



Chapter 9

Agroprocessing and Agro-industries: Current State, Opportunities and Challenges

This chapter takes a closer look at the agroprocessing sector in West Africa in the context of the broader structural transformation. After a brief introduction, the chapter highlights key features of agroprocessing in the region in terms of different enterprise segments and their relative importance across industries and market segments. The chapter then turns to the performance of agroprocessing, highlighting key challenges and opportunities for the different enterprise segments in various subsectors. The final section highlights policy issues and options for upgrading agroprocessing and agro-industries.

9.1 Background: agroprocessing and agro-industries

With the exception of fresh fruits and vegetables, most primary agricultural products undergo some type of processing before their consumption. This even applies to basic food staples such as rice, cassava and livestock products. Agroprocessing is the transformation of agricultural raw products through mechanical, biological and chemical alterations, or combinations thereof.⁶⁸ It often involves several subsequent processes (e.g., oil extraction followed by refinement), referred to as primary, secondary, or even tertiary processing. Processing converts agricultural raw material or commodities into agrifood products for human and animal consumption or for further industrial use, e.g. in the chemical and pharmaceutical industries. It changes the quality, safety and health attributes of agricultural commodities and agrifood products by modifying their attributes in terms of shelf-life, colour, texture, nutrient content or volume.⁶⁹

Part II has shown that the demand for processed products in West Africa has been increasing with

rising incomes, urbanization, and lifestyle changes that reduce the time that urban consumers are willing and able to spend on food purchase and preparation. Food attributes such as shelf life, convenience in preparation, safety, nutritional value, packaging and presentation are all becoming more important, albeit at different velocities among different countries and population strata. Hence, the importance of agroprocessing industries within agrifood chains is increasing. Moreover, their structure and performance have important implications for the costs, quality and safety of agrifood products. The performance of the sector in terms of processing efficiency and product quality is both related to and dependent on the performance of upstream and downstream segments of the value chain. The former determines the availability and quality of raw material and other ingredients throughout the year, whereas the latter influences marketing and distribution costs. Agro-industry performance also depends on an efficient supply chain for processing equipment, spare parts, and maintenance services and on the condition of basic transportation, communication, and energy infrastructure.

The terms agro-industries and agroprocessing are often used interchangeably. While agroprocessing only refers to the post-harvest transformation of agricultural products, agroindustries also include the upstream part of agricultural value chains (e.g. input and equipment manufacturing). This chapter focuses on agroprocessing as the downstream part

⁶⁸ Examples include de-hulling, shelling, and milling (mechanical alteration), fermentation (biological alteration) and pasteurization (chemical alteration).

⁶⁹ A distinction needs to be made between processing and value addition. From an economic point of view, processing only adds value if consumers or users of the processed product are willing to pay a premium exceeding the cost of processing. Moreover, value addition does not necessarily require and is not limited to processing. Other transactions such as sorting, grading, storing, packaging, transporting and trading also add value. Furthermore, processing or other operations that are carried out at an economic loss represent value subtraction rather than value addition.

of agro-industrial activities. Agroprocessing differs widely in terms of scale, complexity, technology and labour and capital intensity, ranging from basic village-level cottage industries to large modern industrial processing plants. At the smallest scale, agroprocessing is carried out at the household level, sometimes on a seasonal basis.

9.2 Key features of agroprocessing in West Africa

The West African agroprocessing sector reflects this diversity in terms of size, range of commodities, mechanization and technology levels, reliance on domestic and imported raw materials, internal and external market orientation, quality awareness, degrees of value addition, and vertical and horizontal integration. Various typologies have been proposed based on the scale of operations, enterprise size and level of formality and technology (Ilboudou and Kambou, 2009; Broutin and Bricas, 2006). However, the boundaries between categories are often blurred and are usually commodity-, product- and context-specific.

A detailed understanding of the size, structure and performance of the agroprocessing sector is limited by a dearth of data and analysis. Official data tend to be fragmented, outdated or overly aggregate, i.e. mainly at the level of major sub-sectors such as foods and beverages and their contribution to Manufacturing Value Added (MVA). More detailed data on the number of enterprises of different sizes, their production and technology levels, and ownership and management structure are rarely available, not even at an industry level. Moreover, official data only capture the formal part of the sector while a significant share of processing and value addition takes place outside of the formal economy. These data limitations pose serious constraints to evidence-based policy making and programme design for the sector. Not surprisingly, there are few studies on agro-industries in the region apart from scattered reports on single sub-sectors such as cotton or cocoa.

Despite these caveats, this chapter discusses some key features of agroprocessing in West Af-

rica concerning its structure and performance and their implications for policies and upgrading strategies. The chapter mainly draws on: (1) a literature review conducted by an international agribusiness specialist as part of the AGWA research, (2) interviews with agrifood companies conducted during the AGWA fieldwork in Lagos and Accra, (3) information on the Nigerian packaged food market from Euromonitor International, (4) additional literature research and (5) the authors' own experiences in the region.

9.2.1 Geographical distribution

Agroprocessing takes place throughout the region, but formal-sector firms are most heavily present in the "big three" countries of Nigeria, Côte d'Ivoire and Ghana. Table 9.1 presents a ranking of 13 of the 15 ECOWAS countries for which data are available; the table ranks the countries in terms of their volumes of production of raw material and primary processed products for several major crops as reported by FAOSTAT. The importance of export-crop processing (palm oil, cocoa, and rubber) is particularly striking in Côte d'Ivoire, while Nigeria ranks first in rice and cassava, as well as industries based on imported inputs such as wheat and milk powder, which are not listed in the table.

The location of processing plants within a given country depends on a number of factors, including access to markets and raw materials, infrastructure and utilities, as well as incentives such as tax breaks and subsidies. Reliable access to raw material of dependable quality and competitive cost stands out as a key determinant. Import-dependent companies tend to be located close to major ports or large consumer markets. Processors of perishable and bulky raw material such as sugarcane, cassava, oil palm and fresh produce tend to be located close to major production areas. Small processors are often located close to raw material sources and can sometimes out-compete larger companies for those raw materials given the smaller plants' lower assembly costs (see the discussion in Chapter 10 on rice and cassava).

Table 9.1 Ranking of countries by the size of their agroprocessing sectors

Ranked by volume of production of raw material and primary processed products.

Country	All crops ^a	Rice	Cassava	Palm nut oil	Sugar cane	Cocoa	Cotton	Rubber
Nigeria	16	1	1	3	4	3	1	3
Côte d'Ivoire	25	5	4	1	8	1	5	1
Ghana	28	7	2	2	2	2	8	5
Guinea	43	3	5	6	13	6	6	4
Benin	49	10	3	8	3	8	4	13
Liberia	57	8	7	7	13	7	13	2
Mali	60	2	11	13	5	13	3	13
Togo	60	13	6	4	13	4	7	13
Sierra Leone	61	4	8	5	13	5	13	13
Senegal	64	6	9	13	1	13	9	13
Burkina Faso	71	9	14	13	7	13	2	13
Niger	79	14	10	13	6	13	10	13
Guinea-Bissau	86	11	12	13	13	13	11	13

Source: AGWA background research based on FAOSTAT data

^a The "all crops" figure represents the sum of the individual rankings for the crops listed in this table. The lower this score, the larger (in volume, compared to the other countries in the region) a national processing subsector industry is deemed to be. While the aggregate score implies comparisons across different subsectors solely on the basis of the volume of raw material processed, which varies greatly between subsectors, it provides a rough guide to the relative size of the entire agroprocessing sector in each country. On the other hand, the subsector scores allow direct comparisons between countries on a like-for-like basis. The ranking does not include the processing of imported raw materials such as sugar, wheat and dried milk, but since Nigeria leads the region in all three commodities, followed by Côte d'Ivoire and Ghana, the overall rankings of the leading countries would not change if these products were included in the calculation.

9.2.2 Size distribution

The agroprocessing sector is highly segmented and marked by a strong dichotomy. At the top, there are a limited number of medium and large enterprises, often affiliates or subsidiaries of multinationals or domestic conglomerates, with high levels of capitalization and technology and with strong brands. At the bottom, there are vast numbers of micro- and small operators, mostly in the informal sector, using rudimentary technologies. In between, there is a relatively small number of small and medium sized agro-industries in the formal sector. This phenomenon, often termed "the missing middle", is also found in other manufacturing sub-sectors in Africa (Dinh *et al.*, 2012). The shares of the different enterprise segments in volumes and values of output vary by commodity, as will be further discussed below.

The relative importance of small, medium and large companies and their respective shares in value addition is highly subsector- and commodity-specific. As mentioned above, data on the number and

key features of processing enterprises and their breakdown according to countries and subsectors are scarce and rarely accessible in the public domain. Available evidence such as value chain studies and industry reports⁷⁰ on various countries in the region and the AGWA field work conducted in Ghana and Nigeria suggests the highly diverse picture (see also Chapter 10 on selected value chains).

Large-scale industries tend to be concentrated in subsectors exhibiting strong economies of scale and capital intensity in processing and where reliable access to raw material of dependable quality can be established. This is the case for industries relying on imported raw materials such as wheat (e.g. flour mills⁷¹, pasta and noodle manufacturers and large bakeries), milk powder (dairy products,

⁷⁰ Including industry reports from the market research company Euromonitor International on Nigeria.

⁷¹ For example, Flour Mills of Nigeria is the market leader by capacity but new entrants into the market, such as Dangote, Honeywell, and BUA, are increasing their market shares. The entrance of these new and aggressive millers, which are both domestic and foreign, into the Nigerian flour milling industry has increased competition based on price and quality. Nigeria's millers commonly export to ECOWAS countries under the free-trade treaty to take advantage of strong demand for pasta, wheat and bread in the region. Nigerian companies also benefit from 30 per cent export incentives and do not pay local duties (AGWA field research).

flavoured drinks, yoghurts, and cheese), fruit juice concentrates, and, to some extent, rice (where, for example, Nigerian mills process imported rough rice). Medium and large industries based on domestic raw materials can be found in the traditional export crops (e.g. cotton gins, cocoa grinding, and rubber processing), in plantation crops (sugar mills and refineries, and oil mills, especially for palm oil). Other medium- to large-scale industries can be found in the beverage sector (breweries, soft-drinks), paddy rice and maize milling, poultry production, aquaculture and fish processing, and the production of branded animal feeds.

These industries have flourished to the extent that they have been able to establish a reliable raw material base. This is generally easier if: (1) there are limited alternative uses for the raw material (e.g. industrial crops like rubber), (2) the raw material is highly perishable and bulky and needs to be processed or packaged soon after harvesting (e.g. sugarcane, oil palm, export bananas and other fresh fruits), and (3) specific varieties restrict alternative uses (e.g. sorghum varieties developed for beer brewing).

While many large-scale, capital-intensive operators are linked to multinational companies, there are also several strong domestic and regional players. The latter are usually parts of domestic conglomerates, mostly in Nigeria. Employee numbers in firms within this group are estimated to be in excess of 100 but fewer than 500 per plant. Medium-sized formal sector industrial operations with between 50 and 100 employees also exist in some of the commodities mentioned above, notably milling of paddy rice, maize, animal feeds and palm oil, as well as in rubber conditioning and cassava processing for starch and flour. Micro- and small enterprises are primarily engaged in either artisanal or semi-industrial processing of oil crops, paddy, cassava, maize and animal feed compounding with processed inputs. The larger units may be nominally incorporated into the formal business sector, but the vast majority operates informally (Lambert 2012).

In many commodity sub-sectors, operators of different sizes and technology levels co-exist, usually

targeting different markets in terms of product quality, price, and geographical location. Examples of such subsectors include milling of grains and pulses, oil extraction, feed milling, and bakeries. Micro- and small operators mainly serve local markets and the low-income segments of the urban population. Large companies have moved beyond just targeting upper- and middle-income market segments with their branded products and are increasingly targeting lower-income groups as well. Examples of product categories targeting the mass market include beverages (soft drinks, beer); dried packaged foods such as noodles, pasta and snacks; and sauces and condiments (e.g. Maggi cubes). The main instrument for market segmentation is the use of different package sizes, with small packages often carrying particularly high profit margins multiplied by large sales volumes. Large companies benefit from their broad distribution networks, strong brand names and large advertising budgets. The artisanal sector dominates many of the traditional staple food chains, such as cassava processing, fish smoking, and production of fermented maize doughs (a staple in some of the coastal countries).

9.2.3 Historic evolution and trends

The sector's diversity derives from its dual origins – as an important player in the global trade of agricultural commodities on the one hand and as a component of local cuisine and of households' food-security strategies on the other hand. Agro-industries linked to plantation crops have a long history in the region, with many of them dating back to colonial times. Additional large agroprocessing enterprises were established post-independence as part of the import substitution strategies pursued in the region. Initially, the agro-industry sector was promoted to add value to perishable agricultural products (e.g., palm oil and sugar cane). As part of the import-substitution strategy, governments supported the establishment of large, mechanised processing enterprises in order to capture economies of scale. In addition to the above-mentioned subsectors, these enterprises also targeted food crops such as maize, cassava, yams, fruit juice and tomato processing.

Many of the companies established soon after independence were owned and/or managed by the government. Apart from management problems, these companies faced major challenges on the market side, as their products were frequently less successful in the market than anticipated. Moreover, raw material sourcing was a persistent bottleneck, leading to low capacity utilization rates, undermining profitability. In some cases, large companies were unable to compete successfully with small companies in accessing raw material, such as, for example, in the Malian rice sector (see the discussion in Chapter 10). Due to these shortcomings, most state-owned agro processing companies were eventually privatised or closed (Broutin and Bricas, 2006).

During the period of import substituting industrialization until the mid-1980s, there was little interest in micro-, small- and medium-sized agroprocessors in the region, except for some NGO programmes and efforts by CILSS to promote processing of local cereals through its PROCELOS programme.⁷² This changed only during the 1990s, when donors and national research institutions “discovered” small and medium enterprises (SMEs) in food processing as an important avenue for value addition and employment generation in the non-farm rural economy. A broad range of technologies of different scales were designed and piloted, often successfully. The development of improved processing equipment was accompanied by product testing to ensure safety and quality. However, these efforts, such as those of PROCELOS, were often limited to pilot projects and pilot enterprises, with the hope that demonstration effects would trigger replication and up-scaling. However, this mainstreaming frequently did not occur as envisaged due to poor business enabling environments, unavailability of broader access to key support services and finance, and weaknesses in product presentation, packaging, marketing and distribution.

Despite its enormous size, the artisanal food-processing sector has long been below the radar screen of programmes to develop food-processing,

which were mainly targeted at somewhat larger and more formal SMEs (Broutin and Bricas, 2006). For many products, however, micro- and small enterprises remain a very important segment of the industry, with processing carried out by small, independent units, often involving small-scale mechanization such as milling, oil pressing, and de-hulling. This enterprise segment also has a long track record as provider of cheap foods and dietary diversity for the rural and urban population. It has grown strongly since the early 1990s due to the diversification of West African diets discussed in Part II and the reduction of activities of large-scale agroprocessors in the early 1990s following structural adjustment. The region boasts a huge diversity of dishes and diets based on various preparations of domestic food staples such as roots and tubers, beans, cereals, and oil-palm fruit, which often require some processing. The processing is frequently performed at the household level, often as a part-time activity to preserve farm produce and earn some cash income. The prevalence of household-level processing explains the high share of small-scale food processing carried out by women, often in combination with trade or food services.

After the 2008 food price crisis, there has been resurging interest by domestic and international investors in the Agricultural sector, including agroprocessing. Fuelled by recent strong economic growth, interest of foreign investors in Africa has increased. Between 2000 and 2010, net FDI flows totalled US\$33 billion against only US\$7 billion between 1990 and 1999 (Dinh, *et al.*, 2012). Even though the bulk of FDI went into extractive industries, the agrifood sector has also received increased attention. Much of this interest is focused on the upstream and downstream segments of the agrifood system, including input supply, agroprocessing and, to some extent, modern food retailing. In addition to traditional players with long-standing presence in the region such as Nestlé, Cadbury (now part of Kraft United Foods), and SIFCA, investors from emerging economies such as India and Southeast Asia are increasingly active in the region. An example is OLAM International, founded by members of the Indian diaspora in Senegal. OLAM began operating in West Africa

⁷² <http://www.fao.org/docrep/X5158F/x5158f1a.htm>.

in 1989 and now operates in 11 countries. While initially focusing on commodity imports and exports, the company has been investing in upstream activities such as rice milling as well as fully integrated ventures including farms. The company is engaged in a range of commodities including cocoa, sesame, cashew, wheat, and tomato paste, but also sells a number of branded and packaged products. It also bought a stake in the SIFCA Group, the largest private-sector company in the agro-industrial segment in Côte d'Ivoire, with operations in palm oil, rubber and sugar. Moreover, a number of equity funds and related investment vehicles targeting agribusiness have been set up in recent years, with various levels and combinations of public and private shareholdings.

9.3 Overall sector performance and trends

9.3.1 Declining shares in total industrial output

Agro-industry has traditionally been an important part of the manufacturing sector in West Africa, although its importance varies significantly among countries. Overall, West Africa's manufacturing base has been declining as a share of total economic output over the past 40 years. While the share of the industrial sector in West African GDP grew from 27% in 1970 to 37% in 2008, that of manufacturing declined from 13% to 5% during the same period (UNIDO and UNCATD, 2011). According to ECOWAS (2010), the manufacturing sector accounted for 7.4% of the regional GDP in 2006. Moreover, over 80% of the region's overall manufacturing and value was generated in four countries – Nigeria (40%), Côte d'Ivoire (23%), Ghana (10%) and Senegal (9%). Even though this trend can partially be attributed to the phenomenal growth of Nigeria's oil production, it also mirrors the limited competitiveness of the manufacturing sector and its downsizing following structural adjustment. See the discussion in Chapter 10 for further details.

Agro-industries are an important part of manufacturing, although their share varies across countries. According to the International Standard

Industrial Classification (ISIC), agro-industries comprise six main groups, namely food and beverages; tobacco products; paper and wood products; textiles, footwear and apparel; leather products; and rubber products. Recent UNIDO data for the whole of Africa show that agro-industry plays a significant but shrinking role in the continent's manufacturing value added (MVA). In 2009, agro-industry's share in MVA was 27%, compared with 35% in 2000. The decline is attributable to stronger growth in the medium- to high-technology sector, amounting to 5.7% per annum, against 1.1% per annum for the food and beverages subsector. Likewise, Africa's share in world food and beverage manufacturing declined from 2.4% to 1.6%, whereas its share in chemical manufacturing increased from 1.6% to 2.2% during this period. Within the agro-industrial sector, food and beverages is the biggest subsector, accounting for 16.6% of MVA in 2009, followed by tobacco (2.6%), wood (1.8%), textiles (4.7%, in which locally produced cotton is a major component), and leather (1.2%). However, as discussed throughout Part I, regional averages mask important diversity among countries. Even though no comprehensive data on the share of agro-industry in West Africa's manufacturing could be accessed for this report, ECOWAS' West African Common Industrial Policy (WACIP) refers to agro-industry as the largest subsector within manufacturing. Earlier data on Ghana (2003) and Senegal (2002) show that the agro-industry's contribution to total MVA was between 50% and 60% (Yumkella *et al.*, 2011). Within agro-industries, food and beverage industries accounted for about 60% in Ghana, followed by wood processing (excluding furniture).

9.3.2 Many of the most dynamic agro-industries depend on raw material imports.

While no direct comprehensive data on volumes and values of processed agricultural products are available, trade and consumption data provide some broad indications about growth trends and dynamics. Trade data suggest increased regional processing capacity of wheat milling and related products such as pasta, breakfast cereals, along with sugar refining and tobacco manufacturing (see section

4.3.3 in Chapter 4). The strong growth of wheat imports and the increase of wheat consumption revealed by food balance sheets of various West African countries (see Chapter 5) illustrate the dynamic of the wheat milling and downstream industries such as bakeries, confectionary, noodles and pasta. Tables 7.2 and 7.3 in Chapter 7 show the importance of dried processed foods (including noodles, pasta and packaged rice), bakery and confectionary products, dairy products, and sauces, dressings and condiments in the Nigerian packaged food market and their strong growth prospects. International and domestic brands play an important role in the packaged food market. The rice industry shows a similar dynamic, with the recent influx of larger-scale mills in Nigeria, Ghana and other countries.

The demand and consumption analysis in Part II further revealed strong demand for dairy products including yogurts and flavoured drinks, and this demand is mainly served by medium- to large-scale processors using imported powdered milk. The same applies for fruit juices, which largely draw on imported fruit concentrates. In the vegetable oil category, which currently relies heavily on imported palm oil, however, there are emerging signs of import substitution through foreign direct investment in oil-palm production and processing by large East Asian palm oil companies in coastal countries (e.g., Sime Darby in Liberia) as well as European companies such as Unilever in Côte d'Ivoire.

9.3.3 Huge productivity gaps within a dualistic industry structure persist.

A dual industry structure—an abundance of micro and small firms on the one hand and a limited number of medium and large firms—is not confined to agro-industries but characterises the manufacturing sector at large. Given the large differences in capital- and labour-intensity between the large and small firms, it is not surprising that there is also a persistent labour productivity gap between the two types of firms. Söderbohm (cited in Dinh, *et al.*, 2012) reports a tenfold gap in the value-added per person between manufacturing firms employing more than 50 workers and those

employing fewer than 10 workers. Moreover, he finds that “small manufacturing enterprises almost always stay small.”

A study by La Porta and Shleifer (cited in UNIDO and UNCATD, 2011) on the nature of business informality in 24 African countries shows that firms that operate outside the legal framework have lower productivity than small formal firms. Furthermore, they are smaller in size, produce based on orders, are run by managers with low human capital, do not have access to external finance, do not advertise their products, and largely sell to informal clients for cash. The analysis also highlights something very important from an industrial policy point of view: informal and formal firms occupy very different market niches, and the former rarely become formal since there is very little demand by formal firms for informal products, indicating that informal firms trade more directly with the public rather than business-to-business. There is also some evidence that informal firms do not become formal as they grow.

The persistent market and enterprise segmentation and limited upward mobility of small, informal operators along the technology and size ladder is due to a combination of several factors:

- » *Skills and human resources:* managing a medium-scale enterprise operating in a formal market environment requires a different skill set than managing a small enterprise, creating entry barriers;
- » *Different cost structures:* informal firms benefit from cheap labour (largely family-based), lack of labour regulations and avoid taxes and other regulations. At the same time, their informality restricts their access to financial services, outside capital, technologies, services and more lucrative segments of the output markets.
- » *Access to land and capital:* Informal firms have very restricted access to land needed to expand their operations. Even though start-up financing might be mobilized within the informal network economy, accessing growth finance is a big challenge. Lack of formalization and

registration of land and other productive assets reduces their collateral value, undermining access to growth finance.

Most small and micro-food processors are part of a social network economy that is more geared towards risk diversification and sustainable livelihoods than towards enterprise growth and profit maximization. This has important implications for the performance of small operators and their ability to survive and thrive in a harsh business environment. On the one hand, social networks play a key role in the establishment and operation of micro and small enterprises, helping them to cope with risks, market imperfections and asymmetric power structures. They are used to mobilize initial investment and working capital through a vast array of informal financial institutions and instruments such as rotating savings and credit associations, tontines, and microfinance institutions. They also facilitate access to information, markets and production inputs. Even long-distance trade in the region often operates through informal networks.

On the other hand, being part of a social network economy also implies responsibilities and obligations towards other members of the network and exerts strong pressure on entrepreneurs who succeed to redistribute income to poorer members. This especially applies to networks within kinship structures, which tend to impose strict rules. Entry into the kinship network takes place by birth, and exit is impossible. Horizontal networks based on neighbourhood, places of origin, activity, age or religion are generally more open and flexible concerning entry and exit (Broutin and Bricas, 2006).

Hence, while social networks subsidise start-up and facilitate operations, they tax expansion and growth. Members of network economies have developed numerous strategies to disguise wealth and reduce their “tax burden” to the broader network.⁷³ One of them is to grow by multiplying small-scale enterprises rather than expanding the scale of a single unit operation. This strategy can be due to several reasons. First, running a number of small

enterprises, say mills, spreads the risks of technical breakdown over several units. Second, each additional entity requires only limited amounts of investment and working capital. Third, a portfolio of small businesses spreads market risks. Fourth, small units are less capital- and more labour-intensive, allowing the owner to employ many members of a given social network, thereby contributing to her or his social status and social capital. Fifth, access to raw material to achieve high utilization rates can be easier using a portfolio of small units distributed over various locations. Sixth, a diversified enterprise portfolio also presents advantages of proximity to customers. Given the multiple risks facing small entrepreneurs, such growth paths are rational and may explain in part the dearth of medium-sized enterprises in West African food systems (Broutin and Bricas, 2006).

The micro- and small-enterprise segment in food processing plays an important role in employment generation and livelihood diversification, especially for women, and in providing affordable food products for large numbers of rural and urban low-income households. The great variety of products also contributes to dietary diversity. Moreover, while many medium and large companies rely on imported raw materials, micro and small enterprises mainly process domestic agricultural products. However, as noted above, these enterprise segments are also plagued by low levels of technologies and skills, resulting in low labour productivity and incomes. Rudimentary technologies and hygiene levels often lead to poor product quality and safety.⁷⁴ Moreover, product presentation and packaging are poorly developed and constrain access to more dynamic markets that offer higher income opportunities.

Despite its apparent weaknesses, the artisanal sector, made up of micro-firms operating informally, has often been successful in adapting products to changing consumer demands and sometimes in outcompeting enterprises in the formal sector. The weaknesses of small informal operators have often led to their relative neglect by policies and programmes aimed at agroprocessing

73 For example, women engaged in small-scale trade, processing or other activities save and invest part of their profits in savings-based informal financial institutions. In Sahelian countries, wealth is often invested in cattle kept by mobile herders, out of sight of social-network members.

74 However, food safety is not always a problem among micro and small operators; it varies widely among products (Broutin and Bricas, 2006)

and private-sector/SME development, which are most often focused on the formal, medium to large enterprise segment. While it may be unrealistic to expect a large-scale transformation and growth of the vast number of operators, the sector is by no means as static and homogeneous as often perceived. There are various examples that have shown the ability small operators to adapt to changing consumer demands and provide a variety of traditional food products to low- and middle-income households. For example, the production of gari is dominated by small units, sometimes operating in clusters in proximity to major cassava producing areas. Gari has all the attributes of a convenience food, with strong demand in both urban and rural areas. While there are certainly opportunities to upgrade hygiene and sanitary standards of small gari producers and improve packaging, the acceptance of such improved products over artisanal ones, even among middle-class consumers, is not automatic, as the discussion in Chapter 7 has shown.

There are other cases where artisanal producers have been more successful in adapting to changing consumer demands than have industrial processors. Broutin and Bricas (2006) describe the example of the transformation of dried yams into chips, which can be stored, transported and eventually further processed into flour that can be prepared with boiling water into an instant food called amala. Two large companies, Nestlé in Côte d'Ivoire and Cadbury in Nigeria, also developed and introduced dehydrated instant yam products, but they did not show great success, apparently because consumers did not perceive sufficient value added over the traditional products (based on the artisanally produced flour) to pay the price difference.

In Senegal during the late 1980s the government initiated a programme to promote millet consumption in Dakar in order to reduce import dependency on wheat and create markets for domestic producers. Initially, the programme focused on supporting an industrial mill (la Société Sentenac) to produce packaged millet flour and semolina. The product was successfully introduced into the market, accompanied by a strong advertising

campaign. This initial success of the products encouraged several small enterprises to develop similar products with the support from development projects. These small companies diversified into several millet-based products, targeting the bakery sector to incorporate millet flour into their bread (baptised pain riche). The CFA franc devaluation gave another boost to this small sector of approximately 50 companies. In the early 2000s, Sentenac withdrew from millet processing, shifting back into wheat milling, which it considered more profitable, and leaving the market for millet-based products to small operators. Total production of packaged millet amounted to about 5 000 tonnes in 2001 out of a total millet consumption in Dakar estimated at 45 000 tonnes (in 1998). The remainder of the consumed millet was transformed (de-hulled and milled) either by artisanal processors in the market or in the consuming households (Broutin and Bricas, 2006).

These examples show the potential of different strata of micro and small enterprises to transform traditional products in ways that makes them more appealing to urban households, targeting various market segments and income groups.

9.4 Opportunities and constraints for expanding agroprocessing in West Africa

9.4.1 Opportunities

Demand and consumption trends suggest substantial opportunities for agroprocessing to enhance domestic value addition and better link the Agricultural sector to domestic, regional and international demand. For domestic and regional markets, the following subsectors boast significant potential (for details, see Chapter 10):

- » *Rice milling*: targeting various market segments, with an emphasis on improved quality.
- » *Maize and cassava processing*: into flours, starch, syrups and glucose.
- » *Vegetable oil production*: including palm oil and other vegetable oils with a higher content

of unsaturated fatty acids (e.g. sunflower and sesame oils) to respond to consumers' increasing demand for more healthy fats.

- » **Sugar:** given the growing demand for soft drinks, pharmaceuticals, confections and snacks. So far in West Africa, sugar growing takes place mainly on estates, but examples in Southern and Eastern Africa show opportunities for outgrower schemes; an example in West Africa is the Savannah Sugar Company Limited in Adamawa State in Nigeria, established by CDC.
- » **Fruit juices:** introducing natural fruit juices for the increasingly health-conscious middle-class population and establishing fruit concentrate production plants.
- » **Beer:** substitution of imported barley by sorghum (practiced by Guinness in Nigeria and Ghana) and cassava (practiced by SAB Miller in Mozambique and now starting in Nigeria and Ghana).
- » **Animal feed:** based on maize, soybeans, oilseed cakes, and cassava pellets.
- » **Cocoa grinding:** Globally, grinding is moving increasingly into cocoa-producing countries, with the international chocolate companies focusing more on manufacture of the confections, new product development, and marketing. West Africa's share of global cocoa grindings is 16%, located mainly in Côte d'Ivoire, Ghana and Nigeria. Cocoa grinding is mainly large-scale, given its capital requirements.
- » **Cotton textiles:** A UNIDO feasibility study (Gherzi Textil Organization, 2011) identified potential in Côte d'Ivoire and Nigeria to expand textile manufacturing if issues such as irregular electricity supply (see below) can be resolved.
- » **Meat processing:** Given the projected rapid growth in demand for meat in the region (Part II) and the poor condition of many current abattoirs that endangers public health, new investment in slaughter facilities through public-private partnerships is needed in most countries.

» **Dairy processing:** As noted in Chapter 10, in the inland Sahelian countries, small-scale dairy processing plants based on local milk production have been expanding recently. Large-scale dairy processing will likely remain heavily dependent on imported milk powder, but given the growing demand for products like yoghurts, opportunities exist for expanded local value addition based on the imported powder.

» **Cashew processing:** Africa produces more raw cashew nuts than any other region of the world, and West Africa accounts for 80% of that production. Côte d'Ivoire and Guinea-Bissau are the largest producers. Yet the region only processes 5% to 6% of its output, with the remainder exported raw to Vietnam or India for processing. In contrast, Tanzania and Mozambique, the largest producers in East Africa, process between 20% and 30% of their nuts. The cashew industry in West Africa is attracting increased interest from Brazilian, European and U.S. investors. There are important technical and safety issues to be addressed in cashew processing (as the raw nuts are toxic to the skin), but the scope exists to expand processing markedly.

Almost all of these industries present substantial opportunities for strengthening backward linkages with farming. Likewise, as discussed before, strengthening farm-agribusiness linkages is crucial for enhancing the performance of agroprocessing by increasing capacity utilization rates. In several subsectors, contract farming and outgrower schemes have been used successfully in West Africa and elsewhere. Examples include sugarcane, fruit juices, palm oil, and sorghum for beer brewing. In the case of staple foods, outgrower schemes are less common and performance has been more mixed. For these crops, improving spot markets and their links to wholesaling by strengthening infrastructure for post-harvest handling, storage and transport might be more promising. In this scenario, wholesalers would play a key role in supplying agroprocessors and would in turn work either through their own agents or farmer organizations to assemble the products at the farm or rural-market level. (See Chapter 11 for a discussion of policy issues surrounding wholesalers.)

9.4.2 Constraints

Despite the increased interest and potential in agroprocessing and agro-industry development in West Africa, a number of important factors continue to stifle the sector's growth and competitiveness and its forward and backward linkages in the agrifood system. While many of these constraints and the options to overcome them are value-chain specific, a few well-known structural constraints apply across the entire sector. These are briefly discussed below.

Poor vertical coordination with domestic farming is perhaps the most important issue affecting agro-industry development in the region. The limited ability to consistently procure raw material of dependable quality results in low utilization rates of the installed processing capacities, undermining profitability and competitiveness. (See Chapter 10 for examples from several different value chains.) Weaknesses in physical infrastructure, utilities or the business environment are more easily overcome or circumnavigated than dysfunctional markets and weak contracting systems. Many of the constraints faced by processors originate in deficient raw material supply, which can be traced back to farmers' lack of timely access to appropriate inputs due to market distortions or market failure. It is also linked to farmers' small range of risk management tools, which forces them to deal with risk mainly through diversification. As a consequence, most smallholders produce only very small marketable surpluses of any given crop, raising processors' costs of raw-product assembly. Poor farmer responses to processors' raw material needs are also market-related, wherein buyers are reluctant to provide an assured outlet for products or reward quality, fearing farmers will not observe contractual agreements.

To a great extent, the success of the wheat, sugar refining and rice-polishing industries in responding to burgeoning domestic demand is their assured access to sufficient supplies of good quality raw material, which are offloaded from the vessels that deliver the goods from the world market and then are transferred with relative ease to their

industrial-scale processing plants in the vicinity of the ports. It is likely that if the maize, paddy rice, cassava and vegetable oil processing industries had the same ease of access and assured quality and quantity of raw materials, they too would achieve performance levels similar to those of the import-processing industries.

Poor physical infrastructure, especially concerning transport and trade, increases transport time and costs, reducing the competitiveness of domestic agro-industries vis-à-vis imports. The issues concerning long-distance traffic, road governance and the organization of the trucking industry are further discussed in Chapter 12. In addition, the poor state of rural feeder roads discourages agro-industries from sourcing locally.

Energy, especially electricity, is a key input to mechanization of production, processing and operating cold storage. Unreliable power supply and frequent electricity outages are common across the region and hurt agroprocessing in five ways. First, large- and medium-scale processors and distributors of perishable products all along the food chain are forced to invest in generators, which drive up their costs substantially. Second, when firms do operate on the electrical grid, they often face electrical surges that can damage their equipment. Third, small-scale processors, especially in rural areas where access to electricity is rare, are forced to operate petrol- or diesel-powered equipment (e.g. small mills) rather than electric-powered equipment whose operating costs are lower. Fourth, the lack of reliable electrical supply in certain areas leads processors to concentrate more in major urban areas rather than closer to raw product supplies or else bear the cost of generating their own electricity. Fifth, the lack of reliable electrical power also discourages households from buying refrigerators, which constrains demand for some perishable processed products, such as dairy products. Electricity is frequently cited as the biggest problem of agro-industries in Nigeria, and some investors, international and domestic, targeting the regional market are relocating to Ghana because of Nigeria's unreliable electrical supply (AGWA field research).

Access to and cost of finance is another core issue frequently featuring at the top of the list of constraints cited in business-climate and enterprise surveys (see Box 9.1). While investment capital is critical for upgrading equipment and expanding productive assets, the importance of working capital is sometimes overlooked. Working capital is the lubricant of agro-industries, allowing them to purchase raw material and keep sufficient inventories to maintain high capacity utilization rates. Yet the demand for working capital is also a function of the organization of the value chain, particularly the efficiency of the links between agroprocessors and their sources of raw materials and other key inputs. To the extent that the supply chains providing critical inputs (raw products, packaging materials, spare parts, etc.) to the processors are unreliable, the processors may be forced to build up inventories of the inputs when they are available rather than working on a just-in-time delivery basis. The need to hold these inventories drives up working capital needs, so developing better vertical coordination in the input supply system is one way to reduce the working-capital constraint. A similar situation applies on the output side; to the extent that wholesalers and retailers of the processed product have limited access to working capital, they may require supplier credit from the agroprocessor, driving up the processor's need for working capital.

On the other hand, agroprocessors with good access to working capital finance are in a position to pay cash upon delivery, often a key factor determining their ability to compete with other product buyers. Larger companies may even be able to pre-finance inputs and technical advice to outgrowers. In export chains such as cocoa, international buyers sometimes provide finance to exporters or other domestic aggregators in order to ensure adequate supply, and this finance is passed on upstream to primary aggregation levels, allowing cash payment. In the case of commodities such as cocoa, finance may only be provided against inventories which are often stored in bonded warehouses under the supervision of a collateral manager.

Access to and costs of finance vary considerably between enterprise segments: multinational and large domestic companies tend to have access to international bank finance at much lower costs than those offered by domestic financial institutions. Micro- and small enterprises tend to have little access to formal finance, but this is partially compensated by informal finance, e.g. within social networks. However, the amounts, terms and conditions for such finance are often insufficient to support enterprise growth. Small and medium enterprises in the formal sector tend to face the greatest challenges. While their financing needs are too large to be met by informal sources or

Box 9.1 Reasons for agroprocessors' limited access to financing

The reasons for agro-processor's limited access to and high costs of finance are manifold. In addition to constraints at the client or enterprise level, they range from poor macroeconomic management to limited capacity of the domestic financial system to provide adequate financial services. Even though macroeconomic management has improved in most countries over the past 20 years, inflation rates remain important, particularly in the non-CFA franc countries, driving up interest rates and eroding the value of deposits. Often governments need to pay high prices for public debt instruments (e.g. treasury bills), which provide comfortable investment

opportunities for banks, undermining their incentives engage in much more difficult and risky activities such as lending to SMEs, especially in agriculture-related activities. High levels of informality and poorly-functioning registries for assets (e.g. real estate, equipment, mobile assets, and accounts receivables) reduce the ability of micro, small and medium enterprises to use their assets as collateral to obtain larger loans on better terms. Moreover, poor contract enforcement due to a slow and overwhelmed court system results in financial institutions' requiring high collateral in order to cover their risks, leaving good business propositions underfunded.

microfinance, their access to formal bank finance is restricted by collateral constraints, their elevated risk profiles and the transaction costs of the loans. Even the recent surge of equity investment vehicles is mainly targeting the upper segment of the market.

Skills and human resources are often insufficient in various fields, including food-processing and equipment technology, business development, marketing and finance. This skill shortage especially applies to small operators, who frequently even lack basic operational and management skills. However, even medium-scale domestic firms often lack knowledge and access to best practices on key operational functions such as cost accounting, financial management, logistics for distribution and supply-chain development, product development and branding. Beyond general business development, agroprocessors need additional specific training and advisory services in more technical fields such as good manufacturing practices including hygiene, food safety and quality management. These knowledge gaps place domestic operators at an additional disadvantage vis-à-vis their international peers.

Secure access to land. Secure access to land for setting up production sites is a key problem due to the complexity of land tenure systems and delays in formalization of long-term property rights. Especially for larger investments, secure long-term rights are an important prerequisite to instil investor confidence. Informal operators also face problems of obtaining secure access to land, which is a major constraint to expanding their businesses.

Ease of doing business: regulatory constraints. Table 9.2 shows the evolution of ECOWAS member states' performance on the World Bank's Ease of Doing Business index over the 2006–2011 period. Two observations stand out. First, rankings for West African countries are very low on a world-wide basis, with only 2 of the 15 ECOWAS countries, Ghana and Nigeria, ranking above the bottom third of all countries globally on average over the six-year period.⁷⁵ Second, there has been no uniform improvement in rankings across the area over time. For example, while Ghana has clearly improved, Nigeria's performance has de-

⁷⁵ A higher number on the table represents a lower performance.

Table 9.2 ECOWAS member states' ease of doing business rankings, 2006–2011^a

Country	2006	2007	2008	2009	2010	2011	Average
Ghana	109	87	82	87	77	60	83.7
Nigeria	108	108	114	121	134	133	119.7
The Gambia	127	131	128	135	141	145	134.5
Cape Verde	128	132	137	147	142	129	135.8
Sierra Leone	155	160	163	156	143	150	154.5
Mali	162	158	160	162	155	148	157.5
Senegal	158	162	168	152	151	157	158.0
Burkina Faso	165	161	164	155	154	151	158.3
Togo	149	156	159	166	162	158	158.3
Côte d'Ivoire	157	155	155	163	168	170	161.3
Benin	147	151	157	172	172	173	162.0
Liberia	169	170	167	159	152	155	162.0
Niger	171	169	171	174	171	172	171.3
Guinea	167	166	172	171	178	179	172.2
Guinea-Bissau	176	176	179	181	175	181	178.0
Average ECOWAS 15	149.9	149.5	151.7	153.4	151.7	150.7	

Source: World Bank, extracted from Euromonitor International, 2012 online database.

^a Rankings out of a total of 185 countries world-wide.

clined significantly, despite the Nigerian economy having grown strongly over the period. Overall, the 15 ECOWAS countries showed no improvement, although individual countries show very different trends, precluding many region-wide generalizations. Nonetheless, in many countries weak contract enforcement is a particular problem, as are financing constraints resulting in the unwillingness or inability of agribusiness and input suppliers to move beyond cash and spot transactions into pre-financing and forward contracting.

Table 9.2 shows performance relative to other countries. It is possible that business conditions may have improved in an absolute sense in many countries in the region over this period; such an improvement could increase incentives to invest to serve the local and regional market. But for certain types of FDI, particularly those targeted at the export market for products that can be produced in many different tropical countries, it is the performance relative to other parts of the world that is particularly important, as West Africa is now competing in a global market.

9.4.3 Agro-industry as a policy orphan

Strengthening the up- and down-stream linkages of agro-industries, including agroprocessing, can help stimulate sustained growth in both the agricultural sector and the food and fibre markets that it targets. On that basis alone, agro-industrial development should be a policy priority. However, the central concerns of agro-industry span the domains of several sector ministries and agencies – agriculture, industry, health, and trade – none of which primarily deal with agro-industries. For example, ministries of agriculture primarily focus on farm-level production, and up- and downstream functions have received less attention. On the upstream end of the value chain, agricultural ministries have often been directly involved in procuring and distributing inputs and technologies and have a limited track record in supporting private-sector based Agricultural input supply chains and support services. Downstream, the main focus has traditionally been on post-harvest handling or value addition on-farm, or through farmer organizations. Support to agri-business, including

SME's in agroprocessing, and to strengthening of farm-agribusiness linkages has rarely been part of agricultural ministries' core functions. Ministries of trade and industries and related agencies implement policies and programmes geared towards manufacturing, private-sector and SME development in general. Although these policies and programmes address many of the generic constraints facing enterprises in manufacturing and trade, they often lack specificity concerning the particular challenges facing agro-related enterprises, such as those related to food safety, quality, coping with seasonality and ensuring reliable access to dependable raw material supplies.

Hence, given the absence of a government agency with a clear mandate or a specific policy framework, agro-industries have long been a "policy orphan." Its plight and potential have only recently been recognised by global and regional players. Consequently, until recently, there have been few comprehensive approaches to agro-industrial development at the national and regional levels, in stark contrast to the CAADP process discussed in Chapter 11, which is focused primarily on production agriculture. While ECOWAS has a regional industrial policy that includes agroprocessing, CAADP is not explicitly linked to it.

Things are beginning to change, however. In 2010, at the request of the African Union, FAO, UNIDO and IFAD launched the African Agribusiness and Agro-Industries Development Initiative (3ADI) with the following objectives (African Union *et al.*, 2010a, pp. 7-8):

1. Leverage the current attention to Agriculture for development in Africa to accelerate the development of agribusiness and agro-industries sectors that ensure value-addition to Africa's agricultural products, respond to domestic market requirements and contribute to intra-Africa trade;
2. Enhance the governance of agribusiness and agro-industry and support a well-coordinated effort by African countries, African Regional Economic Commissions (RECs), relevant UN and other international agencies and the

private sector to share knowledge and harmonise programmes in ways that capture synergies, avoid fragmented efforts, and enhance developmental impacts;

3. Support an investment programme that will significantly increase the proportion of agricultural produce in Africa that is transformed into differentiated high-value products, such that by 2020 more than 50% of Africa's food products sold in local and national markets are in the processed form and such that the proportion of Africa's agricultural exports that are processed into final consumer products more than doubles, fully meeting food safety standards demanded by consumers in the continent and in the global market.

The 3ADI programme operates by providing a combination of technical assistance (e.g. from UNIDO) to investors in identifying opportunities and constraints to agroprocessing in key value chains and then helping connect agroprocessors with financing sources, including through the African Agriculture Fund, a private equity fund managed by the firm Phatisa.⁷⁶ Through its coordination with the CAADP market access pillar (see Chapter 11), 3ADI is also well-placed to help lobby for policies more favourable to agroprocessing and agro-industry. As of early 2013, 3ADI was supporting value-chain development and agroprocessing projects in six West African countries: Burkina Faso, Ghana, Liberia, Niger, Nigeria, and Sierra Leone.⁷⁷ In addition to 3ADI, other efforts such as the Grow Africa Initiative launched at the World Economic Forum in Davos in 2012 and the complementary New Alliance for Food Security and Nutrition promoted by the United States, aim at increasing FDI and African investment in both production agriculture and agro-industries, in coordination with CAADP. It will be important that these new initiatives do indeed coordinate both at the national and the regional levels with CAADP to help ensure policy consistency.⁷⁸

⁷⁶ http://www.phatisa.com/The_Fund_Manager/AAF/

⁷⁷ In 2012, 3ADI's mandate was extended to cover selected LDCs outside of Africa; when operating outside of Africa, it is known as the Accelerated Agribusiness and Agro-Industries Development Initiative. See www.3ADI.org for details.

⁷⁸ ROPPA has raised concerns that the heavy emphasis in some of these new initiatives on FDI threatens family farming and the control of the CAADP agenda by local stakeholders. See Focus Section B in Part IV for more details.

As discussed in Chapter 11, at the regional level, ECOWAS has created an Interdepartmental Committee on Food and Agriculture that will include representatives from ECOWAS departments dealing with agriculture, industry and trade to help guide the implementation of the regional agricultural programme. At the national level, some countries have responded by establishing specialized agribusiness units in agricultural ministries (e.g. in Ghana), or by creating inter-ministerial coordination mechanisms (e.g. in Senegal). While these are important steps into the right direction, their effectiveness in fostering coordination within and between ministries and other agribusiness stakeholders remains to be seen. In addition to government agencies at various administrative levels, agri-business development requires close collaboration with a very diverse and heterogeneous private sector, which is often poorly organized.

9.5 Main findings and policy implications

With growing income, urbanization and female employment outside the home in West Africa, the demand for processed food is increasing. Food attributes such as shelf life, convenience in preparation, safety, nutritional value, packaging and presentation are all becoming more important, albeit at different velocities among different countries and population strata. Moreover, the structure and performance of the domestic agroprocessing sector have important implications for the costs, quality and safety of agrifood products. Development of agroprocessing is critical for adding value to domestic raw materials and strengthening the linkages between the agricultural sector and a growing and increasingly diverse demand for food and non-food products. It provides strong opportunities for employment generation and livelihood diversification in the context of West Africa's rapidly growing labour force and the structural transformation of food consumption patterns. Parts of agroprocessing, particularly at the SME level, are easier to enter than other segments of the industrial sector, due to their relatively limited capital, technology and human resource requirements. However, as witnessed by growing imports of processed foods and the limited share of processed

agricultural exports, the regional agroprocessing sector is not yet fully capable to respond to the growing demand.

The West African agroprocessing sector is highly diverse in terms of size, range of commodities, mechanization and technology levels, reliance on domestic and imported raw materials, internal and external market orientation, quality awareness, degrees of value addition, and vertical and horizontal integration. The sector is marked by a strong dichotomy. On the top, there are a limited number of medium and large enterprises, often affiliates or subsidiaries of multinationals or domestic conglomerates, with high levels of capitalization and technologies and with strong brands. At the bottom, there are vast numbers of micro- and small operators, mostly in the informal sector, using rudimentary technologies. In between, there are also relatively few small and medium sized agro-industries in the formal sector. This phenomenon, often termed “the missing middle”, is also found in other manufacturing sub-sectors in Africa.

The relative importance of small, medium and large companies and their respective shares in value addition is highly subsector- and commodity-specific. Large-scale industries tend to be concentrated in subsectors exhibiting strong economies of scale and capital intensity in processing and where reliable access to raw material of dependable quality can be established. This is the case for industries relying on imported raw materials such as wheat (e.g. flour mills, pasta and noodle manufacturers and large bakeries), milk powder (dairy products, flavoured drinks, yoghurts, and cheese), fruit-juice concentrates and, to some extent, rice (where, for example, Nigerian mills process imported rough rice). Medium and large industries based on domestic raw materials can be found in the traditional export crops (e.g., cotton gins, cocoa grinding and rubber processing) and in plantation crops (sugar mills and refineries, and oil mills, especially for palm oil). Other medium- to large-scale industries can be found in the beverage sector (breweries, soft-drinks), paddy rice and maize milling, poultry production, aquaculture and fish processing, and the production of branded animal feeds. These industries have flourished to the extent that they

have been able to establish a reliable raw material base. Although industrial agroprocessors form an important part of the manufacturing sector in most countries, formal-sector firms are most heavily present in the “big three” countries of Nigeria, Côte d’Ivoire and Ghana.

The artisanal sector has a long track record as provider of cheap foods and dietary diversity for the rural and urban population. It has also a great importance in employment creation and empowerment, especially for women, and as a user of domestic agricultural produce. Micro- and small enterprises are primarily engaged in artisanal or semi-industrial processing of oil crops, paddy, cassava, maize and animal feed compounding with processed inputs. The larger units may be nominally incorporated into the formal business sector, but the vast majority operates informally.

In many commodity sub-sectors, operators of different sizes and technology levels co-exist, usually targeting different markets in terms of product quality, price, and geographical location. Examples of such subsectors include milling of grains and pulses, oil extraction, feed milling, and bakeries. Micro- and small operators mainly serve local markets and the low-income segments of the urban population.

The performance of the agroprocessing sector has been hampered by a number of well-known constraints related to physical infrastructure (roads, electricity), finance, skills and human resources, secure access to land, and other aspects of a poor business environment. Perhaps the most important constraint is reliable access to raw material at dependable quality and competitive costs, resulting in low utilization rates of installed capacities. The importance of raw material supply is illustrated by the fact that industrial processing flourished in industries primarily using imported raw materials such as wheat, milk powder or fruit-juice concentrates.

Despite these challenges, growth opportunities for agroprocessing exist in a number of subsectors. These include rice milling, maize and cassava processing, vegetable oil production, sugar milling

and refining, fruit juice production, beer brewing, animal feed production, cocoa grinding, as well as cotton and cashew processing.

The following are key considerations in crafting more effective policies to support West Africa's agroprocessing sector.

A differentiated and balanced approach. Agro-industrial development requires a differentiated and balanced approach that recognises the diversity of operators in the sector and the respective weaknesses, challenges and opportunities of each enterprise segment. Large companies can introduce new technologies and set benchmarks in product quality, sourcing arrangements and distribution. Due to their leverage, they can mobilize international finance, access domestic and international markets for branded and higher value products, and provide important market outlets for domestic producers. Under certain enabling conditions, they can engage in resource-providing contracts with farmers and their organizations to overcome constraints in input and output markets, financing and other support services. Small and medium-sized companies in the formal sector have specific knowledge of local markets and can adapt products based on domestic raw materials to consumer demands accordingly. While multinational companies tend to supply their global brands into West African markets with little adaptation, domestic companies can blend traditional culinary preferences with convenience and safety attributes that appeal to urban consumers. Informal food processors are important users of local raw materials and providers of affordable and diverse foods to low-income populations.

Public policies and development programmes should aim at enhancing the enabling environment for agro-industrial development in general while levelling the playing field between different operators. Improving the general enabling environment requires reforms and investments to address bottlenecks concerning transport and communication infrastructure, power supply, rule of law, contract enforcement, land access and tenure security. These measures benefit all economic operators across sectors and enterprise sizes. Levelling the playing

field requires transparency and clear rules for large investors such as those envisaged in the Voluntary Guidelines for Land Tenure (FAO, 2012c) and the Principles for Responsible Agricultural Investments.

Improving the sourcing of local products and strengthening the inclusion of family farmers. Governments could also provide incentives for enhancing domestic sourcing of raw materials and small farmer inclusion in supply chains. These could take the form of fiscal incentives, cost sharing for targeted infrastructure development, capacity building and training. Provisions could also be included in land concessions for plantation development, i.e. the need to complement the development of a nucleus estate with outgrower schemes and strengthening of producer organisations. Contract enforcement, risk sharing, and conflict arbitration mechanisms could also be strengthened.

Strengthening the vertical coordination between farmers and agroprocessors requires developing a collaborative as opposed to an adversarial relationship between the two parties. Potential conflicts of interest arise over prices and policies regarding imports of competing raw agricultural products (e.g. raw sugar to be further refined in domestic processing plants). While some such conflicts are inherent in buyer-seller relationships, they can be mitigated through a focus on improving system-wide efficiency (e.g. through adoption of new technologies and institutional arrangements) and a transparent accounting system that helps assure each party that it is equally sharing in the risks and rewards. Another recurrent problem is agroprocessor-provided input financing to farmers. If the processor is the sole buyer of the output, then credit recovery is straightforward. If, however, multiple potential buyers exist, farmers who take credit from the processor sometimes sell to others ("side-selling.") Even if the farmer uses the receipts to repay the input loan (which often does not occur), the processor loses the volume of input needed to operate the plant at capacity. Problems of side-selling have led to breakdowns of processor-provided farm credit as value chains have liberalized (see Chapter 10). Alternatives such as farmers sharing in the equity investment in the plant (e.g. building up their

equity participation over time through a marketing process) could change the incentives facing farmers, as they would now have an ownership interest in the plant. For such an approach to succeed, however, transparency in the accounts would be essential.

The dangers of policies that simply mandate that agroprocessors source product locally, such as the current requirement for inclusion of cassava flour in bread in Nigeria (discussed in Chapter 10), are that they are very top-down and may not correspond with consumer tastes and preferences; furthermore, they may also overestimate the industry's capacity to adjust to the policies in the mandated time. Instead of mandatory instruments such as quotas for using local raw materials, the use of other types of incentives is preferable. These should start from the consumer end, based on market research, which is currently severely underdeveloped in West Africa.

Strengthening SMEs. Governments and donors can help to level the playing field for domestic SMEs that are disadvantaged in their access to finance, human resources, knowledge and technologies, as well as product marketing and distribution. For example, SMEs do not have the means to engage in market research, promotions and advertising campaigns as do their large domestic and international competitors. Possible support measures include co-financing of new product development, e.g. through consumer testing, market research and business development on a demand-driven basis. Associations of SMEs can play an important role in collective marketing and promotional activities. In other parts of the world, collectively supporting such activities has been an important activity of value-chain-wide commodity associations or value-chain participant councils—similar in some ways to the *interprofessions* being promoted in many of the francophone countries (Shepherd *et al.*, 2009; Staatz and Ricks, 2010). Any such initiatives need to be accompanied by investments in and monitoring of quality and safety standards in order to establish consumer confidence and support domestic brand development.

Innovation and technology development. While a range of technical solutions have been developed by national and international technology development

and research centres, widespread adoption and adaptation of such technologies is still a challenge. This requires mainstreaming technologies within private equipment manufacturers and developing and equipping supply chains, including with spare parts and repair facilities.

The incentives to register as a formal enterprise could be enhanced through reforms of the business enabling environment, streamlining regulations concerning licences, taxes and reporting requirements.

Training on food safety, hygiene and good manufacturing practices. National education systems need to be strengthened in specific agribusiness-related areas. These include technical fields such as food technology, packaging and equipment design and repair, but also hygiene, quality management and supply-chain management. In addition to increasing technical education in these areas, enterprises in the informal sector could be assisted by basic business development and financial management training and related support services, sensitization on food safety and hygiene issues (especially for high-risk commodities) and introduction of low-cost improvements in production methods to achieve better food safety and hygiene.

Improved standards for food quality and food safety. Food safety is first and foremost a public health concern. However, as consumers' incomes rise, food safety and quality (including clear nutritional labelling) become key demand issues for an increasing number of people and hence a determinant of the competitiveness of West African agroprocessors vis-à-vis imports. These concerns give advantages to strong national brands and imports that have developed credibility regarding their quality with consumers. To compete, other agroprocessors need to strengthen their credibility with respect to these attributes. Clear public standards regarding food safety and quality can help domestic firms, especially SMEs, increase their credibility.

Yet in developing and enforcing improved quality and food safety standards, West African policy makers need to strike a careful balance between

public health concerns, the purchasing power of the poor, and the ability of the large number of micro-enterprises and SMEs engaged in agro-processing to upgrade their practices quickly. The strict and rapid application of food safety standards derived mainly from international benchmarks would likely imply the closure of vast numbers of small food processors and vendors. Therefore, in practice, implementation of food safety standards in West Africa (which are indeed largely based

on international standards) is usually flexible and rather tolerant. The problem with this approach is that sanctions are applied arbitrarily. An alternative approach would be to develop intermediate standards for the general public that are more in line with the productive capacities of local processors and purchasing power of the large majority of the population. These standards would need to be linked to a clear and credible roadmap for their upgrading.