Chapter 2

Drivers of Structural Change in West African Agriculture

This chapter sets the scene for subsequent chapters by describing the main drivers and trends that have been shaping the evolution of food demand and consumption and will continue to do so in the future, as well as the structure and performance of West African Agriculture. At first glance, some of these drivers may appear to affect primarily demand for agricultural products, while others influence the supply. Upon closer analysis, however, most affect both. For example, population and income growth both clearly increase the demand for food in the region, but they also strongly influence the supply of labour and capital to West African farmers and agroprocessors. The chapter examines the overall trends for the region of these different drivers and highlights the very large variation across the 15 countries of ECOWAS with respect to many of them.[8]

The chapter analyses five major drivers:

- Demographic change, including rapid population growth, urbanisation and the changing geographical distribution of people within the region;
- The region's on-going but uneven structural transformation of its economy;
- Income growth and changes in its distribution, including a discussion of poverty rates, food security, and the growth of the middle class;
- Continuing vulnerability of overall economic and political progress to due to the recurrence of natural and human-created crises in the region, growing pressure on the region's natural resources, climate change and price volatility; and
- Globalisation and technological change, including the involvement of new global actors in the West African economy, the information revolution and the biotechnology revolution.

2.1 Demographic trends

Demographic changes have been characterised by rapid population growth, high urbanization rates and increasingly unequal population distribution.

2.1.1 Rapid population growth

West Africa's population has been growing fast and this trend is projected to continue until the middle of the century. Over the last thirty years, West Africa's population more than doubled, growing by 2.7% annually. In absolute terms, this translates into an increase from 139 million inhabitants in 1980 to 301 million in 2010. This growth is projected to continue through mid-century, albeit at a declining rate, and the regional population is expected to reach 388 million by 2020, 490 million by 2030 and 736 million people by 2050 (UNDESA, 2011). Growth rates vary widely by country, ranging from 1% per annum for Cape Verde, which is far along on its demographic transition and has heavy outmigration, to 4.5% in Liberia, which is

8 Although this chapter analyses the trends in these key drivers, it does not use these to construct scenarios of alternative possible growth paths for West African economies. For such an analysis, see AfDB, 2011a.

Table 2.1 *Past and projected population estimates of ECOWAS member states*

Country	1950	1990	2010	2020	2030	2050	Share of ECOWAS Total in 2010	2005-10 Growth Rate
	(millions of inhabitants)							(%)
Benin	2.3	4.8	8.8	11.5	14.6	21.7	2.9	3.0
Burkina Faso	4.3	9.3	16.5	22.1	29.1	46.7	5.5	3.0
Cape Verde	0.2	0.3	0.5	0.5	0.6	0.6	0.2	1.0
Côte d'Ivoire	2.6	12.5	19.7	24.5	29.8	40.7	6.6	1.8
The Gambia	0.3	1.0	1.7	2.2	2.8	4.0	0.6	2.8
Ghana	5.0	14.8	24.4	30.3	36.5	49.1	8.1	2.4
Guinea	3.1	5.8	10.0	12.8	15.9	23.0	3.3	2.0
Guinea-Bissau	0.5	1.0	1.5	1.9	2.3	3.2	0.5	2.0
Liberia	0.9	2.1	4.0	5.2	6.5	9.7	1.3	4.5
Mali	4.6	8.7	15.4	20.5	26.8	42.1	5.1	3.1
Niger	2.5	7.8	15.5	22.1	30.8	55.4	5.2	3.5
Nigeria	37.9	97.6	158.4	203.9	257.8	389.6	52.7	2.5
Senegal	2.4	7.2	12.4	16.0	20.0	28.6	4.1	2.7
Sierra Leone	1.9	4.0	5.9	7.2	8.5	11.1	2.0	2.6
Togo	1.4	3.7	6.0	7.3	8.7	11.1	2.0	2.2
ECOWAS Total	**69.8**	**180.5**	**300.8**	**388.1**	**490.9**	**736.8**	**100.0**	**2.6**

Source: UNDESA, 2011.

experiencing a return of people who left the country during the civil war. Table 2.1 shows the trends by country and the dominance of Nigeria in West Africa's overall population.

West Africa also has a predominantly young population with 44% of the population below the age of 15. This age structure implies a huge need for job creation in the coming years, as the 80 million young people between the ages of 5 and 14 will enter the labour market over the next decade.[9] In an era of globalization, with increasing exposure to digital media, rural youth are becoming more aspirational and finding traditional farming, characterized by drudgery, low incomes and high risks, less attractive. They increasingly flock into towns seeking employment in the informal services sector. Likewise, a predominantly young population will accelerate new lifestyle trends and changing consumption patterns, spreading from metropolitan areas into the hinterland.

9 Population figures are from UNFPA (2013)

2.1.2 Urbanization

West Africa's population is rapidly urbanising. Between 1980 and 2010, urban populations grew 4.5% annually, against 1.8% in rural areas. This trend is expected to continue between 2011 and 2050, with urban population growth projected at 3.7% per annum compared to only 0.5% in rural areas (UNDESA, 2011). Already by 2020, half of the projected 388 million people residing in West Africa will live in urban areas, and urbanization it is expected to reach 65% by 2050 (UNFPA, 2010).

While urbanization increases at a fast pace across the region, there are considerable differences between countries in their current urbanization levels, ranging from 61% in Cape Verde to 17% in Niger (Table 2.2).

Several authors have questioned the accuracy of official demographic and urbanization statistics (Hitimana *et al.*, 2009b; Hitimana *et al.*, 2009c;

Table 2.2 *Urbanization rate estimates, 1990 – 2050*

	1990	2010	2020	2030	2050
Country			(%)		
Benin	34.5	44.3	50.7	56.5	66.7
Burkina Faso	13.8	25.7	34.0	41.5	55.2
Cape Verde	44.1	61.8	68.7	73.4	79.5
Côte d'Ivoire	39.3	50.6	57.5	63.1	72.1
The Gambia	38.3	56.7	61.6	65.8	73.3
Ghana	36.4	51.2	57.5	62.8	72.3
Guinea	28.0	35.0	40.2	46.2	58.4
Guinea-Bissau	28.1	43.2	49.7	54.7	63.1
Liberia	40.9	47.8	51.8	56.4	66.1
Mali	23.3	34.3	40.8	47.1	59.2
Niger	15.4	17.6	20.6	25.3	37.1
Nigeria	35.3	49.0	55.0	60.8	71.3
Senegal	38.9	42.3	45.7	50.8	61.4
Sierra Leone	33.0	38.9	43.0	48.2	59.5
Togo	28.6	37.5	42.5	47.9	59.3
ECOWAS[a]	**31.9**	**42.4**	**47.9**	**53.4**	**63.6**
West Africa[b]	**33.2**	**44.3**	**49.9**	**55.4**	**65.7**

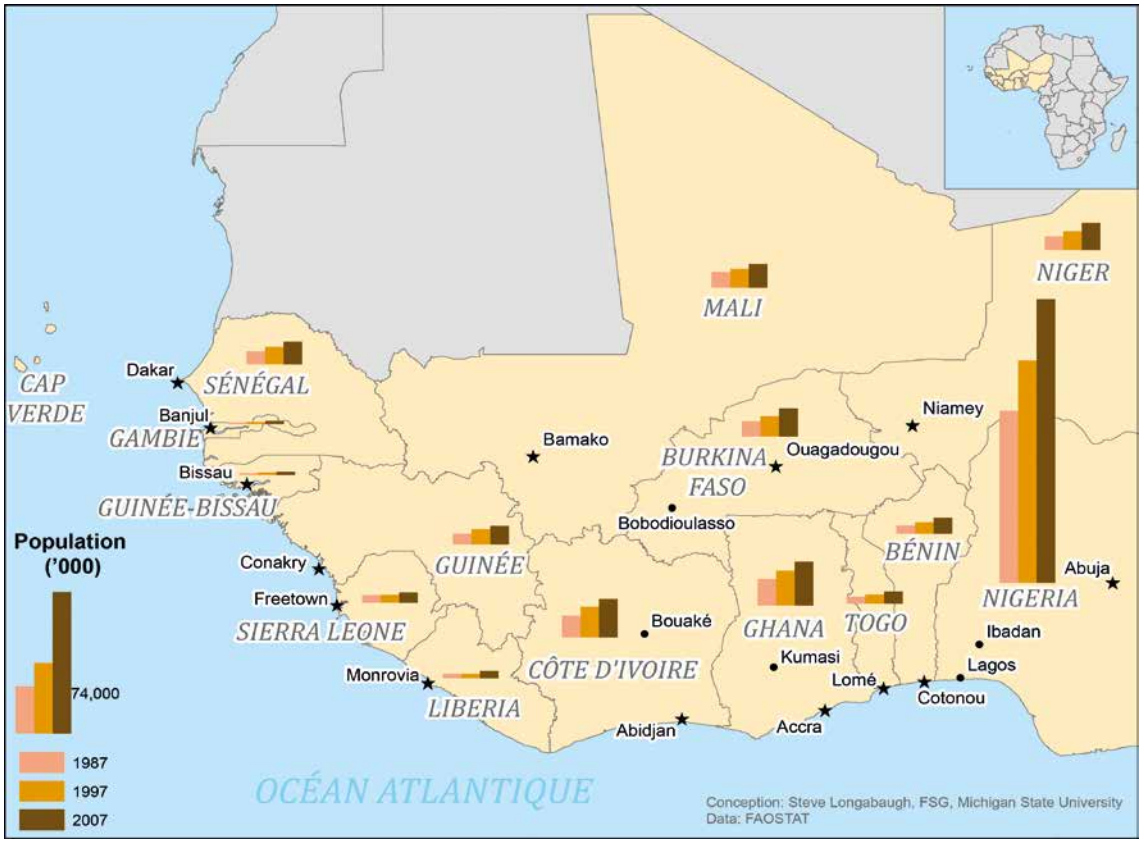
Source: UNDESA, 2011.
[a] Simple average, ECOWAS
[b] Weighted average, West Africa (incl. Mauritania and St. Helena)

Denis and Moriconi-Ebrard, 2008). Moreover, lack of harmonization of definitions of urban populations makes cross-country comparisons and regional aggregation problematic (ibid.). These differences are illustrated by the OECD's Africapolis study, which took an approach different from that of the UN for estimating the urban population in West Africa by combining population census data with satellite images. Applying a threshold of 10 000 inhabitants as the lower boundary for urban agglomerations, the study estimated the entire urban population of West Africa in 2000 at 74.5 million, 18.4 million below the United Nations data based on national statistics.

Data inconsistencies notwithstanding, two overall urbanization patterns stand out throughout the region. First is the primacy of national metropolitan areas over secondary cities and towns. Approximately 40% of the urban population resides in the main metropolitan areas, which on average had about 6.3 times the size of the next largest agglomerations in 2000 (Denis and Moriconi-Ebrard; 2008; Hitimana, *et al.*, 2009c). Second is the proliferation of small towns at the lower boundary of urbanization, whose urban status is not always been recognised politically and statistically. Approximately two-thirds of all agglomerations are in the range between 10 000 and 50 000 inhabitants, totalling about one-fifth of the urban population. New urban settlements are emerging in rural areas, in proximity to large cities and along major highways and transport corridors. As a result, the average distance between urban centres of over 10 000 inhabitants has declined from 111 km in 1950 to 33 km in 2010. While the small towns are the main interface with the rural economy, the metropolitan areas are the main interface with global markets. As will be seen in Chapter 6, in recent years there has been a spread of urban food habits into rural areas (e.g. expanded consumption of wheat and rice products), and these secondary towns are likely an important source of the new foods to rural residents.

Differences in the distribution of the urban population can also be observed between small and

Figure 2.1 *Population growth patterns in West Africa*



Source: Longabaugh, 2012; Data: FAOSTAT

large countries. Small countries tend to show the strongest dichotomy between metropolitan areas and small towns and cities. Large countries such as Côte d'Ivoire, Ghana and especially Nigeria have several large secondary agglomerations and intermediate cities.

Urbanization rates tend to be higher in countries that have experienced stronger economic growth, a correlation also found by the World Development Report 2009 (World Bank, 2009b). However, the direction of causality is not entirely clear. Urbanization can be seen both as a consequence of, and an engine for, economic growth (Allen *et al.*, 2009).[10]

Moreover, the type of urbanization can affect outcomes in terms of overall growth and poverty reduction. Recent evidence based on the analysis of cross-country data sets and long-term panel data from Tanzania suggests that migration into secondary towns has a much larger effect on poverty reduction than migration into metropolitan areas, but a somewhat lower impact on overall economic growth (Christiaensen *et al.*, 2013). Several factors explain the higher incidence of urbanization into secondary and rural towns on poverty reduction, such as the higher likelihood of finding employment (given higher demand for unskilled and semi-skilled labour), lower migration costs and the ability to maintain and exploit closer social ties with the areas of origin. This is consistent with the literature on the positive role of rural nonfarm activities in poverty reduction. Rural towns, which mediate the flow of inputs, goods and services between rural hinterlands and large urban centres are seen as the most effective generators of nonfarm

10 Only three countries showed fast increases in their urbanisation rates despite sluggish or negative growth between 1970 and 2000: Liberia, Sierra Leone and Niger. For the first two countries this is mainly attributable to the armed conflict, while Niger had a far lower urbanisation rate at the end of the colonial period than the other countries in the region (Allen, et al., 2009)

employment for the poor (Haggblade *et al.*, 2007; Lanjouw and Murgai, 2009).

2.1.3 Regional distribution and population densities

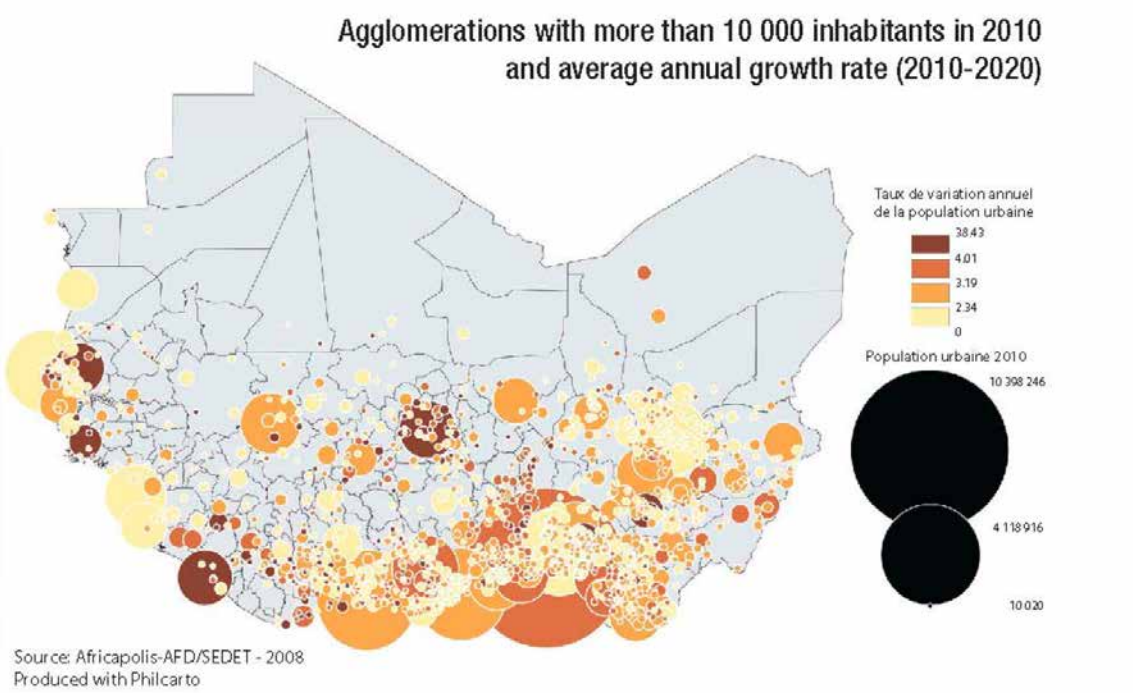
From a demographic standpoint, West Africa is made up of one giant country, six moderate-sized countries, and eight small ones. Nigeria alone, at 158 million, boasts 53% of the total, with two other countries, Ghana and Côte d'Ivoire, accounting for an additional 15%. Hence, these three non-LDCs include two-thirds of the population of the region. West Africa's population is heavily concentrated along the humid coast, and growth, in absolute terms, is concentrated in the coastal states. Population distribution and migration patterns have been strongly influenced by agroclimatic conditions, land availability and variable economic opportunities among countries in the region. Three-quarters of the West African population live in humid and sub-humid zones, 20% in the semi-arid zone (Sahel) and 5% in the arid zone (ECOWAS *et al.*, 2007). Population densities in coastal countries are 6 to 15 times greater than those in the Sahelian countries, making the development of transportation, communication, and marketing infrastructure much cheaper per person served than in the regions farther north.

Intra-region migration has been characterised by high rates of rural-to-urban migration, movements of people from Sahelian to Sudano-Sahelian zones and from these areas to both rural and urban areas of wealthier coastal countries (e.g. Malian and Burkinabé migration to Côte d'Ivoire). Given current migration patterns, by 2020 a high density urban band will have formed running along the breadth of the coastal area of the Gulf of Guinea (Figure 2.2). In 2005, coastal cities accounted for 38% of the entire urban population of the region, compared with 28% in 1950 (Denis and Moriconi-Ebrard, 2008).

2.2 Lagging structural transformation

The demographic changes just described are part of a broader structural transformation of West African economies that is proceeding at an uneven pace.

Figure 2.2 *Projected urban growth rates in West Africa, 2010-2020*



Source: Hitimana, *et al.*, 2009b

Structural transformation is a defining feature of the development process. Typically, it is characterised by four interrelated processes: (1) a declining share of agriculture in GDP (even though the absolute size of the agricultural sector continues to grow), (2) the rise of a modern industrial and service economy, (3) rapid urbanization as people migrate from rural to urban areas, and (4) demographic transition from high to low rates of births and deaths (Timmer, 2012).

2.2.1 Slow sectoral transformation

In West Africa, the structural transformation has been incomplete, with the four interrelated processes occurring at different velocities: while urbanization is progressing fast, there has been little change in the sectoral distribution of the economy, and only three countries (Cape Verde, Côte d'Ivoire and Ghana) are well along in their demographic transitions to lower birth rates. Despite the strong economic growth over the past two decades, official statistics on the sectoral distribution of the GDP show relatively little variation since the 1980s (Table 2.3). The share of agriculture in GDP has declined in countries with high GDP per capita and high growth rates such as Cape Verde, Ghana and Nigeria. In a number of countries, however, agriculture's share of GDP even increased during since the 1980s. However, with the exception of Burkina Faso, these countries had small populations, slow economic growth and were conflict-ridden (Guinea-Bissau, Liberia, Sierra Leone and Niger). More importantly, the share of the industrial sector in GDP only increased in 7 of the 15 countries between the 1980s and the 2000s and remains, on average, at 23%. Within the sector, the main growth drivers have been extractive industries – mining and oil – which are capital-intensive but generate little employment. Manufacturing, which has been the key driver of growth and structural transformation in Asia, has underperformed in West Africa. According to UNIDO and UNCATD (2011), the share of manufacturing in GDP declined from 13% in 1972 to 5% in 2008 for the region as a whole.

Table 2.3 *Average shares of agriculture, industry and services sectors in overall GDP*

1980-1989 and 2000-2009 (%)

	Agriculture		Industry		Services	
Country	1980-89	2000-09	1980-89	2000-09	1980-89	2000-09
Benin	33.8	33.7	14.0	13.7	52.2	52.6
Burkina Faso	29.8	33.8	21.0	22.1	49.2	44.1
Cape Verde	16.6	9.0	19.0	17.5	64.4	73.6
Côte d'Ivoire	27.1	24.2	20.8	24.5	52.0	51.3
The Gambia	34.0	31.1	13.7	14.1	52.3	54.8
Ghana	52.5	36.3	13.8	24.8	33.6	38.9
Guinea	24.0	22.8	33.6	39.1	42.3	38.1
Guinea-Bissau	48.6	55.0	15.7	13.0	35.7	32.0
Liberia	35.8	66.6	27.8	13.5	36.4	19.8
Mali	44.4	37.4	14.8	24.3	40.8	38.1
Niger	38.6	39.3	19.8	17.2	41.6	43.5
Nigeria	–	37.2	–	39.2	–	23.6
Senegal	22.0	16.4	20.7	33.6	57.3	60.0
Sierra Leone	40.0	49.9	15.9	24.4	44.2	25.7
Togo	31.8	39.3	22.0	20.4	46.2	40.3
ECOWAS[a]	**–**	**35.5**	**–**	**22.8**	**–**	**42.4**

Source: World Bank (2011a) Africa Development Indicators

[a] Simple average; data not available for Nigeria in earlier period, so no ECOWAS average for that period.

According to official statistics, the services sector continues to dominate the economy, accounting for 42% of GDP on average during 2000-09 for the ECOWAS countries, followed by agriculture (36%) and industry (23%). The share of the services sector is higher than that seen in other developing regions, taking into account differences in per capita income, and agriculture's share is lower. For example, the average share of the services sector in West Africa is only slightly lower than in Latin America, which has an average per capita income that is nearly eight times higher. Agriculture's share of GDP is only slightly above that of East Asia, the Middle East, and North Africa, although the latter regions have per capita incomes that are three times higher than that of sub-Saharan African countries (Badiane, 2012).

2.2.2 Growth of the informal economy

While the growth of the services sector has been driven to some extent by the recent dynamism in finance, telecommunications and tourism, the dominant trend has been the growth of the informal economy. An important part of the structural transformation in West Africa is a shift of labour from agriculture into the urban and rural informal service economy. In addition, downsizing of government institutions and privatization of parastatals during structural adjustment in the 1980s and 1990s contributed to reducing the formal services sector. Likewise, trade liberalization led to a collapse of some manufacturing enterprises nurtured during industrialization strategies of the 1960s and 1970s. Many of the retrenched employees found a living in the informal economy, including in agriculture.

The figures in Table 2.3 need to be interpreted cautiously because the growth of the informal economy and associated sectoral transformations are not fully captured in official statistics. While agricultural output including subsistence production is usually reflected in national accounts, this is not the case of informal activities in other sectors. As a result, the share of farming in overall GDP tends to be overestimated, whereas important parts of the rural and urban non-agricultural economy are not properly reflected. The latter include informal agricultural trade, cottage food processing and food services which are often primarily carried out by women (see Chapter 9). If the informal sector is defined as including economic activities that do not comply with the obligations to register, keep accounts and pay taxes (Hitimana *et al.*, 2009a), most of West African Agriculture is part of the informal economy. Estimates of the contribution of the informal economy (including Agriculture) to the GDP range from 43% (Côte d'Ivoire) to 77% (Niger) (Hitimana *et al.*, 2011).

Official employment statistics also do not capture the informal economy and are therefore misleading. Especially the share of the agricultural sector in total employment tends to be overestimated. This is partially due to the seasonal nature of most farming activities, particularly under rainfed conditions, forcing farm households to engage in multiple activities, sometimes also on a seasonal basis. Failure to adjust properly for seasonal employment overstates the employment generated by agriculture while at the same time underestimating agricultural labour productivity.[11] Moreover, the majority of non-agricultural activities in rural areas, especially in food processing, trade and catering, are undertaken by women. Still, rural household members often classify themselves as farmers and are reflected as such in surveys and censuses (Allen, *et al.*, 2009; Broutin and Bricas, 2006).

Likewise, not all agricultural producers are rural, as there are an important number of urban households engaged in farming, including vegetable gardening and livestock production on the outskirts of towns and cities. In a number of West African countries, according to official statistics, the agricultural population is far bigger than the rural population.

2.2.3 A growing share of net food buyers

An important implication of this economic and demographic transformation is the shifting relation between net food buyers and net food sellers. By

11 For example, in its 2009 report on trends in agriculture and household living conditions, the Senegalese Ministry of Agriculture estimated the full-time equivalent of agricultural employment at 1.6 million full-time jobs, less than half of the previous official estimate of the agricultural population of 3.4 million in (Hitimana, et al., 2009b).

and large, the urban population is made up of net food buyers whereas in rural areas the situation is becoming increasingly diverse. While data are not available for all the ECOWAS countries, there seems to be a general pattern in many African countries that fewer than half of all smallholders are net sellers of starchy staples (grains, roots and tubers). For example, surveys in Ethiopia, Kenya, Mali, Mozambique, Rwanda, Senegal, Somalia, Tanzania, Zambia, and Zimbabwe between the mid-1980s and 2002 found that in no country were more than half of the smallholders net sellers of staples; the modal figure is closer to one-third. Depending on the country, from 5% to 40% of the smallholders neither bought nor sold staples (Christiaensen and Demery, 2006; Jayne *et al.*, 2006; UNDESA, 2011; Weber *et al.*, 1988).[12] Data from household surveys in Ghana, Nigeria, Malawi and Madagascar found similar patterns, with the amount of land owned being the strongest correlate of net sales position (Zezza *et al.*, 2006).

Two policy implications result: (1) improving food marketing systems needs to address not only strengthening links between rural and urban areas but also rural-to-rural marketing, as many net buyers of staples live in rural areas; and (2) higher food prices do not unambiguously help all rural people, at least in the short run, as many are net buyers of food.

2.3 Trends in income growth and distribution

Economic growth, income levels, and distribution of purchasing power are further powerful drivers shaping demand for agrifood products and structure and evolution of the agrifood system. Despite strong overall economic growth and progress in poverty reduction and food security over the past two decades, important differences between and within countries remain.

12 The figures showing the larger percentages of net sellers were from surveys in more grain-surplus areas that were conducted in the 1980s; while the figures showing smaller percentages were nationally representative studies that took place more recently. Thus, it is most likely that in most of these countries, only about a third of smallholders are net sellers of staples. See for details Staatz and Dembélé, 2007.

2.3.1 Increasing overall economic growth and income

Overall, economic growth has markedly improved over the last 20 years. As shown in Table 2.4, ten out of fourteen countries for which data are available recorded improved GDP growth rates during the 1990s compared with the previous decade. During the first decade of the twenty-first century, all countries except Liberia experienced economic growth, and seven of them had an average GDP growth rate in real terms above 5%. Even in per capita terms, growth has markedly improved, with the majority of countries experiencing positive per capita growth rates. Whereas only 2 of the 13 ECOWAS countries for which data were available during the period 1980-89 experienced growth in per capita GDP, by 2000-09, 11 out of 15 showed a positive trend, and 14 out of 15 had stronger performance than in the 1980s. Top performers during the most recent decade included Cape Verde, Burkina Faso, Ghana, Mali, Nigeria and Sierra Leone (which has been rapidly recovering from war in the 1990s). The impact of civil strife is clearly visible in the figures for various years for Liberia, Sierra Leone, Côte d'Ivoire, and Guinea-Bissau.

The recent strong economic growth has mainly been driven by the primary sector (extractive industries and agriculture) and improved commodity prices. Nevertheless, the economic and political reforms implemented over the last 25 years are bearing fruit in the services sectors as well. Due to improvements in economic management, governance and macroeconomic and sectoral policies (analysed in Chapter 11), other subsectors such as financial services, telecommunications and tourism are beginning to make important contributions to growth. The resurgence has also benefited from increased capital inflows, especially foreign direct investment, aid and debt relief (UNECA, 2012). West African economies also showed remarkable resilience in the face of the global recession following the 2008 financial crisis. Annual real GDP growth hit a nadir of 2.8% in 2009 but by 2011 had rebounded to 6.1% and 6.0% in 2012 and 2013 (West African Subregional Office UNECA, 2013).

Table 2.4 *ECOWAS GDP growth rates and share of regional GDP*

1980-2009 (%)

	2010 GDP/ Capita[a]	Real GDP Ave. Annual Growth Rate			Real GDP/capita Ave. Annual Growth Rate			Share of total sub-regional GDP in 2009
Country		1980-89	1990-99	2000-09	1980-89	1990-99	2000-09	
Benin	1 576	2.7	4.7	4.0	–0.4	1.3	0.6	2.2%
Burkina Faso	1 247	4.0	5.5	5.4	1.4	2.8	1.9	2.9%
Cape Verde	3 954	6.3	5.9	6.4	–	3.4	4.8	0.5%
Côte d'Ivoire	1 885	0.7	3.5	0.8	–3.2	–0.3	–1.3	7.5%
The Gambia	1 400	3.5	2.7	5.2	–0.2	–0.8	2.1	0.3%
Ghana	1 625	2.6	4.3	5.8	–1.1	1.6	3.5	10.3%
Guinea	1 083	–	4.4	3.0	–	1.0	1.0	1.5%
Guinea-Bissau	1 177	3.8	1.4	1.0	2.8	–1.6	–1.4	0.3%
Liberia	416	–3.3	0.2	0.0	–6.7	–1.9	–3.5	0.3%
Mali	1 057	0.5	3.9	5.3	–1.0	2.1	2.8	3.0%
Niger	723	–0.4	2.4	4.3	–2.8	–1.2	0.5	1.8%
Nigeria	2 363	0.8	2.4	6.6	–2.4	0.0	4.0	63.5%
Senegal	1 917	2.7	2.8	4.3	0.0	0.3	1.6	4.2%
Sierra Leone	821	0.5	–5.3	9.5	–1.7	–5.7	5.8	0.6%
Togo	991	1.5	3.6	2.5	–2.3	–0.4	–0.1	1.0%

Source World Bank (2011a) Africa Development Indicators.
[a]GDP per Capita in 2013 US$ (PPP)

Like population, the region's total economic output is heavily concentrated in a few countries (Table 2.4). Despite the overall positive economic performance, income levels, as measured by GDP per capita, vary widely across the zone, with Cape Verde, Nigeria, Côte d'Ivoire, Senegal and Ghana having the highest levels of per capita purchasing power. Nigeria alone accounted for almost two-thirds of the regional GDP in 2009. The three largest economies (Nigeria, Ghana, and Côte d'Ivoire) account for over 81% of the total GDP of ECOWAS. Hence, their economic health is critical to the region. Their economic weight even exceeds their share in the total regional population, which amounted to 67% in 2010 (see Table 2.1). A further group of countries – Senegal, Mali, Burkina Faso, Benin, Niger, Guinea and Togo–each contributes between 1% and 5% to regional GDP. The contribution of the remaining countries – Sierra Leone, The Gambia, Cape Verde, Liberia and Guinea-Bissau – to regional GDP is miniscule, below 1% each.

This huge diversity in demographic and economic terms poses important challenges for the regional integration process. While economic integration is crucial for the smallest and landlocked economies in order for them to benefit from economies of scale, it is less urgent for the larger countries, especially Nigeria.

2.3.2 Poverty has fallen by various degrees

Overall, the consistent economic growth over several years in most West African countries has led to reduced poverty levels. In general, there is a broad correlation between economic growth and poverty reduction, and countries with little or negative GDP growth per capita also experienced worsening poverty levels. Countries such as Ghana, Burkina Faso and Cape Verde that showed a consistent growth record over a longer period have seen the greatest reductions in poverty.

However, the quality of growth clearly matters. The impact of overall economic growth in a

given country on poverty reduction can be muted by income inequalities, due in part to differing economic potentials of various areas within the country. Available Gini coefficient estimates for the ECOWAS countries between 2003 and 2008 (Table 2.5) range between a low of 0.36 (relatively even income distribution) for Guinea Bissau and a high of 0.53 (relatively concentrated distribution) in Liberia.[13] These figures compare with scores internationally that range from approximately 0.23 (Sweden) to 0.70 (Namibia), with the EU coefficient averaging 0.31, the United States scoring around 0.45 and two-thirds of Southeast Asian countries (ASEAN) ranging between 0.30 and 0.40.

Income distribution trends vary between countries. As discussed in more detail in Chapter 7, Nigeria's poverty rate has fluctuated sharply over the past 30 years, and the Gini ratio increased from 0.43 in 2004 to 0.45 in 2010 (NBS, 2012b). ReSAKSS (Taondyandé and Yade, 2012b) calculated changes in Gini ratios over time for four countries (Burkina Faso, Côte d'Ivoire, Ghana, and Mali) for which budget-consumption studies are available for various periods ranging from 1989 through 2009. Income distribution (as proxied by consumption expenditures per person) became more equal in Burkina Faso (between 1994 and 2009), remained unchanged in Côte d'Ivoire (between 1993 and 2008), and became more unequal in Ghana (between 1992 and 2006) and Mali (between 1989 and 2006). In Burkina, the reduction in income inequality came about largely through a reduction in the gap between urban and rural incomes, as urban inequality actually increased during the period. In Ghana and Mali, the increase in income inequality nationally was driven by increasing income inequality in urban areas and between urban and rural areas for both countries and by increasing rural income inequality in Ghana. These contrasting patterns of income distribution illustrate that the gains from economic growth are captured by different segments of the population in different countries; who gains is likely linked, in part, to domestic policy choices. These differences in income distribution will, as we shall see, have important implications for the types of demand facing the agrifood system in each country.

Available data show a wide variation in poverty levels across countries (Table 2.5), with poverty rates much lower in Cape Verde, Côte d'Ivoire, Ghana and Senegal than in the other countries in the region. Table 2.5 shows headcount poverty measures calculated with two different standards: (1) the percentage of the population having purchasing-power parity less than US$1.25 and US$2, which allows comparisons among countries; and (2) the percentage of the population in rural and urban areas in each country falling below the national poverty line as defined in that country's poverty reduction strategy plan. According to estimates of poverty headcount ratios expressed in purchasing-power parities, more than half of the entire regional population lives on less than US$1.25 per day, and three-quarters has less than US$2 per capita at their disposal. Rates of extreme poverty (as measured by the US$1.25 per capita poverty line) are declining in most but not all countries in ECOWAS. Of the 11 countries for which data are available for multiple years between 1985 and 2008, the US$1.25 poverty headcount ratio declined in eight (Burkina Faso, The Gambia, Ghana, Guinea, Mali, Niger, Senegal and Sierra Leone), stayed the same in one country (Guinea Bissau), and increased in two (Nigeria and Côte d'Ivoire).[14] Côte d'Ivoire's increase in its poverty rate occurred as per capita incomes were falling throughout the country, whereas the poverty rate in Nigeria increased during the 1990s (a period of economic stagnation in average per capita GDP growth), and has declined slightly since then.

The figures with respect to national poverty lines show that poverty remains heavily concentrated in rural areas, with poverty rates two to three times higher in rural areas than in urban areas. Budget-consumption studies of seven countries (Burkina Faso, Côte d'Ivoire, Ghana, Mali, Niger, Senegal, and Togo) carried out between 2006 and 2009 found that average total expenditures per

13 A Gini coefficient of 0 means that the poorest 20% of households earn 20% of national income, the poorest 50% earn 50% and so on. A Gini of 100 means that one household earns 100% of national income. The accuracy of Gini calculations depend on reliable fiscal data, and thus the figures must be interpreted cautiously.

14 Calculated from data in World Bank, 2011a Africa Development Indicators.

Table 2.5 *Poverty headcount ratios and Gini coefficients for West African countries*

	Poverty headcount ratio[a]			Percentage of pop. below the national poverty line[b]				Gini Coefficient
Country	Year[c]	$1.25 day	$2.00 day	Year[c]	% rural	% urban	% national	
Benin	2003	47.3	75.3	2002	46.0	29.0	39.0	38.6
Burkina Faso	2003	56.5	81.2	2002	52.4	19.2	46.4	39.6
Cape Verde	2001	20.6	57.7	2006	44.3	13.2	26.6	50.4
Côte d'Ivoire	2008	23.8	46.3	2007	54.2	29.4	42.7	41.5
The Gambia	2003	34.3	56.7	2002	67.8	39.6	58.0	47.3
Ghana	2006	30.0	53.6	2005	39.2	10.8	28.5	42.8
Guinea	2007	43.3	69.6	2006	63.0	30.5	53.0	39.4
Guinea Bissau	2002	48.8	77.9	2001	69.1	51.6	64.7	35.5
Liberia	2007	83.7	94.8	2006	67.7	55.1	63.8	52.6
Mali	2006	51.4	77.1	2005	57.6	25.5	47.4	39.0
Niger	2007	43.1	75.9	2006	63.9	36.7	59.5	34.0
Nigeria	2004	64.4	83.9	2003	63.8	43.1	54.7	42.9
Senegal	2005	33.5	60.3	2004	61.9	35.1	50.8	39.2
Sierra Leone	2003	53.4	76.1	2002	78.5	47.0	66.4	42.5
Togo	2006	38.7	69.3	2005	74.3	36.8	61.7	34.4
Total		**53.8**	**75.4**					**42.7**

Source: World Bank (2011a) Africa Development Indicators.
[a] Purchasing Power Parity (PPP), percent of population.
[b] National poverty lines for rural, urban, and total populations as defined in national Poverty Reduction Strategy Plans (PRSPs).
[c] Selected years between 2003 and 2008.

capita (a proxy for per capita income) in urban areas were from 78% higher than those in rural areas – in Burkina Faso – to 148% higher – in Mali (Taondyandé and Yade, 2012b). Some of the countries that have had the most rapid economic growth in recent years (e.g. Cape Verde, Ghana, and Burkina Faso) have poverty rates that are much lower in urban areas than in rural areas, suggesting that a higher percentage of the urban poor have been lifted out of poverty by this growth than have the rural poor. In contrast, countries that have had sluggish growth and civil disruption (e.g. Sierra Leone, Liberia and Guinea Bissau) have high poverty rates in both urban and rural areas.

2.3.3 An emerging middle class

In the context of Africa's economic rebound, the growth of the middle class has sparked the interest of policy makers and the private sector, including foreign investors. In between the traditional elites and the vast majority of the poor, there is an emerging middle class, mainly in urban areas. This middle class is increasingly recognised by domestic and international companies as a growing market for food and non-food products. Understanding the features of West African middle classes and their food purchasing behaviour is therefore key from a market development perspective aimed at enabling domestic and regional producers to capture a larger share of this market and more successfully compete with imports.

Developing an accurate picture of the key features and size of the middle class is challenging. Like poverty, "middle class" is a multidimensional term that can be defined by various socio-economic variables such as income, expenditure, asset ownership, education levels and professional affiliation, along with less tangible features such as attitudes, aspirations and lifestyles. Middle class households are more likely to have salaried jobs or small businesses and widespread ownership of assets such as refrigerators and mobile phones. They tend to value education, have fewer children and spend more on nutrition and children's schooling. In general,

the values of the middle class tend to align with a desire for greater market competition, better governance, gender equality, and more investment in education, science and technology in their respective countries (AfDB, 2011b).

Defining the middle class and measuring its size along different dimensions is challenged by the dearth of in-depth demographic and socio-economic data.[15] This section draws on some recent evidence on the size of West Africa's middle classes from a study conducted by the African Development Bank based on data from the World Bank's povcal.net database. It further synthezises information on the size and evolution of middle classes in five West African countries for which ReSAKSS analysed survey data (Taondyandé and Yade, 2012b). Some additional characterization of urban middle classes in Ghana and Nigeria is provided in Chapter 7 to set the scene for discussing changing food demand and consumption trends in Accra and Lagos.

The African Development Bank defines three subgroups as comprising the African middle class: (1) the "floating class", defined as people having a daily per capita expenditure, in purchasing power parity (PPP) in 2005 prices, of US$2-4; (2) the lower-middle class, with daily per capita expenditure of US$4-10; and (3) the upper-middle class, with daily per capita expenditures of US$10-20 (AfDB, 2011a). The floating class is a fragile group that is just above the poverty line and can easily fall back into poverty given an economic shock. Nonetheless, as an emerging class, this group is likely to begin to upgrade and diversify its diet, putting new and different demands of the food system. Assuming an average household size of five, the resulting monthly expenditures of the floating class would be in the range between US$300 and US$600 per month. The upper boundaries for the lower- and upper-middle class households would be US$1 500 and US$3 000 per month, respectively.

15 Household surveys tend to underestimate expenditures and assets levels due to under-reporting, and this bias tends to increase with higher income levels.

Table 2.6 *The West African middle class in 2008*

	Floating class[a] population		Lower middle[b] population		Upper middle[c] population		Total population	
Countries	(%)	(millions)	(%)	(millions)	(%)	(millions)	(%)	(millions)
Benin	6.9	0.6	5.9	0.5	4.8	0.4	17.7	1.5
Burkina Faso	10.2	1.6	2.3	0.3	0.9	0.1	13.3	2
Cape Verde	29.7	0.1	11.7	0.1	5	0	46.4	0.2
Côte d'Ivoire	18.2	3.8	11.8	2.4	7.1	1.5	37.1	7.7
The Gambia	22	0.4	12.3	0.2	3.7	0.1	37.9	0.6
Ghana	26.8	6.3	13.5	3.2	6.2	1.5	46.6	10.9
Guinea	6.3	0.6	2.8	0.3	1.5	0.1	10.6	1.0
Guinea Bissau	10.2	0.2	6.4	0.1	1.2	0	17.8	0.3
Liberia	2.9	0.1	1.2	0	0.7	0	4.8	0.2
Mali	17	2.2	4.9	0.6	3.2	0.4	25.1	3.2
Niger	8.7	1.3	3.3	0.5	2	0.3	14	2.1
Nigeria	12.9	19.5	6.2	9.3	3.8	5.7	22.8	34.5
Senegal	23.9	2.9	7.3	0.9	4.5	0.6	35.7	4.4
Sierra Leone	11.4	0.6	4.6	0.3	2.6	0.1	18.6	1.0
Togo	11.6	0.7	7.3	0.5	1.6	0.1	20.4	1.3
ECOWAS	**14.3**	**40.9**	**6.7**	**19.2**	**3.8**	**10.9**	**24.7**	**70.9**

Source: Adapted from AfDB, 2011b

[a] Floating class defined as daily per capita expenditure, in purchasing power parity (PPP) in 2005 prices, of between US$2 and US$4.

[b] Lower-middle class defined as daily per capita expenditure, in purchasing power parity (PPP) in 2005 prices, of between US$4 and US$10.

[c] Upper-middle class defined as daily per capita expenditure, in purchasing power parity (PPP) in 2005 prices, of between US$ 10 and US$ 20.

Table 2.7 *The state of undernutrition in the ECOWAS zone, 1992–2008*

Country	Population	Number of people undernourished					Progress towards WFS[a] target[c]	Proportion undernourished					Progress towards MDG[b] target[c]
	2006-08	1990-92	1995-97	2000-02	2006-08	Change so far		1990-92	1995-97	2000-02	2006-08	Change so far	
	(millions)	(millions)				(%)		(%)				(%)	
Benin	8.1	1.0	1.0	1.0	1.0	–0.3	■ (rd)	20	18	15	12	–41	■ (gr)
Burkina Faso	15.1	1.2	1.2	1.4	1.2	–3.0	■ (yl)	14	12	12	8	–40	■ (gr)
Côte d'Ivoire	18.7	1.9	2.6	2.9	2.9	50.9	■ (rd)	15	17	17	14	–2	■ (rd)
The Gambia	1.6	0.1	0.3	0.3	0.3	143.9	■ (rd)	14	23	21	19	41	■ (rd)
Ghana	22.7	4.3	2.3	1.9	1.1	–74.0	■ (yl)	28	13	9	5	–83	■ (gr)
Guinea	9.4	1.3	1.5	1.7	1.6	23.5	■ (rd)	20	19	20	16	–18	■ (rd)
Liberia	3.5	0.6	0.7	1.1	1.1	85.0	■ (rd)	30	32	36	32	7	■ (rd)
Mali	14.0	2.4	2.5	1.9	1.5	–38.1	■ (gr)	27	25	18	12	–56	■ (gr)
Niger	14.0	3.0	3.5	3.1	2.3	–22.2	■ (yl)	37	37	27	16	–55	■ (gr)
Nigeria	147.0	16.3	10.9	11.9	9.4	–42.3	■ (gr)	16	10	9	6	–61	■ (gr)
Senegal	11.5	1.7	2.3	2.6	2.3	32.4	■ (rd)	22	26	26	19	–14	■ (yl)
Sierra Leone	5.5	1.8	1.6	1.9	1.9	3.6	■ (rd)	45	39	43	35	–22	■ (yl)
Togo	5.7	1.7	1.7	1.9	1.9	7.6	■ (rd)	43	36	36	30	–31	■ (rd)
ECOWAS[d]	**276.6**	**37.3**	**32.1**	**33.6**	**28.5**	**-23.6**		**20.3**	**15.3**	**14.2**	**10.3**	**-49.2**	

Sources: FAO State of Food Insecurity 2011, http://www.fao.org/publications/sofi/en/. Population data from UN World Population Prospects 2010, http://esa.un.org/unpd/wpp/Excel-Data/population.html.

[a] World Food Summit (WFS) target: between 1990 and 2015 halve the number of malnourished people in the population

[b] Millennium Development Goal (MDG) target: between 1990 and 2015 halve the proportion of people who suffer from malnutrition

[c] Key to WFS and MDG progress:

■ (gr)	Target already met or expected to be met by 2015
■ (yl)	Progress insufficient to reach the target if prevailing trends persist
■ (rd)	No progress, or deterioration

[d] ECOWAS totals minus Cape Verde and Guinea Bissau

Table 2.6 shows that in 2008, just over 70 million West Africans, almost a quarter of the total population, belonged to the middle class. However, the largest share – 40 million (58% of the total) – were in the floating class, those with incomes just above the poverty line, with the remaining 30 million in the middle and upper-middle classes. These latter groups–those spending over US$4 per day – would, if all in a single country, constitute the second most populous country in ECOWAS.

The West African middle-class population is mainly concentrated in the three largest countries: half lives in Nigeria, with an additional 27% in Ghana and Côte d'Ivoire. However, when ranked by the middle class's shares in the national population the order looks different. Ghana has the highest share of middle-class persons in its total population (47%), followed by Cape Verde (46%), Côte d'Ivoire (37%), Senegal (36%) and Nigeria (22%). The combined share of lower- and upper-middle classes accounted for 20% of the population in Ghana and 19% in Côte d'Ivoire, followed by Cape Verde (17%), The Gambia (16%), Senegal (12%) and Nigeria (10%). Hence, while Nigeria has by far the largest middle class in the region, its share of the national population is comparatively small, mirroring the highly unequal income distribution in the country.

The analysis of budget-consumption studies by ReSAKSS (Taondyandé and Yade, 2012b) also examined changes in the proportion of the population falling in the middle class over time in

Burkina Faso, Côte d'Ivoire, Ghana and Mali. In two of the countries, Burkina Faso and Ghana, the proportion of the population in the middle class expanded substantially over the past 15 years, with the absolute size of the middle class growing at an average annual rate of 10% (albeit from a small base) in Burkina Faso between 1994 and 2009 and by nearly 7% per year in Ghana between 1992 and 2006. In contrast, the size of the middle class stagnated in Mali between 1989 and 2006 (growing at 2.5% per year in urban areas but falling by 2.4% per year in rural areas). In Côte d'Ivoire, the middle class fell by 0.4% per year between 1992 and 2006. As in Mali, there was a modest expansion of the middle class in urban areas (by 0.8% per year) that was offset by a larger decrease in the size of the middle class in rural areas (by 2.0% per year).

The differing trajectories of middle classes among countries and the large share of the floating class just above the poverty level show that the size of the middle-class and its growth remain fragile. They chiefly depend on the level and quality of economic growth and the absence of civil conflicts. Nigeria is an example of the fragility of middle-class growth. Even though time series data were not available for this study, available evidence suggests that a much larger middle-class population existed during the 1970s following the first oil boom. While the recent sustained economic growth likely increased the middle class in absolute terms, its relative size has decreased, as witnessed by the latest national poverty surveys (see Chapter 7).

2.3.4 Food security has been gradually increasing

Food security statistics show a decline of food insecurity levels in the region, both in the absolute numbers and the percentage of the population that is undernourished (Table 2.7). According to FAO's 2012 State of Food Insecurity (SOFI) report (FAO, 2012b), the proportion of undernourished people in the total population halved from 20% to 10% between 1990 and the 2006-08, with the number of undernourished persons declining from 37.3 million to 28.5 during the same period.[16] Undernutrition rates in West Africa are generally lower than those in Eastern, Southern, or Central Africa. However, Table 2.7 also reveals very uneven progress across West African countries in reducing undernutrition, with Ghana, Nigeria, Mali and Niger making strong progress, while Liberia, The Gambia, Senegal, and Sierra Leone doing much worse. Furthermore, even though the rate of undernutrition declined in 11 of the 13 countries for which SOFI reported data (increasing only in The Gambia and Liberia), because of population growth, the absolute number of the undernourished increased in seven countries (Côte d'Ivoire, The Gambia, Guinea, Liberia, Senegal, Sierra Leone, and Togo). Although average food availability per person has been increasing during this period, the access and quality dimensions of food security remain important challenges.

In addition to a lack of basic calories, millions also suffer from micronutrient deficiencies (so-called "hidden hunger") especially of iron, vitamin A, iodine and zinc. These micronutrient deficiencies, particularly among women and children, are often prevalent in rural areas and are in part linked to cultural habits that direct more of the nutrient-dense foods to men. In urban areas, however, they are also in part driven by a shift in eating habits as city dwellers transition to a diet with higher amounts of sugar, fat, and refined carbohydrates (see Part II). While rates of undernutrition have fallen over the past 30 years, problems of obesity and overweight are beginning to emerge as a growing public health concern, particularly in urban areas (Box 2.1).

16 It is important to note that these undernourishment figures are largely based on the availability of food in the region and therefore do not account for issues related to access to food – both intra-country and intra-household. Therefore in actuality food insecurity in the region could be much higher. Furthermore these numbers do not reflect the nutritional status of individuals, particularly the high prevalence of stunted children throughout the region.

Box 2.1 The double burden of malnutrition in West Africa

Despite the preoccupying figures on undernourishment shown in Table 2.7, problems of over-nutrition (obesity and overweight) are also growing in West Africa and are increasingly recognized as public health threats.[1] The need to simultaneously address problems of under-nutrition and over-nutrition, both related to changing dietary patterns in the region, is often referred to as West Africa's "double burden of malnutrition."

The prevalence of obesity in the region is currently estimated at between 6.6% and 10% of the total population, with the rates over twice as high in urban areas as in rural areas and much higher for women than for men. Between 2000 and 2004, almost 50% of the West Africa urban population was overweight or obese (Abubakari, *et al.*, 2008; FAO, 2013b). WHO data indicate that a staggering 44% of all women in Sierra Leone (including rural as well as urban areas) are either overweight or obese (WHO, 2008-2013).

Contributing factors to these trends include more sedentary lifestyles in urban areas and unhealthy diets increasingly dominated by various forms of indigenous as well as Westernized fast food, as urban populations are ever more time-starved and seek quick meal solutions (see Chapter 7). These foods are typically more energy-dense and less diverse than traditional West African diets and include processed foodstuffs high in sugar, salt, and fat. One of the objectives of food processing is to extend its shelf life, but this often involves removing nutrients such as essential fatty acids that limit the foods' lifespans. The result is a diet with increasing amounts of calories but fewer other nutrients ("empty calories.")

As a consequence of these changes, West Africa faces a growing epidemic of non-communicable, diet-related diseases, including diabetes, hypertension and cardiovascular diseases. The overall prevalence of diabetes in Western African countries is estimated to have increased over the last decades by 30 percent. Figures are even more striking for urban Nigeria and Cameroon, where the prevalence of diabetes rose by more than 300 percent between 1985 and 2000 (Abubakari *et al.*, 2008).

The potential costs of these various forms of malnutrition to West Africa, in terms of premature deaths, disability, and lost productivity, are huge. One way of measuring the social and economic costs of these diseases is through a metric called "disability-adjusted life years (DALYs)". One DALY represents the loss of the equivalent of one full year of healthy life compared to an ideal situation where everyone lives into old age, free of disease and disability. The costs of under-nutrition remain by far the highest of all nutritional problems in West Africa, accounting for a loss of 383 DALYs per 1000 people in 2010, compared to only 14 DALYs per 1000 due to obesity and overweight. But the trend in the social costs due to under-nutrition is sharply downward, having fallen by 60% since 1990 (from 947 DALYs per 1000 people in that year). In contrast, the cost of obesity and overweight is increasing, having more than doubled (from 6 DALYs per 1000 in 1990) (FAO, 2013b). Moreover, the diseases related to over-nutrition are chronic and take time to build up over time, so as the population continues to urbanise and ages, the costs will likely increase rapidly. West African governments may be soon obliged to divert human and financial resources from combating undernourishment and stunting, which may be less visible as they are mainly confined to rural settings, to fighting these consequences of over-nutrition, particularly in urban areas.

West African urban consumers are increasingly aware of these problems of over-nutrition, and Chapter 7 discusses their concerns and policy options to deal with the challenge.

1 Obesity and overweight are measured by the body-weight index (BMI), defined as a person's weight in kg divided by the square of her height (in metres). Obesity is defined as a BMI>30, while a person is overweight if the BMI exceeds 25.

2.4 Overall economic and political progress has remained fragile

2.4.1 Recurrent crises

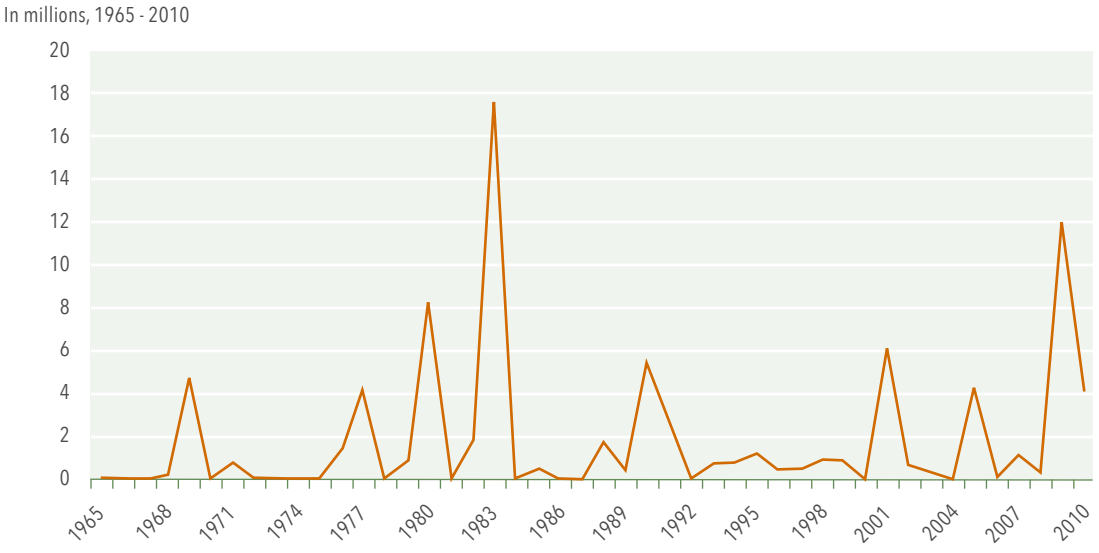
Despite the generally positive trends in terms of per capita income and food availability in West Africa and a trend since the 1990s towards more democratic and open political systems, the region has faced numerous natural and human-created disasters over the past 50 years. These have led to severe food shortages and destruction of productive capacity in various countries[17] Often, instability spills across borders, disrupting regional trade and raising risks to investments in neighbouring countries (as exemplified by the costs imposed on Mali and Burkina Faso by the loss of access to the port of Abidjan during the Ivorian conflict). The persistent vulnerability to natural and human-caused disasters is evidenced by recurrent food crises in the Sahel; the civil wars in Sierra Leone, Côte d'Ivoire and Liberia; and terrorist attacks by non-state actors in Nigeria and Mali. A combination of population pressure, deteriorating environmental conditions and unequal spatial development are likely to perpetuate the region's vulnerability to conflicts and disasters.

17 As Josserand (2011) notes, distinguishing clearly between natural and human-caused disasters is frequently difficult, as natural and human factors often interact to create or worsen a food crisis.

Figure 2.3 shows the number of people affected by natural disasters in Western Africa between 1965 and 2010. These disasters were primarily droughts (concentrated in the Sahelian countries) and floods (predominantly in the coastal states), with the droughts affecting many more people than the floods. As shown in Figure 2.3, the natural disasters occurred irregularly and with highly variable magnitudes. West African countries, particularly in the CILSS member states, have become increasingly adept at managing and mitigating localized natural disasters through improved market-information and early-warning systems and the development of various types of social safety nets. These tools, however, proved less adapted to dealing with periods of global food shortages and spiking prices, as occurred in 2007/08, 2010, and 2012 (see Focus Section A).

Since the 1980s, the frequency of natural disasters has declined relative to human-created crises that are linked primarily to civil unrest (e.g. in

Figure 2.3 *Number of people affected by natural disasters in West Africa*[a]



Source: OFDA/CRED database of natural disasters, University of Louvain, as presented in Josserand, 2011
[a] Figures include ECOWAS countries plus Chad and Mauritania.

Liberia, Sierra Leone, Côte d'Ivoire and, most recently, in Mali). Some of these crises have been of extremely long duration. For example, during the 30 years between 1981 and 2010, FAO/GIEWS reported that Sierra Leone spent 23 years in emergency and Liberia 22 years (Josserand, 2011). In terms of the number of people affected and the severity of the deprivation, the countries most severely hurt by such conflict-driven crises have been, in order of magnitude, Nigeria (due to the civil war of the 1960s), Liberia, Sierra Leone, Côte d'Ivoire, and Guinea-Bissau (ibid.)

The repeated natural and human-created crises have had several important impacts on the development of agrifood systems in West Africa:

- In the absence of risk management tools such as crop insurance, droughts and crop failures frequently lead to farmers being forced to sell off assets to survive; as a result, even when production conditions return to their "normal" state, production frequently recovers only slowly.

- Faced with the risk of natural disasters, farmers place a priority on resilience and risk management at the farm level, often through diversification of their farm and non-farm enterprises. The gain in stability from diversification comes at the expense of losses in efficiency, both at the farm level and in the marketing system that would occur with greater on-farm specialization.

- The instability of local food production due to weather crises increases the incentives facing food processors and retailers to turn to imports rather than local production in order to ensure stable supplies.

- Wars and civil unrest lead to destruction of productive assets and infrastructure, loss of the rule of law, destruction of human capital and the flight of both financial and human capital abroad. Because of the economic interdependence of West African states, crises in one country frequently spill over onto its neighbours.

- Both natural and human-made crises call for emergency relief efforts, such as the widespread distribution of food aid. If poorly designed, such safety-net efforts can undermine incentives for local food production and trade.

Given the inevitability of future natural disasters and the increasing conflict that these may generate over access to increasingly scarce agricultural resources (especially in the context of climate change), strengthening conflict resolution arrangements will need to be an important component of Agricultural development strategies. It will also be critical to design social safety nets in a way that reinforces rather than works against incentives for investment in the broader agrifood system. Both of these imperatives are analysed in Part IV.

2.4.2 Growing pressure on natural resources

Population growth can induce agricultural intensification by improving rural-urban linkages, generating additional demand for food and lowering transaction costs in provision of inputs and support services. In practice, however, West Africa's growing labour-to-land ratio and livestock-to-land ratio have in many cases increased the pressure on the natural resource base. For the region as a whole, the average arable land per rural resident is just 0.5 ha. Approximately 20% of the rural population lives in areas with even higher population densities (Johnson *et al.*, 2008). These higher population densities, particularly in non-irrigated areas, contribute to reduced fallows and a fragmentation of farm sizes into holdings that do not allow sustaining a livelihood, let alone producing a marketable surplus. Population pressure is particularly high in areas with the largest production potential and along major waterways and transport corridors. Consequences can include land fragmentation in highly populated areas with good market access and the expansion of the agricultural frontier and overuse of natural resources in less populated areas.

In more fragile agro-ecological systems, such as in the Sudano-Sahelian zones, population pressure contributes to an overuse of natural resources by reducing fallow periods, expanding crop production

into less suitable areas and enhancing the number of livestock. The expansion of crop farming and livestock numbers has put traditional systems of land management increasingly under stress, with growing conflicts between agriculturalists and pastoralists. The results of these trends have been increased soil mining, loss of vegetative cover leading to wind erosion and silting of lakes and streams, deforestation, and loss of biodiversity[18]. West African soils are generally older than in many other areas of the world (for example, areas with more recent volcanic activity) and are subject to heavy leaching of nutrients. Net soil nutrient losses in 14 of the 15 ECOWAS countries for which data are available varied between 41 kg/ha/year in Senegal to 73 kg/ha/year in Guinea Bissau in 2002/04 (Morris *et al.*, 2007b). Like the rest of the continent, West Africa is losing forest cover due to agricultural expansion, cutting of firewood and the expansion of commercial logging. Africa's rate of deforestation is double that of other regions of the world (ibid.).

The stress on land management systems is accentuated by insecure land tenure in many parts of West Africa, which reduces incentives to invest in land improvement and hinders consolidation of very small plots. Rising global agricultural prices since 2008 have also increased the interest in outside investors in obtaining land in West Africa, and ambiguity in the assignment and enforcement of land rights creates situations where farmers can lose their land without compensation (see Focus Section D on land tenure and water rights in Part IV). Conflicts over land use are on the rise – for example between farmers and herders – and unless the situation improves, are likely to continue to grow as resource degradation induces widespread migration (including across borders) with environmental refugees seeking more productive areas to pursue their livelihoods. A key challenge facing the region is thus how to transition from a situation of resource degradation to one of sustainable agricultural intensification (Box 2.2).

18 In West Africa, these various phenomena are often discussed as different components of "desertification", a term used in the region to cover a broad array of natural resource degradation and climate change effects and not just the southward movement of the Sahara Desert. For details, see ECOWAS, et al. (2012).

2.4.3 Climate change

The vulnerability of West African farming and livestock production systems to weather conditions is being exacerbated by climate change. Climate change is likely to have the most damaging impact in semiarid and arid regions in the Sahel.

From the 1930s to the 1950s there was a period of unusually high rainfall, followed by an extended drought that lasted for much of the 1960s to 1990s. During this period, temperatures rose by around 1°C (Jalloh *et al.*, 2013). Mean annual rainfall and runoff dropped by as much as 30 per cent, with devastating effects on local populations and livelihoods. Since the mid-1990s, better average rainfall conditions have returned, in particular in the continental Sahel (Niger, Northern Nigeria and Chad). These conditions, however, have been accompanied by greater inter-annual rainfall variability.

There is still a fair amount of uncertainty in rainfall-related climate projections for West Africa. Perhaps more than elsewhere, analyses of this region have remained inadequate and the conclusions arrived at by climate projections and their consequences are too uncertain for an effective anticipation of the risks and opportunities linked to climate change (SWAC, 2009). The complicated and uncertain measurement of the climate's future impacts on the region calls for prudence in their analysis (CILSS *et al.*, 2008). The IPCC reports that in the twenty-first century, global warming is expected to be more intense in Africa than in the rest of the world. The average rise in temperature between 1980/99 and 2080/99 is projected to be between 3 and 4°C for the continent as a whole, one-and-a-half times greater than at the global level. The increase would be less marked in coastal and equatorial areas (+3°C), and the highest increase would take place in the Western Sahara region (+4°C) (Pachauri and Reisinger, 2007). Generally, there seems to be consensus on increases in average annual temperatures, although the changes may be unevenly distributed across the region. Temperature increases have not been observed across all areas in West Africa in the last decades. Despite the uncertainty about the capacity of climate models for West Africa and

Box 2.2 From resource degradation to sustainable intensification

Addressing the problems of agricultural resource degradation and declining land productivity in West Africa will require a more sophisticated approach than simply trying to duplicate the Asian Green Revolution model based on improved seeds, expanded irrigation and greatly increased use of mineral fertilizers. Given the diversity of West African agro-ecologies, the weak infrastructure base (including for irrigation) and the challenges of climate change, there have been growing calls to move towards more locally tailored approaches of sustainable agricultural intensification. Although there is no universally agreed-upon definition of sustainable intensification, several common elements emerge in most discussions of the approach:[1]

1. ***Moving beyond an emphasis on just increasing the use of mineral fertilizer to a focus on improving soil health.*** Critical elements of the soil-health approach include combining mineral fertilizers, organic matter, and cultivation techniques such as minimum tillage and intercropping that improve water retention and soil biota. The approach also seeks to improve the efficiency of fertilizer use through better matching of fertilizer formulations to the specific nutrient needs of individual farmers' soils and crops and by improving the timing and placement of applications through techniques such as micro-dosing.

2. ***Moving from one-size-fits-all extension recommendations to differentiated approaches based on West Africa's wide range of farming systems.*** This movement from "best bets" to "best fits" (Fairhurst 2012) involves moving away from blanket recommendations such as the call to raise average mineral fertilizer use in the region to 50 kg/ha towards more targeted solutions to different farming systems that cover a range of productivity, socio-economic and environmental benefits to producers and society at large. Often these approaches involve better integration of livestock and cropping within farming systems.

3. ***An emphasis on plant protection that goes beyond pesticides and herbicides towards integrated pest management.*** This approach emphasises that a healthy agro-ecosystem (including maintaining populations of helpful insects and natural predators of agricultural pests) is a farmers' first line of defence against crop damage.

4. ***Improving crop productivity and robustness to environmental shocks by tailoring germplasm to specific environments and soil conditions*** through a programme of breeding that aims to exploit and maintain the genetic diversity of African crops. The programme is seen as drawing on a range of breeding techniques, including traditional plant breeding, cell and tissue culture, marker-assisted selection, and genetic engineering (although not all proponents of sustainable intensification agree upon the latter).

5. ***Shifting from an emphasis just on expanding irrigation to a focus on improved soil and water management***, including in rainfed areas through cultivation techniques aimed at water conservation, harvesting and retention. In irrigated systems, there is an increased emphasis on improving the efficiency of water use, for example through reducing water losses.

6. ***Developing a supportive policy environment*** that creates incentives for actors to adopt sustainable intensification practices. Examples include more realistic pricing of irrigation water to discourage its waste, improving farmers' access to credit for agricultural equipment that they can use to build

1 See FAO (2011b); The Montpellier Panel (2013); Garnett and Godfray (2012); and Fairhurst (2012).

water-conserving tied ridges and small retention barriers, and movement away from untargeted fertilizer subsidies towards more targeted, voucher-based and limited "smart-subsidy" approaches (see Focus Section C in Part IV).

West Africa boasts some examples of localized success with these sustainable intensification approaches, particularly in the Sahel in restoring highly degraded land, fostering reforestation and raising depleted water tables (Botoni and Reij, 2009; Kabore and Reij, 2004). Other approaches, such as maize-legume intercropping (with the legumes fixing nitrogen and helping suppress weeds early in the growth of the maize) also hold promise, as does the progress in developing drought-resistant maize varieties through genetic engineering.

Fostering the broader adoption of sustainable intensification in West Africa will require addressing two major challenges:

7. These techniques are much more knowledge- and management-intensive to develop, diffuse and use than are one-size-fits-all approaches. Developing and diffusing locally tailored sustainable agricultural intensification will require substantial investment in strengthening knowledge and capacity throughout the agrifood system. Agricultural research systems must work with farmers and other actors, such as input dealers, to develop sustainable solutions; farmer organizations and extension personnel must promote such approaches and acquire indigenous knowledge from farmers that can contribute to improving the proposed solutions; and farmers must learn how to use the new technologies and management tools.

8. There is broad scope for learning across the region, sharing successes and learning from failures, as sustainable intensification approaches are adapted to the region's varying agro-ecologies. At the same time, there is need for better coordination among the many organizations promoting different versions of sustainable intensification within the region. Currently, there are over 40 subregional organizations working in the area of natural resource management and rural development. The efforts are frequently poorly connected, with each organization aiming to ensure its own survival and its legitimacy by developing its own programmes rather than devising ways to complement the others (ECOWAS *et al.*, 2012). ECOWAS, through its regional CAADP programme and its collaboration with CILSS and CORAF, which have been a long-time leaders in promoting regional collaboration on issues of natural resource management and agricultural research, have clear roles to play in promoting greater coherence and collaboration in this area.

the lack of consensus among the various climatic scenarios with regard to changes in precipitation, the IPCC predicts a reduction of average annual rainfall on the order of 10 to 20%. Though there is no consensus among the regional climate models on changes in average rainfall in the region, there is agreement that climate variability (in temperature and rainfall) will likely increase.

In addition to decreases in rainfall, the IPCC report (Pachauri and Reisinger, 2007) anticipates a fall in the ground water levels, following their reduction in recharge, as well as a decrease in the number and size of ponds and watering points. Furthermore, a reduction in the yield of the major crops is expected (e.g. maize, sorghum, rice, and cowpeas) and in cereal production in particular. Brown and Crawford (2008) estimate that temperatures would increase by 2.5°C to 3°C by 2100 and yields of maize would decrease by 6.9% by 2020, but the yield of millet, a more drought-tolerant crop, would not be affected.

One likely consequence of climate change will be increased migration in the region, both within and across countries, as populations in particularly

stressed areas seek other locations to earn their livelihoods. In the context of insecure tenure rights to land and water resources (e.g. for fishing), this potential migration of environmental refugees may further contribute to the recurrent crises discussed earlier in this chapter.

2.5 Globalization and technological change

A number of forces related to the globalising economy and rapid technological change are shaping the evolution of the structure of West African Agriculture. While not an exhaustive list, three of the most powerful ones are the involvement of new global actors in the West African economy, the information revolution and the biotechnology revolution.

2.5.1 Globalization and the involvement of new global actors

Economic reforms since the mid-1980s, combined with other sectoral reforms (discussed in Chapter 11) have led to greater openness of West Africa to international markets at a time when the process of globalization has been accelerating around the world. The development of more sophisticated value chains engaged in global sourcing of products for upscale markets offers new export opportunities for West African farmers and processors, but only if they can meet the firms' minimum order quantities and stringent quality standards.[19] Consumer concerns in importing countries of the North about product safety, environmental quality, and labour conditions have led to strict demands for traceability and compliance with production standards (such as the demands to certify that cocoa was not produced using child labour). At the same time, such demands are also emerging from West Africa's growing middle class (see Chapter 7).

The greater openness of West African markets to imports of processed foods from abroad (e.g. frozen chicken parts and milk powder), often at very low prices, has also threatened the competitiveness of some domestic industries, as discussed in Part III. This competition has led to pressure from West African farmer groups and some processors for increased import protection, under the banner of promoting food sovereignty.

Since the early 2000s, an expanded set of actors, particularly China and India (Broadman *et al.*, 2007), but also Brazil and the African diaspora, has emerged as major sources of demand for African exports and of investment and technical assistance in farming and agroprocessing (sometimes tied to export). The growing relationship between West Africa and these new actors offers new potential to expand and diversify West African Agricultural production and markets, but also has raised concerns in the region about competition (e.g. between Asian and West African trading firms) and control of resources within the sector.

The new actors have also emerged as important providers of imports of agricultural machinery and of light manufactured goods. The expanded availability of inexpensive light manufactured goods (e.g. synthetic textiles and cheap plastic sandals) may have been a boon for West African consumers, but it has stifled local production of competing products and raises questions about whether an Agricultural-led growth strategy in West Africa would have as strong growth linkages (via induced demand for locally produced manufactured goods) as did the Green Revolution in Asia.

2.5.2 Information technology revolution

The rapid spread of modern information and communication technology, especially cell phones, has had a profound effect on Agricultural development in the region. Traders' use of cell phones has improved market integration (Aker, 2010; Aker and Mbiti, 2010), and their increasing availability in rural areas offers new opportunities for their inclusion as a tool for agricultural extension programmes.

19 "Quality@quantity" is a phrase used in agribusiness to describe the requirement of large-scale buyers of agricultural products for consistent quality of products at a volume high enough to allow the buyer to capture economies of scale (Perakis, 2009). As is discussed in Part III, assuring quality@quantity has been an on-going challenge for West African producers and wholesalers who sell both to the export market and domestic processors. Failure to ensure quality@quantity in export markets turns outside buyers away from West African products or leads them to offer steep price discounts. Failure to ensure quality@quantity to West African processors (e.g. feed millers) often leads them to turn to imported raw materials, thereby increasing West Africa's import dependence.

The spread of cell-phone-based mobile banking and the increased ease of remittances from migrants to their families in rural areas thanks to money transfer services, that rely on modern telecommunications, have the potential to improve both, rural finance and the ability of rural households, to respond rapidly to food crises. As the experience of the Arab Spring demonstrated, the spread of such technology also facilitates the mobilization of groups discontented with current government policies, including food policies.

2.5.3 The Biotechnology revolution

The biotechnology revolution, including the development of transgenic varieties, offers opportunities for increasing yields (e.g. through the development of more drought-resistant maize), improving nutrient content, and reducing pesticide use. But there is a strong debate in many West African countries about the desirability of adopting genetically modified organisms (amplified by groups from outside of West Africa on both sides of the issue). Among the concerns raised are safety to humans and the environment, potential loss of local intellectual property rights over indigenous varieties to international firms, and fears of domination of input markets by multinationals. ECOWAS countries and development partners in the region have varying policies with respect to genetically modified organisms (GMOs). The governments of Burkina Faso and Nigeria, for example, have called for GMOs to be part of a diversified strategy to increase agricultural production, as has the African Development Bank. Other countries in the region, however, either oppose the introduction of GMOs or have not taken any official position with regard to the issue.

2.6 Summary of main findings

West Africa is in the midst of a structural transformation of its society, economy and physical environment. Driven by a 2.6% population growth rate, rapid urbanization that will result in over half of West Africans living in cities by 2050, growth and changing distribution of income, expansion of non-farm sectors of the economy, globalization, increased stress on the natural resource base and climate change, this transformation has profound implications for West African Agriculture. Regional averages with respect to all these changes, however, obscure large variation among the 15 countries of the ECOWAS zone. Agricultural and economic growth rates have varied widely across the region, with the impact of civil strife in countries like Liberia, Sierra Leone, and Côte d'Ivoire clearly visible in their poorer performance relative to economic "stars" like Ghana and Cape Verde. Three countries – Nigeria, Côte d'Ivoire and Ghana – account for three-fourths of West Africa's population and 80% of its GDP, so the health of these economies has profound impacts on the rest of the region. Increased regional integration allows the smaller economies of the other ECOWAS countries to benefit from growth in the "big three", but it also makes them vulnerable to disruption in these economies, as evidenced by the impact of the Ivorian crisis on Côte d'Ivoire's neighbours.

A number of forces are influencing the transformation of West African Agriculture through their effects on the demands facing West African producers and the capacity of the agrifood system to respond to those demands. Key among those forces are the following:

- Rapid population growth, with West Africa's total population projected to more than double between 2010 and 2050, from 301 million to 734 million.
- Rapid urbanization, both in large cities (particularly along the coast) and emerging secondary towns throughout the region, which is associated with lifestyle changes including changes in food consumption patterns that are analysed in Part II of this report.
- An on-going but very uneven structural transformation of West African economies, with large numbers of the population employed in low-productivity jobs in the informal services sector.
- Per capita income growth and changes in its distribution, including expansion of the West

African middle class, which now accounts for about 25% of the total population. The proportion of the population in the middle class differs by country, as both the pace of economic growth and how that growth has been shared among different segments of the population varies widely by country.

- Coupled with the emerging middle class, a growing mass market of people still living under the poverty line for whom the price of food is a critical determinant of their real incomes.

- In spite of a trend towards generally higher incomes in the region, highly disruptive recurrent natural and human-created disasters persist in various countries. These range from droughts and floods to civil wars and terrorist attacks, and their effects often spill across borders. Such disasters frequently require strong emergency relief efforts and may divert resources from longer term Agricultural development. If not carefully coordinated with Agricultural policies, these efforts (such as the untargeted distribution of food aid) can also undermine incentives for longer-term Agricultural growth.

- Growing stress on the natural resource base due to population pressure and climate change.

- New opportunities and threats brought about by globalization, including new export opportunities but also strongly increased competition from overseas suppliers in some West African markets. Globalization has also led to the emergence of new international actors (e.g. from Asia, Latin America and the African diaspora) as potential investors and as sources of demand for West African products, and the need to deal with increasingly volatile international commodity prices in recent years.

- New opportunities created by the information and biotechnology revolutions to link West African producers to new sources of demand (and potentially finance through mobile banking) and to respond to the evolving demand with new, more adapted products.

Subsequent chapters in this report analyse the impact of these forces on West African Agriculture and their implications for Agricultural policy in the region.