

EVIDENCE REPORT

No 28

Reducing Hunger and Undernutrition

Policy Guidelines: Enhancing Markets for Nutrient-Dense Foods in Ghana

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September 2013

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.

The authors gratefully acknowledge input from the Global Alliance for Improved Nutrition during research.

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AG Level 2 Output ID: 517

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First published by the Institute of Development Studies in September 2013
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List of Abbreviations

ADVANCE	Agricultural Development Value Chain Enhancement
BAC	Business Advisory Centre
CAADP	Comprehensive Africa Agriculture Development Programme
CMAM	Community Management of Acute Malnutrition
CRSP	Collaborative Research Support Program
CSO	civil society organisation
DFID	UK Department for International Development
ENA	Essential Nutrition Action
FASDEP II	Food and Agriculture Sector Development Policy
FDA	Food and Drugs Authority (of Ghana)
FDB	Food and Drugs Board
GAIN	Global Alliance for Improved Nutrition
GCAP	Ghana Commercial Agriculture Project
GHS	Ghana Health Service
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GSA	Ghana Standards Authority
IDS	Institute of Development Studies
IFAD	International Fund for Agricultural Development (UN)
IMNCI	Integrated Management of Newborns and Childhood Illness
IYCN	Infant and Young Child Nutrition Project (USAID, Ghana)
JICA	Japan International Cooperation Agency
M4P	Making Markets Work for the Poor
METASIP	Medium Term Agriculture Sector Investment Plan (Ghana)
MLGRD	Ministry of Local Government and Rural Development
MOAP	Market Oriented Agriculture Programme (GIZ, for Ghana)
MOFA	Ministry of Food and Agriculture
MOH	Ministry of Health
MOTI	Ministry of Trade and Industry
NAFSN	New Alliance for Food Security and Nutrition
NBSSI	National Board for Small Scale Industries
NCD	non-communicable disease
NGO	non-governmental organisation
NHIS	National Health Insurance Services
NNP	National Nutrition Policy
OFSP	orange-fleshed sweet potato
PCRSP	Peanut Collaborative Research and Support Programme
RING	Resiliency in Northern Ghana
RUF	ready-to-use foods
RUTFs	ready-to-use therapeutic foods
SBCC	Social Behaviour Change Communication
SME	Small and medium-sized enterprise
SUN	Scaling Up Nutrition
USAID	United States Agency for International Development
WIAD	Women in Agricultural Development Directorate

Executive Summary

This report analyses policy options for promoting nutrient-dense foods to reduce undernutrition in Ghana. It is part of 'Strengthening Agri-food Value Chains for Nutrition', a UK DFID-funded project carried out by the Institute of Development Studies (IDS). These policy guidelines set out actions that donors, government, NGOs and businesses can take to promote the provision of nutrient-dense foods in Ghana. They are accompanied by a second report mapping value chains for nutrient-dense foods in Ghana. Subsequent analyses will focus on Nigeria and Tanzania.

Value chains for nutrition

This report introduces a new framework for analysing how to enhance value chains to deliver nutrient-dense foods. This framework complements existing work on linking agriculture and nutrition, which tends to focus on increasing production and consumption of foods by farming households. The on-farm approach has limitations because it does not address the nutrition of those who buy a major portion of their food, including urban populations, farm workers and many farming households. The value chain framework addresses this gap by showing how interventions can promote access to nutrient-dense foods for a much broader population by working through markets.

Markets have great potential for providing nutrient-dense foods, but they are commonly inhibited by a number of market failures. Imperfect information, bounded rationality, uncertainty and opportunistic behaviour lead businesses to underinvest in nutritious foods. Policy interventions can help overcome these problems. To develop solutions, it is important to identify four conditions under which agri-food value chains successfully contribute to better nutrition: value chains must make food that is adequately nutritious, available to those that need it, affordable to the poor and acceptable to consumer tastes. One key reason for market failures in these value chains is that nutritional quality is a credence good: the nutrient content of foods is 'invisible' to consumers. This creates a lack of trust and disincentives to investing in nutrient-dense products. Businesses respond by using high prices to signal the nutritional quality of foods, putting these products out of the reach of the poor. Evidence suggests that these problems indeed inhibit markets in Ghana.

Undernutrition in Ghana

Undernutrition remains a serious problem in Ghana, with populations across the country deficient in iron and vitamin A, and as a result suffering severe health consequences. In particular, one-third of infants do not receive sufficiently nutritious complementary foods after six months of age, and infant care and feeding practices are sub-optimal. Although evidence on the underlying determinants of undernutrition is conflicting, food-based approaches are a crucial strategy to address these drivers, alongside interventions in health, water, sanitation and other areas. Because poor complementary feeding is a key contributor to undernutrition in Ghana, improving the quality of complementary foods available to the poor is a key priority.

Challenges for nutrient-dense foods

There are a number of nutrient-dense products on the market in Ghana, but they are generally not accessible to the poor. To overcome the problem, four challenges must be met: (1) improve food safety by securing supplies that are free of aflatoxin contamination; (2) raise consumer awareness about nutrition and food safety; (3) create mechanisms to verify the nutritional quality of products and signal this quality to consumers and (4) reduce costs so that nutrient-dense foods are available and affordable to the populations that need them.

Ghana policy context

The policy space for addressing these challenges is complex and crowded. Food, agriculture and nutrition policies involve multiple government bodies and donors. In the past, policy efforts have been fragmented. Recently, a number of initiatives have sought to coordinate action along value chains to promote nutrient-dense foods. These efforts take place against the backdrop of several large agricultural development initiatives, including the Comprehensive Africa Agriculture Development Programme (CAADP) and the New Alliance for Food Security and Nutrition (NAFSN). These large programmes have prioritised agricultural growth and staple crop production, rather than nutrient-dense foods. For the challenge of aflatoxin contamination, mitigation technologies are available but poorly implemented due to a lack of incentives to adopt better practices in farming, storage and transport.

Nutrition policies in Ghana are also evolving, especially through the ongoing development of the National Nutrition Policy. Several programmes are working to improve nutrition awareness, behavioural change and infant care practices. Some of these are also promoting nutrient-dense products produced by the private sector, although not all policy actors accept this approach. In consumer food markets, regulation is often ineffective and does not adequately address the nutrient content of key products such as complementary foods.

In sum, despite some efforts, there has been little coordinated policy on nutritious foods in Ghana. The exceptions are several initiatives that are attempting to link support for private sector products with public nutrition and health campaigns. In this complex policy environment, new initiatives should avoid increasing duplication, policy complexity and conflicts, and should work with existing initiatives in agriculture, food, nutrition and health. There are opportunities to link agricultural value chain programmes to private sector initiatives to produce nutrient-dense foods.

Policy guidelines for nutrient-dense foods

This report recommends the following **eight general principles** to guide policy efforts to improve markets for nutrient-dense foods.

1. Focus on specific products. This allows interventions to be more targeted and systematic about their impacts.
2. Focus on products that reach infants and pregnant mothers (the 1,000 days population).
3. Ensure that products reach and are consumed by the populations that need them most – the poor and undernourished.
4. Focus on products that are acceptable to consumers and that meet their needs.
5. Modify existing value chains, rather than build entirely new ones. This reduces the risk of unanticipated outcomes.
6. Develop inclusive public–private partnerships to overcome the constraints faced by individual actors and the barriers to private sector investment.
7. Develop separate solutions for the formal and informal sectors. Leverage the advantages of each.
8. Build evidence-gathering and assessment into interventions. Learn what works and respond flexibly.

In the context of gaps in the evidence, these policy guidelines are intended to increase consumption of nutrient-dense foods by poor households and vulnerable populations. A second, and more difficult, stage will be to link improved consumption to changes in nutrition status. Initiatives aimed at food value chains should coordinate with programmes on the other drivers of undernutrition, and interventions should incorporate evidence-gathering.

In operationalising these principles in Ghana, policy actors can choose from a menu of options for enhancing the provision of nutrient-dense foods. These are divided into supply-side, demand-side and 'whole value chain' approaches.

Supply-side options focus on increasing the availability of safe and affordable inputs to nutrient-dense foods.

- **Incentivise aflatoxin reduction:** Policy action needs to reduce aflatoxin contamination in supplies of food commodities. Doing so requires integrating good on-farm and storage practices into agricultural development programmes while also creating channels that incentivise farmers to adopt these practices.
- **Promote new crops:** In addition to widely consumed crops, policy efforts can promote production of new, nutrient-dense commodities (including biofortified crops). This requires linking producers to markets and working with government and the private sector to increase consumer demand.

Demand-side options focus on increasing consumer demand for nutrient-dense products, signalling nutritional quality and creating incentives for businesses to invest.

- **Increase nutrition awareness:** Promoting demand through nutrition awareness programmes is key to generating business investment. These programmes provide a public good (improving infant feeding and care and general nutrition awareness) while also helping build markets for specific nutrient-dense products.
- **Purchase foods directly:** Public agencies can directly purchase nutrient-dense products and distribute them to undernourished populations. This can overcome businesses' uncertainties about new markets. However, the sustainability of production for non-profit distribution needs to be examined carefully.
- **Promote certification to signal nutritional quality:** Creating mechanisms that verify the nutritional quality of products and signal this value to consumers is crucial to incentivising business investment and reducing the cost of nutrient-dense foods. Various institutional arrangements could be used. A private sector-led certification scheme targeting complementary food products is most likely to be effective in Ghana.
- **Promote franchise schemes to incorporate the informal sector:** In parallel to schemes targeting formal sector businesses, working with the informal sector is also key, since informal businesses provide an important proportion of key foods. A private sector franchising scheme could enrol informal producers as retailers of a centrally produced, certified nutrient-dense product. This approach would improve the availability of high-quality products for the poor.

Integrating action across the value chain

Policymakers and businesses have choices about how to implement the options shown here: they can pursue supply- and demand-side policy options independently, or they can integrate them in a 'whole value chain' approach. Initiatives can focus on specific products or aim to enhance the broader market environment. This report presents options that span these approaches. Where interventions choose to focus their efforts has important implications; policy interventions that target the supply- or demand-end of the value chain are likely to require fewer resources and entail fewer complexities than those that adopt an integrated approach. However, addressing key challenges – notably aflatoxin contamination – requires coordinating programmes at multiple points in value chains. Integrated action is ultimately needed to enhance markets providing nutrient-dense foods to the poor.

1 Introduction and overview

This report presents the findings of an analysis of policy options for promoting nutrient-dense foods to address undernutrition in Ghana. The analysis was conducted as part of a project entitled 'Strengthening Agri-food Value Chains for Nutrition', part of a UK Department for International Development (DFID) Accountable Grant to the Institute of Development Studies (IDS).

These policy guidelines assess areas where policy and programme development can help overcome the barriers to promoting private sector involvement in the development, production and delivery of nutrient-dense food for the poor. The analysis in this report draws on previous work to develop 'Nutritious Agriculture by Design: A Tool for Private Sector Engagement' (Henson, Humphrey and McClafferty 2012). This tool was developed to assess the potential for private sector involvement in producing and marketing nutrient-dense food and uses a value chain approach to assess the different channels through which food can be produced, processed and delivered to populations affected by undernutrition. These policy guidelines are accompanied by a further report, 'Mapping Value Chains for Nutrient-dense Foods in Ghana', which presents the application of the value chain tool to analysing value chains for two specific types of nutrient-dense foods (groundnut-based foods and complementary foods). The policy guidelines in this report focus on the challenges of mobilising private sector involvement in making nutrient-dense foods available, acceptable and affordable to undernourished population groups. They focus specifically on reaching the groups most vulnerable to undernutrition, especially pregnant and breastfeeding women and children under two years old – collectively referred to as the '1,000 days population'.

For such initiatives to be successful, the private sector's involvement has to be both sustainable in business terms and successful in generating nutritional impacts. Ghana is the first of three countries in which similar analyses will be conducted. Once country studies are completed, a set of overarching policy guidelines will be produced that synthesise lessons learned in the three countries.

1.1 Project goal and context

The goal of the Strengthening Agri-food Value Chains for Nutrition project is to help reduce undernutrition by identifying opportunities to promote food-based approaches led by the private sector. It aims to mobilise private sector resources, capacities and know-how to achieve this goal.

In recent times, nutrition has moved up the global political and development agendas. One of the principal reasons for this has been the relatively slow progress in reducing undernutrition and the increasing recognition of the multiple ways in which undernutrition impacts on both individual life opportunities and collective economic productivity. Addressing the problem of nutrition requires nutrition-specific interventions such as micronutrient supplementation, therapeutic feeding and promoting good infant care and feeding practices (Department for International Development 2011: 2). However, it is recognised that such interventions alone cannot solve the problem. Therefore, a broad range of development interventions have to become 'nutrition-sensitive', defined by DFID in the following terms:

Nutrition-sensitive development involves adjusting and re-designing programmes across a range of sectors which have potential to address the underlying causes of undernutrition, to ensure that they deliver results for nutrition.
(Department for International Development 2011: 13)

Food and agriculture are key areas where development can be made more nutrition-sensitive. Increasing the availability of nutrient-dense foods should be one part of a broader package of food-based approaches to undernutrition. In parallel, investments in agriculture that benefit poor farmers should help to reduce undernutrition through their impact on farm incomes. However, it is widely recognised that the linkages between improvements in food production and improvements in nutritional status are weak, particularly when it comes to micronutrient status. Thus, whilst DFID has emphasised the effectiveness of agricultural growth for raising the incomes of the rural poor, it recognises the weakness of the linkages between agricultural growth and improvements in nutrition:

Agricultural growth has been shown to have a significant impact on incomes of the rural poor, with cross-country modelling revealing a 1% gain in agricultural GDP generating a 6% increase in expenditure amongst the poorest 10% (Ligon and Sadoulet 2008; Christiaensen *et al.* 2011). But improving agricultural income does not necessarily mean that people can/do access nutrient-dense foods, or that all members of the household have access to improved nutrition. Recent cross-country analysis of what constitutes 'nutrition-sensitive growth' found that the impact of agricultural growth was greatest in the lowest income countries but that the impact decreases as the levels of calorie consumption rise (Headey 2011). (Department for International Development 2012: 10)

The link between agricultural output and incomes, on the one hand, and nutritional status, on the other, is weakest for micronutrient intake. While many countries have successfully increased production of staple foods, deficiencies in the intake of micronutrients have proved harder to tackle. Policy initiatives to address this challenge have tended to focus on nutrition-specific interventions such as fortification of staple commodities and micronutrient supplementation, which do not necessarily join up with domestic agricultural production (Department for International Development 2012: 6). The focus of these policy guidelines is therefore identifying nutrition-sensitive policies for food and agriculture that can help reduce micronutrient undernutrition.

The project identifies opportunities to improve private sector involvement in providing nutrient-dense foods to populations affected by undernutrition. This will be achieved when private sector actors produce and distribute foods in a way that makes them acceptable, affordable and available to these groups, and that maintains and enhances their nutritional quality (Hawkes and Ruel 2011, see Section 2.2). The project as a whole contributes to this outcome through three sets of activities.

1. Identifying food products with high potential to address undernutrition for poor and vulnerable population groups, focusing on foods that reach populations located off-farm and products that had strong potential to be marketed by businesses on an ongoing basis.
2. Mapping the value chains for these foods in order to ascertain where challenges are (or are likely to be) faced in making these foods acceptable, available and affordable to undernourished population groups.
3. Developing policy guidelines that outline key actions that donors, government, NGOs and the private sector can take to address barriers to making the identified foods accessible and affordable to undernourished population groups.

This report focuses on the third of these activities, presenting an analytical framework, identifying policy challenges and recommending policy guidelines and options in Ghana. It draws on the findings of the accompanying value chain mapping report.

1.2 Outline of the report

The remainder of this report is structured as follows: Section 2 outlines the framework used to assess how action by development agencies, government, NGOs and the private sector can enhance the provision of nutrient-dense foods to poor and vulnerable populations. This approach builds on existing frameworks that were developed by DFID and other donors, including the Making Markets Work for the Poor (M4P) approach and value chain analysis. The framework allows for the identification of the challenges businesses face in markets for nutrient-dense foods, and the conditions that must be met in order to reduce undernutrition through value chains. Following this, Section 3 applies this framework to the Ghana context, identifying specific challenges that need to be addressed when considering the potential for private sector solutions. Section 4 reviews the current context for policy intervention in agriculture, food and nutrition in Ghana, providing an overview of existing initiatives. Finally, Section 5 analyses policy options for addressing the constraints for nutrient-dense foods in Ghana, grouping these options into supply-side and demand-side approaches, and then considering the potential for integrated 'whole value chain' approaches. The conclusion of the report summarises the policy options, and maps them against a framework of approaches to food value chains.

2 Linking agriculture, food and nutrition

This section describes the framework used to conduct policy analysis in Ghana. It begins by outlining the most relevant existing frameworks, and bringing together several of these to understand what conditions must be achieved in order for agri-food value chains to successfully contribute to reducing undernutrition. These policy guidelines are concerned with market-based approaches to food and nutrition, and in particular the role of the private sector in providing safe, nutritious food to the undernourished. However, it is important to recognise that not all efforts to make agriculture more 'nutrition-sensitive' work through markets. One well-established route to linking agriculture and nutrition is to promote production and consumption of nutritious food by farm households (see for example Ecker, Mabison, Kennedy *et al.* (2011) and Le Cuziat and Mattinen (2011: 43–4)). It is common for initiatives aimed at raising agricultural yields and incomes to be combined with specific nutrition interventions, such as the promotion of homestead garden production and behaviour change communication. Such interventions may include a role for the private sector, particularly in the provision of farm inputs, but they do not account for the broader ways in which the private sector in markets can be involved.

A recent review on guiding principles for linking agriculture and nutrition for FAO (Herforth 2012) provides a good illustration of just how little attention is given in most policy discussions on agriculture–nutrition to the role of the private sector. The review, which synthesises lessons from ten development institutions, focuses predominantly on interventions by government, development agencies and NGOs. The 'private sector' is mentioned just five times (with a further three mentions of 'private' in the context of public and private), and 'business' seven times. In contrast, other important issues relevant to the link between agriculture and nutrition – those that focus on pre-farm gate links – received greater attention: this compares with 26 mentions of 'rights', 27 of 'gender', 38 of 'smallholders' and 315 of 'women'. A similar lack of focus on private sector contributions to linking agriculture and nutrition is found in the World Bank's report on agriculture and nutrition (World Bank 2007). This report cites the terms 'business(es)', 'private sector', 'firm(s)' and 'enterprise(s)' just five times in the main body of the text. None of these citations is associated with specific discussion of how business might play a role in linking agriculture and nutrition.

2.1 Market-based approaches to food and nutrition

The World Bank report on links between agriculture and nutrition mentioned above identified five pathways through which agriculture can contribute to reducing undernutrition. Two of the five pathways involve markets explicitly. One of these pathways is through the sale of farm produce to generate income which might then be used, in part, to increase household consumption of nutrient-dense foods. The second pathway is the lowering of food prices that will occur if the availability of nutrient-dense food increases due to enhanced production and off-farm sales. It is important to recognise, however, that neither of these pathways focuses explicitly on enhancing access of non-farm households to nutrient-dense foods. The focus is rather on markets as a mechanism to boost farm incomes or to increase the general availability of these foods. Thus, a recent study of the ways in which USAID (United States Agency for International Development) agricultural interventions are trying to become more nutrition-sensitive shows that, while there have been efforts to increase the production of nutrient-dense foods, these interventions have not focused on who consumes the food once it leaves the farm *per se* (Henson and Humphrey 2013). The gap in identifying consumer groups for foods promoted in agriculture–nutrition programmes leads to these programmes being insufficient to overcome barriers in providing foods to poor consumers through markets, as will be seen below.

Once attention is focused on the potential consumers of nutrient-dense foods beyond the farm, questions arise as to how markets operate and how well they serve poor and undernourished populations. The extensive literature and practical work based on the Making Markets Work for the Poor (M4P) approach has highlighted the need to understand how markets work in practice and why they frequently fail the poor, as well as why interventions are required to enable markets to work better. The following are among the lessons to be taken from this approach.

- Poor people are surrounded by markets and depend upon them as both producers and consumers. Many of the goods and services they consume, including basic services such as health and education, are increasingly provided through markets.
- Markets frequently do not function well, and this is particularly true for markets that serve poor people. Thus, efforts have to be made to make these markets function better. Elliott, Gibson and Hitchins (2008: 105–6) highlight a number of examples where changes to the functioning of markets for land, labour and finance can benefit the poor.
- Market failures take specific forms in particular situations. Farmers, for example, may find their activities hampered by poor distribution of farm inputs, or the high cost of credit, or lack of information about market prices. Policy responses need to be customised to specific types of products and services and specific market structures. Therefore, any policy responses have to be tailored to definite situations.

Failures in markets serving the poor are common and have substantial impacts in the case of markets for food, especially due to their nature as credence goods (see Section 2.3). These market failures create a need for policy to support the development of more efficient markets for nutrient-dense foods whereby such failures are prevented and/or offset. In order to implement effective policy, the failures persistent in particular markets need to be identified and understood, and ways found in which these can be addressed effectively.

2.2 The value chain approach

The M4P approach adopts a variety of methods to identify problems with market functioning and to develop policy solutions to these. One of these methods is value chain analysis (Elliott *et al.* 2008: 115; Tschumi and Hagen 2008). This is particularly pertinent for private sector development, as the approach identifies the key actors and activities involved in bringing products to market and the governance challenges faced by firms as they develop supply chains. These challenges are particularly evident in market-based provision of nutrient-dense foods.

Value chain approaches to trade development and poverty reduction have been adopted by a wide range of development agencies, in particular as tools for promoting private sector development through business linkages, and to assure that these efforts lead to poverty reduction. Among the agencies that have developed and employed these approaches are GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) (GTZ 2006; GTZ 2008),¹ the Swiss Agency for Development and Cooperation, SDC² and USAID (through its microLINKS programme for enterprise development).³ The Donor Committee on Enterprise Development (DCED), which brings together donor agencies working on enterprise development, has a

¹ On 1 January 2011, the Deutsche Gesellschaft für Internationale Zusammenarbeit was established through a merger of three German organisations: the German Development Service ([Deutscher Entwicklungsdienst](#), DED), the German Technical Cooperation ([Deutsche Gesellschaft für Technische Zusammenarbeit](#), GTZ), and InWEnt – Capacity Building International ([Internationale Weiterbildung und Entwicklung gGmbH](#), InWEnt).

² www.sdc.admin.ch/en/Home/Themes/Employment_and_income/Private_Sector_Development/Value_chains_and_cluster_development.

³ www.microlinks.org/ev_en.php.

group and a website devoted to value chain approaches (www.value-chains.org).⁴ A brief definition of a value chain and value chain analysis is presented in Box 1.

Box 1 Value chains and value chain analysis

A widely cited definition of a value chain is:

The value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use (Kaplinsky and Morris 2001: 4).

This definition highlights the sequence of activities required to produce products, but it fails to capture the importance of focusing on specific activities that have special importance in driving the outcomes we are concerned with. Value chain analysis can be compared to making a map: just as a map depicts particular aspects of a real space without reproducing all the details of reality, a value chain description highlights particularly important activities without describing all the stages involved in producing a product. A value chain is, therefore, a description that simplifies and selects from sets of relationships that bring products to market, and which aims to identify actors, processes and interdependencies along the chain that are significant for the specific purposes for which the value chain analysis is to be used. The uses of value chain analyses have ranged from identifying fragmentation and coordination in global industries to promoting linkages of small producers to local, national, and international markets, and to identifying the impacts of food safety concerns on the organisation of outgrower schemes.

Value chain analysis is often used in development policy and practice to examine how to improve the position of poor *producers*. By enhancing the access of poor people to markets, linking producers with buyers and promoting the flow of knowledge and resources, value chain interventions aim to enable poor producers to benefit from market development (see, for example, Oxfam 2010). But value chain analysis can also focus on the challenges involved in improving the availability and quality of goods and services for the poor. In health and nutrition, value chain analysis can identify not only the means by which businesses can reach poor consumers, but also how the quality of goods and services offered by informal sector providers can be improved and made more evident to purchasers.

2.2.1 Strengths of using a value chain approach to policy development

A value chain approach analyses sequences of activities and agents (people, companies, etc.) and how they are linked together. Identifying these agents as linked in a chain recognises that:

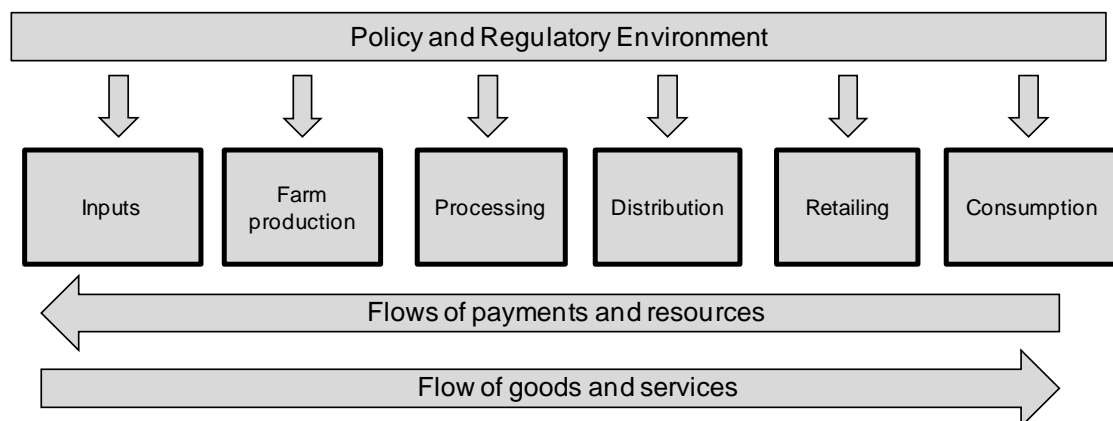
- A number of different activities, often conducted by different agents are required to bring products to market. The value chain approach identifies the different processes that are required to bring a product to market. Figure 2.1 shows a stylised representation of a value chain map. As with all maps, this is a simplification of relationships along the chain and it is selective about which actors and processes it includes and what information about them is provided. Value chain maps highlight actors and relationships that have significance for the particular problem being analysed.
- What happens at one point in the chain may have consequences for activities and agents at other points. In the case of nutritious food, food processing companies

⁴ www.value-chains.org/.

need to be able to source safe, good-quality inputs on a consistent basis. This has implications for agricultural production and marketing systems. The nutritional value of food is potentially affected by input quality, production techniques, storage, processing and transport as it moves along the chain.

- Policy interventions are often most effective when they target points of concentration in the chain, as this simplifies the number of agents whose behaviour has to be influenced. For example, donors and other agencies have pushed many national governments to mandate micronutrient fortification of staple foods, such as wheat flour. These are easiest to implement and manage when there are a small number of businesses active in processing staples (i.e. only a handful of large flour mills). In contrast, where there are large numbers of actors, for example in local salt production, fortification programmes are more difficult to implement.
- A range of resources flow up and down value chains. The most familiar and obvious are the goods and services that move downstream towards a group of final consumers. At the same time, payments flow upstream along the chain in exchange for goods and services. In addition to this, other important elements also flow along value chains, often in both directions, including information, technical assistance, investment and credit (World Bank 2003: 5). In addition, actors at one stage in the chain may use their power to influence processes and procedures at other points in the chain. These additional resource flows can be important for developing capacity and managing interdependencies along the chain.

Figure 2.1 Stylised value chain



2.2.2 Evidence on the effectiveness of value chains for nutrition

Recent reviews of the evidence on the contribution of food and agriculture to reducing undernutrition (Ruel and Alderman 2013; Girard, Self, McAuliffe and Olude 2012; Masset, Haddad, Cornelius and Isaza-Castro 2012) have focused relatively narrowly on programmes to promote production and consumption of nutrient-dense crops on-farm and have not covered wider efforts to promote access to nutrient-dense foods off-farm through markets or other channels. In the 2013 *Lancet* series on maternal and child nutrition, Ruel and Alderman focus on 'targeted agricultural programs aimed at enhancing poor households' income and access to high-quality diets... most specifically homestead food production systems and the biofortification of staple crops'. Similarly, systematic reviews have focused on production and consumption of nutrient-dense vegetables, legumes and animal foods on farms (Girard *et al.* 2012). The narrow focus of these reviews is due to the availability of published impact

evaluation studies,⁵ which have been produced as part of various on-farm interventions. Because of the complexity of impact pathways and the wide diffusion of affected populations, off-farm approaches (including value chain provision) are likely to be even more difficult to evaluate rigorously than on-farm interventions. Furthermore, even as the evidence base on on-farm interventions improves, there is no basis for knowing whether evidence on these interventions is a reliable basis for assessing other channels of delivering nutrient-dense foods, especially agri-food value chains selling to poor consumers.

Clearly, there is a gap in the evidence on how interventions in food value chains affect nutrition, including changes in the availability, affordability and acceptability of nutrient-dense products. In response to this gap, the policy guidelines in this report focus on actions that impact one key outcome in the causal chain linking food and improved nutrition outcomes: assuring that nutrient-dense foods reach and are consumed by the populations most affected by undernutrition. It also discusses how to coordinate these actions with those targeting other drivers of undernutrition, especially infant care and feeding practices (Section 3.1.3 discusses the drivers of undernutrition in Ghana). Increasing consumption of nutrient-dense food is a necessary but not sufficient condition for achieving improvements in nutrition status. Other conditions will be necessary to assure impact, including those related to disease burden, women's roles and empowerment, intra-household distribution of food, care and feeding practices and uptake of nutrients in the body.

2.3 Market failures and underinvestment

From the point of view of private sector-driven initiatives to reduce undernutrition, market imperfections are likely to lead to underinvestment in market development and innovation.

- Businesses will tend to underinvest in the creation of new markets if they are unable to fully appropriate the benefits flowing from such investments. In such contexts, other firms may benefit from the efforts of first-movers.
- In real-world markets, actors have only bounded rationality, and information about the present or future state of markets is often unavailable or expensive to acquire. Investment tends to be inhibited by the resulting uncertainty about likely returns and/or the costs of compensating for this uncertainty.⁶
- Private companies and individual actors will not be able to capture in their revenue streams the full social benefits of improving the nutrition of the undernourished (through enhanced human welfare, improved productivity, lower demand for health services, etc.). This will lead to underinvestment in these foods.
- Consumers do not demand a socially optimal amount of nutrient-dense foods, because these foods are 'credence goods'. So consumers cannot assess the true nutritional value of a food either before or after consuming it. This inability to observe the nutrient content of food also lays the consumer open to false product differentiation, which imposes health risks as well as unnecessarily increased expenditure.

Table 2.1 categorises the most common market failure obstacles to innovations by businesses in such value chains and gives some examples of policy interventions that have been used in private sector development programmes to compensate for these. Later in these guidelines such issues and responses will be explored specifically in the case of markets for nutrient-dense foods in Ghana.

⁵ Even for interventions on-farm the evidence is insufficient. The reviews have concluded that very few assessments have been sufficiently rigorous to demonstrate that programme activities caused the observed outcomes (Girard *et al.* 2012; Masset *et al.* 2012).

⁶ This uncertainty includes the need to protect against losses arising from possible opportunism by other agents in the value chain.

Table 2.1 Market failures and policy interventions to address them in value chains

Market failure	Policy interventions addressing these issues	Illustrative examples, including for nutrient-dense foods
<p>1. Market size and stability Uncertainty about market demand is a constraint on developing new products aimed at novel categories of potential consumers. Appropriability of investments in market development may not accrue solely to the firm making the investment.</p>	<ul style="list-style-type: none"> • Public purchasing can provide a guaranteed market and reduce the risk of innovation. • Education, communication and awareness-raising can increase market demand for all suppliers. • Promotion of private sector demand, such as from mining corporations. • Improving consumer confidence in credence goods. 	<p>Promotion of orange-fleshed sweet potato in Uganda and Mozambique.</p> <p>Purchasing and distribution of complementary food products by public agencies.</p> <p>Market pre-commitments to purchase by governments and development agencies.</p>
<p>2. Distribution channels are needed to bring products to consumers. Where markets are underdeveloped, these channels can be expensive to access or create.</p>	<ul style="list-style-type: none"> • Using established distribution channels to distribute new products. • Use of social programmes to distribute products. • The involvement of large lead firms may reduce risk perceptions of other value chain actors. 	<p>DFID initiative with Coca-Cola on distribution (Department for International Development 2009: 62–3).</p> <p>Distribution of RUFs and RUTFs through social programmes.</p>
<p>3. First-movers may incur setup costs. Such investments are undermined if new entrants can also appropriate the benefits.</p>	<ul style="list-style-type: none"> • Patent protection and trademarks are mechanisms that allow these costs to be paid for by the innovation process itself. • Subsidies to cover the increased costs of being first-mover compared to other firms. 	<p>Incentives for first-movers, such as the GAIN (Global Alliance for Improved Nutrition) Nutrition Marketplace.</p>
<p>4. Uncertainty about new markets and products Uncertainty about market potential will increase the rate of return required before businesses invest and increase the costs of constructing the value chain. New products, value chains and markets may require capabilities new to businesses.</p>	<ul style="list-style-type: none"> • Support to enable companies to reduce the upfront costs of investment and the development of new value chain linkages. • Challenge funds to underpin start-up costs and reduce the risk of exposure. • Governments can facilitate the availability of skills that firms do not have through partnering schemes and encouraging the development of specialist service providers. 	<p>Matching programmes to facilitate the development of new linkages between companies.</p> <p>Oxfam and Unilever partnership to develop skills around outgrower schemes in Azerbaijan (Sunrise).</p> <p>USAID promotion of specialist horticulture input providers in Kenya.</p>

2.4 Using value chains to reduce undernutrition

The value chain challenges outlined in Table 2.1 are faced by businesses in many fields. They concern the inability of business to capture the full value of the products that they produce. When considering food-based approaches to undernutrition, there are additional challenges that concern the benefits to poor consumers and the extent to which nutrient-dense foods contribute to resolving problems of undernutrition. The ability of value chains to address undernutrition depends upon the extent to which they provide the right food to the groups that need it most. To assess this, Hawkes and Ruel (2011) identified four overarching conditions that are necessary for people to benefit from markets for nutrient-dense foods, as presented in Box 2. A fifth condition, not considered by Hawkes and Ruel, the reliable signalling of nutritional quality to consumers, is discussed further below.

Box 2 Necessary conditions for addressing undernutrition through agri-food value chains

- **Food availability:** the food must be present in a specific location.
- **Food acceptability:** the food must be in a form that is acceptable to the consumer.
- **Food affordability:** at-risk households must be able to afford the foods that will reduce micronutrient undernutrition.
- **Food nutritional quality:** the food must have an adequate nutrient profile, measured in terms of the density of essential nutrients.

Source: Adapted from Hawkes and Ruel (2011: 2).

2.4.1 Availability

The first condition for addressing undernutrition through agri-food value chains is food availability. Hawkes and Ruel emphasise that this is not the familiar concept of overall food availability,⁷ but rather refers to a more specific context, 'the foods that are available to consumers (including those who may be producers) in specific settings (e.g. at home, at work, in retail stores, in schools)' (Hawkes, Turner and Waage 2012: 9).

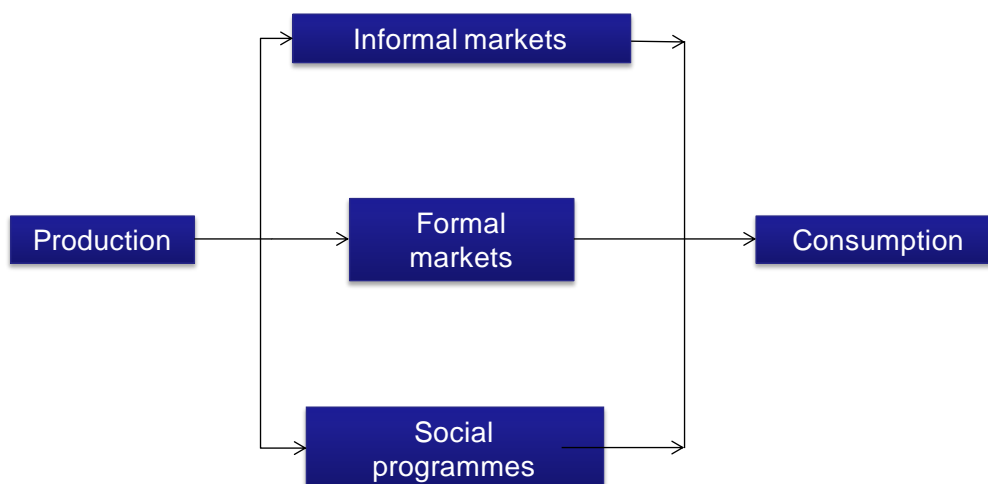
This approach emphasises the need to consider how market-based approaches to food and nutrition are able to deliver food to locations where the target populations can obtain it (i.e. local shops or markets, door-to-door salespeople) and through channels that are socially acceptable to these consumers. Thus, distribution may need to occur differently for distinct population groups and different locations. Figure 2.2 identifies different channels through which food can move from production to consumption. In densely populated areas, formal and informal markets may be sufficient to deliver food close to where undernourished people live. However, in rural areas where the population is widely dispersed, food may need to be delivered through social programmes.

Figure 2.2 distinguishes between informal markets, formal markets and social programmes. Clearly, different types of products are better suited for each of these distribution systems. For example, ready-to-use therapeutic foods (RUTFs) are commonly distributed through social programmes (even when they are sourced from private sector firms). Equally, nutrient-dense foods not designed specifically for therapeutic uses can find their way to consumers through both formal and informal markets, and there may be situations where public distribution utilises the extensive distribution networks of the private sector, as noted by DFID:

⁷ For example, 'Availability refers to an adequate supply of food within the country or region' (Bonnard 1999: 2).

The food industry has the supply chains and market penetration that far exceeds that of the public health sector, and therefore could contribute tremendously to distribution of nutrition-related products.
(Department for International Development 2009: 62)

Figure 2.2 Channels from production to consumption



The issue of local availability also raises pertinent concerns about where food is produced and processed and the structure of the market. Centralised production requires a system that distributes from a single location to many points of consumption. Such a system entails higher costs for transport and for packaging, so that products can withstand long transportation distances. Under some circumstances, an alternative system where production is decentralised, making use of informal distribution networks and local markets, may lead to greater availability to key populations and may make products more affordable.

2.4.2 Acceptability

Hawkes and Ruel (2011) highlight a second important prerequisite for the successful introduction of nutrient-dense foods – acceptability. People have strong preferences for food taste, appearance, preparation and ease of use, and these preferences are shaped by habit, social status and cultural significance. Acceptability is a major concern when new products are being promoted. For example, attempts to introduce orange-fleshed sweet potato (OFSP) in African countries were initially hampered by the low dry matter content of early varieties, which reduced their acceptability.⁸ In addition, for some consumer groups, roots and tubers are associated with food shortages and poverty. All of this implies that products that are similar to foods that are already part of local diets are more likely to be acceptable and to successfully deliver needed nutrients.⁹

2.4.3 Affordability

Affordability is a major challenge for many attempts to develop markets for nutrient-dense foods amongst poor consumers. Nutrient-dense food must be delivered at a price point that at-risk households are willing to pay. Achieving this condition depends to a large extent on how the three conditions discussed above are met. It is linked to the questions of signalling the nutritional quality discussed above; potential consumers will be willing to pay more for nutrient-dense foods if they are confident that claims made about these foods are true.

⁸ See, for example, the discussion in Tarini *et al.* (2006) on attempts to increase dry matter content of OFSP in Burkina Faso, and a report to DFID that focuses on acceptability (Carey *et al.* n.d.).

⁹ However, see the discussion on nutrient quality below.

Equally, any strategy to enhance value chain integrity and signalling through labelling, regulation, testing or franchising has to be achieved without generating high costs that put the price of the food beyond the means of the target population. For this reason, in examining strategies for establishing the quality of nutrient-dense foods in the minds of consumers, this report pays particular attention to their impacts on affordability. One potential alternative to high-cost approaches to quality assurance based on packaging or retailing strategies (as discussed by Masters, Kuwornu and Sarpong 2011) is to explore the options for incentivising improvements in the nutritional quality of foods provided by micro-enterprises, and increasing consumer confidence in these products. However, in some situations private sector actors alone may be unable to deliver nutrient-dense foods at a price that is affordable to poor consumers. In these instances, non-profit distribution systems need to be considered.

Having mapped out the broader context for policy development in order to enhance food value chains for nutrition and described the key elements of the value chains framework used in this analysis, the remainder of this report draws on the mapping of value chains for two nutrient-dense food types to identify key challenges to market-based provision of nutrient-dense foods in Ghana and recommends options for responding to these challenges. Policy responses will need to join up with ongoing efforts in this area. The following section describes the current context for policy development on nutrient-dense foods in Ghana.

2.4.4 Nutritional quality

The final condition highlighted by Hawkes and Ruel (2011) is nutritional quality. They define this almost entirely in terms of two issues. First, foods obviously need to contain sufficient nutrients at the time when they are consumed. Understanding how the nutrient content and bioavailability of the food is affected by storage, transport and processing (and, eventually, preparation and cooking) is important in this regard. Secondly, consumers need to know the nutritional requirements of those for whom they buy food, and they need to be motivated to act on this knowledge. Market-based promotion of nutrient-dense foods requires that consumers are aware of the importance of nutrition. If consumers are not aware of the nutritional benefits of particular foods, they will have no reason to buy, particularly if they are more expensive than other foods. The policy prescription in this case might be to support consumer awareness of good nutrition and the benefits of particular types of food. This intervention would create a public good (knowledge of which foods are nutritious) that would benefit all suppliers of the targeted foods, suggesting a need either for government or donor interventions, or collective action by private firms.

The importance of consumer awareness is clearly seen in the case of the promotion of orange-fleshed sweet potato in Uganda and Mozambique. The high provitamin A content of orange-fleshed sweet potato is indicated by its colour. It is what economists call a search good: consumers can easily distinguish a sweet potato with provitamin A from one that lacks this nutrient. However, this is relatively unusual for foods; as noted above, many nutrient-dense foods are credence goods; the nutritional value cannot be directly observed by consumers even post-consumption. Thus, consumption of a nutrient-dense food depends upon two factors: awareness of nutritional needs and accurate information about products' nutritional content. Not only do consumers need to be aware of their own (and their children's) nutritional needs, they also need to have accurate information about a product's nutrient content. The cues used by consumers to distinguish foods of a higher/lower nutritional value (for example, price, packaging, nutritional claims) are important here, as are the ways in which food producers, processors and distributors use such cues as part of their marketing strategy. Given the considerable scope for deception in this area, bringing order into the market is important.

Markets are likely to fail to provide accurate information about the nutritional quality of foods if they are not regulated in some way. It is not enough for businesses to make claims about the nutritional quality of food products. These could be false for two different reasons. First, food companies may make well-intentioned but incorrect claims about the nutritional value of a product. This may arise from ignorance, or because nutrient value is lost at some point along the value chain. It may arise because the company making the claim is itself misinformed about the value of the ingredients it uses. Responses to this problem seek to provide information and assurances to food producers. The GAIN premix facility, for example, was designed to help food processors who faced high costs in order to identify reliable manufacturers of micronutrient additives. The premix facility provides food processors with a supply of micronutrient additives whose quality GAIN has pre-certified. This reduces the costs of sourcing for food processors and increases the reliability of their supply. Other solutions include businesses taking more control over activities upstream in their value chains or technological solutions to prevent nutrient loss at subsequent stages. The second reason nutritional claims may be false is that agents in the value chain may deliberately make false claims about nutritional value. This represents simple opportunism: if products with high nutritional value are more expensive than non-nutritious products, businesses have an incentive to make false nutrition claims about their products. Interventions in markets are needed therefore to reduce the potential for opportunism. These include public or private systems that assure consumers about product nutrition quality, for example through systems of regulation and standardisation. Section 4 of this report discusses several ways this problem could be addressed in specific product markets in Ghana.

To address these two market failures, value chains need to incorporate solutions that accomplish two things: value chain integrity and signalling quality to consumers. Integrity refers to the accuracy and reliability of claims about the qualities of products in each transaction in the value chain, so that producers can be sure that the claims they make are correct. Guaranteeing integrity at one point (for example, by certifying the content of iodised salt in the factory), does not necessarily guarantee that the product retains the relevant characteristics at subsequent points (for example, iodised salt can lose its iodine content at subsequent stages, or can be diluted with un-iodised salt or substituted altogether by a non-iodised product). Signalling refers to the need to communicate the quality of the product to buyers along the value chain in a way that is reliable and trustworthy – not just to the final consumer, but also to other buyers along the chain.

Lack of integrity and/or signalling disadvantage the consumer in two ways. First, they can lead consumers into paying higher prices for products that do not have the nutritional content they expect, resulting in a loss of income and economic value. More seriously, these problems can mislead consumers into believing they are purchasing foods that are a good source of the nutrients needed by household members, in particular children, when in fact the foods are not. In addition, this also has negative effects on the incentives for firms to invest in the nutritional quality of their products. Firms that make nutritious foods will not be able to differentiate their products from cheaper, less nutritious alternatives. Therefore, all firms will face strong incentives to reduce nutritional quality and to compete on the basis of low price (Dranove and Jin 2010). This challenge can be addressed through different ways of signalling quality and establishing the reliability of claims made about nutritional quality, which are discussed in Section 5.

The guidelines in this report focus on promoting both formal and informal sector involvement in the production and distribution of nutrient-dense foods. There are two reasons for this. First, informal sector businesses create distinct opportunities and challenges for reaching the poor with nutrient-rich foods. The opportunities lie in the fact that the informal sector often already has distribution networks that make food available to the most vulnerable populations and do so at prices that are affordable. However, the distinct challenges posed by informal

sector businesses in the food industry relate to the difficulties of exercising oversight over the quality and safety of food. This is a particular challenge in the case of processed nutrient-dense foods, whose quality consumers cannot assess on their own. This raises policy concerns about consumer confidence, signalling of positive attributes and verification of quality that will be discussed further in the context of Ghana. While these issues are certainly not absent in the formal sector, the structure of informal sector value chains may offer different opportunities for establishing oversight.

Having outlined the value chain framework to be used, the following sections apply this framework to the case of nutrient-dense foods in Ghana and identify specific options for policy actors. Section 3 begins by reviewing the key challenges to the provision of nutrient-dense foods to the poor in Ghana.

3 The role and challenges for nutrient-dense foods in Ghana

This section of the report identifies the key challenges facing market-based provision of nutrient-dense foods to the poor in Ghana. The accompanying value chain mapping report (Anim-Somuah *et al.* 2013) analyses the value chains for groundnut-based products and complementary foods for young children and identifies private sector initiatives that are trying to develop safe, affordable, nutrient-dense foods. Through investigating the actors, processes and incentives involved, the mapping report identified a number of specific challenges that inhibit the private sector in attempts to provide these foods to the populations that need them. This section first reviews the undernutrition situation in Ghana. It then identifies the key policy challenges facing value chains for nutrient-dense foods in Ghana.

3.1 State of undernutrition in Ghana

Poverty and caloric malnutrition have fallen substantially in Ghana over the last decade, but rates of underweight and stunting remain high, and micronutrient deficiencies are very common. In 2008, 28 per cent of children under five were stunted, 14 per cent were underweight and 9 per cent suffered from wasting. Since 1988, rates of stunting and underweight have steadily decreased, while wasting has remained stagnant and obesity levels have increased to five per cent. There are major nutrition disparities between Ghana's poor northern regions (Northern, Upper West and Upper East regions) and the wealthier south, with children in the north more likely to be stunted and underweight and to suffer from anaemia. While indicators of overall nutrition have shown some improvement in recent years, undernutrition in the form of deficiencies in key micronutrients remains widespread, (especially for children in the period from conception to two years old). In particular, deficiencies in iron and vitamin A among women and young children are a major concern for child health and development. The remainder of this section outlines these deficiencies, and examines the drivers of undernutrition.

A number of factors appear to drive persistent undernutrition in Ghana. Diets appear to be an important factor, especially for infant and young child nutrition. The main problems with diets are low nutrient content in complementary foods (see Box 3), low dietary diversity and inadequate feeding practices for weaning infants after six months. Food-based approaches should therefore target potential mothers and infants and should focus on foods containing particular micronutrients (especially iron and vitamin A) in order to best contribute to reducing undernutrition.

3.1.1 Iron deficiencies

Anaemia is alarmingly high among pregnant women and young children across Ghana, and has seen little improvement in recent years. Seventy-eight per cent of children 6–59 months old suffer from anaemia. For women aged 15 to 49, the rate is 59 per cent, while for pregnant women it is 70 per cent. Anaemia increased by two percentage points between 2003 and 2008, despite other health indicators having improved over the same period. Further, there are substantial disparities across the country. Anaemia in children is much higher in the Upper East and Upper West regions (89 and 88 per cent respectively), while prevalence in the Greater Accra region is lower (62 per cent) (Ghana Statistical Service, Ghana Health Service & ICF Macro 2009).

3.1.2 Vitamin A deficiencies

It has been estimated that vitamin A deficiency contributes to one in three deaths of Ghanaian children aged between six and 59 months (Simler *et al.* 2005). About three-quarters of preschool-aged children and one-fifth of pregnant women are deficient in vitamin A. Deficiency is the result of insufficient consumption of vitamin A-rich fruits and vegetables, leafy green plants and animal proteins. Surveys show that more than half of Ghanaian children receive vitamin A supplementation (Ghana Statistical Service, Ghana Health Service & ICF Macro 2009: 198).

Despite recent progress, undernutrition problems are severe in Ghana. Tackling them requires initiatives that address the multiple drivers of undernutrition. The role of these various drivers is discussed in the following section.

3.1.3 Determinants of undernutrition in Ghana

The UNICEF framework (Black, Allen, Bhutta *et al.* 2008) on the underlying causes of global undernutrition places insufficient consumption of diverse and nutritious foods alongside other potentially important drivers of nutrition status, including poverty, health, sanitation, access to safe water and environmental factors (Ghana Statistical Service, Ghana Health Service & ICF Macro 2009: 244). Addressing these other drivers is crucially important for the success of food-based approaches, as they have the potential to impede the impact pathway linking access to nutrient-dense foods to child development outcomes.

Available evidence in Ghana does not allow rigorous assessment of the relative importance of food and diet versus other drivers of nutrition status. A comprehensive account of the evidence is beyond the scope of this report. However, scoping identified four published studies modelling the relative importance of various drivers of undernutrition at the national level (Nikoi 2011; World Food Programme 2009; Hong 2007; Van de Poel, Hosseinpoor and Jehu-Appiah 2007). The studies came to differing conclusions about which drivers were most important, although they cannot be directly compared, since they use data from different years and different nutrition indicators as outcome variables (see Box 3). Nonetheless, taken together, they reveal the need for more rigorous evidence and assessment to ascertain the relative importance and interaction of drivers of undernutrition in Ghana. These gaps notwithstanding, available evidence provides reason to believe that food-based approaches are critical to achieving improved nutrition outcomes in Ghana, especially those that target complementary foods and feeding practices.

Box 3 Comparison of studies modelling drivers of undernutrition

Scoping the undernutrition situation examined the results of four studies modelling the factors driving undernutrition (Nikoi 2011; World Food Programme 2009; Hong 2007; Van de Poel, Hosseinpoor and Jehu-Appiah 2007). These are summarised below. The studies consistently found that wealth status is the most important driver, confirming findings that reducing poverty and wealth inequality is necessary, but not sufficient to address undernutrition (Haddad *et al.* 2003). However, the studies come to different conclusions about which of the other drivers are significant. They variously cover disease burden, access to health services, availability of sanitation and access to safe water.

Poverty and wealth status: All four studies find that wealth status is the most important driver of undernutrition in Ghana (Nikoi 2011; World Food Programme 2009; Hong 2007; Van de Poel, Hosseinpoor and Jehu-Appiah 2007). Overall, wealth status is responsible for about one-third of inequality in malnutrition (Van de Poel *et al.* 2007).

Health services: One study finds that access to health services (Van de Poel *et al.* 2007) is significantly correlated with malnutrition inequality, while another finds that proximity to healthcare is not correlated with the three standard child growth indicators (Nikoi 2011).

Safe water: One study finds a significant correlation between safe water and outcome variables (Nikoi 2011), while others find no relationship (Hong 2007; Van de Poel *et al.* 2007).

Sanitation: Three studies found no relationship between nutrition and sanitation at the national level (Hong 2007; Van de Poel *et al.* 2007). However, one found that access to food, safe water and sanitation variables were correlated in some regions, but not in others (World Food Programme 2009).

Food and diet: Only one study included food-related factors in regression models. This study, the Comprehensive Food Security and Vulnerability Analysis, found that the importance of food consumption varied by region, with a significant correlation with stunting in savannah areas, and with wasting in coastal areas (World Food Programme 2009).

Because most of the studies do not include food-related factors, it is impossible to assess the interaction of food strategies with other determinants of nutrition status (especially access to health services, safe water and sanitation). Large-scale and rigorous analysis is needed to understand the importance of these other drivers and how initiatives to promote nutrient-dense foods through value chains (and other food-based approaches) should be designed and coordinated with efforts to address health access, water and sanitation problems. There is, however, evidence that suggests that coordinating food-based approaches with parallel efforts on infant and childcare and feeding practices could be effective. District-level anthropometric studies have shown that weaning is the point when Ghanaian infants suffer the greatest setbacks in nutrition, and have linked this to inadequate nutrient content of complementary foods (Lartey *et al.* 1999) and infant feeding practices, especially improper breastfeeding, poor dietary diversity and insufficient use of complementary foods (IYCN 2011).¹⁰ Several programmes have coordinated promotion of complementary food products with infant feeding and care campaigns in Ghana; these are discussed below.

In the context of gaps in the evidence on the role of food-based approaches in reducing undernutrition in Ghana, the policy guidelines in this report focus on actions that can increase consumption of nutrient-dense foods by poor households and vulnerable populations. They also identify opportunities for coordination with programmes targeting the other drivers. Interventions should be accompanied by rigorous assessment and analyses to improve the evidence base for food-based approaches.

3.2 Constraints for nutrient-dense foods

Having reviewed the undernutrition situation in Ghana, and the various drivers that underlie it, the following section outlines the barriers to the production and consumption of nutritious foods in the country, drawing on results from the value chain mapping report.

3.2.1 Food safety problems in important commodities

The first major challenge for nutrient-dense foods in Ghana is widespread aflatoxin contamination (see Box 4). Maize and groundnuts are among the most widely available and consumed commodities. They are used in a variety of processed foods, and are highly subject to aflatoxin contamination.

¹⁰ Further analysis of problems with complementary foods in Ghana is shown in Box 5.

Box 4 What are aflatoxins?

Aflatoxins are highly toxic chemical compounds produced by species of fungus that infect grains and legumes. Maize and groundnuts are especially susceptible to infection. Aflatoxin ingestion is associated with liver disease, cancer and immune system suppression. It prolongs recovery from protein malnutrition and contributes to underweight status. On a global scale, it is estimated that aflatoxin exposure, through its effects on immune function and undernutrition, contributes to health factors that account for 40 per cent of the total disease burden in developing countries (Williams *et al.* 2004). In Ghana, aflatoxin levels are high in groundnut and maize supplies, and especially in highly processed food products (Florkowski and Kolavalli 2012). Once aflatoxins are present in food, they can only be eliminated by physically removing contaminated portions of the product.

Aflatoxin ingestion has been associated with liver disease, cancer, immune system suppression and other adult illnesses. Further, there appears to be an association between aflatoxin and inhibited growth in children, and aflatoxins in complementary foods consumed after weaning seem to contribute to stunting. In cross-sectional and longitudinal studies in West Africa, Gong *et al.* found just such an association (2004, 2002). The longitudinal study in Benin of child development during the weaning period found that ‘the level of AF-alb [a marker for aflatoxin uptake] was strongly associated with growth faltering, particularly stunting’ (Gong 2004: 1334), even controlling for age, height at recruitment and weaning status.

The study also found that levels of aflatoxin in children’s bodies tended to increase strongly at the period when children begin to eat solid foods. In Ghana and elsewhere in West Africa, maize and groundnuts are ingredients widely used in complementary foods. In sum, aflatoxin – in addition to being a major public health risk for the general population – is also a major concern for child health and development, and appears to contribute to stunting. Aflatoxin contamination is a serious barrier to the potential of key nutrient-dense foods.

While aflatoxin is present in a wide variety of foods derived from maize and groundnuts, contamination is especially dangerous in nutrient-dense foods in highly processed forms. Consumers can visually detect aflatoxins in whole groundnuts or maize kernels, and this creates a demand for low-aflatoxin supplies and generates incentives for value chain actors to sort the product pre- or post-purchase. However, it is not possible to detect aflatoxins in food that has been substantially processed, such as maize flour or groundnut paste, without using sophisticated and expensive tests that are not available in food markets. Thus, both businesses and consumers have difficulty finding and recognising aflatoxin-free supplies of maize and groundnuts. Once kernels have been ground or milled, it is not only difficult for businesses to detect the presence of aflatoxins, but it is also impossible to remove them.

The structure of food value chains in Ghana makes aflatoxin reduction measures especially difficult to put in place sustainably. Legal limits for aflatoxin content in food are not enforced, and regulation is complicated by the fragmentation of responsibility across ministries (see Section 4). Furthermore, the large number of actors at each stage of the value chain, and prevalence of the informal sector make it difficult to regulate the value chain. Section 5 of this report outlines policy options to reduce aflatoxin contamination in key foods, focusing on demand-side policies.

3.2.2 Low consumer awareness of food safety and nutrition

Consumers in Ghana have very low awareness of the aflatoxin risks and nutritional value of foods (Anim-Somuah *et al.* 2013). Only a small number of educated and wealthier consumers exert demand for nutrient-dense packaged products (low-aflatoxin-content

products were introduced recently to judge consumer demand).¹¹ Furthermore, complementary feeding practices remain poor, despite recent increases in exclusive breastfeeding. This problem is linked to low awareness of the special nutritional needs of infants older than six months and the foods that can provide for these needs. Awareness of aflatoxin is also extremely low, as was revealed in the public controversy following dissemination of research showing high levels of aflatoxin contamination (Koomson 1998). Low consumer awareness and demand for nutritional products contributes to the low incentives offered to firms to produce these products, with especially few incentives to sell to poor consumers. This compounds the tendency for food processing firms to signal nutritional quality through high price and premium product traits, as discussed in the following section.

Various policy actors have made efforts to increase awareness about nutrition needs and food nutritional content. Government agencies have provided nutrition education through primary healthcare centres and, to a more limited extent, through rural extension activities. Several donor initiatives are currently promoting nutrition awareness (see Boxes 7 and 8). More has to be done to provide poor consumers with information about nutrition needs, food quality and nutrient content. Nutrition awareness alone is not sufficient to create incentives for private sector involvement in nutritious foods, due to widespread problems with value chain integrity and signalling nutrition quality, which are discussed next.

3.2.3 Absence of mechanisms to signal nutritional quality

Even when they are aware of their nutrition needs, consumers need a guarantee of nutrition quality in order for value chains to deliver appropriate foods. For consumers to be willing to pay the added price for nutrient-dense foods, they must be confident that the product does in fact provide the nutrients and benefits it claims to contain. Mechanisms can be created that signal this 'invisible' nutritional value to consumers, as discussed in Section 2.4.4. The value chain mapping report shows that quality and signalling are central problems in value chains for many packaged nutrient-dense foods in Ghana, and especially complementary food products (Anim-Somuah *et al.* 2013). The quality of complementary food products is highly uneven in both the formal and informal sectors (Masters *et al.* 2011). Products come in a variety of packages and there is little way of establishing precisely what they contain. As well as being highly variable in quality, it is likely that many of these products contain unsafe levels of aflatoxins, especially since maize is the principal ingredient. These problems pose real risks, since without fortification with micronutrients, these products can contribute to high levels of stunting in infants following weaning (Amagloh *et al.* 2012; Lartey *et al.* 1999). Whilst fortified products can provide sufficient nutrients to support child development, consumers cannot judge with confidence the extent of fortification or distinguish between products that are nutritionally adequate and those that are not. Furthermore, this problem is also faced by complementary food producers themselves, who often do not have the capacity to assess the quality of the fortificants they purchase to add to their products.

The absence of signalling reduces consumer willingness to purchase nutrient-dense foods and undermines the supply of these foods. It creates a strong incentive for producers to reduce product quality in order to sell at the lowest possible price. Evidence from Ghana indicates that this situation, a so-called race to the bottom, occurs in the marketplace for complementary foods (Box 5). At present, only very high-cost products from multinational enterprises provide a guarantee of nutrition quality. To address this problem, mechanisms need to be put in place that can identify high-quality products, and do so in the context of opportunistic behaviour by other producers (the 'free rider' problem).

¹¹ An exception to this trend is demand for the international brand complementary food product, Nestlé Cerelac. Low-income consumers are reported to preferentially purchase this product due to its association with high quality and infant health (Masters *et al.* 2011), despite the fact that the high cost means they cannot afford sufficient amounts for good infant feeding.

Box 5 Gaps in the market for complementary food products

The evidence in Ghana also shows that an important component of the stunting problem occurs during the weaning period from six months to two years old. For this reason, and the availability of high-quality, nutrient-dense complementary foods and use of good infant feeding and care practices are key to addressing undernutrition. Both dietary diversity and fortification of products with micronutrients can satisfy infants' requirements. In Ghana, a diversity of specific complementary food products are available, including cereal blends produced by a range of enterprises (Anim-Somuah *et al.* 2013: 10). At one end of the market, there are informal sector producers and sellers of 'weanimix', which was introduced and promoted by government initiatives. At the other end of the market, there are imported products and products from multinational companies, most notably Nestlé, marketed at substantially higher prices.

Neither of these two market segments provide a satisfactory answer to the challenges of undernutrition for poor populations. Informal producers make products that are affordable and available to lower-income populations. However, these products are highly variable in nutritional quality – and there is no way for consumers to evaluate this quality. They also have high risk of aflatoxin contamination.

At the other end of the market, high-quality producers also fail to meet the nutritional needs of the poor. While Nestlé uses well-controlled value chains and provides a guarantee of nutrient content in Cerelac, they do so at a high cost. Nestlé differentiates its products using packaging, marketing and high price. Poor consumers do indeed preferentially purchase Cerelac over local products. However, they are unable to afford sufficient quantities, and must either over-dilute them or supplement using informal products. Thus, the premium product fails to provide adequate nutrition for the poor.

3.2.4 Low affordability and availability

Low affordability is one of the principal barriers to consumption of nutrient-dense foods in Ghana. Businesses in Ghana are technically able to produce products that contain the nutrients needed to address micronutrient deficiencies through fortification. Similarly, technologies are available for reducing aflatoxin contamination. However, businesses target such products to middle- and upper-income consumers who are willing and able to pay a price premium. The challenge is to create a sustainable business model selling these products at a price that is affordable to the poor, and with a distribution model that reaches them. Currently, no product is available that achieves both affordability and availability. Nestlé Cerelac is widely available in neighbourhoods of Accra, but is three times as expensive as the cheapest locally produced alternative. In contrast, while cheaper, local products are available in only a small number of shops, as well as in major open markets. Availability is even more restricted outside of Accra, especially in northern regions, which suffer the highest burden of undernutrition.

There are several reasons why aflatoxin-free and nutrient-dense products are sold at a high price. First, creating traceable supply chains to secure aflatoxin-free inputs entails high costs, both to provide incentives to upstream value chain actors and to monitor performance. Second, in the absence of signalling mechanisms, companies use premium branding and high prices to signal nutrient-dense or aflatoxin-free products and distinguish them from low-cost competitors. Masters and Sanogo found that complementary food producers indeed adopt a strategy using 'conspicuous expenditure on packaging and advertising' and upmarket retail channels (2002: 976). This helps explain why international brand products tend to be much more expensive than local ones.

3.3 Challenges to providing products for the poor

In summary, products exist in Ghana that can address the nutrition needs of infants after six months of age, but these products do not adequately reach the poor. The challenge is to provide incentives to the private sector to extend the benefits of safe and nutrient-dense foods to the poor (Box 6). Such products are available or in development. Future efforts can build on available experience: locally produced micronutrient-fortified weanimix is available at approximately half the price of the international brand of complementary food. Micronutrient-fortified sprinkles (KokoPlus) are being developed that could provide a nutritionally adequate product at an even lower price (Anim-Somuah *et al.* 2013: 34). Products that meet the required levels of nutritional quality and safety have been developed with the support of development agencies and NGOs including GAIN. The challenges are to ensure that safe inputs can be secured for these products, to create demand, to distinguish them from low-nutrition alternatives and to market them in a way that makes them acceptable substitutes to the leading, high-price brand.

Box 6 Requirements for complementary foods for the poor

- **Safe to eat**, particularly for children.
- **Acceptable substitute** for high-cost brands.
- **Affordable** to the poor.
- **Available** in locations households can access, especially in northern Ghana and rural areas.
- **Credible** to consumers so that they are willing to pay a premium for nutritional benefits.

The policy challenge is to generate incentives for the private sector to provide nutrient-dense products that meet the needs of the poor, by working at multiple points along the value chain, and increasing consumer awareness of nutritional needs and practices so that they recognise the merits of these products and purchase them. The remaining sections of this report outline policy guidelines for responding to these challenges, beginning with an analysis of the context in which policy interventions must act.

4 Policy context for nutrient-dense foods in Ghana

Food and nutrition policy formulation and implementation in Ghana is complex and multisectoral, spanning multiple ministries and agencies. Donors and international agencies have also been active in shaping policies and programmes. However, as will be seen, activities are often poorly coordinated across these bodies, and the majority of policy initiatives have been implemented by individual agencies in isolation. This section of the report briefly reviews relevant policy initiatives in three areas: agricultural production and value chains, nutrition policy and food regulation. After looking at each of these areas, it assesses the degree of coordination across them.

The two most important ministries for nutrient-dense foods are the Ministry of Food and Agriculture (MOFA) and the Ministry of Health (MOH), due to their responsibility for policy in agricultural production, and nutrition and health programming, respectively. Other ministries and bodies that are also centrally important are the Ministry of Trade and Industry (MOTI), which has overall responsibility for the formulation, implementation and monitoring of trade policies both internal and external; the Ghana Standards Authority (GSA), which sets and administers food standards; and the Food and Drugs Authority (FDA), which is responsible for implementing standards and for registering food processing firms. The Ministry of Local Government and Rural Development (MLGRD) manages local markets and regulates food safety and sanitation at the community level, through the District Assemblies.

4.1 Agricultural policies and programmes

Over the past decade, a large number of agricultural policies and programmes have been implemented in Ghana. A complete review of these is beyond the scope of this report. Instead, this section examines a number of the most important initiatives and their link with nutrient-dense foods (see summary in Table 4.1). MOFA is the lead agency for agricultural policy, within the context of a coordinated government programme. This programme, the Food and Agriculture Sector Development Policy (FASDEP II) emphasises commercialisation of agricultural activities by farmers of all sizes with the goal of market-driven growth. FASDEP II focuses on increasing yields, market access and value addition for five staple crops: maize, rice, yam, cassava and cowpea. It sets out objectives in six areas:

- Food security and emergency preparedness.
- Increased growth in incomes.
- Increased competitiveness and enhanced integration into domestic and international markets.
- Sustainable management of land and environment.
- Science and technology applied in food and agriculture development.
- Improved institutional coordination.

To realise the policy objectives of FASDEP II, MOFA developed the Medium Term Agriculture Sector Investment Plan (METASIP).¹² The plan has six programmes that correspond to the six FASDEP II policy objectives shown above.

¹² The METASIP plan is the national investment plan for agriculture and food security developed in the context of CAADP (Comprehensive African Agriculture Development Programme).

Nutrition has a minor place in FASDEP II, sitting as one objective under the umbrella area of food security. The target is to reduce levels of stunting and underweight children by 50 per cent by 2015. However, the policy provides no detail on how programmes will approach reducing undernutrition through agriculture. Nutrition programmes are allotted GHS 10 million of the GHS 384 million (US\$500,000 out of US\$19.2 million) priority investment for food security programmes. The METASIP strategy does provide more detail on programme approaches for reducing undernutrition, emphasising promoting the production and consumption of nutrient-dense commodities, including High-Quality Protein Maize and orange flesh sweet potato. It also includes promoting biofortification – fortification of staples for use in the School Feeding Programme and consumer nutrition education.

In addition to the Government of Ghana's policy orientation on agriculture–nutrition, donors are implementing programmes designed to accelerate agricultural growth and increase the incomes of rural households. Projects have focused on developing agricultural value chains to address gaps in food production, marketing, food security and food sovereignty. While some projects have been oriented towards high-value aquaculture, fruit and vegetables with an orientation to export markets,¹³ others are linked to production of staple food crops or focus on improving efficiencies within domestic markets for food crops. The USAID-financed project managed by ACDI/VOCA,¹⁴ Agricultural Development Value Chain Enhancement (ADVANCE), is working on linking small farmers to markets and services through larger nucleus farmers or traders, in order to promote investment in improved production technology.¹⁵

The USAID Feed the Future programme for Ghana (USAID 2010) maintains the focus on agricultural growth and staple crop production, even though it also incorporates nutrition goals. The programme refers to expanding credit availability for agriculture, facilitating commercial linkages in value chains, and attracting private investment in agribusiness centres that will provide services to farmers. USAID also promotes outgrower schemes, as have other donors.

In 2010, a USAID document outlining nutrition investment priorities noted that the focus on staple crops in Feed the Future Ghana failed to address micronutrient deficiencies, and identified a mismatch in the regions targeted by USAID funding for agriculture and nutrition programmes (Birx, Chung, Payes *et al.* 2010). In response to these observations, USAID announced the Resiliency in Northern Ghana (RING) project, which focuses explicitly on designing agricultural interventions to achieve nutrition outcomes. The project aims to improve food security and nutrition, by promoting commodities produced by women, accompanied by business training and nutrition and health education.

In 2012, the New Alliance for Food Security and Nutrition (G8 2012) was launched in Ghana, which is one of three initial countries in Africa. The programme emphasises mobilising business investment in agriculture and along agricultural value chains. Working within the context of the METASIP programming, this new initiative includes funding commitments by Canada, Germany, the UK, US, and European Union, as well as commitments by Ghanaian and international companies to make investments relating to food security and nutrition (G8 2012: 7–16). However, none of the company investment plans in the initial document make any explicit mention of nutrition or the production of foods for the purpose of reducing undernutrition.

¹³ See, for example, the GIZ MOAP project (Market Oriented Agriculture Program) in Ghana: www.giz.de/themen/en/7787.htm, and USAID TIPCEE project (Trade and Investment Programme for a Competitive Export Economy).

¹⁴ ACDI/VOCA is a US-based non-profit development organisation.

¹⁵ www.acdivoca.org/site/ID/ghanaADVANCE.

Box 7 Government of Ghana commitment to private sector investment in agriculture under the New Alliance for Food Security and Nutrition

The Government of Ghana intends to improve incentives for private sector investment in agriculture, in particular: taking actions to facilitate inclusive access to and productive use of land; developing and implementing domestic seed regulations that encourage increased private sector involvement in this area; and supporting transparent inclusive, evidence-based policy formulation.

The Government of Ghana reaffirms its intention to provide the human and financial resources and the mechanisms for dialogue with the private sector, farmers and other stakeholders, and across government ministries that are required for the achievement of tangible and sustainable outcomes, the acceleration of Ghana's development, and the delivery of tangible benefits to smallholder farmers, including women.

Source: G8 (2012: 3).

In summary, the majority of agricultural development policies and programmes have focused on agricultural growth, increasing farmer incomes and raising yields for staple crops. Some recent programmes have emphasised developing more efficient value chains for domestic food crops and increasing farmers' access to markets but there has been very limited attention to the production of nutrient-dense foods or their distribution through domestic value chains. Most recently, the RING project is trying to increase production and consumption of nutrient-dense crops and is seeking to link with policies on nutrition education and behavioural change.

Table 4.1 Recent agricultural policies and programmes relevant to nutrient-dense foods in Ghana

Policy initiative	Actors	Priority areas	Implications for nutrient-dense foods
Food and Agriculture Sector Development Policy (FASDEP II)	Ministry of Food and Agriculture Donors	<ul style="list-style-type: none"> - Increase farmer incomes; - Improve food security; - Enhance competitiveness in domestic and international markets. 	<ul style="list-style-type: none"> - Focus on five staple crops; - Nutrition is one area under food security; objective is to reduce levels of stunting and underweight.
Medium Term Agriculture Sector Investment Plan (METASIP)	Ministry of Food and Agriculture Donors	<ul style="list-style-type: none"> - Implementation of FASDEP policy areas. 	<ul style="list-style-type: none"> - Nutrition is 10 of 384 million GHS requested priority investments in Food Security. <p>Nutrition components:</p> <ul style="list-style-type: none"> - Promote production and consumption of specific nutrient-dense crops; - Promote micronutrient fortification; - Nutrition education; - Promote value-added; quality grading.
New Alliance for Food Security and Nutrition	US, UK, EU, Germany, Canada, France; Investments by Ghanaian and international companies	<ul style="list-style-type: none"> - Investment in value chains for rice, maize, cassava, yam, cowpea. 	<ul style="list-style-type: none"> - Objectives include reducing undernutrition; - No specific mention of investments in nutrient-dense foods in Ghana.
Agricultural Development Value Chain Enhancement (ADVANCE)	USAID; ACDI/VOCA	<ul style="list-style-type: none"> - Increase farmer incomes; - Link farmers to input and commodity markets; - Upgrade production through nucleus farmers. 	<ul style="list-style-type: none"> - Focus is on domestic staple crops; - Does not consider nutrient-dense crops or nutrition outcomes.
Resilience in Northern Ghana	USAID	<ul style="list-style-type: none"> - Improve household nutrition status; - Diversify household incomes; - Increase availability of diverse foods; - Improve nutrition practices; - Improve support networks for nutrition. 	<ul style="list-style-type: none"> - Programme specifically designed to reduce undernutrition; - Promote links from farmers to local retailers and consumers; - Does not necessarily target nutrient-dense commodities, or address nutrition value addition in value chains.
Ghana Commercial Agriculture Project	World Bank	<ul style="list-style-type: none"> - Increase productivity and value addition in selected value chains; - Improve investment climate for agribusiness; - Develop public-private partnerships. 	<ul style="list-style-type: none"> - Does not specifically consider nutrient-dense crops.
Northern Growth Programme	IFAD	<ul style="list-style-type: none"> - Modernise production of root crops; - Link farmers to domestic markets. 	<ul style="list-style-type: none"> - Does not specifically consider nutrient-dense crops.

4.2 Nutrition policies

Nutrition policy in Ghana has recently received significant national-level attention, with Ghana joining the Scaling Up Nutrition (SUN) movement in 2011. However, in general, nutrition has not been a high policy priority. Efforts have been project-specific and have received low budgetary allocation. Coordination among ministries and local implementation has been insufficient. Nutrition policy has tended to be led by donors and a small number of national policymakers (Ghartey 2010). Until recently, Ghana has not had a comprehensive nutrition policy, although a national policy is currently under development. This section of the report focuses on the context for cross-sectoral nutrition policy and the promotion of nutrient-dense foods. A review of all recent nutrition programming is beyond the scope of this section. Thus this review excludes programmes specifically focused on acute malnutrition, although it is recognised these could be a source of demand for nutrient-dense foods, particularly RUTFs.

Government of Ghana nutrition policy has developed over time. Following the International Conference on Nutrition in 1992, a multisectoral coordinating Committee on Nutrition was formed. This committee developed a national nutrition strategy; the National Plan of Action on Food and Nutrition (Ghartey 2010: 21) helped place nutrition high on the government policy agenda. In the last decade, the foci of nutrition policy in Ghana have been micronutrient deficiencies (particularly vitamin A, iron and iodine), exclusive breastfeeding, supplementary feeding and community-based growth monitoring. The strategy contributed to the implementation of national fortification programmes to fortify vegetable oils and wheat flour with vitamin A and iron respectively.

At time of writing, a proposed National Nutrition Policy (NNP) is being negotiated among relevant ministries. The policy outlines a framework for nutrition interventions and attempts to define roles for all stakeholders, provide a framework for the implementation of nutrition programmes across government agencies and assure adequate funding for nutrition programmes. The NNP draws on the 2007 National Health Policy which promotes preventive health and healthy lifestyles. The NNP focuses on four main areas.

1. Prevention and control of various nutrition disorders.
2. Promoting access to nutrition and related services to facilitate effective management of nutrition deficiency disorders.
3. Addressing underlying drivers of undernutrition such as food security, food safety, water and sanitation.
4. Creating an enabling environment for effective implementation of interventions.

Policy measures are being developed to help achieve the strategic objectives. Specific measures proposed include the following:¹⁶

- support the agricultural development goals of FASDEP, accompanied by promoting production of nutrient-dense crops, biofortified crops and vegetables, working with the Ministry of Food and Agriculture;
- promote appropriate complementary foods and appropriate breastfeeding and complementary feeding practices;
- provide treatment services for infants and children with acute malnutrition, including therapeutic foods and Community Management of Acute Malnutrition, and encourage people to seek care for acute malnutrition;

¹⁶ This list is selective, based on a discussion of the Draft National Nutrition Policy during the interview with Dr Gloria Quansah Asare, Director, Family Health Division, Ghana Health Service.

- regulate breast milk substitute products;
- support existing programmes on fortification of staples with micronutrients (wheat flour, vegetable oil, salt);
- undertake social and behavioural change communication to promote diet diversification, consumption of fruit and vegetables, exercise and hygiene practices among Ghanaians;
- advocate for nutrition to be mainstreamed across government policy and for budget allocation to be increased;
- create mechanisms to coordinate nutrition policy among ministries and stakeholders.

The proposed National Nutrition Policy attempts to integrate action across the multiple dimensions that contribute to nutrition. The challenge will be in securing sustainable funding and ongoing cooperation across the institutions involved in order to implement programmes effectively. In the past, nutrition policy developed at the national level has not been sufficiently implemented at district and local levels (Ghartey 2010: 45).

In parallel to the development of nutrition policy, a number of programmes focused on awareness, behavioural change and infant care practices. These include the USAID-funded Infant and Young Child Nutrition programme (IYCN), which developed a social marketing campaign to promote good infant feeding practices and coordinated with efforts to market a fortified complementary food product (Box 8). The project trained district health workers to continue to provide education on feeding practices after donor support ended. Similarly, USAID's Behavior Change Support Project is implementing a national campaign on infant feeding using an animated television show (Box 9). USAID also provides technical assistance for the delivery of nutrition health services and Community Management of Acute Malnutrition (CMMA), and convenes the SUN Ghana group. UNICEF has also been active in nutrition programming, supporting the Ministry of Health to implement direct nutrition interventions, salt iodisation and nutrition, health and hygiene awareness programmes.

Box 8 Promoting complementary foods and feeding practices

GAIN worked with food processing firm Yedent Agro Limited to produce a low-cost, fortified complementary food product for young children. In parallel, the USAID-funded Infant and Young Child Nutrition project funded an awareness-raising campaign about infant feeding practices, working with the Ghana Health Service and district health management teams. The marketing strategy for the product started by generating an understanding of feeding practices and linked the promotion of the product with other behaviour change communications. Coordinating private sector marketing with the work of NGOs and health practitioners opened up ways of reaching children in poor and rural households.

Source: IYCH (2011).

A public-private partnership is also combining marketing of complementary foods and raising awareness about infant feeding practices. USAID and JICA (Japan International Cooperation Agency) signed a memorandum of understanding with Ajinomoto Corporation on a venture to promote and market a micronutrient-fortified sprinkles project, known as KokoPlus. Working with partners including GAIN and CARE International, the project will conduct a trial of two distributing channels for reaching consumers and creating demand: one based on conventional radio advertising, and the other recruiting women to act as retailers and nutrition educators in their communities. Results of these trials are not yet available.

Sources: Ajinomoto (2011); <http://allafrica.com/stories/201206010890.html>.

Box 9 ‘Good Food for Good Life’ Nutrition Education Campaign

In 2012, the Ghana Health Service launched the *Aduane Pa ma Asetena Pa* (Good Food for Good Life) Campaign to educate caregivers in providing infants with diverse foods. The campaign received technical assistance from USAID’s Behavior Change Support Project. The characters in this animation are ‘superheroes’ representing the four key food groups, as well as good infant care practices. The superheroes teach mothers and caregivers the importance of feeding children a diversity of foods, in addition to breast milk, after the age of six months.

4.3 Food product policies

Food safety and regulation in Ghana is the responsibility of the Food and Drugs Authority (FDA), while the Ghana Standards Authority (GSA) is tasked with setting and certifying compliance with standards (see Annex 3 for details on their mandates). By law, commercial packaged foods must be registered with FDA, and this process includes assuring that firms provide evidence to support any nutritional claims made on product packaging and advertising. Although legally mandatory, the majority of small and informal food processors are not registered with FDA. In parallel to FDA registration, GSA operates a voluntary food quality certification scheme, which certifies that a product incorporates quality management processes. GSA-certified products must also include certain information on packaging, including a list of ingredients and micronutrient content. In general, only large food processing firms and those selling products in supermarkets pursue GSA certification.¹⁷ In practice, enforcement of both FDA registration and GSA certification is low, and products often use the GSA logo illegally. In addition to regulation of formal food products at the national level, District Assemblies regulate some food processors and vendors at the community level.

In addition to its role in product registration, the FDA oversees mandatory national fortification programmes. GAIN has provided important support to allow the FDA to enforce the standards effectively for flour and vegetable oil (Box 10). Salt iodisation is also mandatory, but remains poorly enforced, leading to insufficient iodine content in end products. Agencies including UNICEF and GAIN operate programmes to incentivise salt producers to iodise products.

Box 10 Enforcing standards for fortified staple foods

GAIN has provided support to the Food and Drugs Authority to enforce standards for fortified staples: vegetable oil is fortified with vitamin A, and wheat flour is fortified with iron, vitamin A, vitamin B and zinc. GAIN support has helped FDA implement quality assurance systems and has funded awareness-raising campaigns about the benefits of fortified foods and the meaning of the fortified certification logo. The ability of FDA to regulate the nutrition content of these staples is facilitated by the structure of these value chains, which are dominated by a small number of flour mills and importers. The FDA reports that the quality assurance system for imports achieves 100 per cent compliance for imported vegetable oils. However, not all fortification programmes have been successful; enforcement of standards for iodine content in iodised salt has waned over time.

¹⁷ Processors report that GSA certification can provide a competitive advantage when selling to consumers in middle- and upper-income groups.

4.4 Policy on aflatoxin contamination

Responsibility for efforts to reduce aflatoxin contamination in foods is fragmented across different ministries and this area has received little attention from government. The Ministry of Food and Agriculture has the responsibility for policy to reduce aflatoxin contamination through on-farm and post-harvest practices. In practice, however, the Ministry implements few activities in this area. It is commonly perceived by professionals that food production is a greater priority than dealing with the food safety issues related to aflatoxin (Jolly *et al.* 2009). Ghana has set regulatory limits on the aflatoxin content of processed food products, using the European Union standard of five parts per billion. However, it is acknowledged that monitoring and enforcement are almost entirely absent, even for products produced in the formal sector, while the informal sector is totally unregulated.

Although there has been little government action on aflatoxins, donors have funded research initiatives to develop technologies and products that address aflatoxin contamination. In Ghana, these have included USAID-funded research under the Peanut Collaborative Research and Support Programme (PCRSP), which developed food processing techniques to remove contaminated groundnuts, additives to prevent uptake of aflatoxins in the human body and efforts to improve on-farm production and storage techniques (further detail on these products can be found in the accompanying value chain mapping report). In addition, research at the International Institute for Tropical Agriculture in Nigeria has developed a biological control product that inhibits aflatoxin at the farm level (see further details below). Finally, the newly formed Partnership for Aflatoxin Control in Africa is planning to provide support for on-the-ground aflatoxin control projects across the continent, and to support the integration of aflatoxin control into CAADP activities.¹⁸

4.5 Coordination among policy actors

This overview of agriculture, nutrition and food policies reveals a complex and poorly coordinated policy environment. Government and donors have undertaken numerous initiatives on food and nutrition, including seeking to promote value chains for domestic foods. In this context, key decisions already taken by the Government of Ghana have to be accepted as the context within which new policy initiatives have to be located. These decisions include the emphasis on increasing production of staple foods and on education programmes to promote good infant care practices and diverse diets. In general, government agencies have avoided working with the private sector to promote particular products, such as complementary foods. Donors have been more active in this area. New policy initiatives to promote private sector involvement in the processing and distribution of nutrient-dense foods need to respond to this context.

There are two broad policy strategies. The first is to seek to link into existing programmes when opportunities arrive to mobilise resources for nutrition. For example, existing agricultural programmes aimed at promoting outgrower schemes could include a focus on aflatoxin-free products. The second strategy is to try to bring together the various agencies whose work has an impact on the supply and development of nutrient-dense foods and mobilise these agencies around initiatives that explicitly address the challenges discussed above. These two policy approaches are examined in greater detail in the sections that follow.

¹⁸ www.aflatoxinpartnership.org/.

5 Policy guidelines for promoting nutrient-dense foods

Having identified the challenges for policy development (Section 3) and the context of relevant policy initiatives in Ghana (Section 4), the report now examines policy guidelines and options for donors, public–private partnerships and others seeking to enhance provision of nutrient-dense foods in Ghana. It is divided into three sections. The first section sets out overarching principles that apply to many initiatives, identifying broad challenges and risks involved in policymaking on nutritious foods. The second section focuses on supply-side policies, securing aflatoxin-free inputs into food processing and promoting new crops. The third section focuses on the demand side and the steps needed to create functioning markets for complementary foods, including providing incentives and signalling nutritional quality. A fourth section examines options for integrating supply- and demand-side approaches in a ‘whole value chain’ strategy.

The challenge is to develop innovative business models that can deliver these food products to the poor, not only making them available and affordable, but also signalling the benefits of the products to the target populations. Strategies for achieving these aims are outlined below.

5.1 Overarching policy principles

A number of broad policy principles can guide interventions aimed at increasing provision of safe, nutrient-dense foods to reduce undernutrition in Ghana. These overarching principles apply to both supply-side (Section 5.2) and demand-side (Section 5.3) policy options.

- 1. Target-specific products.** There are a number of potential agri-food commodities that can serve as inputs to nutrient-dense foods in Ghana, and an even larger array of products. The value chain conditions and challenges facing each of these products are substantially different. Therefore, in order to maximise measurable impact, interventions should focus on overcoming challenges facing particular products. This level of specificity maximises the likelihood of overcoming constraints and reduces the risks of unexpected outcomes of interventions.
- 2. Focus on key populations.** There is a lack of rigorous evidence on the most effective designs for value chain interventions for nutrition. In this context, interventions should target foods most likely to improve nutrient uptake for 1,000 days populations and should coordinate efforts to promote production and distribution of these foods with behaviour change measures that address the documented problems in infant feeding and care in Ghana. Interventions focused on these products should be greater priorities than those that target a more general population.
- 3. Ensure that products reach the poor.** It is not enough to simply promote the production and distribution of nutrient-dense foods. Past experience shows that while efforts have succeeded in developing new nutrient-dense products, they have often failed to deliver these products to the poor in a sustainable way. Instead, nutrient-dense foods often end up being targeted to middle-class populations. Middle-class consumers will remain easier to reach and more profitable target consumers, at least until demand has been built among the poor. New initiatives in this area must be able to demonstrate concretely that the business model will in fact reach the poor. Public–private partnerships that increase consumer awareness and experiment with new marketing and distribution approaches are important in making these models viable.

4. **Focus on products that appeal to tastes and needs.** Food interventions always face the challenge of acceptability, because food is strongly associated with taste, preparation and habit. In Ghana, new products have successfully built a market share when they modify an already familiar product. There are also prominent examples where novel food types have been introduced and achieved substantial market share, especially for non-nutritious products that require very simple preparation. The lesson is that products need to address the tastes and needs of the target population (see point 2, above). New nutrient-dense products need to be carefully designed based on evidence about consumption habits and preferences of poor populations.¹⁹ Public investments in this area should prioritise acceptability for the target population.
5. **Work with existing value chains.** Value chains frequently involve complex interdependencies, and these interdependencies are difficult to predict. Failing to account for these interdependencies can lead to unexpected impacts or failure to achieve the desired outcomes. These risks can be minimised by limiting the number of changes that interventions induce. This means working with existing chains and building on successful experiences, rather than attempting to build radically new market linkages. One implication of this is that reaching consumers who are poorly served by food value chains – such as those in remote areas – is likely to be a risky endeavour.
6. **Develop multi-stakeholder approaches.** Evidence shows that under current conditions, businesses in Ghana are not able to create profitable models selling nutrient-dense and affordable products to poor consumers. This experience shows the need for public–private partnerships that can overcome uncertainty in new markets, develop mechanisms to signal nutritional value and reduce the risks of developing distribution systems to reach the poor (see Table 2.1). Current initiatives in Ghana (Box 7) highlight the importance of inclusive public–private partnerships that involve government agencies, local and international businesses, donors and NGOs. One advantage of these partnerships is they can allow different participants to focus on addressing specific challenges to which they are well placed to respond.
7. **Work with both the formal and informal sectors.** While there is potential for companies in the formal sector to produce nutrient-dense foods that are affordable to poor consumers, they are unlikely to be able to expand production and distribution sufficiently to reach the majority of poor consumers in the short term. For this reason, a dual approach is needed: interventions should build the capacity of formal sector businesses and also work with informal sector businesses to increase the quality and safety of their products. The informal sector has been neglected, and greater effort is needed to engage and upgrade informal businesses; options for doing so are examined in Section 5.3.4.
8. **Build evidence on the impact of value chain approaches.** In Ghana and globally, there is insufficient evidence on the impact of food-based approaches to reducing undernutrition, and on value chain approaches in particular. Action is needed in the short term to enhance provision of foods through markets. At the same time, evidence is needed to answer key questions: do value chain initiatives increase micronutrient intake by the poor and by vulnerable populations? Does increased consumption translate into reduced stunting? How can interventions be coordinated with other actions, such as behaviour change communications? Evidence-gathering should be designed to enable assessment of the effectiveness of value chain interventions, identify unanticipated impacts (for example, on women’s time, and the

¹⁹ Food processing enterprises in Ghana have tended to assume that making products convenient to prepare is the key to achieving market share. Whether convenient preparation is something that poor consumers are willing to pay for in nutrient-dense foods needs to be tested.

distribution of food among household members) and inform the design of future programmes. To improve food markets for nutrition, donors, governments, businesses and others should invest in value chain approaches, and simultaneously build the evidence.

These overarching principles can be applied to a number of policy options for addressing the specific challenges facing specific product types in Ghana. The report now examines a number of options, grouping them into supply-side policies (upstream in the value chain) and demand-side policies (downstream in the value chain). The options are grouped in this way because the actors and the policy instruments at these points in the value chain are different, and options at each of these points can address different dimensions of the challenges. Supply-side options focus on addressing food safety and aflatoxin contamination in nutrient-dense foods in a way that makes products affordable to those who need them. These options are especially relevant to the supply of maize and groundnut inputs to foods. The demand-side options seek to create mechanisms for signalling nutritional quality in a way that makes products affordable to the poor. Although this problem is relevant to a very broad set of nutrient-dense foods, the problem is most acute for complementary food products. After describing the policy options on the supply and demand sides, the section considers how these approaches might be integrated through 'whole value chain' approaches.

5.2 Supply-side policies

The first set of options aim to increase the supply and reduce the costs of safe inputs into food processing. The logic of this approach is to improve the market environment for a broad set of products that use these inputs. Policy interventions in this area can help address the challenges of food safety and affordability (described in Section 3). Addressing these problems is particularly critical for complementary foods, because of the major risks posed by aflatoxin contamination for infant and young child nutrition. Policy interventions must aim to achieve food safety at a low cost, so that products are affordable to vulnerable populations.

5.2.1 Incentivise aflatoxin control by linking value chain actors

The key to reducing aflatoxin in many products is preventing toxins developing on farms and during storage through good agricultural practices. Box 11 lists six prevention practices covering a broad range of farm activities. Improved post-harvest handling or storage is also key. Options exist for decontaminating products after aflatoxins are already present, but are unlikely to be viable on their own due to the costs involved.

Box 11 Technical options for controlling aflatoxin contamination

According to Richard Lawley of Food Safety Watch, the key to controlling aflatoxin is preventing the contamination of crops in the field and during storage. Contaminated material can also be removed during processing.

At the pre-harvest stage, measures include correct land preparation, use of resistant crop varieties, preventing drought stress, control of fungal infection (including using bio-control measures such as Aflasafe) and correct harvesting. During handling and storage of the commodity, technologies are needed to maintain a low moisture content and temperature to prevent the growth of mould. During processing, kernels can be sorted based on colour or density to remove contaminated individuals. Control at the processing stage alone has proved to be prohibitively expensive for groundnut products in Ghana, if these are to be targeted to the poor.

Sources: www.foodsafetywatch.com/public/482.cfm; Anim-Somuah *et al.* (2013).

Current efforts in Ghana have included a number of the techniques described in Box 11. From a value chain perspective, however, these efforts can be categorised under two approaches: supply chain management and decontamination. Used alone, neither of these addresses the conditions necessary to produce foods that reach poor populations. The first approach involves management of the entire supply chain to reduce aflatoxin contamination. There is only one example of this approach in Ghana: Nestlé Ghana, which has invested in systems that reduce aflatoxin levels in its branded products, beginning with controlling on-farm practices.²⁰ This strategy forms part of a focus on premium products, which are unaffordable to poor consumers. The second approach used in Ghana has focused on decontamination of products during processing through the removal of contaminated kernels (developed in particular for groundnut supplies). The decontamination approach also has important limitations, because it tends to steer the contaminated supply towards products used by poor consumers (Anim-Somuah *et al.* 2013: 40) The preferable option is to ensure quality at source, by introducing good practices in farming and storage. Good agricultural practices identified in Box 11 are the starting point. Implementing them at scale would require farmer training and investment in farm infrastructure.

There have been efforts in Ghana to train farmers to adopt on-farm aflatoxin control techniques on a limited scale, including research and uptake efforts by the Crop Science Research Institute and Food Research Institute, and by the NGO the Ecumenical Association for Sustainable Agriculture and Rural Development. However, at present, uptake of these practices is limited. One of the reasons for this is the organisation of transport and wholesaling. Traders do not offer farmers a price premium for low aflatoxin material, since there are no opportunities to sell this through channels that offer a price premium. Incentivising farmers to use improved practices would therefore require changes in the marketing of commodities, and would need to link up with efforts on the demand side to promote products (see Section 5.4). Examples from elsewhere in Africa suggest ways that policy actors can help create incentives for farmers and others in the value chain to control aflatoxin (Box 12).

One route to improving the system is to develop public–private partnerships. These partnerships would need to undertake the following initiatives:

- An agreement between the relevant partners on good agricultural practices for aflatoxin-free production at the farm level and the formalisation of these practices into a standard.
- Monitoring farm-level performance, either through checks on compliance with good practice or testing of farm produce.
- Improving post-harvest storage infrastructure, both on-farm and subsequently.
- Creating incentives for farmers and other actors in the value chain and building awareness of the benefits of reducing aflatoxins. Creating aflatoxin-free supplies creates additional costs since consumers and businesses would need to be aware of aflatoxin-free products and be willing to pay a premium price.
- Putting in place systems that make products traceable. This strategy involves linking the product back to the farm where it was produced. Traceability can allow actors downstream in the value chain to identify the sources of contamination, and to work with farmers to improve their practices (Emmott and Stephens 2012). Traceability must also include mechanisms to guarantee the distinction between the compliant

²⁰ According to anecdotal reports on Nestlé supply chain in Ghana. See also: www.nestle.com/csv/case-studies/AllCaseStudies/Grains-Quality-Improvement-Project-Central-and-West-Africa.

and non-compliant material, since value chain actors will have an incentive to try to pass off contaminated material as aflatoxin-free in order to benefit from higher prices.

The example of Nestlé (Anim-Somuah *et al.* 2013: 34) shows that individual companies can develop dedicated supply systems to secure aflatoxin-free inputs.²¹ However, the costs of developing such systems are high, and recovering these costs requires a large scale of operations and high price for the final product. Public–private partnerships need to create a broader supply of aflatoxin-free commodities that would be available to a range of food processing businesses, including small firms.

Box 12 Creating incentives to control aflatoxins in smallholder value chains in Malawi

Twin, a UK-based ethical trading organisation, has proposed a programme of interventions in order to control aflatoxin in formal and informal groundnut value chains in Malawi. In the formal sector, Twin proposed working with Afri-Nut, a groundnut processing firm, to introduce in-shell storage and to create an alternative value chain to divert contaminated material to animal feed and biofuel. For the informal sector, which processes the majority of Malawi's groundnuts, Twin proposed creating village-based storage and processing centres, that would serve as hubs for disseminating improved farming practices, processing and selling fortified products and providing education about the health impacts of aflatoxin in the importance of good farming and storage practices. Twin's approach outlines options for supply-side interventions focusing on improved storage, or for a 'whole value chain' approach (see Section 5.4) that also links farmers to a processing firm, develops new products and stimulates demand in order to provide incentives to adopt the improved on-farm and storage practices. Published studies are not available on the impacts of integrated approaches to aflatoxin control.

Source: Emmott and Stephens (2012) (grey literature case study).

As was described in Section 4.1, there are a number of programmes and policies aimed at agricultural value chain development, including many projects on maize. Donors should work with the Ministry of Food and Agriculture to encourage these projects to increase the supply of aflatoxin-free maize and groundnuts. Such initiatives would need to collaborate with intermediaries at various points along the value chain. Traders and product aggregators could be mobilised to promote and purchase the aflatoxin-free product.²² Aggregators could be mobilised to provide a secure channel to move products from farms to processing centres and to enforce standards along the chain. Processing companies might be prepared to support the development of farmer capacities through outgrower schemes if some of the costs of developing these schemes were defrayed by public support.²³ Alternatively, farmer-based organisations and farmer associations could be promoted through agricultural development schemes so that they are capable of providing specialist services and oversight.

A policy push on supply-side issues is required to link initiatives focused on agricultural development to the needs of nutrition. Agricultural strategy in Ghana remains focused on increasing agricultural output, yields and incomes. As long as nutrition goals are not central to these programmes, there will be little incentive to focus agricultural programmes on the production of aflatoxin-free products. Interventions could take the form of incorporating nutrition goals into agricultural projects, as projects such as Feed the Future are doing to a

²¹ According to anecdotal reports on Nestlé Ghana's supply chain.

²² There are aggregators in Ghana, such as Savanna Farms (Anim-Somuah *et al.* 2013: 32), that would be well placed to incorporate new quality controls into their supply chains and to provide credit and training through farmers' organisations.

²³ There is likely to be underinvestment by private companies in outgrower schemes because of the challenges of managing them and the risks of defection by outgrowers from the sponsoring company to competitors.

limited extent. It might also be possible to stimulate demand for these products to address the high cost for developing outgrowing schemes by persuading large firms to participate in aflatoxin-free supply programmes.²⁴ Were this to happen, farmers would benefit from the investment in assuring safe supplies and from the demand from the processing industry.

Creating safe supplies of maize and groundnut inputs requires multisectoral action linking actors across the value chain. The benefits would come both by reducing health risks for the broad population and through reducing risk of stunting due to aflatoxin in complementary foods. At the same time, other supply-side approaches could include promotion of production of new or existing commodities with potential for nutrient-dense foods.

5.2.2 Promote the production of commodities that are inputs to nutrient-dense foods

Reducing aflatoxin in maize and groundnuts is key because these commodities already feature in nutrient-dense foods in Ghana (Anim-Somuah *et al.* 2013). In addition to these commodities, supply-side interventions can promote the production and marketing of other commodities in order to encourage their incorporation into new nutrient-dense food products. A wide variety of commodities with desirable nutrient content are produced in Ghana (a number of these were reviewed in the accompanying value chain mapping report). These include orange-fleshed sweet potato, leafy green vegetables, cowpea, soybean and Quality Protein Maize. These commodities have potential to be consumed by a broad base of the population and could also be incorporated into products that target particular vulnerable groups. However, value chain mapping found that these products lack the distribution to reach large numbers of Ghanaian consumers and often have limited market demand or business interest. Further, agricultural development initiatives in Ghana have largely neglected these commodities, and where such commodities have been promoted (for example, soybeans), programmes have not examined how supplies can be fed into nutrient-dense products for the poor.

The exceptions to this gap are a number of small-scale initiatives that have promoted the production and consumption of nutrient-dense commodities by farming households. These initiatives are limited because they have thus far not considered how value chains might deliver the products to a wider base of consumers (Box 13). The absence of efforts to link these commodities to key consumer groups means that promoting the production of these foods will not necessarily mean they reach the consumers that need them. Instead, integrated, 'whole value chain' approaches that both promote production of these crops on the supply side, while also addressing demand-side issues, will be needed to assure that these commodities reach the populations that need them. The potential of whole value chain policy approaches is examined in Section 5.4.

²⁴ In this vein, GAIN is seeking to develop a partnership with a multinational food processor to produce an RUTF and a supplementary food product in Ghana and to stimulate demand for aflatoxin-free groundnut supplies. See the accompanying value chain mapping report for further details.

Box 13 Efforts to promote on-farm production and consumption of nutrient-dense commodities in Ghana

Orange-fleshed sweet potato is a very good source of provitamin A and is eaten in some regions of Ghana. Sweet potatoes are considerably cheaper than other staples; however, they have not attracted substantial business interest. The Ministry of Food and Agriculture (MOFA) has promoted their production and utilisation, while the West Africa Agricultural Productivity Programme has supported breeding and dissemination of new varieties in Ghana. The USAID-funded Horticulture CRSP (Collaborative Research Support Program) is providing farmers with inputs and training, teaching micro-enterprises to make products and researching new product types. The VITAA (Vitamin A for Africa) initiative is linking organisations to promote orange-fleshed sweet potato across the value chain in seven countries, including Ghana. Impact evaluations have shown that programmes that promote production and consumption of OFSP in Uganda have increased intake of Vitamin A in infants (Hotz *et al.* 2012), but there is no evidence of their effectiveness in Ghana, where sweet potato does not have the same level of acceptability with most consumers.

Leafy green vegetables are especially cultivated in the northern regions of Ghana, and can be a good source of iron. The consumption of leafy vegetables seems to be decreasing with time due to low status and time-consuming preparation. The Nutrition Outcomes for Women project implemented by CARE International is promoting the production, processing and storage of leafy green vegetables by rural households in several districts.

The Women in Agricultural Development programme of MOFA also promotes production and consumption of these vegetables. There are no examples of efforts to promote consumption post-farmgate. Impact evaluations of similar home garden production programmes in South East Asia showed significant increases in intake of protein and vitamin A, but not other nutrients (Girard *et al.* 2012: 210).

Supply-side policy approaches are clearly important for improving safe and affordable inputs and increasing production of other, less widely used crops. But the discussion above also shows these efforts on their own are not sufficient to alter value chain structures in a sustainable way. Demand-side interventions are needed to provide incentives for producers to adopt good practices and to link agricultural production to markets. These options are explored in the following section.

5.3 Demand-side policies

The successful development of markets for nutrient-dense foods requires effective demand for these products to be generated. Examples in Ghana show that demand can be promoted by partnerships between agencies, businesses and other actors. The key issues are promoting demand for nutrient-dense products, increasing nutrition awareness and behaviours and creating mechanisms that signal nutritional value to consumers. The sections that follow outline the options for each of these activities.

5.3.1 Generate consumer demand

Demand-side policies can help address the challenges facing food processing firms in entering and developing markets for nutrient-dense foods (see the business challenges outlined in Table 2.1). Ghana-based food processors face challenges in scaling up their operations, and this makes it more difficult to target poor consumers. Processors report challenges with the prevailing system of revolving market credit among retailers, who expect to be able to purchase products on credit and pay back after sale. Because processors are uncertain about how much consumer demand there will be for nutrient-dense products, businesses are discouraged from making investments in these product types. Policy interventions can help to overcome these uncertainties by generating demand for nutrient-dense foods. This can be done either by directly creating demand by purchasing products and distributing them through non-profit channels or by seeking to increase consumer

demand through awareness-raising and marketing campaigns. The direct demand approach has been used in the past; for example in the World Food Programme establishing a contract with a Ghanaian food processor to purchase and distribute a complementary food product. The price that public agencies can pay for products, as well as strict international standards that must be met for some of these products, pose challenges for Ghana-based businesses.²⁵ The other approach, seeking to increase consumer demand, was employed in the USAID and GAIN marketing and awareness campaign accompanying the promotion of the Yedent Agro complementary food product (Box 8 in Section 4). Creating consumer demand for nutrient-dense products is very closely linked to larger efforts to promote broader nutrition awareness.

5.3.2 Promote nutrition awareness

Consumer demand for nutrient-dense products is low and complementary feeding diets for infants are insufficiently diverse, leading to undernutrition. Proper infant nutrition and care practices are key contributors to undernutrition rates. In this context, promoting nutrition awareness can help address demand-side challenges in value chains, and can contribute to behavioural change and good nutrition practices. Raising nutrition awareness among target populations entails increasing knowledge of nutrition requirements and good practices, as well as providing motivation to act on this knowledge. Behavioural change programmes target a wide range of practices, including breastfeeding, hygiene, weaning practices and consumption of adequate and diverse diets. Evidence is lacking on the effectiveness of behaviour change communications for increasing demand for nutrient-dense foods, altering nutrition-relevant behaviours and improving nutrition indicators (Bhutta *et al.* 2013). Rigorous assessments of such programmes are not available in Ghana, and available evidence is based on self-reporting by actors involved in project implementation. Future programmes need to build rigorous, independent research and evaluation into interventions. Some recently initiated projects are seeking to fill this gap; for example, the Ajinomoto public–private partnership is assessing the effectiveness of two models for coordinating product promotion and behaviour change communications (Box 8). The project evaluation will measure anthropometric child growth outcomes. However, this lack of evidence notwithstanding, there are strong potential complementarities between behaviour change communication and efforts to increase demand for nutrient-dense foods.

USAID has been a prominent donor in funding nutrition awareness programmes. Its Feed the Future strategy for Ghana aims to improve nutritional behaviours through behaviour change communication and enhancing the skills of healthcare workers (USAID 2010: 15). Stressing good infant feeding practices and the need to use fortified (and if possible aflatoxin-free) complementary foods should be part of such programmes.

Connecting nutrition awareness programmes – which are generally publicly funded – to the marketing of specific products is a critical and potentially sensitive issue. This approach has been used in Ghana. The USAID Infant and Young Child Feeding Programme attributed its success to the use of a marketing strategy that worked through links to public nutrition education and district health workers (IYCN 2011: 4).²⁶ Linking public awareness campaigns to the marketing and promotion of specific products can enable businesses to expand their markets and make it more profitable to target vulnerable populations in remote areas. There are concerns about conflicts of interest in such programmes, and these have been expressed by public health authorities in Ghana. One way to address potential conflicts of interest is to link awareness campaigns to types of products, such as fortified complementary foods, rather than particular brands. This approach depends upon mechanisms that identify

²⁵ This has been the experience with RUTFs in a number of African countries.

²⁶ Source is a self-reported project brief.

these products to consumers, meaning that promoting nutrition awareness is complementary to developing mechanisms to signal nutritional quality (discussed in the next section).

These policy options can be joined up; for example, awareness campaigns can enhance the value of a certification scheme by promoting certified products. In addition to using public campaigns to promote products, private marketing by businesses can also communicate nutrition and health messages that have a public good component. In another example, the community salespeople team trained under the Ajinomoto sprinkles project in Ghana inform consumers about the benefits of fortified complementary foods and good infant feeding practices, at the same time as they market the sprinkles product. Additionally, interventions need to be aware of the potential for conflicts of interest that make it unlikely that private marketing will deliver certain messages. In the case of sprinkles, for example, messages emphasising dietary diversity might conflict with promoting sales of the sprinkles. Furthermore, it should be recognised that nutritional value is very unlikely to be the primary quality that businesses use in consumer marketing. Marketing will often emphasise other qualities that are more important to consumers, such as convenience or price. In addition, nutrition awareness campaigns should include messages about food safety that enable consumers to be more discriminating in what they purchase, while simultaneously allowing companies to market their products based on their low aflatoxin content and earn a return from their investments.

Nutrition awareness among the undernourished is clearly a public good that would benefit not only consumers, but also any business that develops, produces and markets nutrient-dense foods. However, nutrition awareness by itself is of limited benefit if consumers are unable to find safe and nutritious food on the market or are unable to distinguish safe and nutritious products from those that are not. Therefore, awareness must be complemented by other measures that increase the availability and affordability of foods and that create mechanisms that guarantee that they are of high nutritional quality.

5.3.3 Use public–private partnerships to increase demand and consumer awareness

Providing consumers with information about what to eat and what to feed their children may increase demand for nutrient-dense foods in the longer term. A more direct route to increasing demand is to use non-profit channels to purchase and deliver foods. This could be done in the short term to complement raising consumer awareness. This strategy is also likely to be important in the long term in delivering key nutrient-dense products to populations that are poorly served by national food markets, including the poorest populations and those in remote areas.

Lessons can be learned from experience of using non-profit distribution channels in Ghana. USAID's Feed the Future strategy aims to support local production of nutrient-dense ready-to-use foods (RUFs) and incorporate these products into programmes of community-based management of acute malnutrition (USAID 2010: 16). Following these efforts, a multinational food processing enterprise has expressed interest in supporting production of RUFs in Ghana, for distribution through the Ghana Health Service and other public agencies.

However, experience from West Africa shows that this approach for promoting demand is unlikely to be sufficient on its own to reach poor households with new products. In Mali several public–private initiatives produced competent entry foods for non-profit distribution, but did not gain traction in the market after donor funding ended and production was not sustained in the long term (Masters and Sanogo 2002).²⁷ Similar cases have occurred in Nigeria (GAIN Nigeria, pers. comm.). The implication is that the promotion of affordable

²⁷ Source is a published, peer-reviewed study based on a consumer survey.

nutrient-dense foods requires major efforts to establish market presence, achieve wider distribution and convince consumers that these products really meet nutritional needs. This is a strong reason for working through health systems or community-based channels to increase awareness, market products and build new distribution networks. This was the case in the coordination of the USAID-funded infant feeding campaign with promotion of Yedent Agro's complementary food product. Yedent also uses distinctive and informative packaging to increase the credibility of its product with consumers, and is planning an advertising campaign to position the product as providing the same quality as the more expensive international brand.

In summary, both raising awareness and distribution through non-profit channels can help generate demand for nutrient-dense foods. A third group of demand-side policy options can help businesses establish credibility for their products and communicate nutritional quality, without the added cost of branding and advertising-based strategies.

5.3.4 Create mechanisms to signal nutritional quality

Policy intervention can play a key role in establishing mechanisms that guarantee and signal the nutritional value of products to consumers. The absence of such mechanisms is a key inhibitor of sales of nutrient-dense foods in Ghana (see Section 3.1.3). Globally, a large body of evidence shows that assuring that producers and consumers have access to accurate information about product quality and safety is key to the efficient operation of markets (Dranove and Jin 2010). The challenge for policy is to develop mechanisms that identify good-quality and safe products in a way that is credible and easily understood by consumers while not increasing the cost of products prohibitively.

The guidelines presented here are based on the case of fortified complementary food products, because these are crucial for addressing nutrient deficiencies in infants and young children; lack of signalling has been established as a key problem inhibiting these products (see the discussion of complementary foods in the accompanying value chain mapping report). However, lessons from the implementation of these options could be applied to addressing the signalling problem in a large number of other nutrient foods; they could similarly be applied to aflatoxin-free products.

This section discusses three different, non-exclusive options for improving the signalling of nutrient-dense foods to consumers:

- strengthen the capacity of public regulation and enforcement;
- develop private sector-led certification systems, supported by key public institutions;
- promote franchising to incorporate informal sector providers of complementary foods.

As will be shown, there are substantial challenges to implementing each of these options. Again, public–private partnerships can play a key role in bringing players together to overcome obstacles that the private sector is not capable of resolving on its own.

Option 1: Government-led regulation

Improving government regulation is a potential mechanism for guaranteeing the nutritional content and safety of foods. However, a government-led solution is unlikely to be feasible in Ghana for the foreseeable future, due to institutional complexity and major problems with enforcement. This approach would require collaboration among various government bodies, including the Food and Drug Authority, Ghana Standards Authority, Ministry of Health, Ghana Health Service and the National Board for Small Scale Industries (NBSSI). A government-led approach would involve a number of processes:

- **Establishing a standard for micronutrient content in complementary food products.** At present, there are no established standards in Ghana for micronutrient content. However, lessons can be drawn from existing mandatory standards for fortified wheat flour and vegetable oil. Policy initiatives need to convince the Ghana Standards Authority of the need for such a standard. The standard would then need to be designed to be simple and easily understood by consumers. Achieving the standard, including the nutritional profile testing involved, would also need to be low-cost and accessible to small and medium businesses. This could be achieved by focusing on a small number of macro- and micronutrients (energy, protein, fat, vitamin A, iron, zinc). While additional requirements focusing on quality processes and inputs, including aflatoxin concerns, would improve product quality, they would also risk complicating the scheme and increasing costs.
- **Identifying and registering small processing enterprises.** The NBSSI has a system of identifying these enterprises in local districts and facilitating their registration with the Registrar General's Department (RGD), using NBSSI's district-level Business Advisory Centres.
- **Enhancing the capacity of registered enterprises so they can use good manufacturing and hygiene practices.** The NBSSI could facilitate training, as it has done under the IFAD/AfDB/GoG-funded Rural Enterprises Project, facilitated by the Business Advisory Centres.
- **Enhancing the capacity of larger businesses to meet quality standards.**
- **Streamlining registration and certification procedures through the FDA.** At present, FDA registration and GSA certification are parallel processes, and are too burdensome for most small and medium businesses. Under current arrangements enterprises are exempt from FDA fees. Approved products would be identified in the market through a logo, as is currently done for fortified flour and vegetable oil.
- **Campaigning and marketing products through commercial and social platforms.** Through existing activities, the Ministries of Gender, Children and Social Protection, and Health could promote the meaning of the standard and benefits of using certified complementary foods. Partners would need to address the concerns in some ministries about promoting private products.
- **Enforcement of the standard.** To be effective, enforcement needs to identify non-compliant products, threaten non-compliant businesses with deregistration, and prevent unauthorised products from using the certification logo. This would require market checks and random testing of market samples. NBSSI outreach activities in districts could be a channel for enforcement at the local level.

Current experience in Ghana suggests that a system of government regulation covering both the formal and informal sectors would be extremely challenging. First, standards for key traits (micronutrient content, aflatoxin content) do not currently exist, and would need to be developed. Second, product registration is not accessible to small businesses, particularly because of the requirement to provide a third-party certificate of analysis for each product registered. Further, because FDA does not have offices at the district level, it is nearly impossible for small-scale processors and cottage industries to register their products and premises. Lessons could be learned from the NBSSI programme working with food processors and water packaging enterprises, where NBSSI enabled GSA to register enterprises at the district level. Thirdly, enforcement would be a major barrier. At present, enforcement of standards is very low even in the formal sector. Enforcing standards for informal producers would be even more difficult. FDA has limited enforcement capacity, and

relies on local district authorities to enforce its standards. The Inspectorate Division of the Ministry of Local Government and Rural Development (MLGRD), which is responsible for enforcing food regulation, is considered to be unable to enforce at the moment. Enforcement might be made easier if a programme specifically targeted a narrow range of products, such as complementary foods.

Clearly, a government-centred programme to regulate the nutrient content of complementary foods – let alone broader sets of products – poses major challenges, especially in enforcement. A government-led nutrition certification system is likely to be imperfect for the foreseeable future. While steps should be taken to improve the system, other options need to be explored.

Option 2: Private sector-led certification

Private sector-led certification schemes are an alternative approach to signalling nutritional quality. Experience in a number of countries and sectors provides lessons that could be applied to such a scheme in Ghana. Of course, these schemes require the cooperation of relevant government institutions to develop standards, create an enabling regulatory environment and ensure fairness and legitimacy. A group of researchers has suggested that private-led certification would be a strong approach to improving complementary foods in Ghana. Building on their earlier work in Mali, Masters *et al.* argue that:

quality certification... could improve nutrition by inducing more investment in quality control, wider distribution and more consumption of low-cost, high-quality products. Introducing quality certification could lead to increased availability and lower cost of high-quality foods, for improved child nutrition at market scale.
(Masters *et al.* 2011: 1)

The authors of this study argue that a quality certification scheme would provide consumers with reliable information and allow companies to compete in the market without having to build up a brand image based on quality proxies such as price and packaging. The challenge here is to devise and implement a scheme that is reliable, cost-effective and trusted by consumers. While third-party schemes are used widely in developed countries (for example, Fairtrade and organic standards), there is a lack of evidence on the potential for implementing them in developing countries, particularly for markets serving the poor.

Masters *et al.* propose the formation of an independent body with broad representation, including independent research organisations, as a means of providing credibility to the regulating body (see Box 14). This institution would establish standards and operate on a user fee basis, becoming commercially sustainable over time. The new body would provide technical advice to companies producing complementary foods, inspect facilities, commission laboratory tests, provide a labelling system that identifies approved products and promote the logo to consumers (Masters *et al.* 2011: 19–20). The authors provide no guarantee that the scheme would work; they propose it as an experiment to learn whether such a scheme would be profitable for manufacturers and credible to consumers. The results from the earlier study in Mali indicated that consumer willingness to pay for certified products was sufficiently high to cover the cost of certification (Masters and Sanogo 2002). However, it is unclear whether the scheme could motivate consumers, control the behaviour of certified companies and prevent unauthorised use of its logo. On the basis of these recommendations, the potential for private sector certification schemes needs further exploration.

Box 14 Proposal for third-party certification of complementary food products in Ghana

Masters *et al.* propose developing a pilot certification scheme for the nutritional quality of complementary foods in Ghana. The project would require donor funding for the pilot phase, which would be rolled out in several urban centres as a randomised control trial to allow impacts to be measured rigorously.

The project would establish a secretariat to oversee certification and promote the certification logo, composed of government officials, NGOs and researchers. Certification would be based on measuring macronutrient density, indicator micronutrients and contaminants that can be measured at low cost.

Testing would be supplemented with inspections of production processes. In parallel, an independent study team would measure the project impacts. The authors propose that the programme would be assessed at the end of the pilot phase to see whether the costs of certification could be covered by subscription fees from food processing firms. If it proved profitable, the scheme could then be spun off as a wholly commercial venture.

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

Third-party certification could simplify the requirements for controlling business behaviour and provide services on a sustainable basis. However, a key limitation to this approach is that membership in the scheme will be most accessible and profitable for larger formal sector businesses, and it may exclude informal sector processors. Because informal producers are the actors that currently sell complementary food to the poor at an affordable price and constitute a distribution network that reaches most urban neighbourhoods, parallel efforts are needed to address the signalling challenge in the informal sector.

Option 3: Private sector franchising of informal businesses

The informal sector presents a different set of challenges for guaranteeing product nutritional quality. Neither public regulation nor private-led certification will reach them. Yet, informal sector providers of complementary foods are an important part of the market, and working with them is key to reaching poor households. This section outlines the measures that need to be in place as part of an effective franchise scheme that guarantees nutrition content of complementary food products.

Although there are currently few cases of franchise schemes for nutritious foods, the problem of guaranteeing product quality is by no means confined to the food sector. A body of evidence shows that very similar challenges are found in marketised health provision in developing countries (Box 15) and can provide lessons that might be applied to nutritious foods.

Box 15 Credence health goods

Like food products, many health services are credence goods. The immediate consumers of healthcare frequently have limited knowledge about what care they need and the effectiveness and quality of the care provided. As with food, this information asymmetry creates the potential for opportunism: sellers misrepresent the products they are selling. And, as with food, poor people frequently depend upon small-scale and informal sector providers – untrained village doctors, unqualified drug dispensers, traditional healers, etc. – for services that are accessible and cheap.

The resulting shortcomings have been widely documented (see the extensive reviews by Goodman *et al.* 2007; Shah, Brieger and Peters 2011). There are high levels of inappropriate or unnecessary treatment, and informal providers sometimes offer treatments that can be dangerous. But, franchising schemes have been promoted as a solution to these problems in the health sector, and there may be scope for similar initiatives in the area of nutrient-dense foods.

Success factors for franchise schemes

A franchising model is one in which downstream (nearer the customer) operators are licensed to use a brand if they comply with behavioural controls specified by the franchise owner. The value of the franchise's brand lies in consumer acceptance of the franchise's products and the franchise's ability to secure consistent delivery of that product across its many franchisees. The brand owners, the franchisors, have various ways to achieve conformance with the claims being made by and about the brand. First, they specify procedures that franchisees must follow and enable them to conform to these procedures through training and technical assistance. Second, the franchise owner implements governance mechanisms to assure that the franchisees comply with the behaviour specification. In Ghana, it could be possible to establish a franchise for small food businesses, who would be authorised to use a franchise label on condition that they follow a set of rules about how the food is prepared and sold and the minimum content of micronutrients in it at point of sale. The rules could also require franchisees to provide information to customers on good infant feeding practices.

A successful franchise needs incentives for both franchisor and franchisee. Private franchisors are motivated by payments from franchisees; non-profit franchisors may be motivated by the achievement of social goals. The franchisee may benefit from increased sales, technical assistance or key inputs. For example, a franchisee producing complementary foods might be given access to a supply of fortificants, or find that the price and acceptability of their product increases. The franchisees must also face an incentive to comply with the rules while the franchisor needs to be able to protect the franchise and exclude businesses that do not comply.

Public support can help initiate franchises

As with certification, the validity of the franchise's claims depends on enforcing rules in a way that is credible to consumers. This has to be achieved without unduly raising costs. The value generated by the franchise has to be sufficient to cover the costs of governance and provide incentives to the franchise partners. However, due to the risks and barriers involved in developing a new market, and uncertainties about revenues, public-private partnerships may be necessary. Public-private collaboration could develop franchising templates and agreements so that the franchise creation process is simplified, and could train franchisors and franchisees. Social enterprises could also be encouraged to take responsibility for managing schemes in order to produce social benefits such as improved nutrition.

Options for simplifying franchise controls

The success of franchising schemes and the costs of running them depend very much upon their characteristics and brand image. The harder it is to control franchisee behaviour, the more it costs to maintain the integrity of the system. Thus, franchise systems have to be designed to simplify the mechanisms for controlling behaviour. For example, Unilever Indonesia has established a successful franchise selling personal care products to low-

income consumers (Clay 2005).²⁸ This model was successful because products were packaged in a way that made them easily identifiable by the consumer and hard to adulterate. The consequence is that Unilever does not have to devote resources to controlling the quality of the product after it reaches the distribution agents. This approach could be used for complementary foods in Ghana: the costs of control are reduced if the franchisees serve as local agents who distribute a centrally produced, ready-to-sell fortified product, compared to a scheme that attempts to regulate producers who make the product themselves. Alternatively, a franchise could distribute easy-to-identify, pre-packaged sprinkle fortificants to franchisees, who would either add them to their products directly, or bundle the packages together to sell to consumers. This last approach would be the most transparent, because consumers themselves would add the fortifications to the product mix, providing some assurance of content. This approach would reduce control complexity; the monitoring required would only be that franchisees do indeed sell the two products together as a package.

In other words, an alternative approach to developing controls appropriate for existing models of informal sector production of complementary foods would be to:

- convert existing informal sector producers into retailers of centrally produced fortified products;
- incentivise informal producers to use a centrally produced pack of fortificants, alongside their own complementary food mix. This would build on existing initiatives on sprinkles with the advantage of leveraging existing informal distribution systems, rather than trying to create new ones.

Franchising models do not always work. In Ghana, for example, the CareShop pharmacy franchise collapsed after about five years (McCabe *et al.* 2011: 30),²⁹ partly because it never achieved the scale needed to cover its costs. Developing a franchise for complementary foods would require analysing which factors make franchising costly and creating a financially sustainable model that provides incentives to both franchisors and franchisees. Because the franchising model addresses the key barrier of signalling in the complementary food market and has the potential to leverage existing distribution networks, this model warrants further investigation in Ghana.

5.4 Integrating supply- and demand-side approaches

The supply-side and demand-side policy approaches outlined above address different subsets of the challenges that inhibit the provision of nutrient-dense foods in Ghana. Pursuing these approaches will involve different kinds of actions, expertise and value chain actors. Potential policy efforts must choose whether to focus on one of these areas, or to intervene in both areas in an integrated, 'whole value chain' fashion. The advantages of pursuing these areas separately are that fewer resources will be required, interventions and partnerships will be less complex and unanticipated outcomes will be less likely. However, focusing on one side of the value chain will not be able to address problems on a sustainable basis. Some problems – notably aflatoxin contamination – are particularly hard to address at only one end of the chain. An integrated, whole value chain approach can be seen as a gold standard, if sufficient resources and time are available, and if the lead policy actors are willing and able to adopt a flexible and adaptive approach. Further, even if policy efforts cannot integrate both supply-side and demand-side efforts within a single programme, they should look for opportunities to coordinate their actions with other initiatives that are working at the other end of relevant value chains. For example, an effort to develop a certification or

²⁸ Report published by Oxfam GB, Novib Oxfam Netherlands and Unilever.

²⁹ Working paper published by the World Bank.

control system for nutrient-dense complementary food products (a demand-side intervention) could link up with agricultural value chain development programmes (supply-side initiatives), in order to connect processors to producers of high-quality, safe inputs.

In parallel to deciding on supply-side and/or demand-side approaches, policy initiatives must also choose whether to focus on particular products or on broader commodity- or sector-based interventions. For example, efforts to create value chains for aflatoxin-free supplies of maize or groundnuts could focus on supplying particular food processors and product lines (a product-specific approach), or they could seek to create a broader market serving a diversity of processing firms and products (market environment approach). As was the case with integrating supply- and demand-side interventions, interventions in broader markets entail greater expense and risk. In parallel, focusing on a particular product allows programme designers to systematically evaluate which target groups the intervention benefits, while a market environment approach affects a wide range of products and population groups, making evaluation difficult. However, if market environment interventions succeed in reshaping the actions and relationships of a broad set of value chain actors, the impacts may be widespread and lasting.

Analysing how supply- and demand-side options fit together provides important lessons about the design of value chain interventions. The choice of how to incorporate the two project dimensions discussed (supply/demand-side, product/marketplace-focused) will help determine project outcomes and impacts: Which of the value chain challenges identified in this report will the intervention address? What target populations will it reach? What resources will be required? What are the risks of unpredicted outcomes? What is the complexity of measuring the project's impacts? Table 5.1 summarises how choices in each of the two project dimensions affect design considerations and outcomes.

Table 5.1 Implications of value chain and product approaches for design and outcomes of policy interventions

	Supply-side	Demand-side	Whole value chain
Value chain challenge addressed	- Quality and safety of inputs - Affordability* ³⁰	- Market size - Availability to consumers - Awareness of nutrition - Signalling nutritional quality	- Assuring nutritional quality - Affordability
Cost	Low	Low	High
Uncertainty and unpredictability	Low	Low	High
Complexity of measuring impact	Simple	Simple	Complex

	Product-specific	Market environment
Target populations reached	- Small/local - Specific vulnerable groups	- Large/national - General population
Cost	Low	High
Uncertainty and unpredictability	Low	High
Complexity of measuring impact	Simple	Complex

Interventions in agri-food value chains should consider where their efforts fall along each of these project dimensions. To understand the implications of these decisions, a simple tool can be used by combining the two dimensions to create a matrix of intervention types (Table 5.2). This does not mean that the distinction between supply-, demand- and whole value chain approaches, and between focusing on specific products versus market environments should be a rigid template for designing interventions. Various activities may span multiple categories. However, for project designers, plotting out where activities and intended outcomes fall within this matrix will assist in determining how a project contributes to overcoming specific value chain challenges, and ultimately how it promotes delivery of nutrient-dense foods. It may trigger important reflection and learning about how project objectives can be achieved, the level of risks and uncertainty the intervention entails and how impacts might best be measured.

³⁰ While supply-side interventions can increase the supply of important commodities, they will not necessarily have substantial impacts on affordability of resultant products, since the costs of products are highly dependent on post-farm value addition as well as failures in consumer food markets.

Table 5.2 Examples of interventions categorised by whether they address supply- or demand-side challenges and whether they target particular products or the market environment

	Supply-side	Demand-side	Whole value chain
Product-specific	<ul style="list-style-type: none"> - Outgrower schemes led by intermediaries - GAIN premix facility 	<ul style="list-style-type: none"> - Private sector-led certification scheme - Development of new product or distribution channel (e.g. health officers, village entrepreneurs) - Marketing campaign for product 	<ul style="list-style-type: none"> - Outgrower schemes led by food processors
Market environment	<ul style="list-style-type: none"> - Investment in warehouse and transport infrastructure - Promotion of biofortified crops (e.g. Quality Protein Maize) 	<ul style="list-style-type: none"> - Certification of inputs (e.g. aflatoxin-free groundnuts) - Nutrition awareness campaign 	N/A ³¹

³¹ The combination of a whole value chain approach and targeting the market environment is not generally feasible. Whole value chain approaches involve coordinating the activities of a number of actors distributed vertically along the value chain, which is at odds with market environment approaches that coordinate actors 'horizontally' across a set of value chains. Very large agricultural market reform programmes that also seek to organise and coordinate the actions of transporters, aggregators, processors and retailers are perhaps the closest example.

6 Conclusions

Despite recent progress in reducing poverty and hunger, micronutrient deficiencies continue to impact nearly one-third of children under five in Ghana. Increasing consumption of nutrient-dense foods by linking vulnerable populations to agri-food value chains has strong potential to contribute to reducing this undernutrition, especially deficiencies in iron and vitamin A. It is especially important in the market for complementary foods. This report has analysed the current barriers inhibiting greater private sector involvement in these value chains and has proposed options for policy and programmes to address these challenges and increase access to and consumption of nutrient-dense foods. It begins from a value chain approach that focuses on conditions necessary for foods to reach populations through markets: foods must be available, acceptable and affordable, and the nutritional value must be guaranteed and signalled to consumers. The report identifies four key policy challenges in Ghana: (1) making foods safe by addressing aflatoxin contamination; (2) making consumers aware of their nutrition needs and of the specific foods that can provide for them; (3) signalling nutritional quality to consumers in a reliable way; (4) finding low-cost solutions that do not make products unaffordable to the poor. Based on analysis of these problems, the report presented six options for policy interventions, on both the supply and demand sides of value chains.

There are some complementary food products that meet the criteria of food safety and nutritional quality in Ghana, but these products are not affordable to the poor. Several public–private partnerships are producing more affordable nutrient-dense products, but thus far these products have struggled to establish themselves in the market. It is hard for small firms to establish distribution systems that make their products available to the people and regions that need them most. A central recommendation is to create initiatives to involve firms that could bridge this gap. Second, the guidelines recommend creating an initiative to improve the quality and reliability of products provided by the informal sector. These businesses will continue to provide foods to the poor in the near term. Product quality can be upgraded by linking firms in the informal sector to firms in the formal sector through franchising schemes.

Acting alone, the private sector cannot overcome all of the barriers identified. Multi-stakeholder approaches linking government agencies, NGOs, communities and bilateral donors with businesses can increase the likelihood of success by reducing the cost of safe inputs, raising consumer awareness about food safety and nutritional quality, promoting products and acting as a source of demand.

This report has argued that interventions can target the supply- or the demand-side or can pursue a whole value chain approach. Addressing some of the barriers requires supply-side action; for example, reducing aflatoxin contamination requires broad-based efforts to improve and incentivise on-farm and storage practices. Given that there are extensive programmes to increase agricultural production and attract private investment into agriculture, there is scope to orient these programmes towards developing supply chains for aflatoxin-free inputs.

On the demand side, policy needs to address at least two problems. First, businesses left to their own devices will not target products at the population groups that are most in need. Reaching these groups is expensive, and their purchasing power and willingness to pay for nutrition are low. These problems are exacerbated by the absence of mechanisms to signal nutrition quality, effectively increasing the costs of communicating nutrition quality to consumers. Public–private partnerships involving businesses, government agencies, NGOs, communities and bilateral donors are needed. These partnerships can play a number of different roles: they can facilitate delivery to the poor, promote consumer awareness and/or reduce risk and uncertainty by directly purchasing products.

Second, while poor Ghanaians are willing to pay for products that they trust will provide nutrition for children, the absence of mechanisms to signal nutritional quality severely hampers this market. Potential solutions include roles for government, the private sector, research institutions and development agencies. Past experience suggests that public agencies in Ghana are not well placed to lead a credible and effective system to certify nutrition quality. One alternative approach is a private sector-led certification system, led by an independent body and working closely with public agencies. This system would address the nutrition quality of products in the formal sector. This approach should be complemented by work with the informal sector, which reaches poor consumers throughout Ghana. The quality and consistency of these informal sector products could be improved by two initiatives: the first is to implement franchising schemes that would introduce controls on inputs and processes and assure consumers about quality. The second is to use franchising to provide fortificants that increase the nutritional quality of complementary food mixes. In this way, poor consumers who will continue to rely on the informal sector would gain access to safer, high-quality foods. Together, these interventions could leverage the proximity of informal businesses to consumers by connecting them into a distribution network for certified products.

In developing these options, the report focused on evidence collected on two value chains in particular: groundnut-based products and complementary foods. These types of foods were found to have especially high potential for reducing undernutrition (Anim-Somuah *et al.* 2013). Policy initiatives should focus on complementary food products, and the commodities used as inputs in these products. For this reason, the policy options are focused on these products (controlling aflatoxin in groundnut supplies). At the same time, they provide broader lessons for other types of food products: third-party certification of nutritional quality is especially important for complementary foods, since the quality of these products appears to have a major impact on infant nutrition. For example, although third-party certification is an especially high priority for complementary foods, this approach could also be applied to the wide range of other products whose nutritional value needs to be signalled to consumers.

Box 16 Summary of policy options

Demand-side options

- Control aflatoxin contamination in maize and groundnut supplies by linking farmers to markets for aflatoxin-free products.
- Promote the production of other nutrient-dense commodities and link these to new products.

Supply-side options

- Use nutrition awareness campaigns to promote behaviour change and increase demand for nutrient-dense foods.
- Use public channels to directly purchase and distribute nutrient-dense foods produced in the private sector.
- Create mechanisms to guarantee and signal the nutritional value of products, especially for complementary foods. Focus on a private sector-led certification scheme to create incentives for formal sector businesses to invest in these products. Also promote quality products in the informal sector, using a franchising scheme to allow micro-enterprises to sell as centrally produced and certified product.

Supply- and demand-side policy options summarised in Box 16 can be pursued independently, or in an integrated 'whole value chain' approach. They can also be implemented through focus on specific products or broader market environment initiatives. The policy options in Ghana span these approaches (Table 6.1). Interventions that focus on one end of value chains and that target specific products are likely to require fewer resources, and may involve fewer complexities in project design. Intervening across entire value chains – or coordinating with other projects undertaking complementary activities – while more costly and complex, has a greater likelihood of addressing the key challenges to the provision of nutrient-dense foods. Understanding where particular interventions fall across these programme design dimensions will assist project designers in understanding how they can address the value chain challenges in Ghana and which populations can be reached. It will also contribute to informed decision-making about the degree of certainty and measurability of project impacts.

A set of **overarching policy principles** for value chain approaches to reducing undernutrition underlie all of the policy guidelines presented in this report.

- Focus on particular products, as this will facilitate detailed analysis of value chains and mapping of how foods reach the target populations.
- Target foods that reach infants and mothers (the 1,000 days population), such as complementary foods.
- Provide a clear account of how products will be made accessible to the poor.
- Address acceptability and consumer needs. In the case of complementary foods, there is no problem of acceptability in Ghana.
- Work with existing value chains. Incentivise aflatoxin-free value chains through public–private partnerships that provide incentives to farmers to implement good agricultural practices. Leverage existing initiatives for linking farmers to markets and developing outgrower schemes.
- Use a multi-stakeholder approach. Partnerships can help address the uncertainties of developing new markets and the costs of creating distribution systems. New product development should be linked to existing awareness and infant feeding programmes; novel distribution models should be subsidised in the initial period.
- Provide programmes for both the formal and informal sectors. Help develop formal sector providers to provide quality products at a low cost through introduction of a system to certify nutritional quality. In the informal sector, use franchising to improve the quality and reliability of products.
- Incorporate evidence-gathering into interventions. Assess whether activities lead to vulnerable people consuming more nutrient-dense foods and whether this leads to a reduction in stunting. Incorporate mechanisms to learn from results and respond appropriately.

Table 6.1 Policy recommendations for Ghana, grouped according to where they intervene in value chains and whether they target specific products

	Supply-side	Demand-side	Whole value chain
Either product or market		- <i>Work with formal and informal sectors</i>	- Link suppliers and processors to create incentives to reduce aflatoxin - Promote new nutrient-dense commodities and link to new products
Product-specific	- Promote rural aggregators to build capacity for aflatoxin control	- <i>Focus on products for 1,000 days groups</i> - <i>Ensure products reach the poor</i> - <i>Choose products that are acceptable to consumers</i> - Create demand through public distribution - Third-party certification for complementary foods - Create franchising scheme for informal producers	
Market environment	- Promote storage infrastructure and farmer training to reduce aflatoxin	- Promote nutrition awareness	

Note: Recommendations shown in italics are overall policy principles; those in standard text are specific policy options.

Annex 1 Strategic priorities for the proposed National Nutrition Policy

The proposed National Nutrition Policy (NNP) outlines a framework for nutrition interventions by all stakeholders, defining roles and responsibilities of all institutional stakeholders, with well-coordinated intersectoral linkages. In addition, the NNP provides a national framework for the implementation of nutrition programmes by all stakeholders that addresses the budgetary allocations issues to ensure there is adequate funding for nutrition programmes. The NNP also draws on the 2007 National Health Policy which promotes preventive health by placing emphasis on nutrition and lifestyle changes. NNP will strengthen the link between the various dimensions of nutrition and serve as a coherent framework and strategic document in a broader mandate of ensuring a healthy and productive population for sustainable development. The policy framework employs an approach that takes cognisance of the physiological needs of different population groups through the six stages of the human lifecycle.

The NNP focuses on four main areas:

- prevention and control of various forms of nutrition disorders;
- promoting access to quality nutrition and related services to facilitate effective management of nutrition deficiency disorders;
- addressing underlying factors such as food security, food safety, water and sanitation;
- creation of an enabling environment for effective implementation of interventions.

Four strategic objectives are being set to guide the implementation of the NNP. These objectives are to:

- promote optimal nutrition as an essential component of health and development among all people living in Ghana;
- increase access to and create demand for quality and timely interventions, for effective control of priority nutrition in Ghana;
- promote food security, food quality and food safety at the individual, household, community and national levels;
- create an enabling environment for the effective coordination, integration and implementation of nutrition programmes in Ghana.

Policy measures are being developed to help achieve the strategic objectives. These measures were summarised in the interview with the director of the Family Health Division, Ghana Health Service as follows.

Promotion of optimal nutrition

Information available to Ghana Health Services (GHS) indicates that inappropriate breastfeeding and complementary feeding practices are major factors contributing to infant and child mortality. Under the NNP, priority shall be given to protecting and promoting the nutritional wellbeing of infants, young children, adolescents, pregnant and lactating mothers, people living with diseases and the elderly. Key interventions will include the Essential Nutrition Actions (ENA), which promote the implementation of small and well-defined high-impact nutrition actions at the lowest level through caregivers and service providers to improve women and children's nutrition. Specific policies include:

- the promotion of complementary foods of an appropriate quality, quantity and frequency introduced at six months of age in addition to breastfeeding, and breastfeeding continued for up to two years and beyond;
- regulating the marketing and distribution of breast milk substitutes in accordance with Ghana's Breastfeeding Promotion Regulation of 2000 (known as LI 1667) and the international code of marketing of breastfeeding substitutes;
- promote and support the fortification of appropriate food vehicles such as salt, flour and oil with essential micronutrients (including micronutrient powders), according to specified standards;
- employ and promote diet diversification as a principal approach to the control of micronutrient deficiencies;
- include nutrition in the school curriculum and build the capacity and knowledge of food vendors so that they can prepare and serve safe and nutritionally adequate meals.

Promotion of healthy lifestyle

Poor nutritional practices and habits, ranging from over-consumption of fats, processed or refined foods to smoking, alcohol consumption and poor dietary variety, are some of the factors contributing to the increase in obesity and the associated high risk of chronic illnesses (cardiovascular diseases, cancers, hypertension, osteoporosis, diabetes, etc.) and premature death. The absence of a strong and effective promotion on healthy diets and lifestyle, and a changing nutrition environment, have contributed to this rather unfortunate problem in Ghana. To address the problem it is important that interventions are implemented through promotion of the consumption of healthy foods and diet, and physical activity and exercise. Additionally, the effort should include the management of diet-related non-communicable diseases (NCDs) and strengthening the surveillance system in order to monitor progress. Some of the specific policy aims are:

- develop and implement comprehensive SBCC to sensitise the population to diverse diets and healthy food choices;
- incorporate information on healthy diet, food safety, hygiene, sanitation and routine physical activity into the curriculum of relevant training institutions;
- ensure that promotion of increased production and consumption of fruits and vegetables forms an integral component of nutrition communication activities (in collaboration with WIAD, the Women in Agricultural Development Directorate of MOFA);
- intervene to prevent NCDs through promotion of the consumption of healthy foods and diet, and scale up and support physical activity and exercise.

Nutrition care and support

The interaction between malnutrition and infection has a significant impact on health status and is a major contributory factor to the prevailing high morbidity, mortality and disability rates among malnourished and acutely malnourished children under five. Interventions will link up with current child health policies and programmes including the Integrated Management of Newborns and Childhood Illness (IMNCI) and in line with the Community Management of Acute Malnutrition (CMAM). In addition, policy interventions will facilitate prompt requests for healthcare and nutrition services in the management of children with acute malnutrition, and improving access to National Health Insurance Services (NHIS) will be key. Some specific policies include:

- Infants and children with severe acute malnutrition will receive routine medication upon admission, and monitoring and therapeutic food for the period of the treatment at no cost to the family.

- Essential supplies for managing severe acute malnutrition will be provided.
- Nutrition support will be provided, including counselling and therapeutic foods.
- Regular screening for vital indicators and risk factors will be promoted.

Food security and food safety

The key food security challenges in Ghana are sub-optimal staple food production, weak food commodity value chains, seasonal variability in food availability and prices, and inadequate access to sufficient nutritious food at the household level. Coupled with the inadequate supply of staples is the lack of an effective food safety and quality control system across the food supply chain that ensures consumers have access to food of appropriate nutrient content. Interventions addressing food security concerns and enhancing agricultural production and productivity are in accordance with Food and Agricultural Sector Development Policy (FASDEP II). Food safety challenges will be addressed, implementing a comprehensive plan that will foster strong collaboration with agencies such as the Food and Drugs Authority (FDA), Ghana Standards Authority (GSA), Ministry of Local Government and Rural Development (MLGRD), the Ghana Police Service, Environmental Health and Veterinary Services and others who have the mandate to maintain food safety standards at the community level. The specific policies include:

- modernise agriculture to improve and diversify food production, increase the quantity and quality of available and accessible food in order to ensure a sufficiently diverse and healthy diet for all Ghanaians;
- promote the production of nutrient-rich foods (crops, livestock, and fisheries) by promoting diversification and investigating biofortification options to ensure access to nutrient-dense foods for the entire populace, including the vulnerable groups;
- promote lower-cost production through integrated support services facilitated through the operation of bulk food storage, processing of agricultural commodities and use of public-private partnerships
- create public awareness on relevant issues, and set, promote and enforce appropriate guidelines, standards and a regulatory framework to ensure safe, high-quality food will be sought;
- update, review and harmonise the regulatory and institutional framework to improve guidelines, coordination and enforcement, including food labelling;
- promote public-private sector partnerships for improved food safety and quality control.

Coordination and enabling environment

Due to the multifaceted nature of nutrition issues, long-lasting intervention will involve many sectors, including health, agriculture, water and sanitation, social welfare, education, women and child development actors, among others. The absence of a strong coordinating mechanism affects the availability, accessibility and utilisation of quality nutrition services as most interventions are *ad hoc*, fragmented and vertical. The interventions proposed include advocacy by civil society organisations (CSOs), institutional capacity development and an integrated and comprehensive system for increased and predictable budgetary allocations to nutrition programmes. In addition a strong coordination and management system for nutrition programmes at all levels is needed that will:

- strengthen advocacy for increased and sustained resource allocations by government and donors towards nutrition;
- advocate to reposition nutrition as a cross-cutting issue to be integrated and mainstreamed into national development efforts;

- provide continuous and sustained advocacy and communication to inform policymakers and key stakeholders about the importance of investing in nutrition, and their respective roles;
- establish a well-defined multisectoral coordination mechanism for nutrition services and programmes at national and sub-national levels.

Annex 2 National Board for Small Scale Industries

The National Board for Small Scale Industries (NBSSI) was established in 1981 as the apex governmental body for the promotion and development of the micro and small enterprises sector in Ghana. NBSSI has its head office in Accra with regional secretariats in all the ten regions of Ghana. NBSSI has Business Advisory Centres (BACs) in the districts, bringing their services to the doorsteps of entrepreneurs. BACs provide a comprehensive package of financial and non-financial services including:

- an enabling environment for micro and small enterprise development and growth;
- high-quality business development services;
- deepening the development of an enterprise culture;
- advisory and counselling services;
- facilitating access to credits;
- promoting group formation and developing sector associations.

Under the enabling environment service package, NBSSI facilitates the registration of enterprises with the Registrar General's Department and the certification of premises and products with the Ghana Standards Authority (GSA). Since 2010, NBSSI have facilitated the certification of 137 SMEs (small and medium-sized enterprises – SMEs), of which 115 are in food processing, 17 in body care products manufacturing and five in other manufacturing activities. NBSSI facilitation of certification includes: training clients about the requirements for certification; facilitating site inspection by GSA staff; providing technical and in some cases financial support for clients to meet requirements; technical assistance in applying for certification. NBSSI has an arrangement with the GSA for concessionary pricing for the certification of SME premises and products.

Annex 3 Remit of the Food and Drugs Authority

The remit of the MOH (Ministry of Health) includes food regulation and food safety enforcement. Food regulation and the administration of national food safety policy are under the mandate of the Ghana Food and Drugs Authority (FDA). The FDA's goal is to safeguard public health by ensuring that food products on the Ghanaian market meet the appropriate food safety and quality standards and comply with recognised good practice in manufacturing, warehousing, and so on. The FDA regulates the food sector through:

- registration and evaluation of food products;
- registration and inspection of food processing premises and facilities;
- destination inspection of imported food products and ingredients;
- post-market surveillance;
- public education and food-borne disease surveillance.

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