing (see Box 5.9). In this case, publically-funded BCC provides a social good in the form of greater nutrition awareness, and also facilitates the company expanding into new markets.

Box 5.9 Unilever social marketing of iodised salt

Around 2000, Unilever began marketing an iodised salt product, Annapurna, in Nigeria, aimed at low-income consumers in the north, where rates of iodine deficiency were highest. The company began the project as a joint venture with Dangote, in the context of the mandatory salt iodisation policy, which had been in effect since 1993. When the project began, 95 per cent of salt was not iodised, and was sold unbranded in markets. Through intensive marketing, Unilever was able to displace unbranded salt with its own iodised product. In 2013, Unilever stated that Annapurna was the number one branded salt in Nigeria.

The campaign was successful both because it focused narrowly on reaching bottom of pyramid (BOP) consumers, and because parallel efforts from government agencies and NGOs supported Unilever's messages, and garnered support from key traditional leaders. The project focused on minimising marketing costs while targeting hard to reach rural consumers. This ruled out standard television marketing, because of its high cost and because these advertisements do not reach the rural poor. Instead, Unilever used radio advertisements, endorsements from public figures and promotion through school programmes. It also focused on creating a recognisable brand and compelling messaging, which emphasised that consuming iodised salt helps children to grow up healthy and productive. In parallel, UNICEF and NAFDAC ran a public awareness campaign about the health benefits of iodised salt, without promoting a specific brand.

A project manager closely involved in the Annapurna project emphasised that companies need a long-term strategy for new BOP products. New ventures often operate at a loss for the first few years. Unilever found that marketing messages needed to come from trusted sources, especially traditional leaders.

Source: Stakeholder interviews.

The above examples indicate that BCC in Nigeria has depended on funding from donor agencies, with UNICEF and USAID particularly active. In contrast, little funding has come from government agencies or the private sector. Public funding is key; BCC campaigns are very expensive and require long-term commitment to induce change, but the private sector is unlikely to fund these activities on their own.

5.5.1 Lessons

Low nutrition awareness is a fundamental constraint in efforts to provide nutrient-dense foods to the undernourished. In this respect, BCC may play a crucial role in facilitating the other food-based strategies discussed here. However, there is a need for much stronger evidence on the effectiveness of this approach in altering consumer and food-related behaviours, as well as what forms interventions should take. The examples from Nigeria have exemplified two models of BCC: the first is broad campaigns focused on overall nutrition and health, which emphasise the public good aspect of nutrition awareness and may promote demand for a wide array of nutrient-dense products. However, the results from these efforts may only be seen over the long term, and will be difficult to measure. The second model of BCC is public-private partnerships oriented around particular food products. This approach may have outcomes in the shorter term, and may enable public funding to leverage complementary investments by the private sector. Evidence is needed on which of these models is effective, and under what circumstances. Regardless of the model, public funding for BCC interventions is key, as there is little incentive for the private sector to provide this public good. Donors and civil society can advocate for federal and state governments to fund BCC on an ongoing basis. Given the crucial importance of nutrition awareness for all food-based strategies, there is an urgent need to improve understanding of the function and design of BCC. Interventions should be structured in order to facilitate evidence gathering and learning and address the questions set out above.

6 Policy and programme recommendations

This report has analysed food-based solutions for undernutrition in Nigeria, focusing on the role of businesses and markets in distributing food to rural and urban populations. The constraints facing these markets are well known. Many populations have low understanding of the importance of nutrient-dense foods for health. Even when they are aware, they often cannot identify which foods are most nutritious because of a lack of signalling mechanisms. Furthermore, it is difficult to deliver foods to the rural and urban poor at prices that are affordable to them. Due to all of these constraints, it is very difficult for businesses in Nigeria to address undernutrition acting on their own.

Policy actors can implement food-based strategies to overcome some of these problems. This report has reviewed experiences with five such approaches: mandatory fortification, voluntary fortification, nutrition-sensitive agriculture and non-profit distribution, as well as behaviour change communications. Each strategy entails different interventions in value chains and different sets of challenges. 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 assess the feasibility of overcoming these constraints. The report concludes that in the short term, efforts focused on developing new products or supporting individual businesses are insufficient. Instead, interventions need to instigate market-wide changes (e.g. mandatory fortification) or specifically avoid constraints related to demand and distribution (e.g. non-profit distribution). For the moment, controls that might enable markets to deliver nutrient-dense foods voluntarily (such as labelling regulations or third-party certification) do not appear feasible. Public awareness about food and nutrition appears to be critical to the success of nearly all of the other strategies. Only non-profit distribution can be viable without greater nutrition awareness. In the long term, a range of reforms can promote value chain organisation, improve rule of law and strengthen capacity for regulation. These broad reforms could make market-based delivery more feasible. However, reducing undernutrition is an urgent priority. Therefore, this report has identified interventions that can function within the current institutional environment. In the short and medium terms, sustained public funding for food-based programmes is needed; stakeholders need to advocate to strengthen and expand programmes in mandatory fortification, non-profit distribution, nutrition-sensitive agriculture and behaviour change communications. Federal and state governments in Nigeria, development partners and other funders need to commit to funding these strategies in order to improve the functioning of markets, enable business involvement and tackle the scourge of undernutrition.

Table 6.1 summarises the food-based strategies, outlining the mechanisms through which they address (some of) the key constraints and the areas where there is the greatest need for research.

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

	Poor quality supplies	Cost of distribution	Absence of signalling	Low awareness
Mandatory fortification	Use imported products	Use staple foods with existing channels	Mandate industry-wide compliance	Focus on widely-consumed foods Mandate industry-wide compliance
Voluntary fortification	Use imported products	Possible for large companies with established networks	Branding strategy can succeed, but leads to higher prices Government and third-party certification – not currently feasible	Fortify market-leading products (when price not increased)*
Nutrition-sensitive agriculture	Promote organisation and controls in value chains*	On-farm consumption route	Use easily-identifiable crops (e.g. OFSP)	N/A
Non-profit distribution	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	N/A	N/A	Increase consumers' ability to distinguish products*	Increase nutrition awareness and demand for nutrient-dense foods*

Source: Authors' own. Note: *Evidence on the effectiveness of the starred mechanisms is weak; research is needed to establish their validity and context-dependence.

6.1 Programme-specific recommendations

Mandatory fortification

Mandatory fortification continues to be a central part of government nutrition policy. However, evidence suggests that there are significant problems with industry compliance and the ability of regulators to enforce the requirements. Based on this review, the following actions are recommended:

- **Strengthen mandatory fortification**. The approach can be successful because it focuses on foods that are consumed by a wide range of populations, including by the poor. This has major advantages: (i) the products are acceptable; (ii) they are consumed by most people, including many of the undernourished (with the possible exception of undernourished infants); (iii) distribution networks exist that deliver them throughout the country.

- **Assess the coverage of the most vulnerable groups.** Mandatory fortification needs to cover all products in a market to be successful. More evidence is needed on how well this strategy covers the products that are consumed by the poor, especially where there is informal sector production.
- **Invest in enforcement.** Recent evidence on non-compliance shows that better monitoring and enforcement is essential. Evidence is needed to assess whether low quality of fortificants or degradation during storage and transport or under-dosing by industry is the key driver. Addressing these problems requires moving to testing at the point of sale, strengthening the capacity of regulatory agencies, aligning their incentives and shielding them from political interference.
- **Support mandatory fortification with public awareness**. Enforcement should be complemented by campaigns to raise public awareness about the importance of fortification. The public could also be provided with information about which products do and do not meet requirements. This could increase the incentives for manufacturers to comply with legislation.

Voluntary fortification

- **Voluntary fortification is not a promising strategy at present.** The biggest challenge arises from the difficulty of differentiating fortified products from unfortified alternatives without resorting to strategies that increase prices and undermine affordability.
- **Regulation or third-party certification appears unfeasible.** Although these institutional mechanisms can help differentiate fortified products, the enforcement climate in Nigeria is too difficult at present.

Nutrition-sensitive agriculture

- **Encourage farming households to produce nutrient-dense crops for own-consumption (the pre-farm-gate approach).** This approach avoids the problems with distribution and demand in markets; it may also be the best option for targeting populations in rural areas with poor access to markets. Parallel efforts could target these efforts to the 1,000 days group by promoting household production of complementary foods using locally available ingredients.
- **Focus on nutrient-dense crops that are easily distinguishable from alternatives**, due to their colour, etc. This avoids signalling problems that will otherwise pose a major barrier to distributing the crops through markets.
- **Analyse the impact of import substitution on nutrition programmes**. Although domestic sourcing is a policy priority, it poses risks for food-based nutrition programmes that rely on imports, such as mandatory fortification. Investments are needed to organise domestic value chains so that they can provide high quality inputs, and to make them easier to regulate.

Non-profit distribution

- **Non-profit distribution should be scaled up.** The approach bypasses low demand and awareness and can better target the poorest and most vulnerable groups, compared to alternatives. Given slow rates of poverty and undernutrition reduction, non-profit distribution will remain crucial to reaching the poorest groups.
- **Securing and sustaining political commitment from donors and government is key.** This ultimately requires building the commitment and capacity of individuals and departments at the federal and state levels. Government decisions about funding non-profit distribution may hinge on supporting local industry and creating jobs, not only on reducing undernutrition.

- **Businesses require long-term funding guarantees.** Manufacturers will not invest in new fortified products without guarantees of future funding. This reinforces the need for sustained public commitment.
- **Non-profit distribution can assure the nutritional quality of food.** Where a strong institution manages procurement, it is easier to maintain food standards. This is demonstrated in the case of RUTF. More evidence is needed about the effectiveness of monitoring and enforcement, especially in cases such as home-grown school feeding, where procurement is run in a decentralised fashion.

Behaviour change communications

- **Invest in BCC.** The approach has the potential to facilitate other food-based strategies by stimulating consumer demand and willingness to pay for nutrient-dense foods. Public investment is needed, since nutritional awareness is a public good unlikely to be provided by the private sector.
- **Build the evidence base.** Further evidence is needed about the effectiveness of BCC in motivating purchasing and eating behaviours. Research should evaluate different programme models, including whether to undertake broad awareness campaigns or promote particular foods and products.

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