COOPERATION BETWEEN UKRAINE AND AFRICAN COUNTRIES IN AGRICULTURE:

WEST AFRICA

Pavlo Martyshev
Hryhorii Stolnikovych
Igor Piddubnyi

2024

KSE Agrocenter information products are available at https://agrocenter.kse.ua and at telegram channel t.me/kseagrocenter

KSE Agrocenter

**Center for Food
and Land Use Research
at Kyiv School of Economics**

KSE | Center for Food and Land Use Research

TABLE OF CONTENT

INTRODUCTION

The report is aimed to outline the directions of partnership between Ukraine and West African countries in agri-food sector. Unlike North Africa, the potential of food markets in the western part of the continent remains largely untapped for Ukrainian exporters as trade flows between local countries and Ukraine are relatively small.

In this report, we analyze three most-populated countries in West Africa (Nigeria, Ghana, and Cote d'Ivoire) to unveil their potential of partnership with Ukraine in agricultural and food processing industries. First of all, we present the summary of online seminar «The African Countries and Ukraine Partnership in Agriculture: Unleashing the Potential for Cooperation with West African Countries» organized by the Center for Food and Land Use Research at the Kyiv School of Economics (KSE Agrocenter) on March 21, 2024. The seminar outlines the major directions of cooperation between Ukraine and West African countries in agriculture. Second, we analyze food security profiles of the observed countries and compare them with regional benchmarks. In addition, we describe local UN World Food Programme operations intended to strengthen local food security.

Third, we examine agri-food trade patterns and the level of food self-sufficiency for the selected countries. Fourth, the local agricultural sector is analyzed to understand the potential of food production in West Africa. This chapter is followed by the overview of current challenges for local agriculture. Finally, we provide the overview of the national agri-food policy and its effect on local production.

EXECUTIVE SUMMARY: COOPERATION OPTIONS

Despite the essential growth of agricultural production in West African countries over the last two decades, the average prevalence of undernourishment in the region was relatively stable and fluctuated around 14%. This is explained by the strong demographic growth amidst the underdeveloped institutional and macroeconomic environment, especially in Nigeria. Another strong driver of food insecurity is urban-rural inequality caused by massive urbanization on the one side and low productivity of agriculture on the other side. Therefore, operations of UN World Food Programme (WFP) in West Africa primarily focus on providing unconditional food- and monetary aid to food-insecure internally displaced persons, returnees, refugees and host communities affected by crises.

Agri-food imports to West African countries decreased over the last decade; the main imported commodities are cereals, sugar, and fish products. At the same time, Nigeria, Ghana, and Cote d'Ivoire export actively cocoa, palm oil fruits, and edible fruits and nuts. The volumes of agri-food trade between Ukraine and West African countries are relatively small and unilateral. Ukraine supplies cereals and vegetable oils to the region, while Ukraine's imports from the region is close to zero.

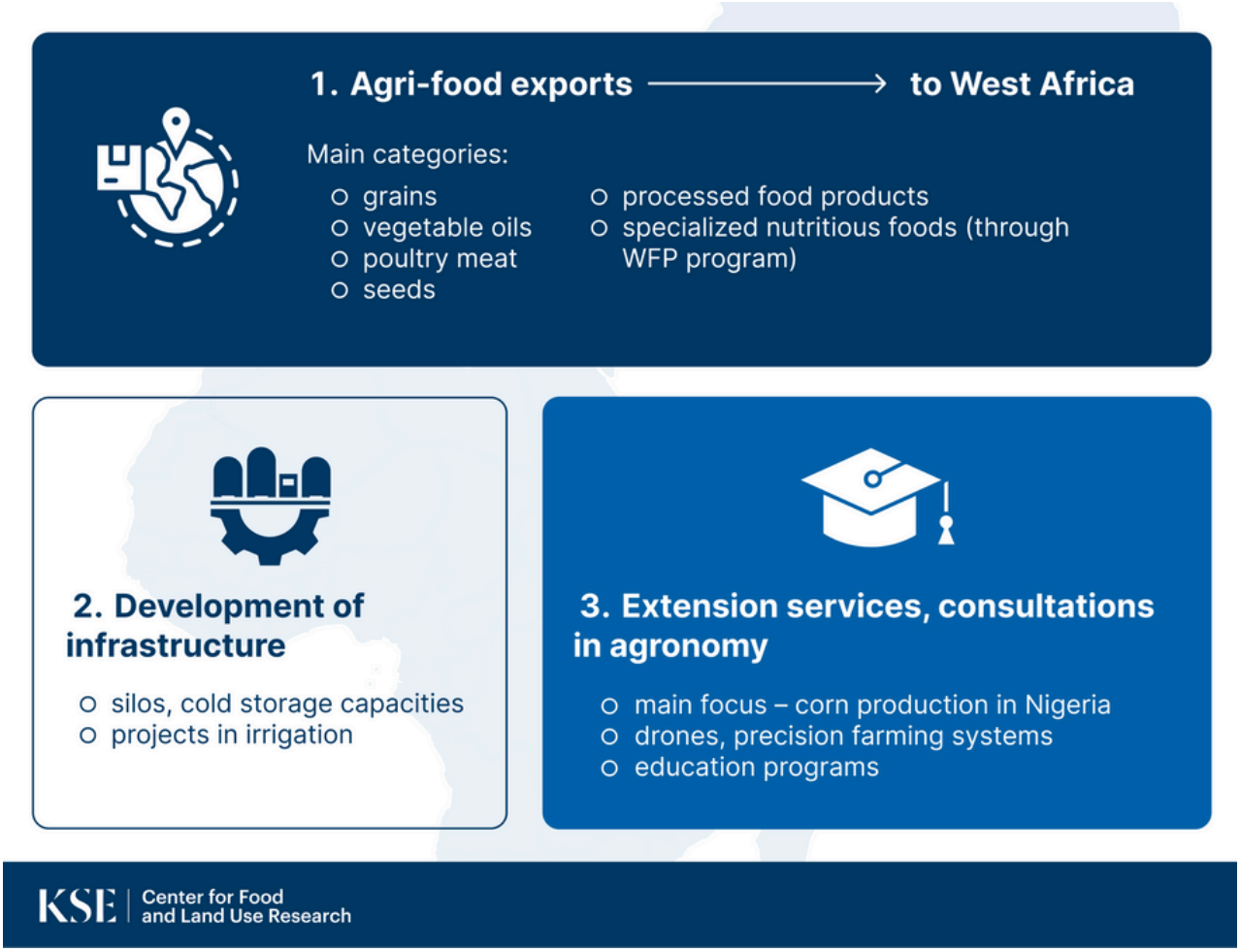
Agriculture is an important sector of the West African economy, accounting for about one-third of the working population and one-fifth of local GDP. The main crops produced are yams and cassava, oil palm fruit, rice, and corn. The share of irrigated lands is below 1%; this exacerbates climate risks for local farmers. Livestock production is focused mostly on chicken eggs, dairy, cattle and chicken meat, and pork.

The main challenges for local agriculture are underdeveloped transport and storage infrastructure, poor market access, labor shortages caused by urbanization, low education level of farmers, inconsistent agricultural policies, and excessive specialization on a limited range of agricultural products.

Agricultural policy in West Africa is based mostly on direct state interventions such as government investments, input provision, market support, regulatory incentives to domestic production. In particular, over the last decade, local authorities were prone to impose various import restrictions on agri-food commodities in order to support domestic producers. These policies have limited effect on the efficiency of local farming; they also contributed to worsening food security in the region. Meanwhile, the financing of support services and infrastructure development is insufficient to incentivize market development.

The options for partnership between Ukraine and West African countries in agriculture were discussed on the online seminar **«The African Countries and Ukraine Partnership in Agriculture: Unleashing the Potential for Cooperation with West African Countries»** organized by KSE Agrocenter on March 21, 2024. The speakers were representatives of research institutions from Ukraine, Nigeria, Ghana, and Cote d'Ivoire. The seminar allowed to highlight the main areas of cooperation between Ukraine and North Africa in agri-food sector (Figure 1).

Figure 1. Options of partnership between Ukraine and West Africa in agri-food sector



1. NIGERIA

1.1. FOOD SECURITY

Nigeria is the largest country in the West Africa, being a home to almost half of its inhabitants. Nigerian total population have been growing rapidly throughout the last two decades and increased by 73% to approx. 213 million people (Figure 2).

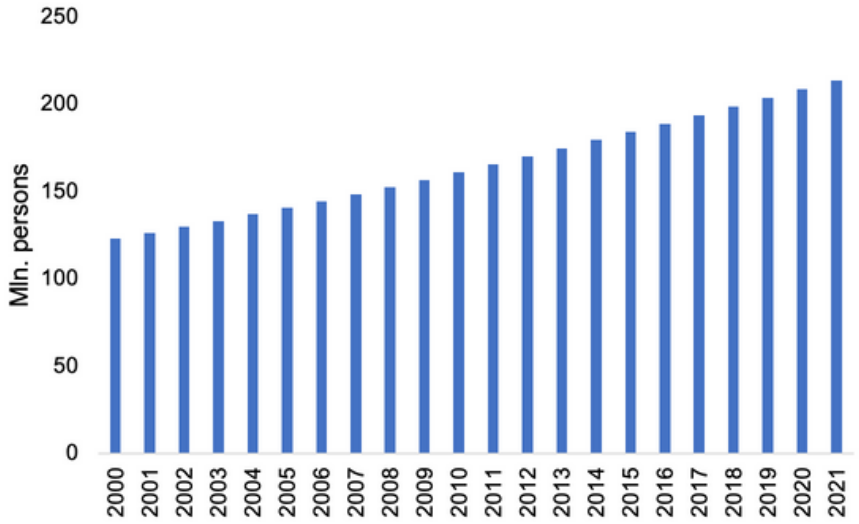


Figure 2. Total population in Nigeria

Source: World Bank

From the macroeconomic perspective, Nigerian GDP per capita have been steadily growing throughout the 2000s and stagnated in 2010s (Figure 3). Over the observed period, it remained significantly higher than the regional average. As of 2022, Nigerian GPD per capita was approx. 30% higher than the West African average.

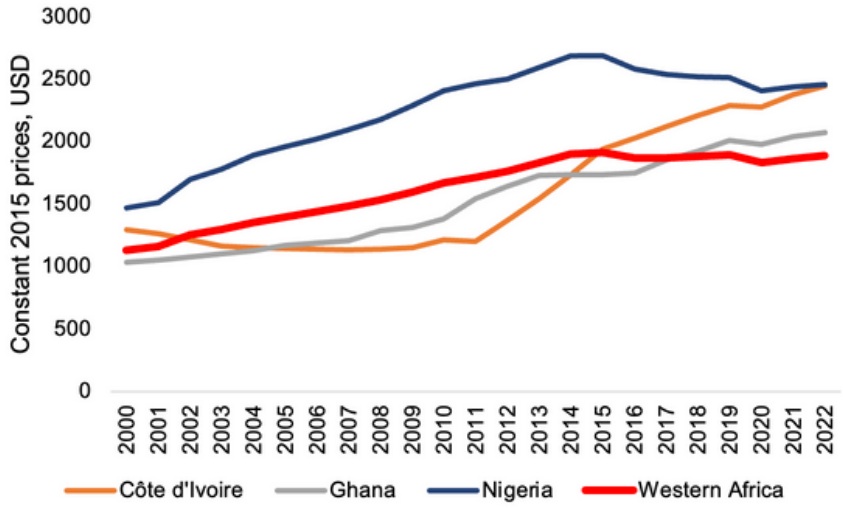


Figure 3. GDP per capita in West African countries

Source: World Bank

Economic stagnation of the 2010s caused the share of undernourished Nigerian population to increase. Since 2000, the share of undernourished population in the country remained relatively unchanged, but started to grow rapidly in mid-2010s and exceeded the regional average (Figure 4). As of 2022, 15.9% of Nigerian population were

food insecure, which is almost two times higher than the 2000 level of 8.8%; for West Africa this share was approx. 14% in 2022.

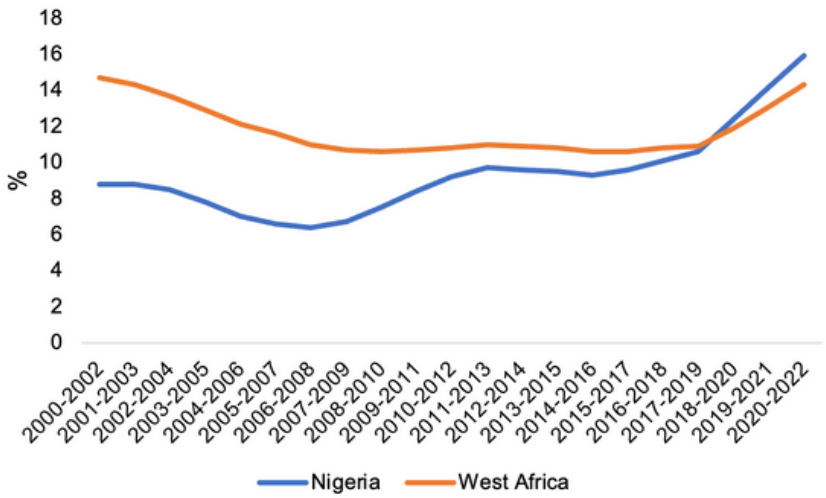


Figure 4. The share of undernourished population

Source: FAOSTAT

Given the rapid population growth, the number of undernourished persons increased as well from 11.4 million in 2000 up to 34 million in 2022 (Figure 5).

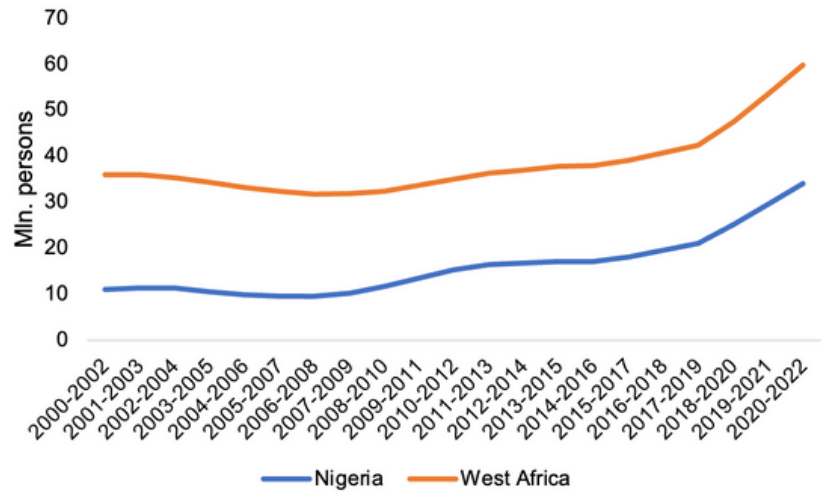


Figure 5. The number of undernourished persons

Source: FAOSTAT

The 2019-2021 3-year average value of dietary energy supply in Nigeria was 2520 kcal per person per day. It is slightly lower than the regional average of 2620 kcal per person per day (Figure 6).

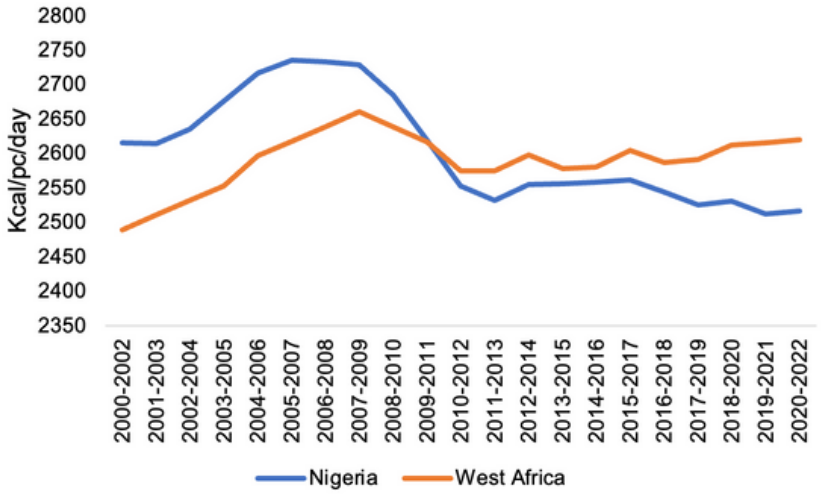


Figure 6. Dietary energy supply

Source: FAOSTAT

As the Figure 7 shows, the average dietary energy supply adequacy indicator has been higher than the regional average in the 2000s, but have dropped significantly since 2009, while the West African average stagnated.

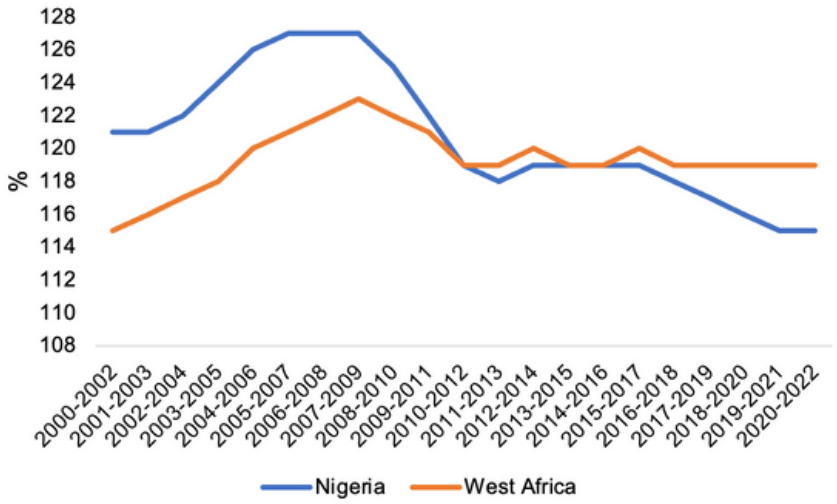


Figure 7. Average dietary energy supply adequacy

Source: FAOSTAT

To assess the share of nutrient-rich food in the diet, the share of dietary energy supply derived from cereals, roots and tubers is considered (Figure 8). In Nigeria this share is quite high at approx. 67%, which is equal to the average level in Western Africa. It has been growing in the late 2000s and remained unchanged since 2012.

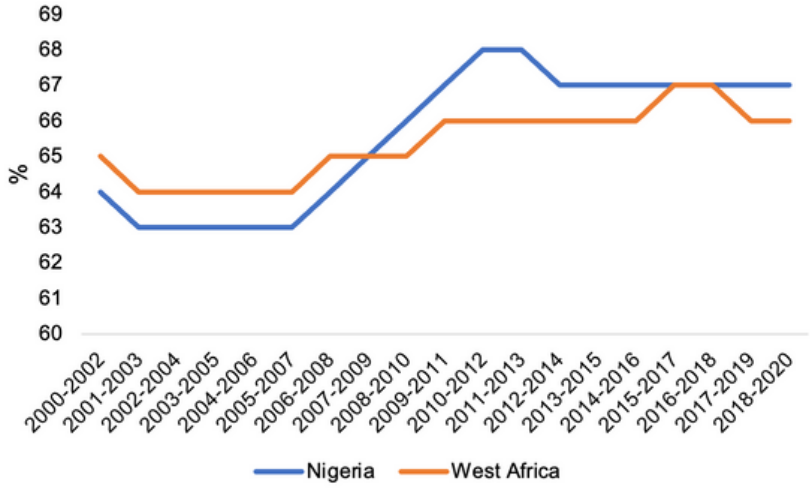


Figure 8. Share of dietary energy supply derived from cereals, roots, and tubers

Source: FAOSTAT

As for protein supply, in Nigeria it was somewhat lower than regional average throughout the 2010s and decreased over this period. As of 2020, it was 59 grams per person per day (Figure 9). The share of this protein obtained from the food of animal origin remained relatively unchanged throughout the last two decades. However, it has been lower than the West African average (6.7 and 10.1 grams per person per day, respectively), indicating a worse food security level than on average in the region (Figure 10).

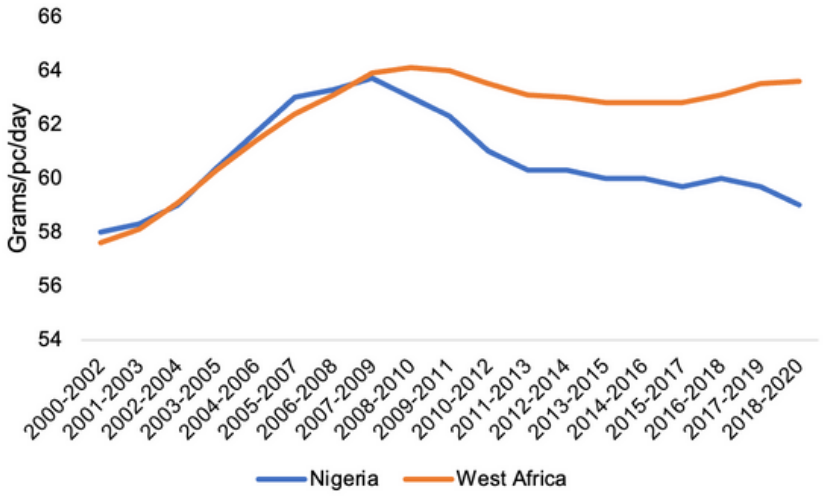


Figure 9. Average protein supply

Source: FAOSTAT

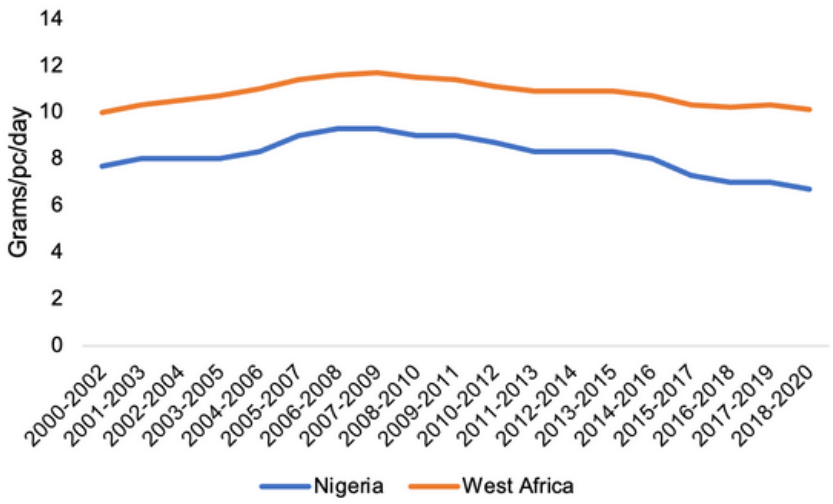


Figure 10. Average animal protein supply

Source: FAOSTAT

In 2021, per capita food supply variability for Nigeria was quite high, as compared to the West African average (12 and 11 Kcal/pc/day, respectively) (Figure 11). This means that the food supply instability did not affect the dietary energy supply of the Nigerian population.

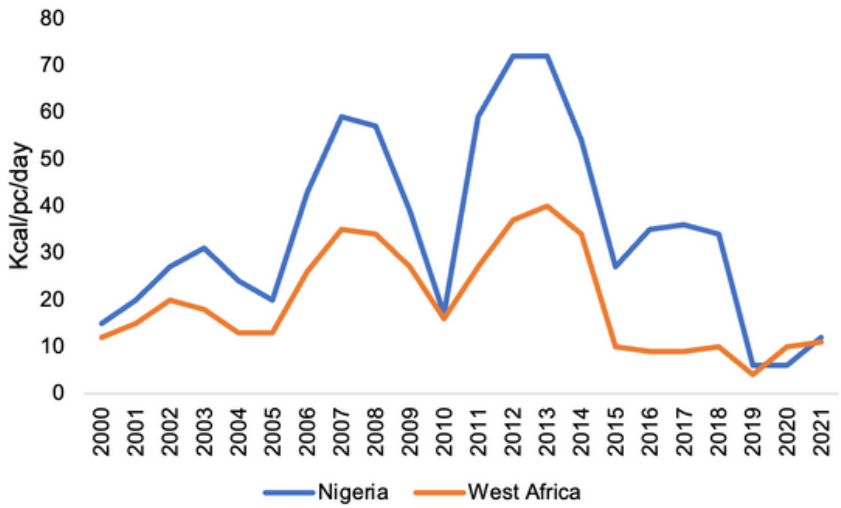


Figure 11. Per capita food supply variability

Source: FAOSTAT

Poverty, as a main factor fueling food insecurity, have been an important concern in Nigeria since it received the independence. Even though it decreased throughout 2000-2018, it is still highly prevalent in Nigeria, with the latest data from 2018 indicating 30.9% of population below the poverty line (Figure 12).

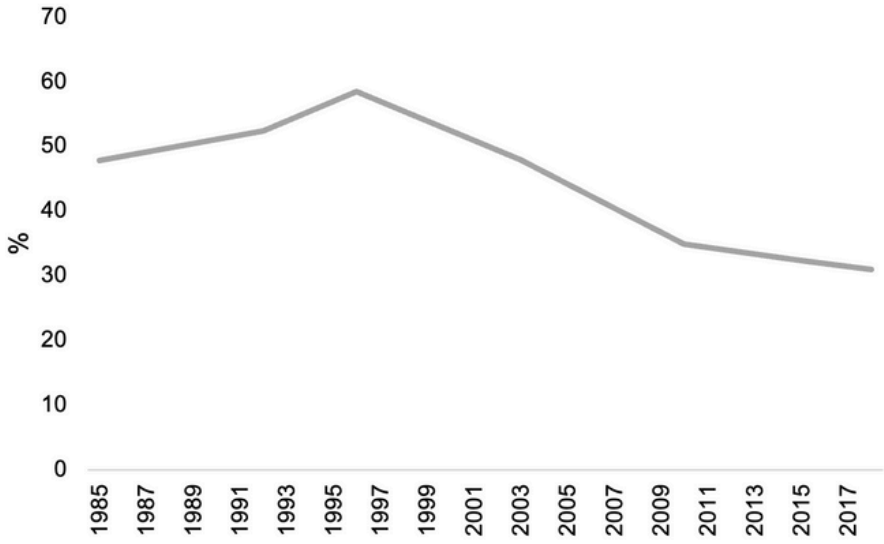


Figure 12. Poverty headcount ratio at 2.15 USD/day (% of population)

Source: World Bank

According to World Bank (2022), the poverty situation is significantly worse in rural areas. Among the 82.9 mln. people living below the national poverty line (2019 estimate), 84% are rural inhabitants. To assess the deepness of poverty, poverty gap index is employed, which measures the average difference between the consumption of the poor and the poverty line. It indicates that poverty is not only more prevalent in the rural areas, but deeper as well. Its value is 0.174 for rural areas and 0.045 for urban (lower value represents income closer to poverty line). In geographical terms, poverty is unequally distributed. It is mostly concentrated in northern part of the country, with southern coastal regions suffering from it to much lower extent (Figure 13).

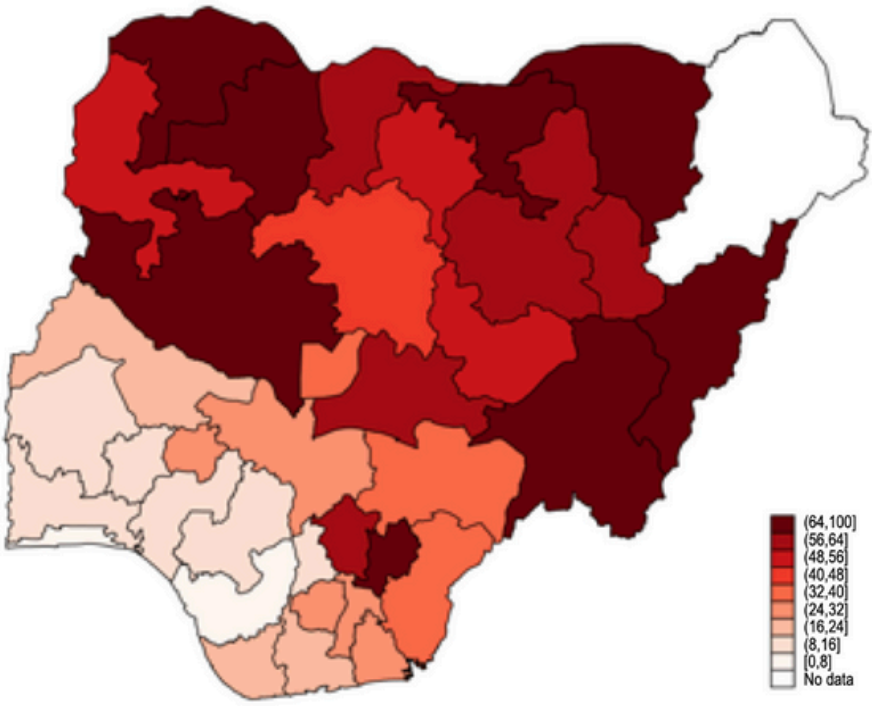


Figure 13. Poverty headcount rate in Nigeria in 2018/19, by state

Source: World Bank, 2022

In Nigeria, WFP primarily focused on providing unconditional food- and monetary aid to food-insecure IDPs, returnees, refugees and host communities affected by crises with 75% of its expenditures devoted to it (Table 1). Other activities included various forms of conditional transfers and aid, and policy consultancy to the government.

Table 1. WFP support programs in Nigeria in 2022

Activity	Expenditures, mln. USD	Share in total expenditures, %
Provide conditional transfers to food-insecure persons, including women, young people and smallholders	8.24	3.19
Provide common logistic services to government, United Nations and NGO partners to facilitate effective field operations	2	0.77
Provide common emergency telecommunications services to government, United Nations and NGO partners to facilitate effective field operations and provide for staff security	1.05	0.41

Activity	Expenditures, mln. USD	Share in total expenditures, %
Provide humanitarian aid services to all partners until appropriate alternatives are available.	23.58	9.13
Provide on-demand supply chain, information technology and guesthouse services to humanitarian and development partners	0	0.00
Support the technical capacity of federal, state and local actors in information management systems, vulnerability assessment and mapping, monitoring and evaluation, safety net management, food technology and fortification, supply chains, nutrition and emergency preparedness and response, integrating gender considerations.	1.09	0.42
Support the Zero Hunger Forum and food and nutrition security coordination and advocacy in line with the recommendations of the zero hunger strategic review	0.04	0.02
Provide nutrition prevention and treatment packages to children 6-59 months, PLWG, other nutritionally vulnerable populations and persons with caring responsibilities	2.1	0.81
Support improving the nutrition status of children, PLWG, adolescent girls and other nutritionally vulnerable groups (including people living with HIV) through an integrated malnutrition prevention package, including access to nutritious food and quality care, social behavioural change communication and capacity strengthening	27.28	10.56
Provide unconditional food assistance and income- generating activities to food-insecure IDPs, returnees, refugees and host communities affected by crises	192.88	74.68
Total	258.26	100

Source: WFP. Ghana. Annual Country Report 2022.

1.2. AGRI-FOOD TRADE

Nigeria is the leading imported of the agri-food products in the West Africa region. The value of total import has been gradually decreasing throughout the last decade until the COVID-19 crisis. The main categories of imported products were cereals, fish, and sugar (Figure 14).

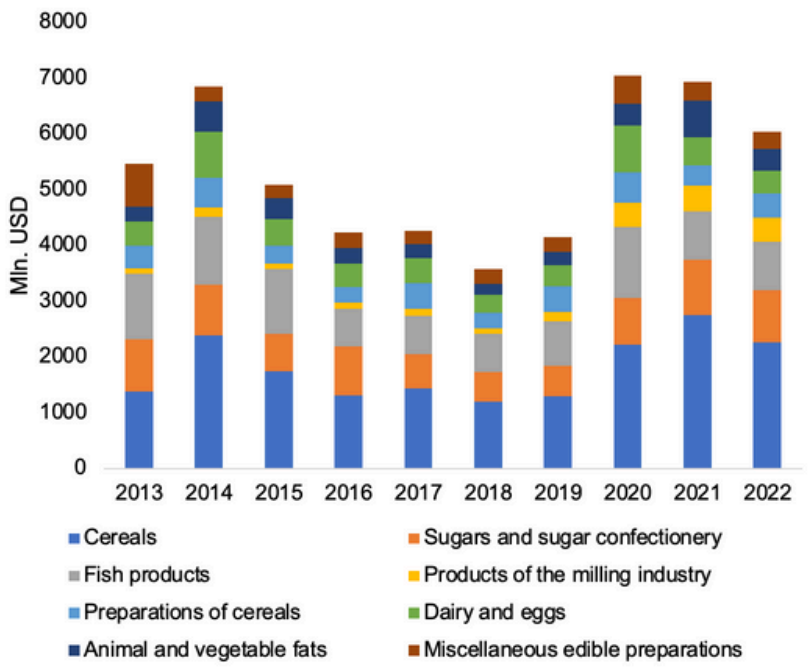


Figure 14. Product structure of food imports to Nigeria

Source: ITC Trade Map

Monetary value of the agri-food exports from Nigeria dropped significantly in 2013-2015, but started to slowly increase since mid-2010s. Main export products are cocoa, oil seeds (or oleaginous fruits), fruits, and nuts (Figure 15).

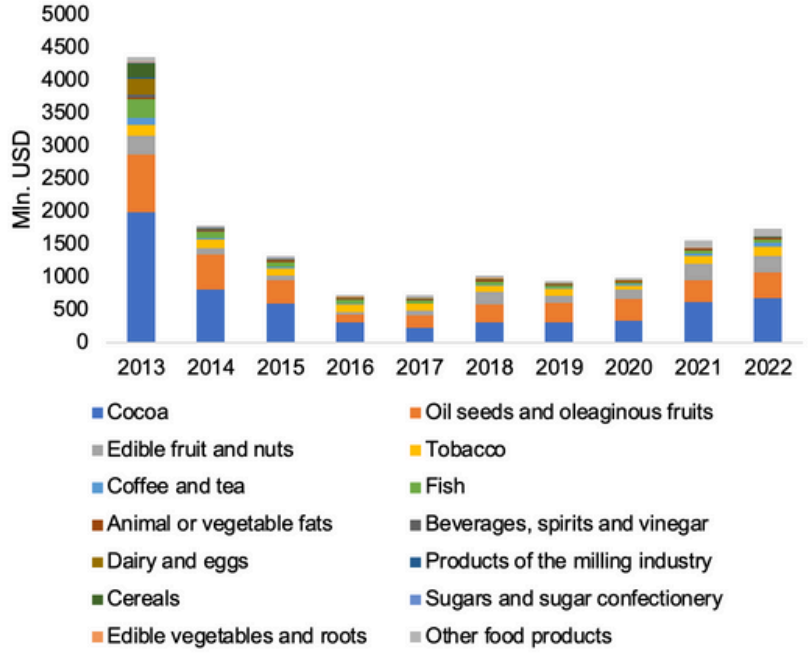


Figure 15. Product structure of food exports from Nigeria

Source: ITC Trade Map

Geographical structure of Nigerian food import is quite diversified, with no country taking up a significant share of it. The main exporters are Brazil, United States of America, and China (Figure 16).

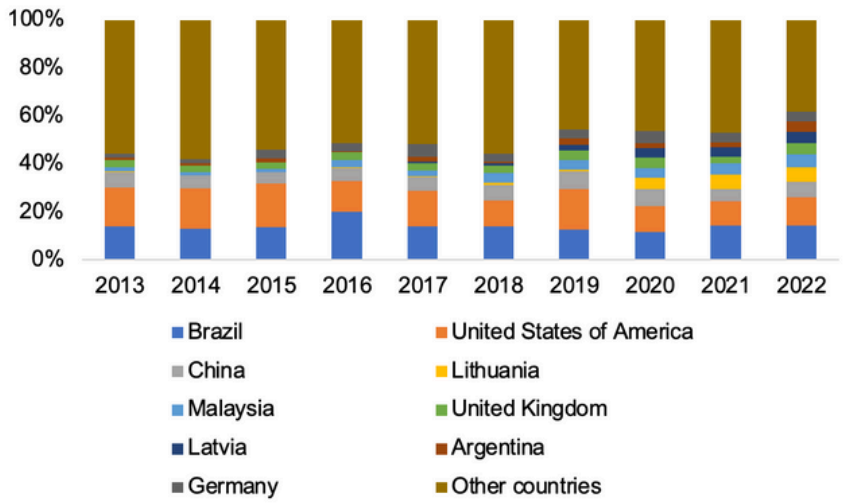


Figure 16. Geographical structure of food import to Nigeria

Source: ITC Trade Map

The main destinations for Nigerian food export are Netherlands, Vietnam, China, and India (Figure 17).

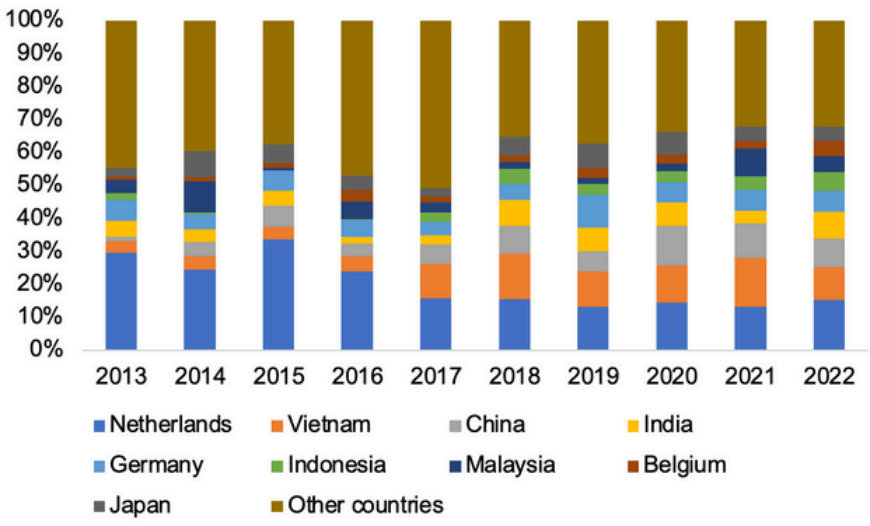


Figure 17. Geographical structure of food export to Nigeria

Source: ITC Trade Map

Monetary value of Ukrainian exports of agri-food products to Nigeria have been insignificant throughout the last decade (Figure 18). With the only exception of 2021, it did not exceed 100 thousand USD. Commodity structure is dominated by cereals (primarily wheat).

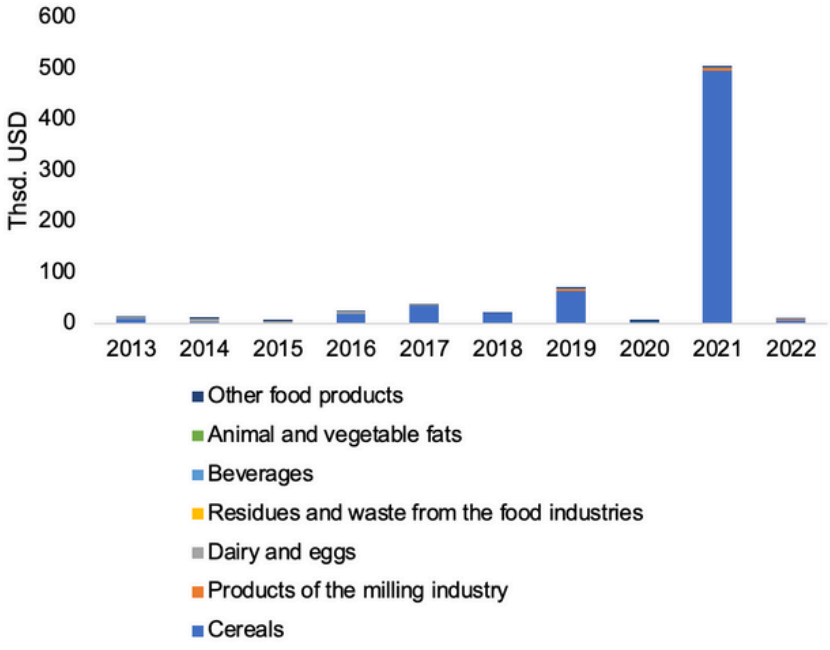


Figure 18. Agri-food exports from Ukraine to Nigeria

Source: ITC Trade Map

1.3. LOCAL AGRICULTURAL SECTOR

Agriculture is an important sector in Nigerian economy, employing 35% of the working population, as of 2021. The share of population employed in agriculture remained have been gradually decreasing throughout 1990s-2010s, from 51.7% in 1991 to 35.2% in 2021. The share of agriculture in GDP was 23.4% as of 2021. It remained relatively unchanged throughout the last three decades, fluctuating within the 20-25% interval (Figure 19).

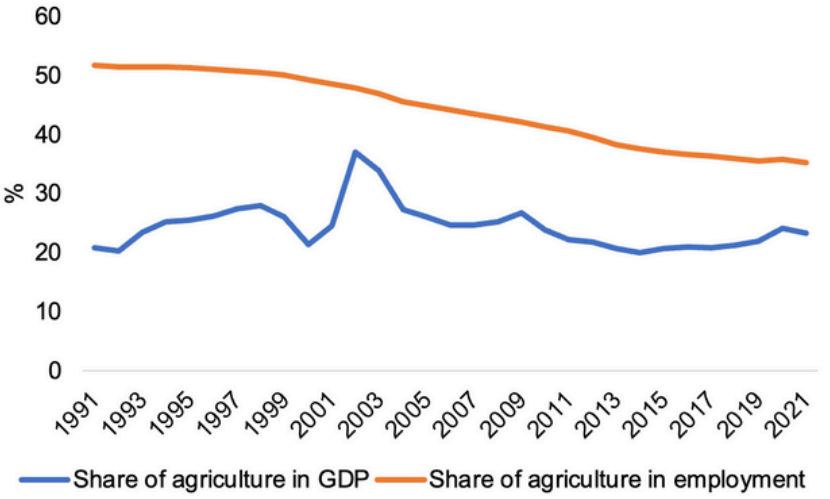


Figure 19. Share of agriculture in GDP and total employment, 1991-2021

Source: World Bank Database

Despite the share of agriculture in GDP being unchanged, in monetary terms agricultural production have been growing over the last 40 years, with a rapid increase of growth rate since early 2000s (Figure 20). In 2022, monetary value of produced commodities in constant 2015 USD was almost 4 times higher than the 2000 value (394% of 2000 value).

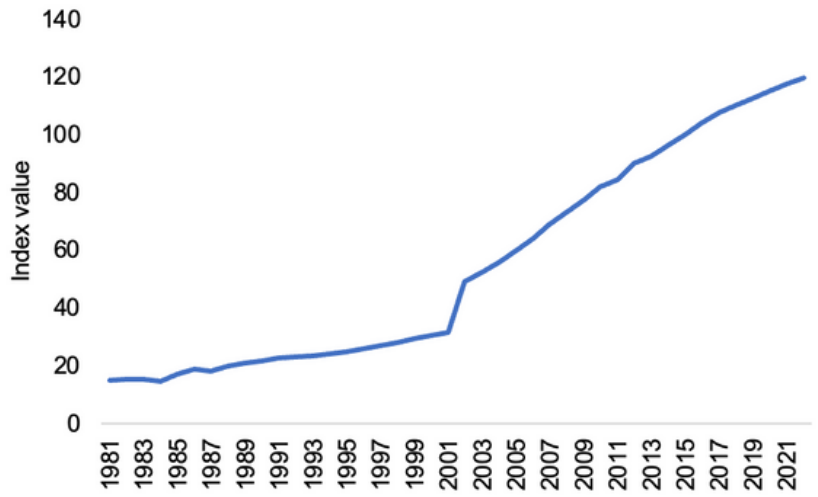


Figure 20. Agricultural production value index, constant 2015 USD. Baseline: 2015

Source: FAOSTAT

Crop production

The main crop produced in Nigeria is cassava, with 63 million tons produced in 2021. It is followed by yams, corn, and rice. As of 2021, amounts of their production were 50.4, 12.8, and 8.3 million tons, respectively. Another significant sub-sector of Nigerian agriculture is production of oil palm fruit, with 10.1 million tons of it produced in 2021.

Throughout the last two decades, commodity structure of production changed only slightly. Cassava, yams, and oil palm fruit remained the leading commodities produced in Nigeria (Figure 21). At the same time, production of sorghum and taro decreased over the observed period and were replaced by corn and rice. Production of cassava and corn increased by more than 2 times over the last 20 years. Amount of oil palm fruit produced remained relatively unchanged. The highest growth rate is observed for rice. As of 2021, its production constituted 303% of the 2001 level.

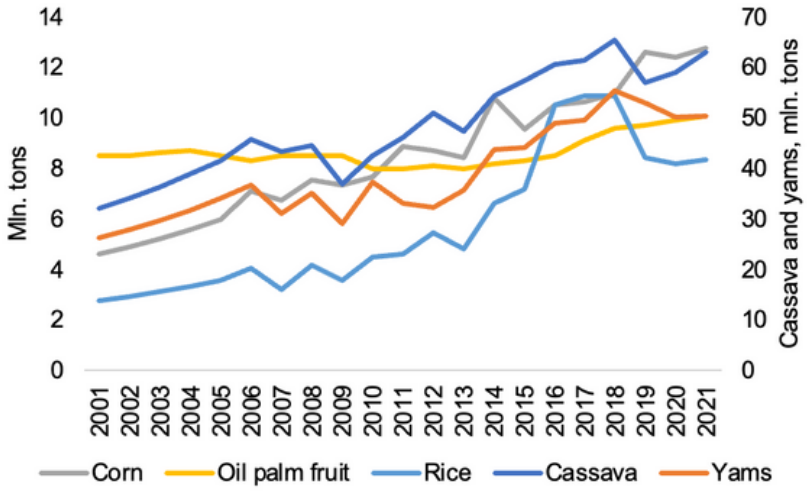


Figure 21. Production amounts of the 5 most-produced crops in Nigeria

Source: FAOSTAT

Land use and sown areas

As of 2020, 695 thousand square kilometers of land were used for agricultural purposes, which is approx. 76% of the total Nigerian area. Amount of agricultural land have been increasing since mid-1980s. Then it reached the ceiling in the 1990s, and the growth rate slowed down significantly. Over the last 30 years, the amount of agricultural land increased by 40 thousand square kilometers (Figure 22). In the sown areas structure, cassava, corn, sorghum, and cow peas are dominating. As compared to 2001, this structure changed significantly. Two decades ago, shares of land under sorghum and millet were more than two times higher. At the same time, share of land under cassava and yams almost doubled over the observed period.

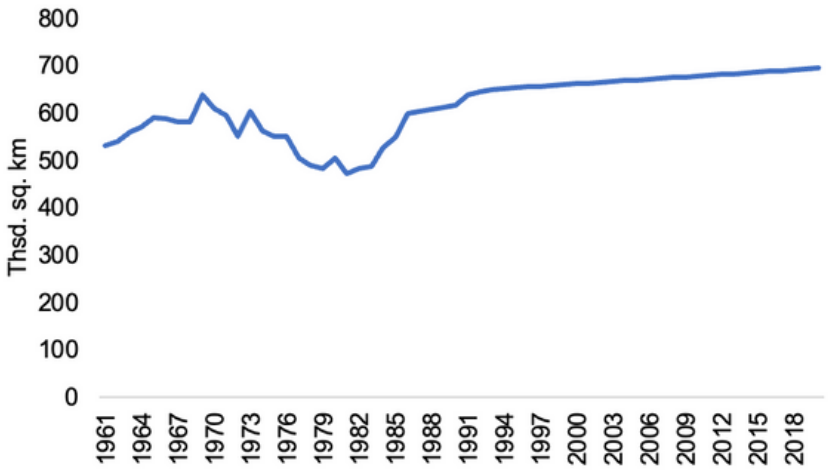


Figure 22. Agricultural land in Nigeria

Source: World Bank Database

According to FAO's AQUASTAT, as of 2016, only 0.8% of the agricultural land have been equipped for irrigation (325 thousand hectares). Additionally, 682 thousand hectares are classified as water-managed areas. These lands are flood recession cropping areas and cultivated wetlands or inland valley bottoms. The total water-managed area is only 2.5% of the total cultivated area. Irrigation in not developed in Nigeria. In addition to the small area equipped for irrigation, only 57% of it was actually irrigated, as of 2016 (FAO, 2016).

Livestock production

Cow milk, chicken eggs, and various meat kinds are the leading livestock commodities produced in Nigeria. Meat types produced include cattle, pig, goat, chicken, sheep, and game meat. Over the last two decades, the structure of livestock production did not change significantly. Production amounts of mentioned commodities have been growing gradually, increasing by 1.5-2 times on average over the 2001-2021 (Figure 23). The only exception is the meat of cattle, production of which remained relatively unchanged over the observed period.

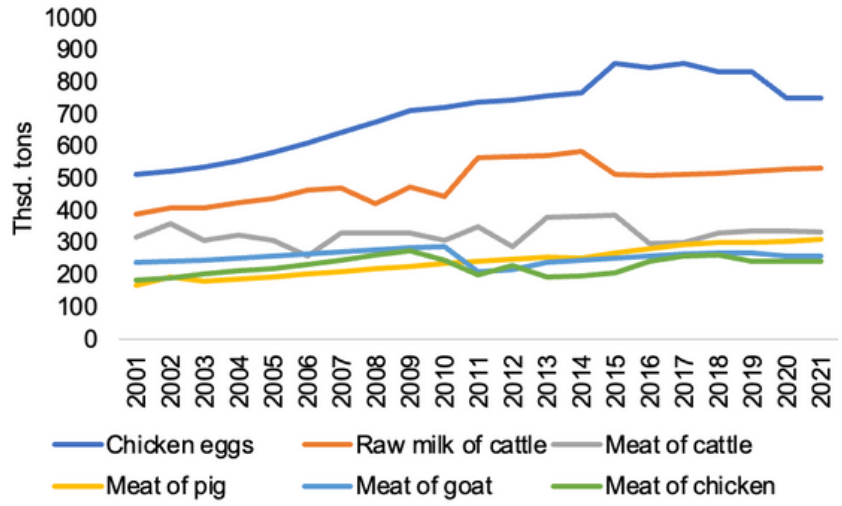


Figure 23. Livestock commodities production in Nigeria

Source: FAOSTAT

The livestock population data reflects the production statistics. Chicken is the most widespread animal in Nigerian livestock sector, with 169 million heads, as of 2021. It is followed by goats, sheep, cattle, and pigs (Figure 24).

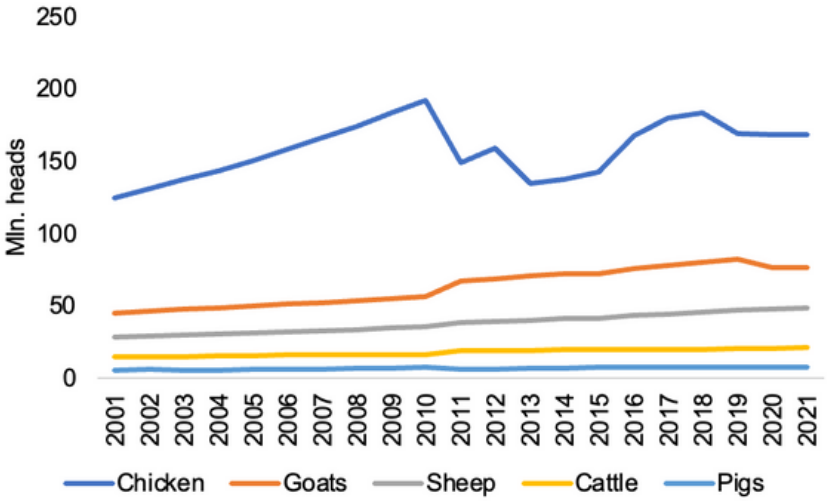


Figure 24. Livestock population

Source: FAOSTAT

Processing sector

No recent data is available regarding the share of processing sector in GDP and its total output. The latest available information is 1996. As of this year, the value added related to food processing sector amounted to 5.7% of the GDP.

Primary processed products are vegetable oils, skim milk, and cotton. Vegetable oils include palm oil, palm kernel oil,[1] groundnut oil, soya bean oil, and sesame oil. Except skim milk, other dairy commodities, such as butter or cheese, are produced in much lower amounts. One more important processed crop is cotton. Processed commodities include cotton lint, cottonseed oil, and cotton seed itself.

Over the last 20 years, structure of commodities produced have undergone significant changes (Figure 25). Soybean oil began being produced in late 2000s and have been rapidly growing over the 2010s. Amount of cotton lint and groundnut oil produced have been decreasing gradually. At the same time, production of skim milk and palm oil increased over the period of 2001-2020. However, the increasing trend was not stable and amounts produced fluctuated significantly.

1 Palm oil and palm kernel oil are different products extracted from the separate parts of oil palm fruit. Palm oil is used for edible purposes, in particular, cooking and frying. Palm kernel oil is used for non-edible purposes (production of soaps, cosmetics and some chemicals).

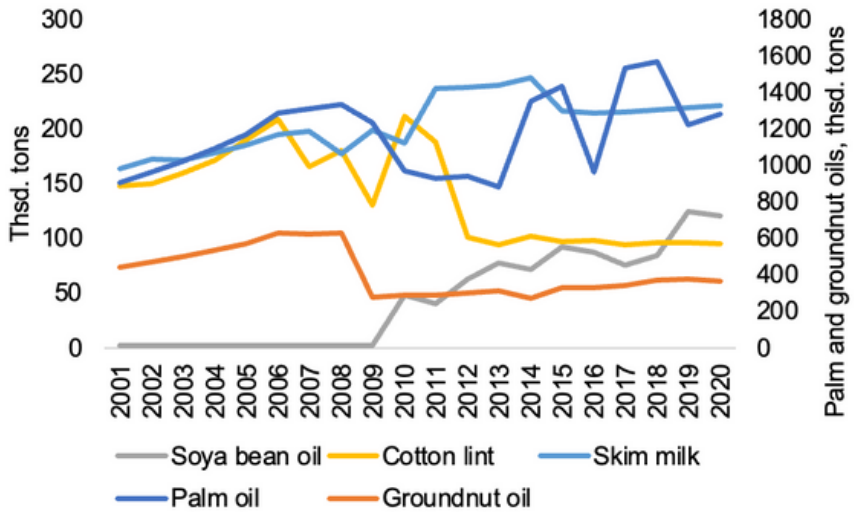


Figure 25. Processed commodities production, 2000-2020

Source: FAOSTAT

1.4. CHALLENGES IN AGRICULTURE

Main challenges, that Nigerian agricultural producers are facing, are directly or indirectly related to nation's poverty.

Low development of infrastructure. In rural areas, the access to markets is limited by lack of proper roads or railroads, logistics services and storage infrastructure. This limits both the availability of agricultural products in remote areas and reduces farmers' incomes. The infrastructure constraint has persisted due to government neglect, poor governance, poor political leadership, poor maintenance culture and poor funding. In addition, the railway system that is expected to provide relief, fails to expand and satisfy the demand for logistics services, thereby restricting the movement of agricultural inputs and outputs to the road transport system (Olukunle, 2013). Additionally, lack of social infrastructure in rural areas, such as education or healthcare facilities, stimulates the internal migration to cities, which reduces the amount of workforce available for agricultural production and makes the sector less appealing for population.

Storage and processing issues. The lack of adequate storage and processing facilities accounts for divergence between national food security and household food security. Even if the total production of food seems adequate at the aggregate level, it will not lead to significant improvement in food security unless the food is available for consumption at the right time and in the right form. A significant quantity of products harvested in Nigeria perishes due to lack of storage and processing facilities. Simple, efficient, and cost-effective technologies for perishables, such as roots, tubers, fruits and vegetables, are not as highly developed in the country compared to the storage technologies for cereal grains and legumes. Consequently, post-harvest food storage losses are very high, approximately 40 per cent for perishables, compared to cereal grains and pulses at about 15 percent (Olukunle, 2013).

Agricultural labor. The high reliance on human labor in Nigerian agriculture is impacted by seasonal labor shortages, often due to rural-to-urban migration. Beside the seasonal factors, a constant urbanization in Nigeria decreases overall number of labor force

available for agricultural sector. When there aren't enough laborers available during critical farming periods, tasks like land preparation, weeding, and harvesting become more challenging and costly, which leads to lower yields, decreased profits and sometimes losses for farmers.

Technical constraints. Poor government support and communication gaps between researchers and farmers hinder the adoption of modern agricultural practices. Despite the availability and existence of modern, more efficient farming technologies, many farmers are unaware of or unable to access them, leading to lower productivity and output.

Inadequacies in policies. Previous agricultural programs in Nigeria focused on increasing production but often neglected the entire post-harvest system, from processing to marketing. This fragmented approach resulted in substantial food wastage, which was already mentioned, and limited the impact of these programs (Olukunle, 2013).

Excessive specialization. The overreliance on a limited range of agricultural products, like cassava, exposes farmers to risks such as market gluts. When prices fall due to overproduction, farmers suffer from decreased profits, because for many of them cassava is the only output of the farm. Diversifying into other crops or value-added products could mitigate this risk, but it is still not widely applied.

1.5. AGRICULTURAL POLICY OVERVIEW

Macroeconomic profile

Nigeria's economy showcased consistent growth until 2015, reaching a per capita income of 2,679 USD in 2022. However, between 2016 and 2020, the economy stagnated, witnessing a decline in GDP per capita to 2,401 USD in 2020, followed by a minor recovery to 2,450 USD in 2022 (Figure 26). Nonetheless, Nigeria remains closely aligned with its regional counterparts such as Cote d'Ivoire (2,430 USD) and Ghana (2,000 USD). Notably, these figures surpass those of neighboring countries like Burkina Faso (632 USD per capita), Guinea (994 USD per capita), Liberia (647 USD per capita), and Mali (749 USD per capita). Consumer price fluctuations in Nigeria have displayed substantial variation over the last decade, with inflation surpassing 10% in 7 out of the last 10 years.

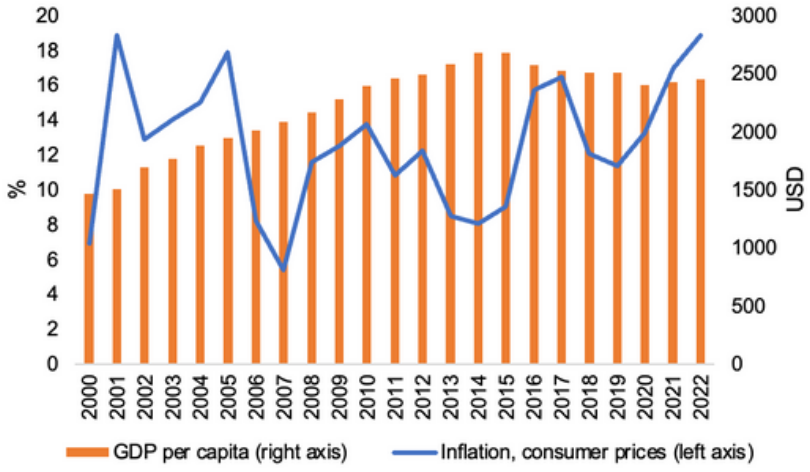


Figure 26. Nigeria's macroeconomic indicators

Source: The World Bank

Agricultural policy

Primary tools of agricultural support in Nigeria are government investments, support services and infrastructure development, inputs provision, market support, regulatory incentives to domestic production. These include agriculture programs such as the National Special Program for Food Security, the National Fadama Development Project, Community-based Agricultural and Rural Development Program, Community-based Natural Resources Management Program, and the Root and Tuber Expansion Project (Nitag Consults Limited, 2009).

For instance, Nigeria, ranking fifth in global palm oil production, implemented in 2016 **foreign exchange restrictions** on palm kernel, palm oil products, and vegetable oils. This move was aimed at boosting domestic production within the country. **Funding support program** was initiated in 2022 for the domestic palm-oil producers, with a focus on small and medium enterprises. It was designed to facilitate the cultivation of 350,000 hectares of oil palm by 2028 through easier access to funding (USDA, 2023b).

Aiming at improving food supply self-sufficiency, Nigeria introduced import duty of 20% for wheat, bolstering domestic production. This tool is paired with **Seeds for the Future Initiative** aimed at improved access and availability of wheat seeds and widens within a recently adopted **National Wheat Strategy**. The strategy is designed to close the 5.5 million tons wheat supply deficit by targeting smaller farmers. Moreover, there is a 5% import duty and permit regulations for corn import, also aimed at stimulating domestic production (USDA, 2023a).

Other programs aimed at enhancing domestic production are the government's **National Rice Development Strategy II (NRDS II)** and **Competitive Rice Platform (CARP)** that include a set of policies aimed at boosting rice production by 2030. Instruments to achieve the goal include credit financing and financial services provision to rice producers and processors, including for the purpose of bolstering mechanization in the sector, seed provision.

Within NRDS II, the Nigerian government also will focus on **irrigation improvements**, as only 17% of rice cultivable land of Nigeria have at least partial or seasonal water control systems. By establishing special funding for irrigation development, attracting private investors for irrigation facility concession and licensed dam construction the strategy aims at reaching over 60% of land used for rice production to be irrigated (FMARD, 2022).

In recent years, government allocations for agriculture have constituted roughly 2% of the overall budget expenditure, with an average of approximately 615 million USD between 2017 and 2019 (Figure 27). This represents a significant shift from the earlier period of 2006 to 2009 when investments in the agricultural sector reached unprecedented levels, consistently exceeding 800 million USD each year. This decrease in funding underscores the need for a reevaluation of agricultural investment priorities and strategies to revitalize the sector.

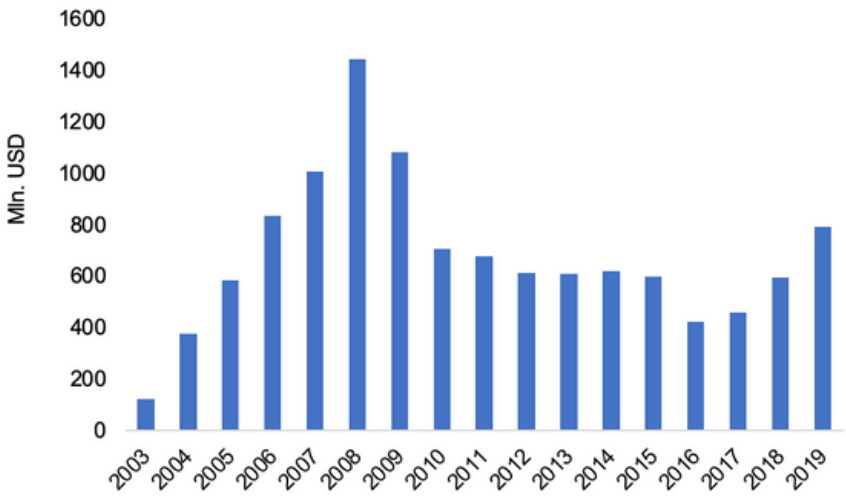


Figure 27. Government expenditures on agriculture, fishing and forestry in Nigeria

Source: FAOSTAT

While government investments in agriculture have seen a decline since 2011, the inflow of credit into Nigeria's agricultural sector has witnessed remarkable growth (Figure 28). In 2014, these credit flows exceeded 3 billion USD, and by 2021, they had surged to 3.5 billion USD. This marks a significant upturn from the comparatively lower average of 768 million USD recorded during the period from 2005 to 2010. Notably, the share of agriculture in the overall credit financing landscape has doubled since 2016, reaching nearly 6% by 2021. This increase underscores the growing importance of credit in supporting and driving agricultural activities within the country.

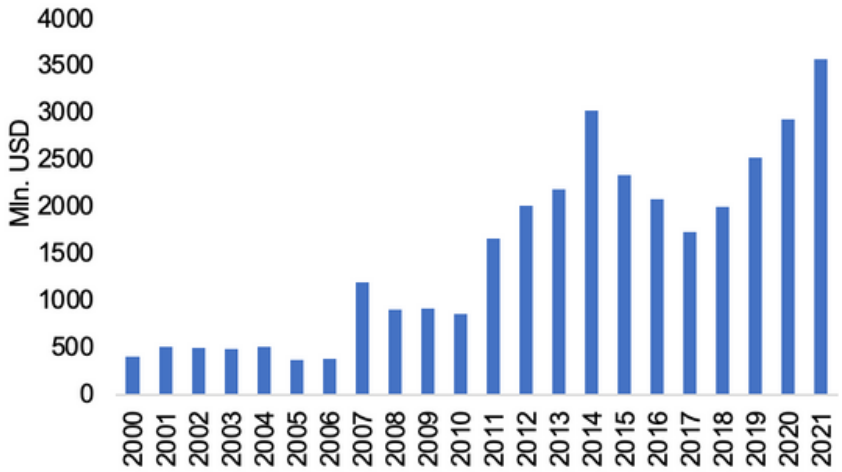


Figure 28. Credits to agriculture, fishing and forestry in Nigeria

Source: FAOSTAT

1.6. NIGERIA: SUMMARY

Nigeria is the largest and most populated country in the West Africa being a home to approx. 213 million people. Similar to its neighbors, Nigerian population is growing rapidly. Nigerian GDP per capita have been steadily growing throughout the 2000s and stagnated in 2010s. This stagnation led to a decrease in populations' welfare and worsening food security. In 2020-2022 the share of undernourished population exceeded

the regional average and reached 16%, which is a substantial number. It reflected in average dietary adequacy and nutrients supply, all of which dropped below the West African average in early to mid-2010s. As of 2022, average dietary energy supply was 2520 kcal per person per day.

Growing poverty is the main factor fueling food insecurity in Nigeria. The most notable issue is the urban-rural inequality and the geographic distribution of poverty. While the number of poor has been decreasing since 1990s, it dropped only to 32% in 2019, and this decrease was not evenly distributed. As of 2019, among the 82.9 million people, 84% were rural inhabitants. Additionally, in northern regions of the country, poverty rate reaches 65%-70%.

WFP operations in Nigeria primarily focus on providing unconditional food- and monetary aid to food-insecure IDPs, returnees, refugees and host communities affected by crises with 75% of its expenditures (193 million USD).

Over the last decade, the main imported agri-food commodities were cereals, sugar, and fish products. Agri food export has significantly dropped after 2013 (4.5 billion USD) and did not exceed 2 billion USD in the following years. Main exported commodities are cocoa, palm oil fruits, and edible fruits and nuts. In geographical terms, Nigerian agri-food trade is very diversified. Main supplying markets are Brazil and USA, whose share decreased in recent years due to increased import from China and Malaysia. The main importing markets of the Nigerian production are Netherlands, Vietnam, China, and India. Netherlands share, which was quite substantial in the mid-2010s (30% on average) dropped in 2017-2022 down to approx. 12-15%, while shares of Vietnam, China, and India have grown. Ukrainian agri-food trade with Nigeria is almost nonexistent. Over the last decade it did not exceed 100 thousand USD, with the only exception of 2021, when it reached 520 thousand USD. The main traded product is wheat.

Agriculture is an important sector in Nigerian economy, employing 35% of the working population, as of 2021. Share of agriculture in GDP remained relatively unchanged throughout the last three decades, fluctuating within the 20%-25% interval. In monetary terms agricultural production have been growing over the last 40 years. The main crops produced are yams and cassava (mostly for domestic consumption), oil palm fruit, rice, and corn. Over the last 30 years, the amount of agricultural land increased by 40 thousand square kilometers, reaching a number of 695 thousand sq. km. Only a small portion of this land is equipped for irrigation (325000 hectares, 0.8%). Livestock sub-sector of Nigerian agriculture is producing chicken eggs, dairy, cattle and chicken meat, and pork.

Most challenges, that Nigerian agricultural producers are facing, are directly or indirectly related to nation’s poverty. The main issue is the infrastructure inadequacy and low level of its development. In rural areas, where majority of farms operate, access to markets is limited by lack of proper roads or railroads, logistics services and storage infrastructure. This limits both the availability of agricultural products in remote areas and reduces farmers’ incomes.

The impact of infrastructure problems is worsened by the storage and processing issues. The lack of adequate storage and processing facilities accounts for divergence between national food security and household food security. Even if the total production of food seems adequate at the aggregate level, it will not lead to significant improvement in food security unless the food is available for consumption at the right time and in the right form. A significant quantity of products harvested in Nigeria perishes due to lack of storage and processing facilities.

Primary tools of agricultural support in Nigeria are government investments, support services and infrastructure development, input provision, market support, regulatory incentives to domestic production. Over the last decades, Nigerian government was prone to impose various import restrictions on agri-food commodities in order to support domestic producers. For instance, Nigeria, ranking fifth in global palm oil production, implemented in 2016 foreign exchange restrictions on palm kernel, palm oil products, and vegetable oils. This move was aimed at boosting domestic production within the country. Aiming at improving food supply self-sufficiency, Nigeria introduced import duty of 20% for wheat and of 5% for corn, bolstering domestic production. This tool is paired with Seeds for the Future Initiative aimed at improved access and availability of wheat seeds and widens within a recently adopted National Wheat Strategy. While this policy helped to make local producers more competitive on the local market, it contributed to worsening food security situation within the country.

In recent years, government allocations for agriculture have constituted roughly 2% of the overall budget expenditure, with an average of approximately 615 million USD between 2017 and 2019. This represents a significant shift from the earlier period of 2006 to 2009 when investments in the agricultural sector reached unprecedented levels, consistently exceeding 800 million USD each year. This decrease in funding underscores the need for a reevaluation of agricultural investment priorities and strategies to revitalize the sector.

2. GHANA

2.1. FOOD SECURITY

Ghanian total population have been growing throughout the last two decades and increased by 43% to approx. 28.2 million people (Figure 29).

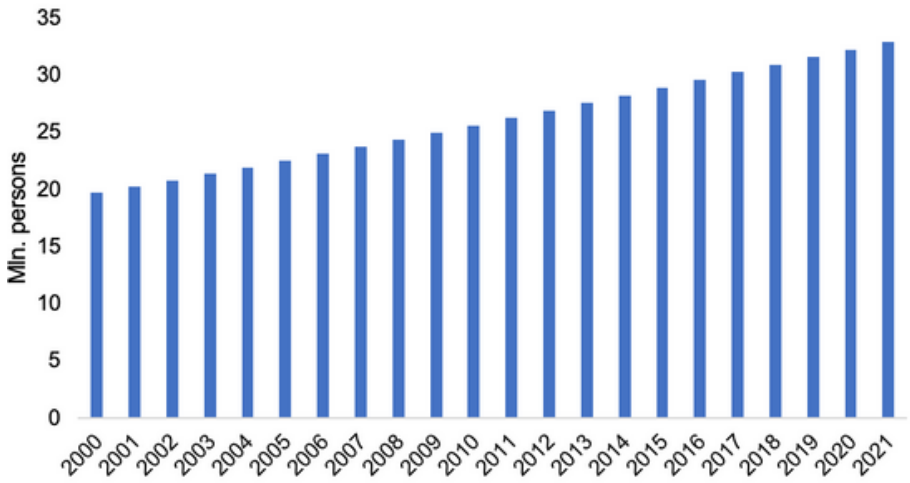


Figure 29. Total population in Ghana

Source: World Bank

From the macroeconomic perspective, Ghanian GDP per capita have been steadily growing throughout the last two decades. In the late 2010s, it exceeded the average West African level (Figure 30). As of 2022, Ghanaian GPD per capita is approx. 10% higher than the West African average.

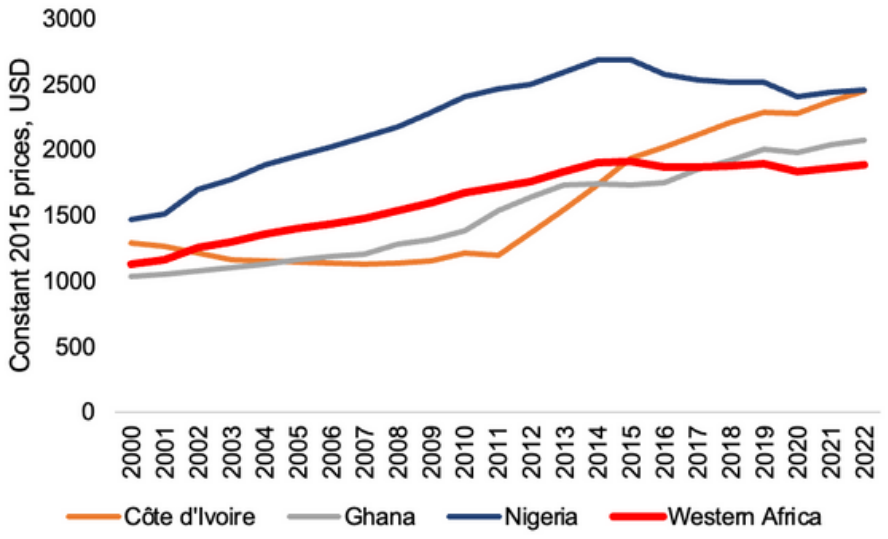


Figure 30. GDP per capita in West African countries

Source: World Bank

The economic grown have allowed Ghana to fight undernourishment among its population. Since 2000, the share of undernourished population in the country remained significantly lower than the regional average (Figure 31). As of 2022, 4.9% of Ghanaian population were food insecure, which is approx. three times lower than the 2000 level of 18%; for West Africa this share was approx. 14% in 2022.

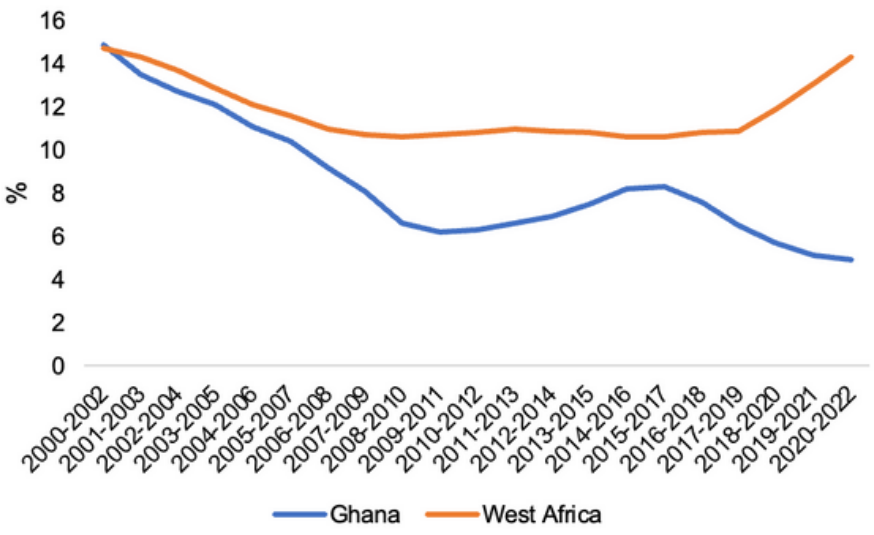


Figure 31. The share of undernourished population

Source: FAOSTAT

Despite the rapid population growth, the number of undernourished in Ghana decreased by approx. 1.4 million over the last two decades (Figure 32). This goes against the regional trend of worsening food security situation.

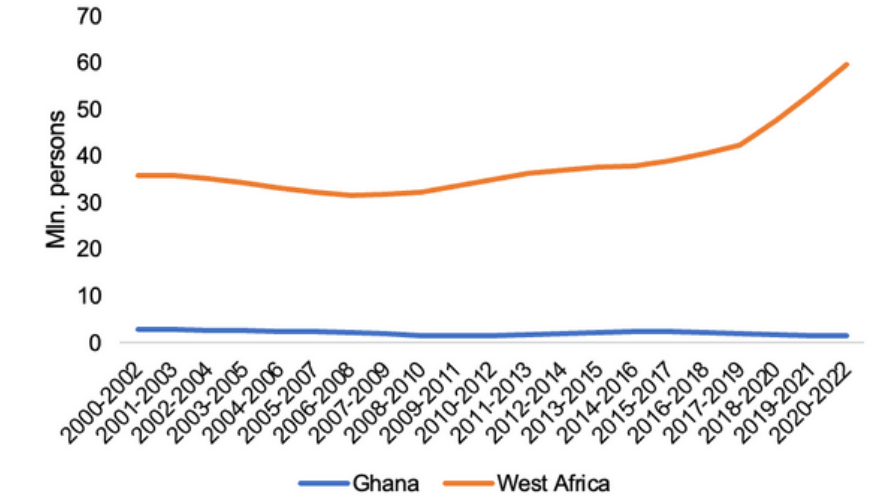


Figure 32. The number of undernourished persons

Source: FAOSTAT

The 2019-2022 3-year average value of dietary energy supply in Ghana was 3080 kcal per person per day. It is slightly higher than the regional average of 2620 kcal per person per day (Figure 33).

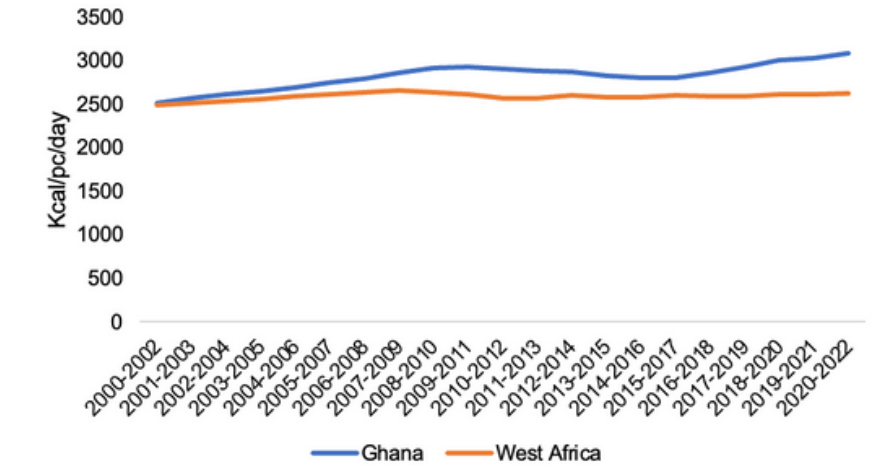


Figure 33. Dietary energy supply

Source: FAOSTAT

As the Figure 34 shows, the average dietary energy supply adequacy has been moving closely to the regional average in the early 2000s, but have been growing at the higher rate in late 2000s and 2010s, while the West African average stagnated.

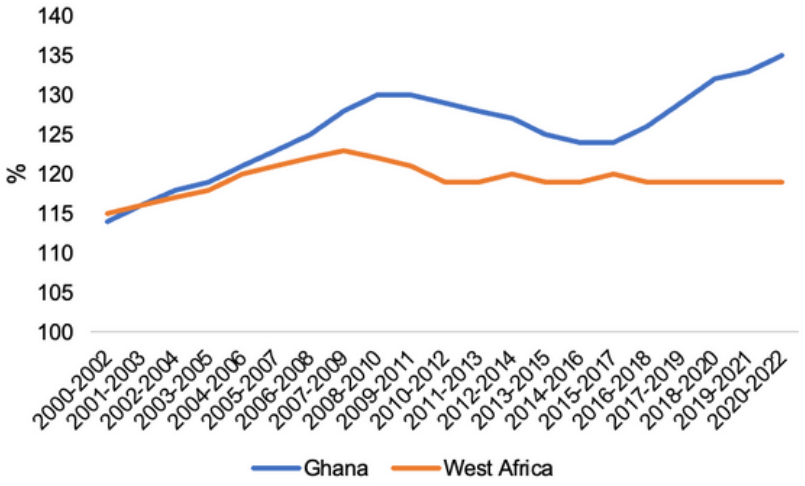


Figure 34. Average dietary energy supply adequacy

Source: FAOSTAT

To assess the share of nutrient-rich food in the diet, the share of dietary energy supply derived from cereals, roots and tubers is considered (Figure 35). In Ghana this share is quite high at approx. 66%, which is equal to the average level in Western Africa. It has been growing in the early 2010s.

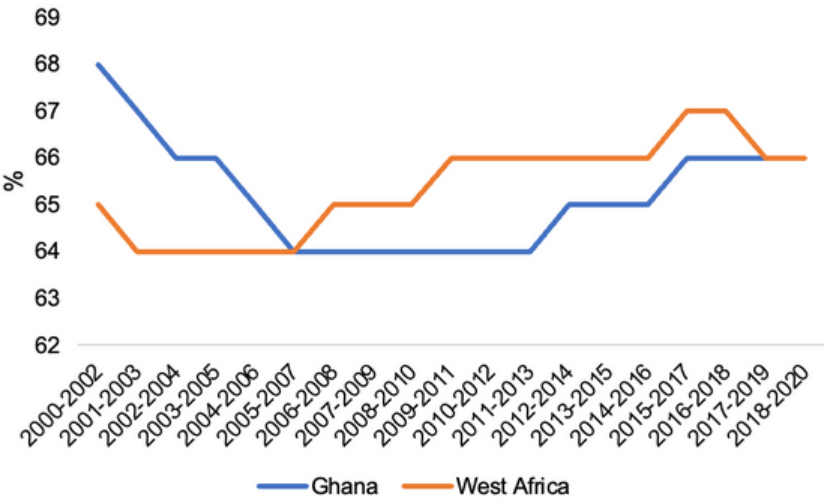


Figure 35. Share of dietary energy supply derived from cereals, roots, and tubers

Source: FAOSTAT

As for protein supply, in Ghana it was also approximately equal to the regional average throughout the last two decades and did not change significantly, remaining within the 57-63 grams per person per day interval (Figure 36). The share of this protein obtained from the food of animal origin remained relatively unchanged throughout the last two decades (Figure 37). However, it has been higher than the West African average (15.3 and 10.1 grams per person per day, respectively), indicating a better food security and welfare in the country than on average in West Africa.

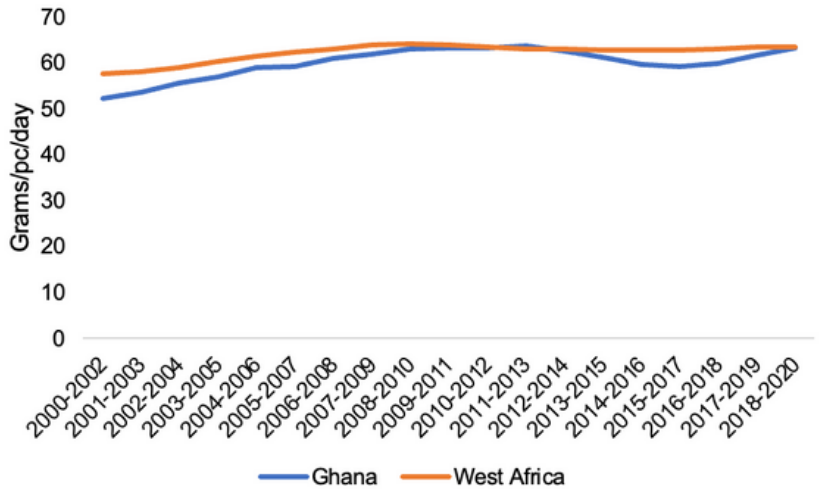


Figure 36. Average protein supply

Source: FAOSTAT

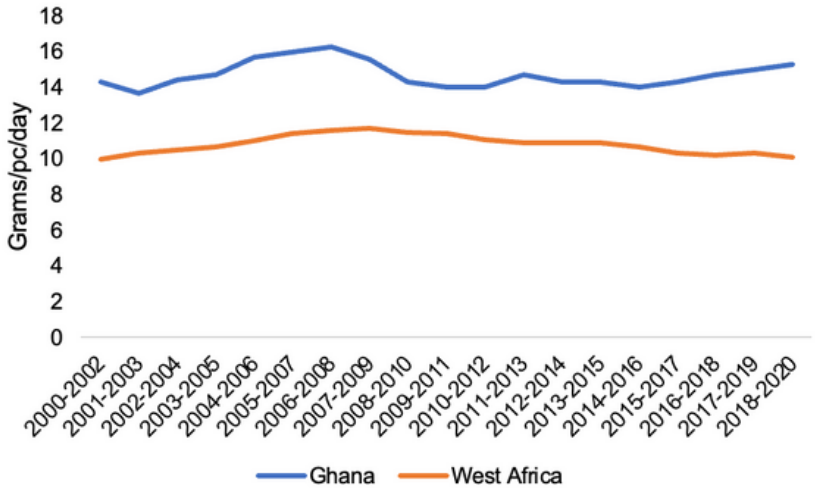


Figure 37. Average animal protein supply

Source: FAOSTAT

In 2021, per capita food supply variability for Ghana was quite high, as compared to the West African average (80 and 11 Kcal/pc/day, respectively) (Figure 38). However, this value is still more than 4 times lower, then the gap between average calorie supply in Ghana and West Africa as a whole. This means that the food supply instability did not affect the dietary energy supply of the Ghanaian population.

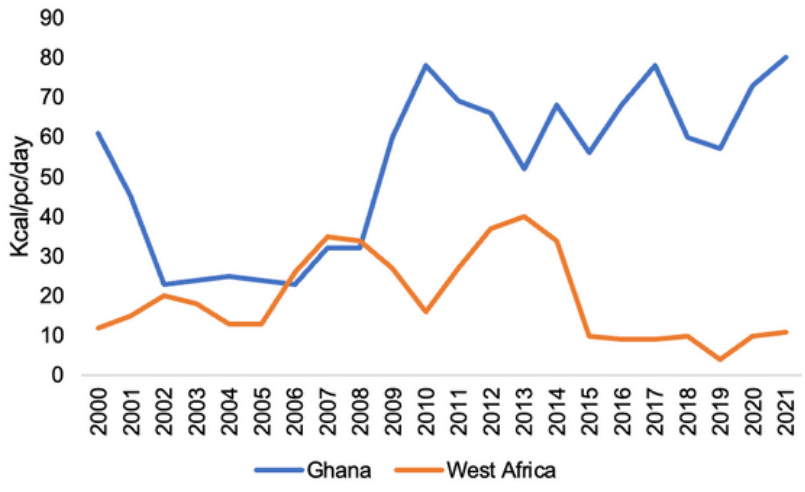


Figure 38. Per capita food supply variability

Source: FAOSTAT

Poverty, as a main factor fueling food insecurity, have been an important concern in Ghana since it received the independence. Even though it has been decreasing throughout the last three decades, it is still highly prevalent in Ghana, with the latest data from 2016 indicating 25.2% of population below the poverty line of 2.15 USD per day (Figure 39).

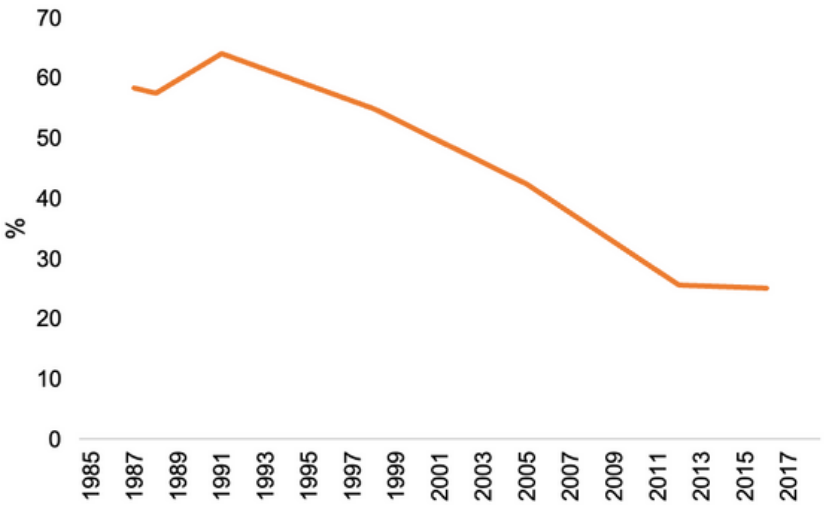


Figure 39. Poverty headcount ratio at 2.15 USD/day (% of population)

Source: World Bank

Poverty in Ghana follows the pattern similar to the West African region. Majority of population below the poverty line lives in rural area. According to 2016 data, 9% of urban population were poor, while this value in rural areas reached 42%. Even though the latest estimates of poverty are available for 2016, it is assessed that it increased in recent years, as COVID-19 pandemic and war in Ukraine have been a significant shock for Ghanaian economy. By December 2022, yearly inflation rate reached 50% implying a considerable loss in purchasing power for Ghanaians (World Bank, 2023).

In its operations in Ghana, WFP had 32% of its expenditures devoted to malnutrition prevention programme. Additionally, WFP provided an assistance and consultancy to government regarding various topics including school feeding, food safety, and public procurement. Additionally, 16.1% of WFP expenditures in Ghana have been devoted to technical support for production of flour and food safety/quality assurance.

Table 2. WFP support programs in Ghana in 2022

Activity	Expenditures, mln. USD	Share in total expenditures, %
Advocate for the promulgation and enforcement of policies and legislation on school feeding, gender equality, nutrition, food safety, weights, measures and standards, smallholder-friendly public procurement and market support	0.12	2.4

Activity	Expenditures, mln. USD	Share in total expenditures, %
Provide technical support for community and industrial production of fortified flour and for food safety and quality assurance. This includes technical support on food safety and quality for up to 30 community milling and blending concerns, predominantly women's groups, in the three northern regions and financial and technical support for two industrial fortified flour producers in Brong Ahafo and Ashanti regions	0.79	16.1
Provide technical support, including through South–South cooperation, for the national school meals programme, the Ministry of Food and Agriculture, the National Disaster Management Organization, the Food and Drugs Authority and the Ghana Health Service to optimize the nutritional quality of school meals; food security monitoring; the early-warning system; disaster risk reduction and emergency preparedness, food safety and quality and food-based dietary guidelines	0.87	17.7
Malnutrition prevention programme	1.58	32.1
Provide support and link smallholder farmers to the Government One District One Warehouse Flagship through training and equipment support for the reduction of post-harvest losses, quality assurance and market linkages to processors and institutional demand	0.79	16.1
Provide food and nutrition assistance through in-kind or cash-based transfers to crisis-affected populations, including COVID-19 populations in epicentres, refugees and displaced persons, adolescent girls and other vulnerable groups	0.77	15.7
Total	4.92	100

Source: WFP. Ghana. Annual Country Report 2022.

2.2. AGRI-FOOD TRADE

Despite Ghana being one of the largest food importers in the West African region, the monetary value of this import varied over the last decade. It did not demonstrate a clear trend over the years, except for significant increase in 2020-2022 during the Covid-19 crisis, similar to that observed for Cote d'Ivoire. The main imported food commodities are cereals, meat, and vegetable oils (Figure 40).

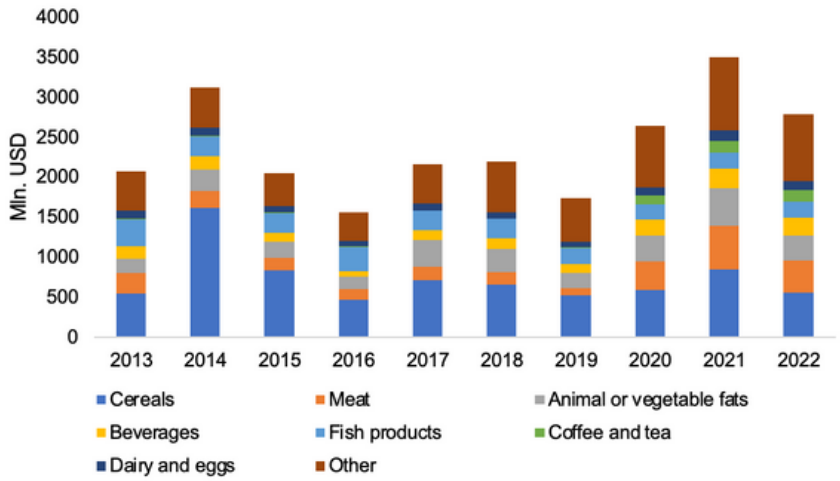


Figure 40. Product structure of food imports to Ghana

Source: ITC Trade Map

Ghanaian food exports remained relatively unchanged, over the last decade, fluctuating within the 3-4 billion USD interval. The main exported commodity is cocoa, which makes up more than a half of the yearly monetary export value. It is followed by fruit, nuts, and vegetable oils (Figure 41).

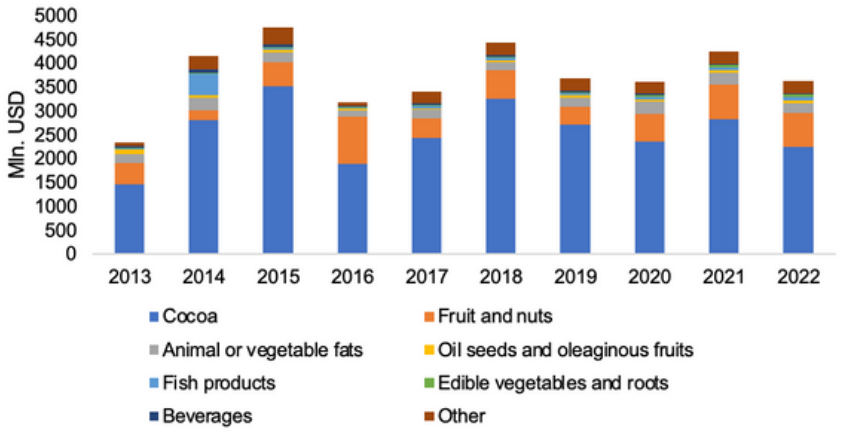


Figure 41. Product structure of food exports from Ghana

Source: ITC Trade Map

In geographic dimension, Ghanaian food imports are quite diversified. The main supplying markets are Vietnam, Canada, Belgium, and China, which make up roughly one third of the total food imports to Ghana (Figure 42). Relative share of Russian import increased significantly since 2014. On the other hand, share of Thailand in the structure decreased.

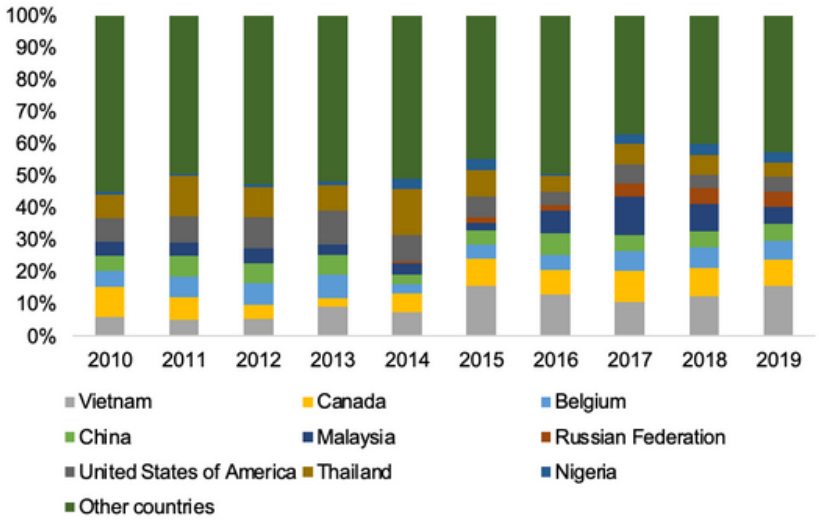


Figure 45. Geographical structure of food imports to Ghana

Source: ITC Trade Map

Food exports from Ghana are quite diversified as well. As Figure 43 shows, the largest importer of Ghanaian agri-food products is Netherlands.

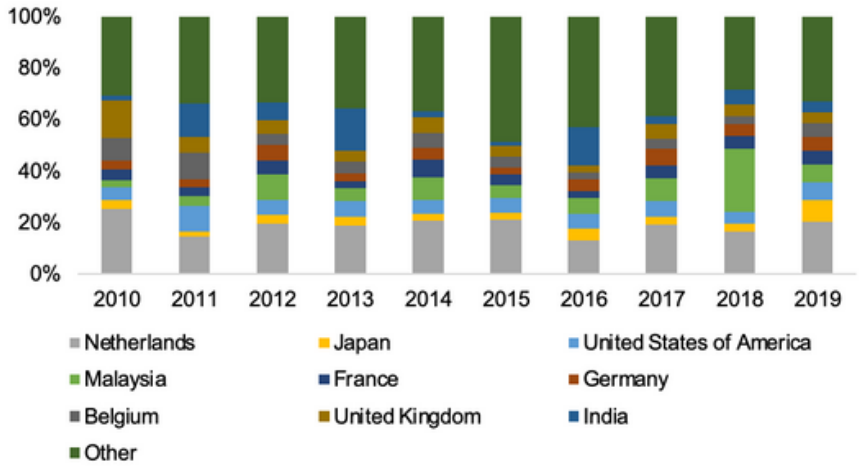


Figure 43. Geographical structure of food exports from Ghana

Source: ITC Trade Map

The last data on Ghanaian-Ukrainian bilateral trade is available for 2019. Over the 2010s, the amount of agri-food export from Ukraine has been constantly growing (Figure 44). Prior to 2016, the main commodity were miscellaneous edible preparations. Since 2016, amount of vegetable fats and meat imported to Ghana started to grow. However, in absolute terms the monetary value of Ukrainian export to Ghana remained insignificant, barely exceeding 8 million USD in 2019.

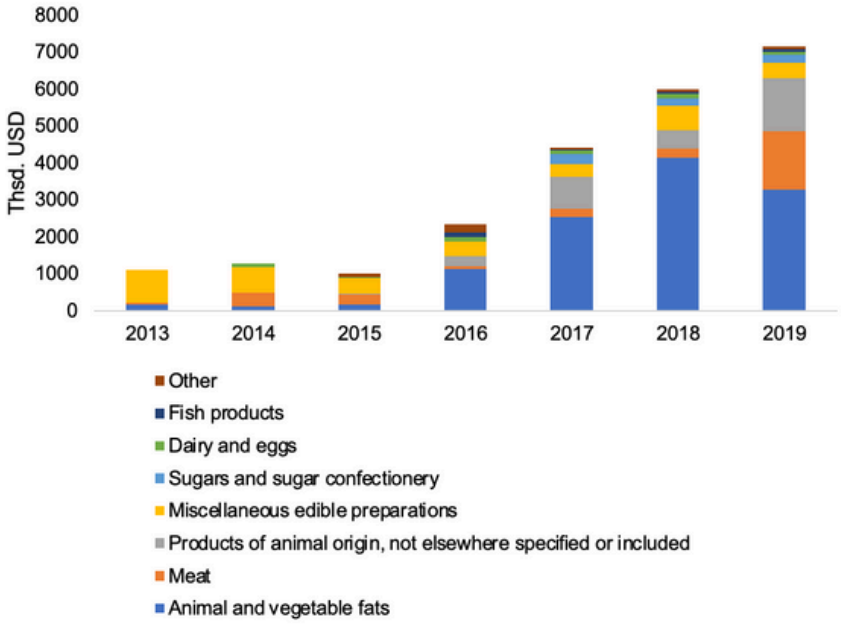


Figure 44. Agri-food exports from Ukraine to Ghana

Source: ITC Trade Map

2.3. LOCAL AGRICULTURAL SECTOR

The role of agriculture in Ghanaian economy have been gradually decreasing over the last three decades. The share of crop and livestock production in Ghanaian GDP decreased from 45.5% to 18.8% in 1991-2022. However, it still remains an important sector, employing almost 40% of the total working population. This number decreased by 23 percentage points in 1991-2021 (Figure 45).

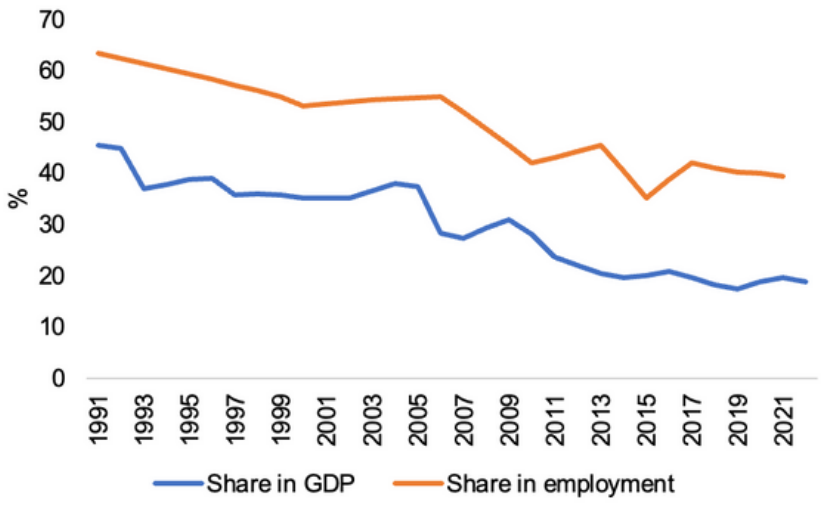


Figure 45. Share of agriculture in GDP and total employment in Ghana

Source: World Bank Database

Despite the share of agriculture in GDP was decreasing, in monetary terms agricultural production have been growing over the last two decades. In 2022, monetary value of produced commodities in constant 2015 USD was approx. 1.5 times higher than the 2012 value (Figure 46). The earliest production value data available in the Word Bank database is 2006, so the 1990s and early 2000s are not presented on the graph.

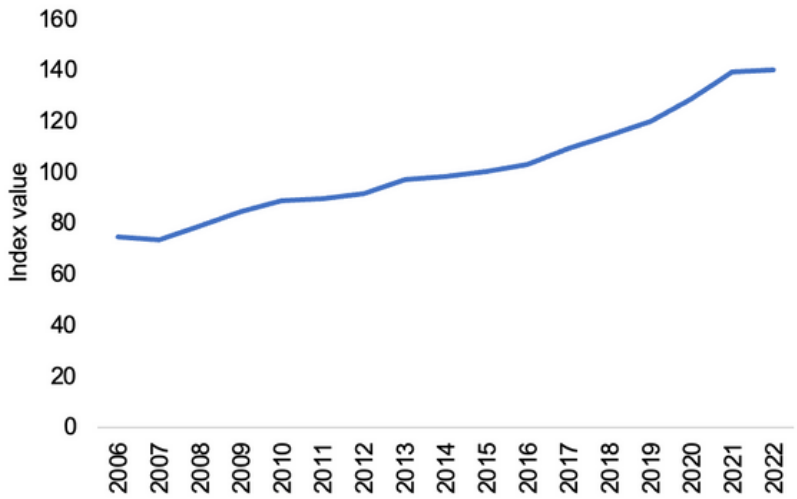


Figure 46. Agricultural production value index, constant 2015 USD. Baseline: 2015

Source: World Bank Database

Crop production

Main crops produced in Ghana are cassava and yams, with 22.7 and 8.3 million tons produced in 2021, respectively. They are followed by plantains (and other cooking bananas), corn, oil palm fruit, rice, taro, and cocoa beans. Additionally, important export commodities are fruits and rubber. Among the fruits, oranges, pineapples, bananas, and mangoes are leading in production.

Throughout the last two decades, commodity structure of production did not change (Figure 47). The highest growth rate of production amount is observed for yams and cassava. Yams have been gradually growing from 3.6 to 8.3 million tons over the span of 2001-2021. For cassava, the growth rate was similar to yams, with an increase from 9.0 million tons in 2001 up to 22.7 in 2021.

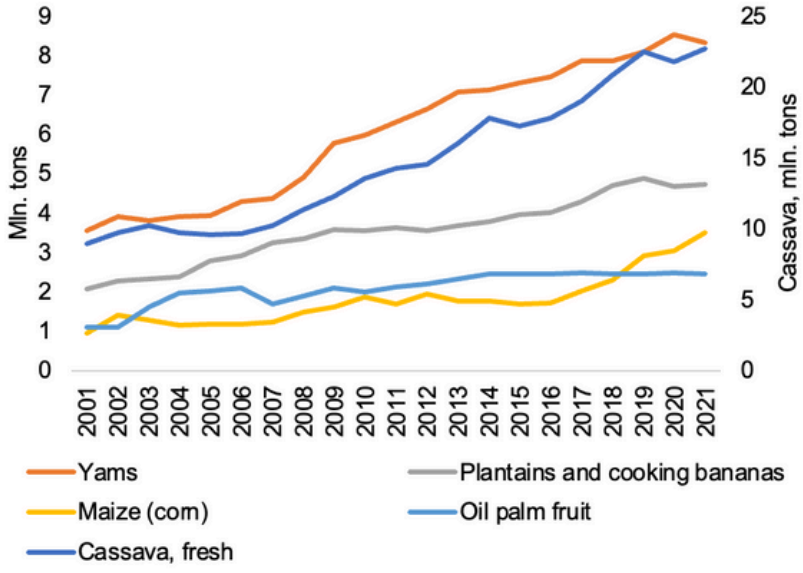


Figure 47. Production amounts of the 5 most-produced crops in Ghana, 2001-2021

Source: FAOSTAT

Land use and sown areas

As of 2021, 126 thousand square kilometers of land were used for agricultural purposes, which is approx. 52% of the total Ghanaian area. Amount of agricultural land have been increasing in 1970s-1990s, and dropped in 1990s-2000s (Figure 48). Since 2004, the total area used for agricultural purposes have been growing slowly, with an increase of 7.3 thousand square km. In the structure of planting areas, cassava, yams, plantains, corn, and oil palms are leading, reflecting the production statistics. As compared to 2001, this structure did not change significantly.

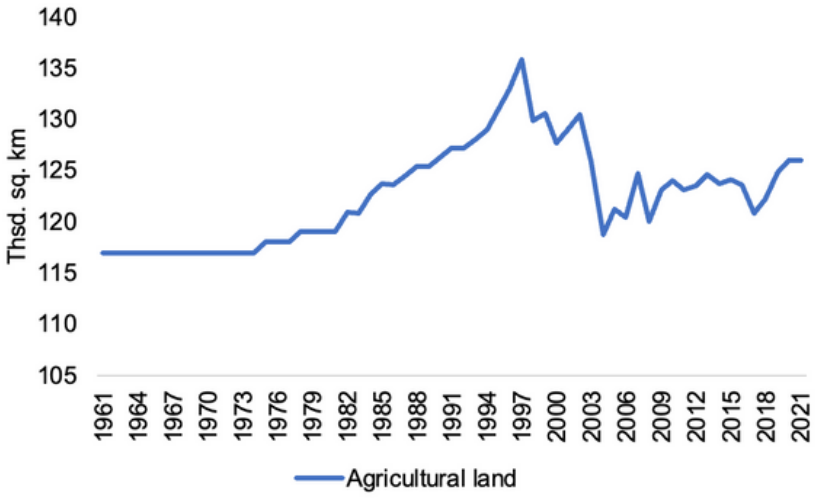


Figure 48. Agricultural land in Ghana

Source: World Bank Database

According to FAO's AQUASTAT, as of 2005, only 0.5% of the cultivated land have been equipped for irrigation (30.9 thousand hectares) (FAO, 2005a). The total area equipped for irrigation did not change in 2005-2020. However, the share of this land that is being actually irrigated increased from 94% to 98%.

Livestock production

Game meat is the primary livestock commodity produced in Ghana with 76 thousand tons produced in 2021. It is followed by chicken and meat and eggs, and milk of cattle. As of 2021, 74, and 46 thousand tons of chicken meat and milk of cattle were produced, respectively. Number of chicken eggs produced was 1.2 billion, which is equal to approx. 50 thousand tons.

Over the last two decades, the structure of production did not change significantly. Production amounts of game meat, and both cattle milk and meat increased only slightly, by 25% on average, over the 2001-2021. The highest growth rate is observed for chicken commodities – eggs and meat. Amount of their production have been growing rapidly in 2001-2021. Eggs production more than doubled over the last two decades. Chicken meat production amount increased by 3.5 times over the same period (Figure 49).

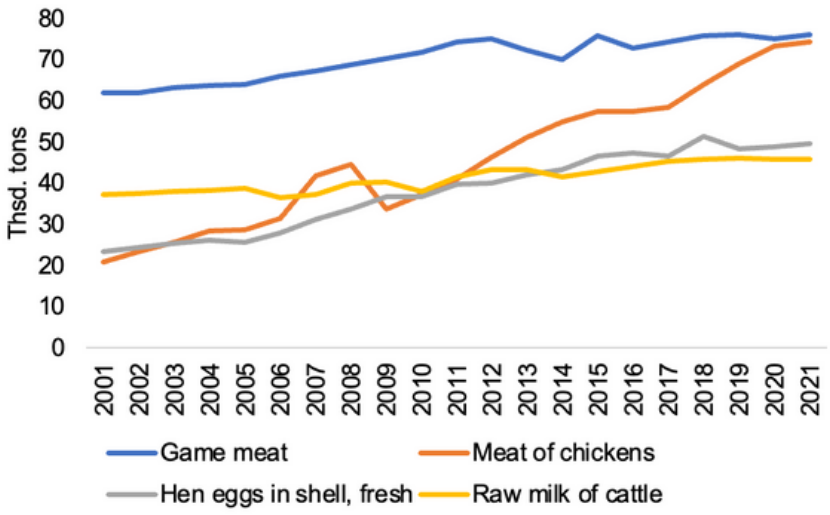


Figure 49. Livestock commodities production in Ghana

Source: FAOSTAT

The livestock population data reflects the production statistics. Chicken is the most widespread animal in Ghanaian livestock sector, with 96 million heads, as of 2021. It is followed by goats, sheep, cattle, and pigs. Throughout the period of 2001-2021, the highest population growth rate was observed for chicken, it increased by 4.4 times (Figure 50). Number of pigs, goats and sheep have been growing rapidly as well, with an increase of 180%, 160% and 107%, respectively. Cattle population increased by only 40% over the observed period.

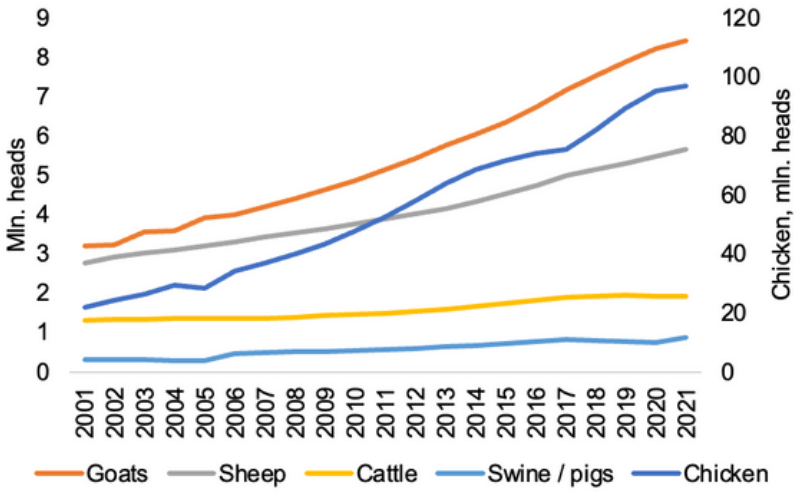


Figure 50. Livestock population in Ghana, 2001-2021

Source: FAOSTAT

Processing sector

No data is available regarding the share of processing sector in GDP and its total output for 1990s-2000s and part of 2010s, so it is impossible to assess its recent dynamics. The latest available information is 2015. As of this year, the value added produced by processing sector amounted to 3.8% of the GDP, according to World Bank Database.

Primary processed products are vegetable oils and beer of barley. Vegetable oils are palm oil and groundnut oil. No data on livestock processed commodities production amount is available. Over the last 20 years, amount of barley beer and palm oil increased significantly, with a high growth rate since early 2010s. Amount of palm kernels, groundnut oil, and palm kernel oil remained relatively unchanged (Figure 51).

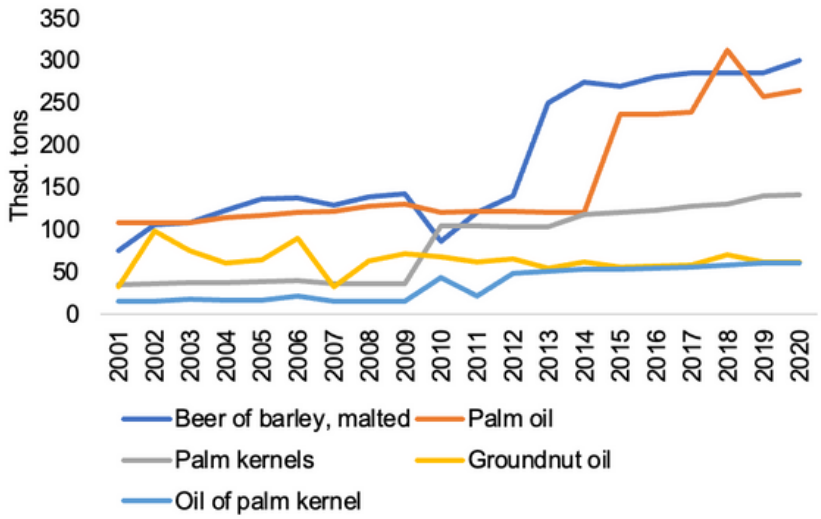


Figure 51. Processed commodities production

Source: FAOSTAT

2.4. CHALLENGES IN AGRICULTURE

Challenges, which Ghanaian agriculture is facing, are similar to those observed in the neighboring West African countries. Most of them are the direct consequences of poverty and low level of institutional development.

Policy and market constraints
Ghanaian agriculture faces persistent challenges due to poor agricultural policies and the significant influence of middlemen in the pricing of agricultural commodities. These issues have led to multiple constraints on smallholder farmers. In the study by Yankson et al. (2016), it was found that 93% of farmers in various districts faced diverse challenges in marketing their farm produce, with middlemen playing a central role in price determination. Farmers often have little bargaining power, as middlemen collude to set unreasonably low prices. This results in farmers being compelled to accept these low prices due to a lack of strong associations that could negotiate better terms. In the absence of effective agricultural policies, smallholder farmers are left with limited means to secure fair prices.

Infrastructure and transportation
The inadequate state of rural infrastructure, particularly poor road networks in many Ghanaian rural areas, is a significant challenge affecting agricultural marketing (Banson et al., 2015). Poor roads discourage transport operators from using their vehicles due to potential damage, effectively depriving farmers of access to essential transportation facilities. As a result, products often remain trapped at production centers, leading to postharvest losses. Farmers frequently encounter high transport costs due to the poor condition of roads, which further increase the price of agricultural commodities. In many cases, the price increases fail to compensate for the elevated transport expenses, eroding farmers' profit margins. Furthermore, these road conditions influence farmers' crop choices, with many opting to grow less bulky and non-perishable crops in areas with inadequate road access to markets, impacting crop diversity and food security (Yankson et al., 2016).

Limited market access
The challenges of limited market access are compounded by adverse weather conditions, particularly during rainy seasons, which make ground roads impassable by many vehicles. In these circumstances, farmers struggle to find buyers for their agricultural products, exacerbating their difficulties in selling crops. Farmers are often forced manually transporting their commodities to markets or buyers, particularly when prices rise. This practice is influenced by the lack of available transportation and further exposes farmers to exploitation by middlemen, who sometimes take advantage of the difficult conditions to offer even lower prices. Limited market access results in reduced income for smallholder farmers, as they are unable to access profitable markets for their produce (Yankson et al., 2016).

Poverty and unsustainable resource use
Widespread poverty in Ghana has resulted in the unsustainable use of natural resources, leading to the land degradation and exploitation of natural ecosystems (King, 2008). Poverty forces many Ghanaian farmers to rely on unsustainable agricultural practices, exacerbating environmental problems. This poverty-driven unsustainability further challenges the long-term viability of agriculture in the region.

Globalization and marginalization
The liberalization and reforms of the agricultural sector, driven by globalization, have marginalized smallholder farmers in Ghana. Large importers in Europe and the USA exert significant influence over production and marketing standards, placing smallholder producers in a disadvantaged position. This marginalization within the export sector further worsens the challenges faced by smallholder farmers, limiting their access to global markets and opportunities for growth (Banson et al., 2014).

2.5. AGRICULTURAL POLICY OVERVIEW

Macroeconomic profile
Ghana's economy has demonstrated consistent growth, achieving an average annual increase of 3.2% in real GDP per capita since 2000, reaching 2,000 USD in 2022 (Figure 52). However, in terms of per capita GDP, Ghana falls behind its regional neighbors such as Cote d'Ivoire (2,430 USD) and Nigeria (2,450 USD). These figures are notably higher compared to neighboring countries like Burkina Faso (632 USD per capita), Guinea (994 USD per capita), Liberia (647 USD per capita), and Mali (749 USD per capita). However, the purchasing power of the population is adversely affected by price instability, with inflation averaging almost 14% over the last decade.

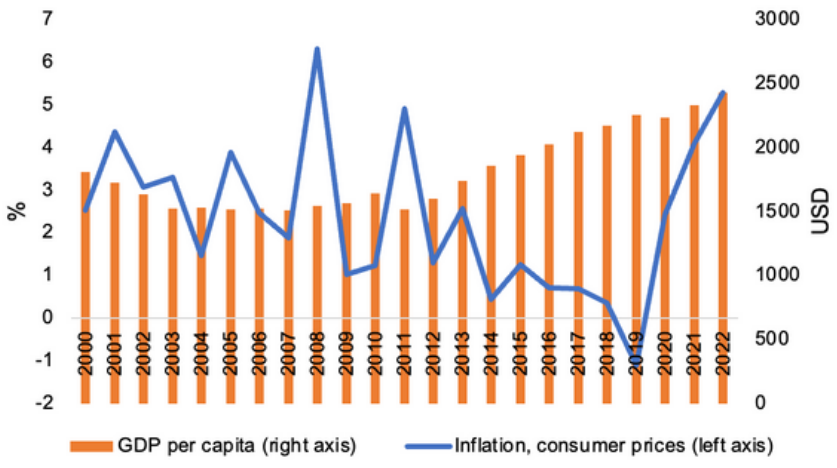


Figure 52. Ghana's macroeconomic indicators

Source: The World Bank

Agricultural policy
As for many other African countries, Ghana's agricultural policies stem from the commitment outlined in the **2003 Maputo Declaration**, mandating a minimum of 10% of the national budget for the agricultural sector (NEPAD, 2003). Its core objective for the economy was to improve national employment, food security, infrastructure development, research, and overall productivity. Apart from this, Ghana embraced the **common agricultural policy of ECOWAS**[2], aligning with the goals of the Maputo Declaration to boost agricultural productivity, ensure food security, and foster rural development across West African nations.

The Ghanaian government mostly provided fertilizers, pesticides, and seedlings

2 The Economic Community of West African States (ECOWAS) is a regional political and economic union of 15 countries located in West Africa.

subsidies through the Ministry of Food and Agriculture, primarily supporting cocoa farmers via the **Ghana Cocoa Board (COCOBOD)**. However, the sustainability of these subsidy programs is a concern due to escalating costs and ineffective targeting mechanisms (The World Bank, 2017). Furthermore, there are additional concerns regarding cocoa production subsidies, primarily because they are considerably larger in comparison to the product's share of output within the agricultural sector.

Government expenditures were relatively low over the period till 2018, not exceeding 100 million USD annually (Figure 53). They have increased significantly since then, averaging 171 million USD in 2018-2021. However, a significant concern lies in the allocation of public expenditures within the agricultural sector overall, as a substantial portion is directed towards salaries of regulatory and policy institutions rather than investments (except for input subsidies). Despite the pressing need for improvements in irrigation infrastructure, investments in this sector remained meager, constituting only about 3% of agricultural spending.

Considering the impact of oil production in the agriculture and economy as a whole, the government supports the oil palm industry by establishing the **Tree Crop Development Authority (TCDA)**, responsible for development of cultivating various tree crops, including oil palm (USDA, 2023c). The initiative seeks to diversify the agricultural sector and enhance export earnings, drawing inspiration from the COCOBOD policies and programs. However, following its launch an immediate impact and institutional capacity are questioned, with expectations of more substantial effects in the future. In parallel, the **National Alternative Employment and Livelihood Programme (NAELP)** incentives palm oil production as part of the plan to address the repercussions of illegal gold mining. This particularly involves distributing four million hybrid oil palm seedlings through the **Alternative Livelihood Projects (ALPs).**

Direct inputs subsidies are also a tool used by the Ghanaian government. In 2017, through the Planting for Food and Jobs (PFJ) campaign, a 50% subsidy on rice seed and fertilizer was implemented to stimulate rice production (USDA, 2023c). Although the program targeted rice self-sufficiency, the fertilizer subsidy was trimmed to 15% for the 2022/23 season.

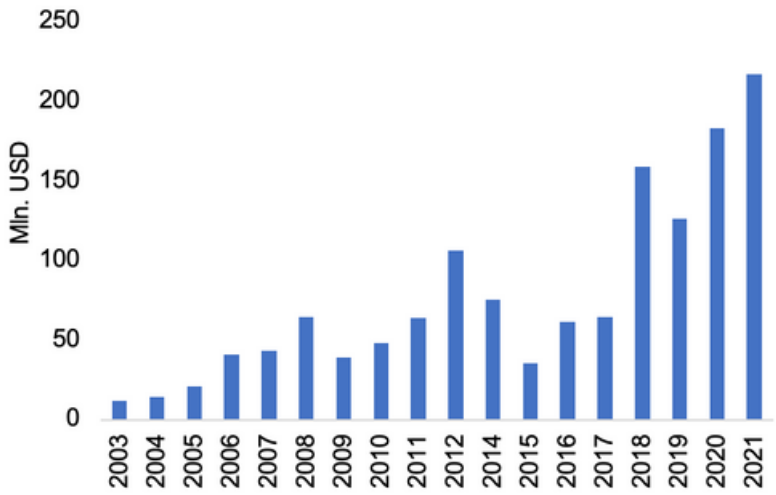


Figure 53. Government expenditures on agriculture

Source: FAOSTAT

There exists a weak link between government expenditures and donor development flows. Despite an uptick in public spending since 2018, financial inflows to the sector have not improved significantly. On average, from 2018 to 2021, the financial inflows were 15% lower compared to the period of 2014-2017, amounting to 155 million USD as opposed to the previous 183 million USD (Figure 54).

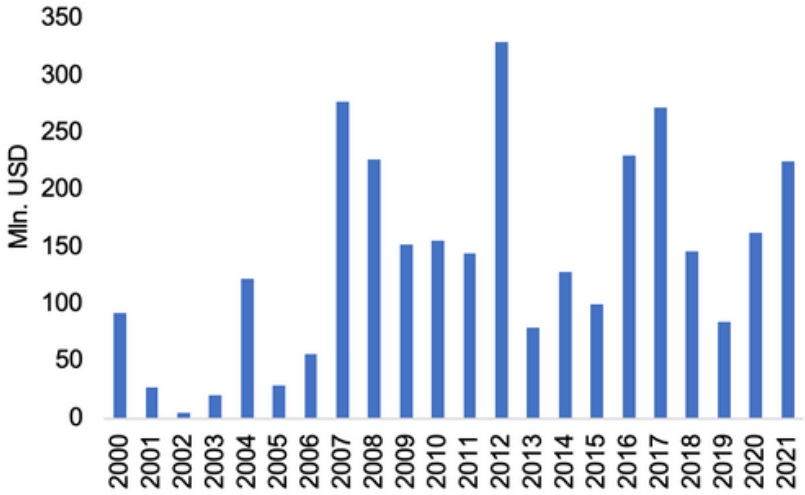


Figure 54. Development flows to agriculture

Source: FAOSTAT

2.6. GHANA: SUMMARY

Ghana is one of the fast-growing countries in West Africa, similar in size to the neighboring Cote d'Ivoire, with a total population of approx. 28.2 million people. Over the last two decades, a gradual increase in population's welfare and food security was observed. This trend prevailed throughout 2010s and persisted in the beginning of 2020s. The share of undernourished population dropped by almost 3 times over the last two decades, and reached a moderate level of 4.9%. As compared to neighboring countries in West Africa, Ghana stands slightly above the regional average in terms of economic development, food security and nutrition adequacy. The only exception is dietary protein supply, which reached the regional average of 60 grams per person per day in 2018-2020. WFP operations primarily focus on malnutrition prevention and food safety/quality assurance.

Over the last decade, Ghanaian agri-food trade varied significantly from year to year in its monetary value without a clear pattern. At the same time, commodity and geographical structure remained relatively unchanged. Main imported food products are cereals, meat, and vegetable fats. Commodity structure of agri-food export is dominated by cocoa. In 2013-2022, it made up approx, two thirds of the Ghanaian agri-food export. Geographic structure of both imports and export is quite diversified. The main supplying markets are Vietnam, Canada, and Belgium, the main importing markets are Netherlands, USA, and Japan. Amount of Ukrainian trade with Ghana have been growing rapidly over the last decade, from approx. 1.2 million USD in 2013 up to approx. 7 million in 2019. However,

relative to the total amount of Ghanaian agri-food trade, this numbers are insignificant. Before 2016, the main imported Ukrainian commodities were miscellaneous edible preparations. After 2016, sunflower oil was leading in the commodity structure.

The role of agriculture in Ghanaian economy have been gradually decreasing over the last three decades. The share of crop and livestock production in Ghanaian GDP decreased from 45.5% to 18.8% in 1991- 2022. However, it still remains an important sector, employing almost 40% of the total working population.

The main crops produced are yams and cassava (mostly for domestic consumption). The main export crops are cocoa beans, plantains, and oil palm fruit. Over the last 30 years, the amount of agricultural land decreased by approx. 10 thousand square km (7.5%).Only a small portion of this land is equipped for irrigation (30900 hectares, 0.5%). Livestock sub-sector of Ghanaian agriculture is producing chicken eggs, cattle products (milk and meat), and game meat.

The main challenge that holds back the development of Ghanaian agriculture is infrastructure imperfection and limited market access. Particularly during rainy seasons, ground roads become impassable by many vehicles. In these circumstances, farmers struggle to find buyers for their agricultural products, exacerbating their difficulties in selling crops. Additionally, poor roads discourage transport operators from using their vehicles due to potential damage, effectively depriving farmers of access to essential transportation facilities. As a result, products often remain trapped at production centers, leading to postharvest losses.

As for many other African countries, Ghana’s agricultural policies stem from the commitment outlined in the 2003 Maputo Declaration, mandating a minimum of 10% of the national budget for the agricultural sector. The Ghanaian government mostly provided fertilizers, pesticides, and seedlings subsidies through the Ministry of Food and Agriculture, primarily supporting cocoa farmers via the Ghana Cocoa Board. Government expenditures were relatively low over the period till 2018, not exceeding 100 million USD annually (Figure 10). They have increased significantly since then, averaging 171 million USD in 2018-2021. Direct inputs subsidies are also a tool used by the Ghanaian government. In 2017, through the Planting for Food and Jobs (PFJ) campaign, a 50 percent subsidy on rice seed and fertilizer was implemented to stimulate rice production.

3. COTE D'IVOIRE

3.1. FOOD SECURITY

Cote d'Ivoire is one of the fast-growing countries in West Africa. Its total population have been growing throughout the last two decades and increased by 60% to approx. 27.5 million people (Figure 55).

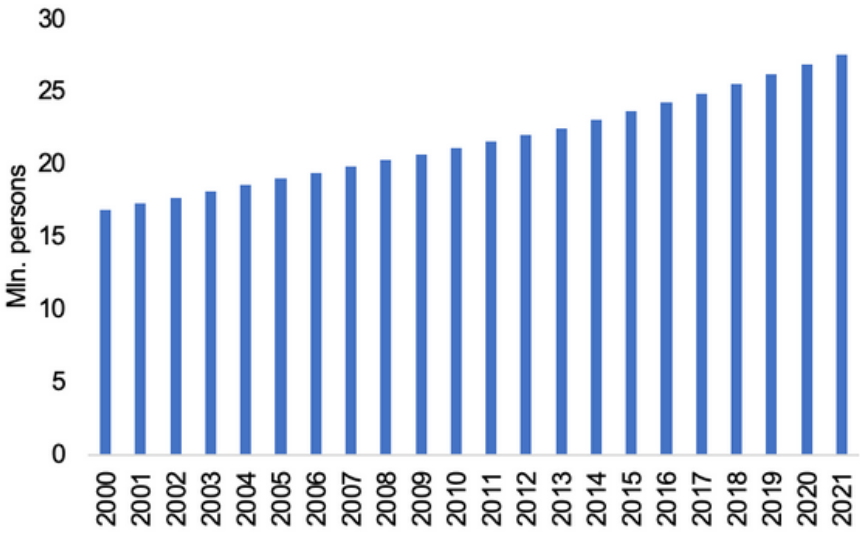


Figure 55. Total population in Cote d'Ivoire

Source: World Bank

From the macroeconomic perspective, Ivorian GDP per capita have been rapidly growing throughout the last decade, after a period of stagnation in 2000s (Figure 56). As of 2022, Ivorian GPD per capita is approx. 30% higher than the West African average.

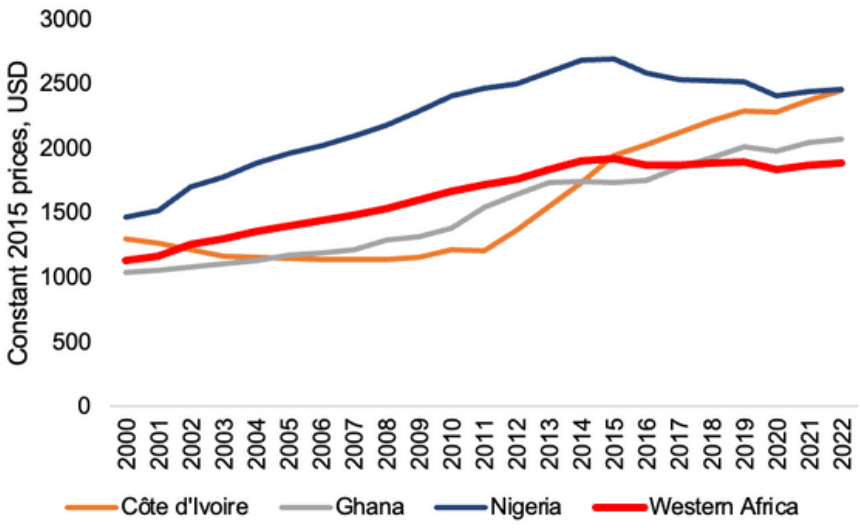


Figure 56. GDP per capita in West African countries

Source: World Bank

The economic growth in 2010s allowed Cote d'Ivoire to efficiently fight undernourishment among its population. Since 2000, the share of undernourished population in the country decreased at the much faster rate, as compared to regional average, which stagnated in 2010s and even increased at the beginning of 2020s. As of 2022, 8% of Ivorian population was food insecure, which is more than two times lower than the 2000 level of 18%; for West Africa this share was approx. 14% in 2022 (Figure 57).

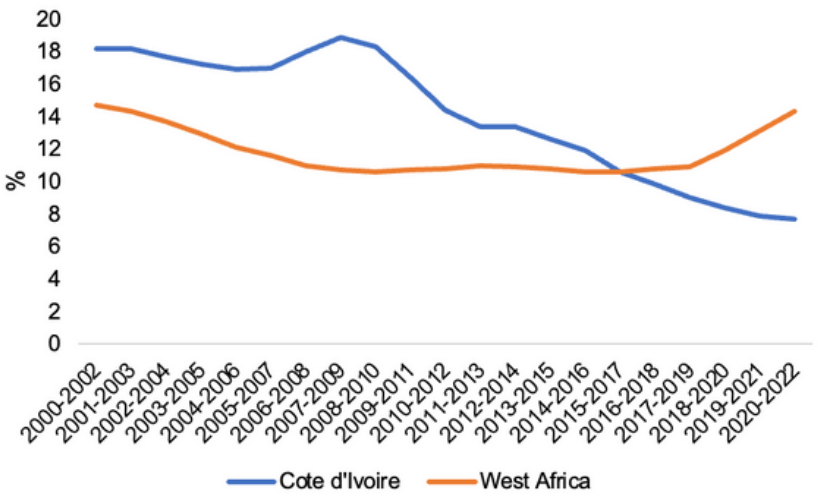


Figure 57. The share of undernourished population

Source: FAOSTAT

Given the rapid population growth, the number of undernourished in Cote d'Ivoire still managed to decrease by approx. 1 million over the last two decades. This goes against the regional trend of worsening food security situation (Figure 58).

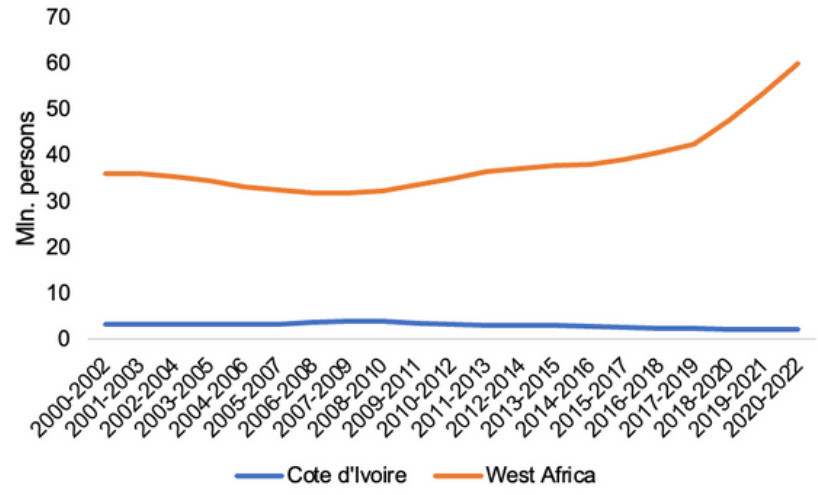


Figure 58. The number of undernourished persons

Source: FAOSTAT

The 2019-2012 3-year average value of dietary energy supply in Cote d'Ivoire was 2900 kcal per person per day. It is slightly higher than the regional average of 2620 kcal per person per day (Figure 59).

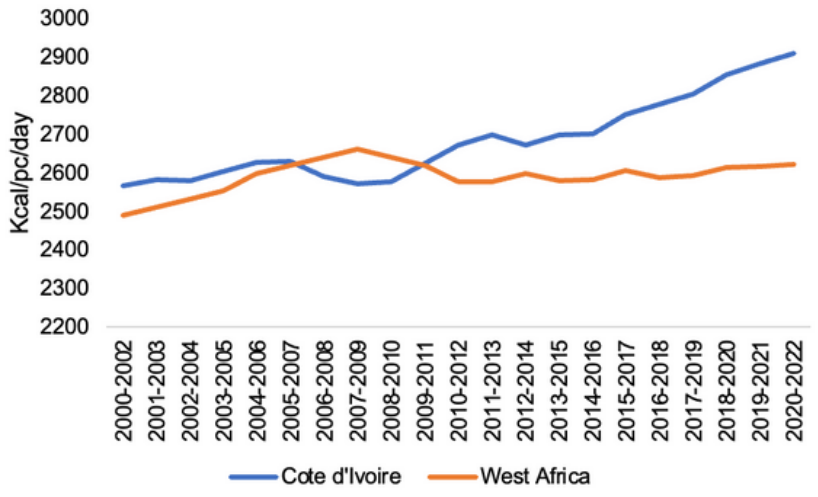


Figure 59. Dietary energy supply

Source: FAOSTAT

While the absolute level of calories intake can be misinterpreted, the average dietary energy supply adequacy indicator expresses the dietary energy supply as a percentage of the average dietary energy requirement. As the Figure 60 shows, this indicator has been moving closely to the regional average in the 2000s, but have been growing at the higher rate since 2010s, while the West African average stagnated.

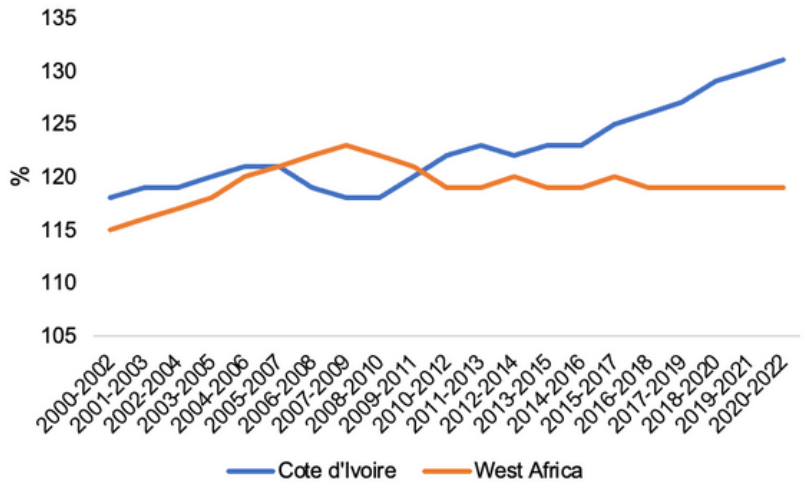


Figure 60. Average dietary energy supply adequacy

Source: FAOSTAT

To assess the share of nutrient-rich food in the diet, the share of dietary energy supply derived from cereals, roots and tubers is considered (Figure 61). In Cote d'Ivoire, this share is quite high at approx. 71% versus 66% on average in Western Africa. It has been growing in the 2000s, but remained relatively unchanged throughout the last decade, similarly to the regional average.

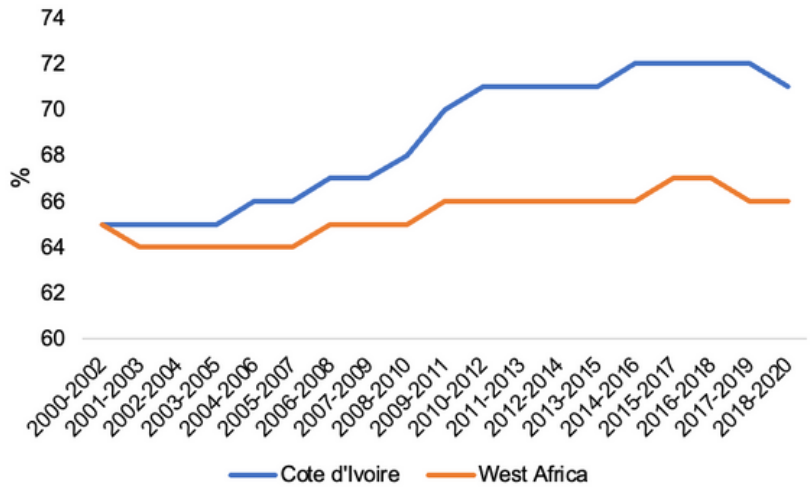


Figure 61. Share of dietary energy supply derived from cereals, roots, and tubers

Source: FAOSTAT

As for protein supply, in Cote d'Ivoire it was slightly higher than the regional average throughout the last two decades and did not change significantly, remaining within the 57-63 grams per person per day interval (Figure 62). The share of this protein obtained from the food of animal origin increased in the 2010s from 11.7 to 15.3 grams per person per day indicating an improvement in food security and welfare. The regional average of this share remained relatively unchanged throughout the last two decades at the level of approx. 10 grams per person per day (Figure 63).

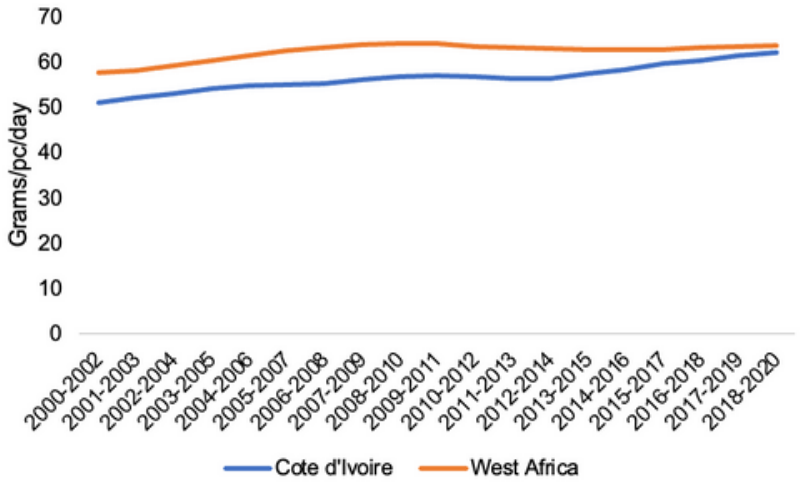


Figure 62. Average protein supply

Source: FAOSTAT

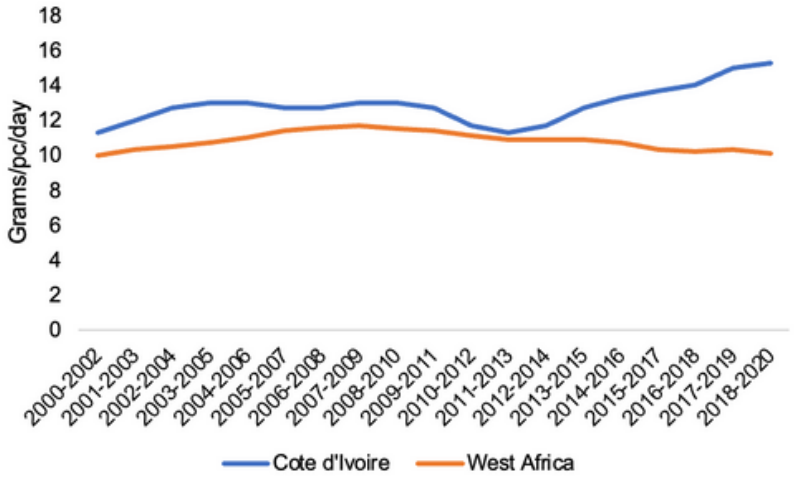


Figure 63. Average animal protein supply

Source: FAOSTAT

The stability of food supply is reflected by per capita food supply variability that measures annual fluctuations in the per capita food supply (kcal), represented as the standard deviation of per capita food supply over the previous five years. In 2021, this indicator for Cote d'Ivoire was quite low and approximately equal to the West African average (10 and 11 Kcal/pc/day, respectively) (Figure 64). This means that the food supply instability did not affect the dietary energy supply of the Ivorian population.

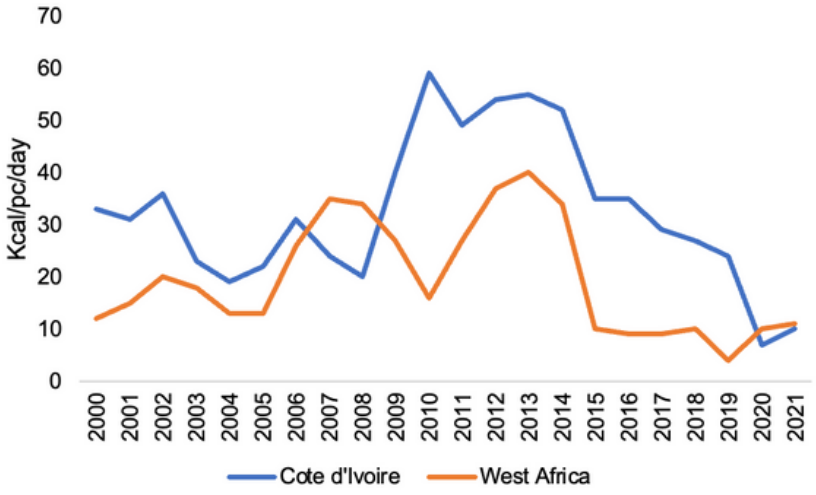


Figure 64. Per capita food supply variability

Source: FAOSTAT

Poverty, as a main factor fueling food insecurity, have been an important concern in Ghana since it received the independence. It increased significantly throughout 1980-2000, it stagnated in 2000s (Figure 65). According to governmental data, latest values of which are available for 2018, the share of population living under the national poverty line (2.15 USD per day) decreased from 33.4% to 11.5% in 2015-2018. However, the national poverty line is higher (approx. 3.6 USD per day), and 39.5% of population have been living below it, as of 2018. Similar to neighboring countries, poverty is concentrated in rural area. Using the international poverty line, 5% of urban population, and 18% of rural population are classified as poor (World Bank, 2023).

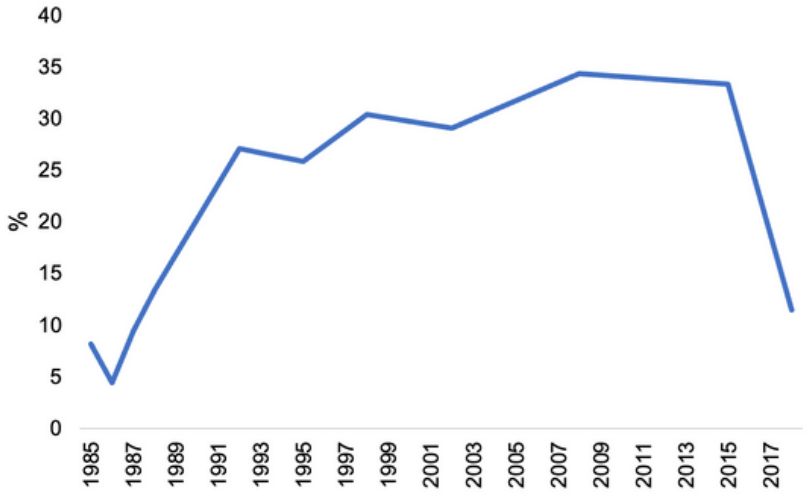


Figure 65. Poverty headcount ratio at 2.15 USD/day (% of population)

Source: World Bank

In its operations in Cote d'Ivoire, WFP primarily targets children malnutrition with approx. 72% of its expenditures devoted to providing school meals and take-home rations for primary school-aged children. Additionally, WFP provides an assistance and consultancy to government, national institutions, and farmers (Table 3).

Table 3. WFP support programs in Cote d'Ivoire in 2022

Activity	Expenditures, mln. USD	Share in total expenditures, %
Provide, on demand, supply chain, ICT and coordination services to the Government, humanitarian and development partners	0.12	2.2%
Provide an integrated and gender-transformative assistance package to smallholder farmers, especially women's farmer groups, comprising training on good agricultural practices, equipment, SBCC related activities that place value on local agricultural potential, asset creation and targeted food assistance; and provide technical support for generating evidence to inform the scale-up of farmer groups' activities	0.75	14.0%

Activity	Expenditures, mln. USD	Share in total expenditures, %
Provide technical support to national institutions in their efforts to address school feeding, food security, nutrition, social protection and emergency preparedness and response	0.52	9.8%
Support the implementation of the national nutrition programme with a focus on: the development and implementation of a gender responsive SBCC strategy; the implementation of the national strategy for the fortification of regularly consumed staples; enhancing the primary education curricula to include nutrition; and the generation of evidence on the activities within the National Multi-sectoral Nutrition Plan	0.06	1.1%
Provide school meals, take-home rations and complementary services to primary school-aged children during the school year and promote the purchase of locally produced food for school meals	3.86	72.1%
Provide an integrated assistance package to affected populations, including food assistance, SBCC and specialized nutritious food to children aged 6-59 months, PLW/Gs and PLHIV to improve access to food and prevent malnutrition	0.04	0.8%
Total	5.35	100%

Source: WFP. Cote d'Ivoire. Annual Country Report 2022.

3.2. AGRI-FOOD TRADE

Improvements in Ivorian food security observed in the 2010s, could be partly explained by the increase of food imports to the country. It has been gradually growing since mid-2010s. The main food commodities imported to Cote d'Ivoire are cereals and fish (Figure 66).

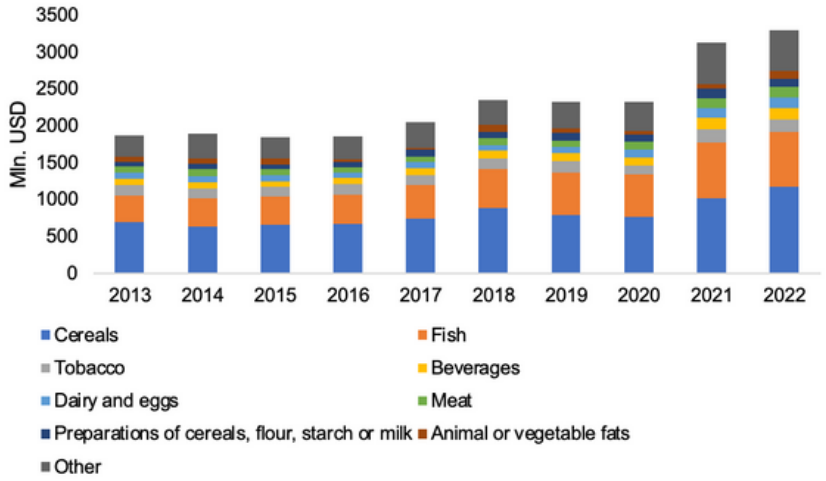


Figure 66. Product structure of food imports to Cote d'Ivoire

Source: ITC Trade Map

Food exports have also been slowly growing over the last decade. The main export food commodity is cocoa, followed by fruits, nuts, and vegetable oils (Figure 67).

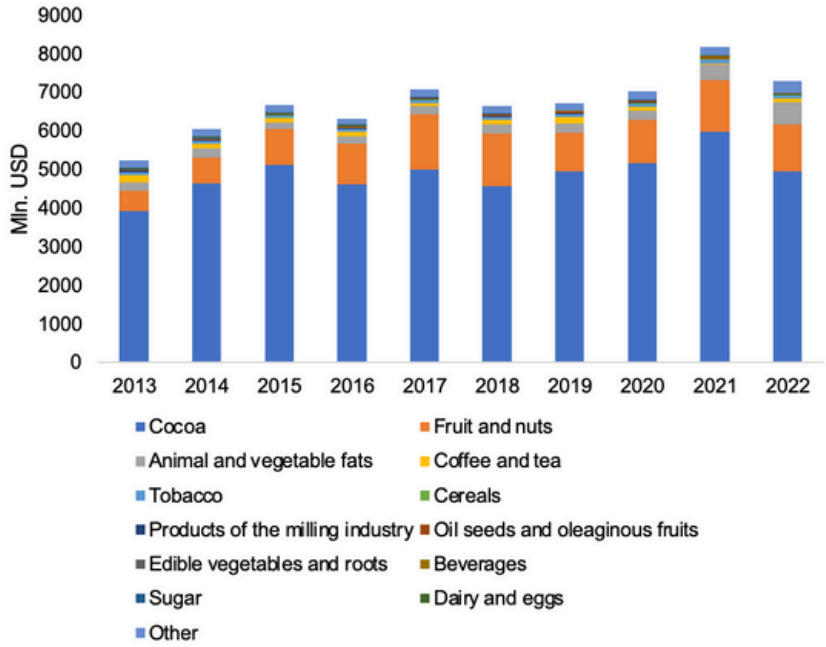


Figure 67. Product structure of food exports from Cote d'Ivoire

Source: ITC Trade Map

The geographical structure of food imports to Cote d'Ivoire is dominated by France, Vietnam, and India. These origins make up approximately a half of the Ivorian food imports (Figure 68).

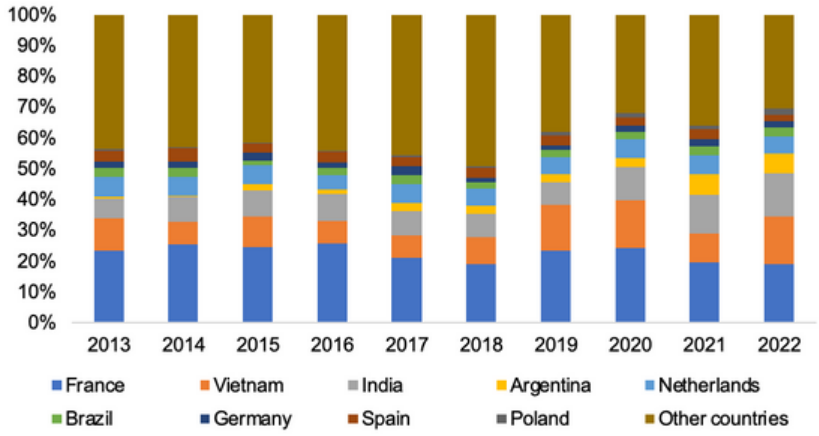


Figure 68. Geographical structure of food imports to Cote d'Ivoire

Source: ITC Trade Map

Ivorian exports of agri-food commodities are quite diversified. The main export destinations are Netherlands, United States of America, Belgium, and Vietnam, France, and Germany (Figure 69).

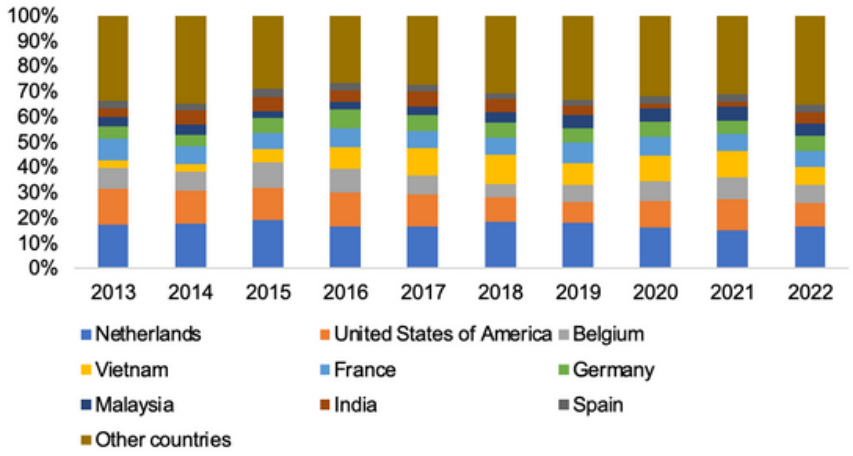


Figure 69. Geographical structure of food exports from Cote d'Ivoire

Source: ITC Trade Map

Monetary value of the Ukrainian agri-food export to Cote d'Ivoire was not persistent over the last decade. Although, it remained relatively insignificant in total Ivorian agri-food imports due to very small amount. The main commodities were cereals (primarily wheat) and vegetable fats (Figure 70).

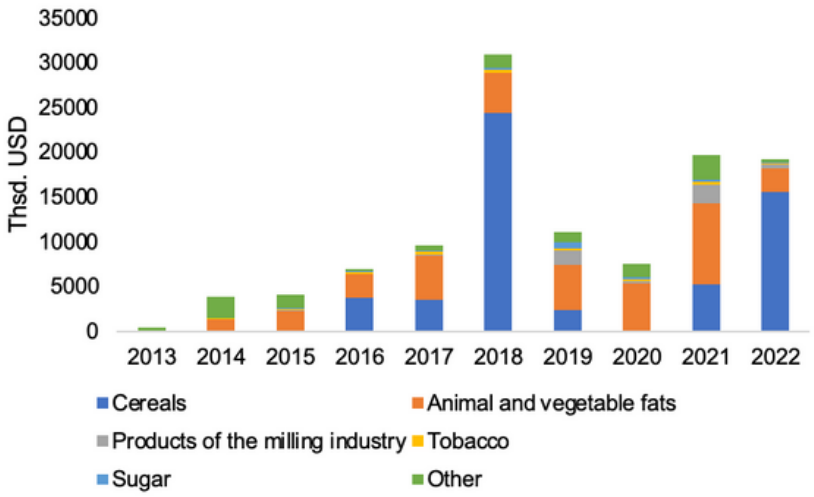


Figure 70. Agri-food exports from Ukraine to Cote d'Ivoire

Source: ITC Trade Map

3.3. LOCAL AGRICULTURAL SECTOR

Agriculture is a core sector in Ivorian economy, employing 45% of the working population, as of 2021. The share of population employed in agriculture have been slowly decreasing from 52.9% in 1991 to 45% in 2018-2021. The share of agriculture in GDP is relatively unchanged since 1996, fluctuating within the 15%-20% interval (Figure 71).

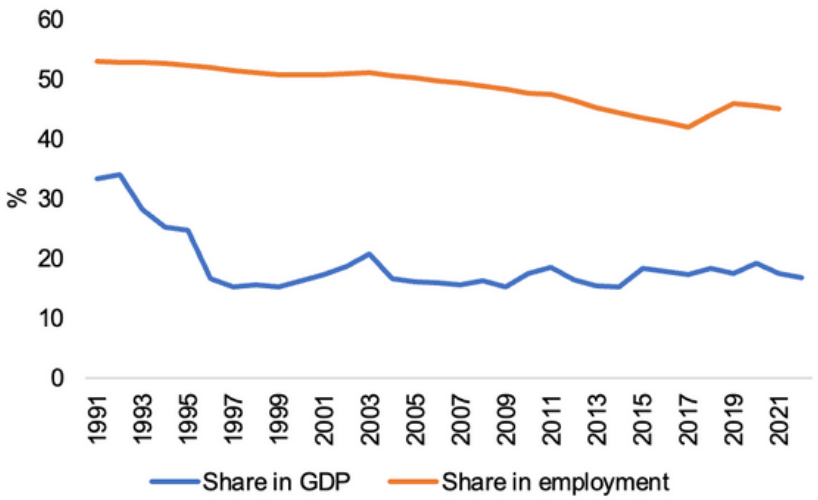


Figure 71. Share of agriculture in GDP and total employment, 1991-2021

Source: World Bank Database

Despite the share of agriculture in GDP being unchanged, in monetary terms agricultural production have been growing over the last decade, with an increased growth rate since early 2010s (Figure 72). In 2022, monetary value of produced commodities in constant 2015 USD was approx. two times higher than the 2012 value.

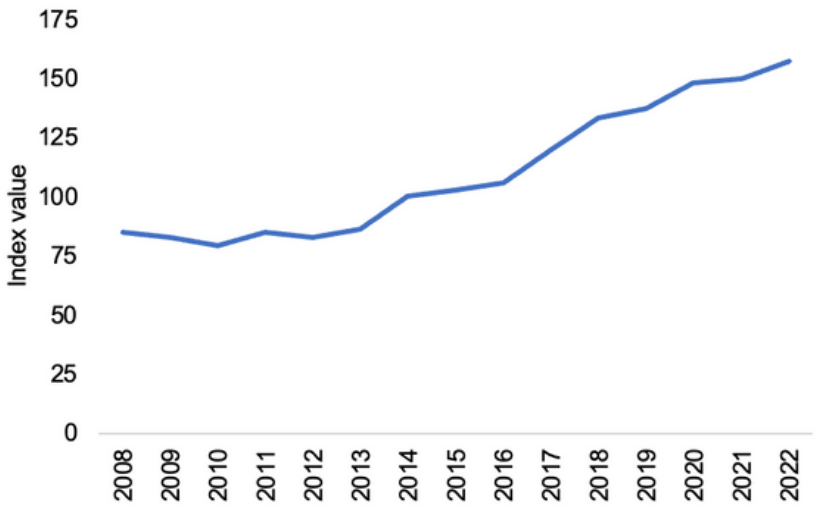


Figure 72. Agricultural production value index, constant 2015 USD. Baseline: 2015

Source: World Bank Database

Crop production

Main crops produced in Cote d'Ivoire are cassava and yams, with 6.96 and 7.85 million tons produced in 2021, respectively. These crops are produced mainly for domestic consumption. Cassava and yams are followed by the main Ivorian agricultural export commodities – palm oil fruit, cocoa beans, and sugar cane. As of 2021, amounts of their production were 2.3, 2.2, and 2.1 million tons, respectively.

Throughout the last two decades, commodity structure of production did not change, the same five commodities were leading in crop production. The highest growth rate of production amount is observed for yams and cassava. Yams have been gradually growing from 4.5 to 7.9 million tons over the span of 2001-2021. For cassava, production amount remained relatively unchanged in 2001-2013, and have been growing rapidly since 2014 from 2.4 million tons in 2013 up to 7.0 in 2021 (Figure 73).

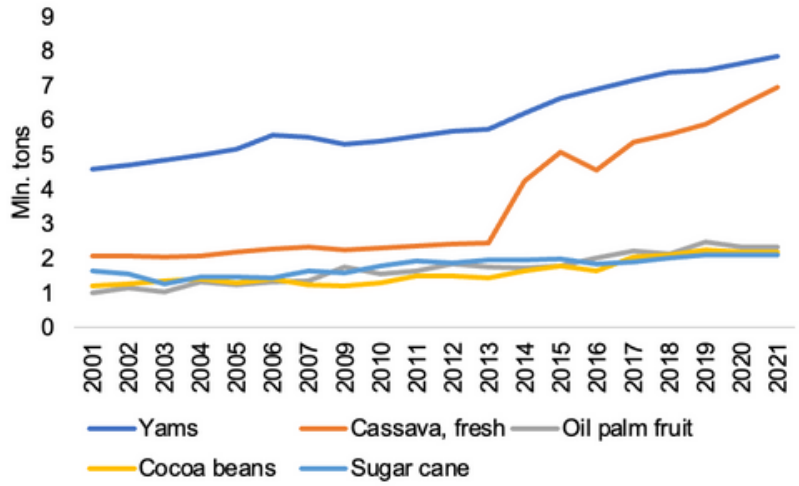


Figure 73. Production amounts of the 5 most-produced crops in Cote d'Ivoire, 2001-2021

Source: FAOSTAT

Land use and sown areas

As of 2021, 235 thousand square kilometers of land were used for agricultural purposes, which is approx. 74% of the total Ivorian area. Amount of agricultural land have been increasing throughout the last 6 decades, with period of intensified growth in 1990s and 2010s and two plateaus in 2000s (Figure 74). Over the last 30 years, the amount of agricultural land increased by 45.5 thousand square kilometers (approx. 24%). In the structure of planting areas, cocoa trees, yams, cassava, and tree nuts are dominating. These crops take up 18%, 6%, 5%, and 9% of the total sown areas as of 2021. As compared to 2001, this structure did not change significantly.

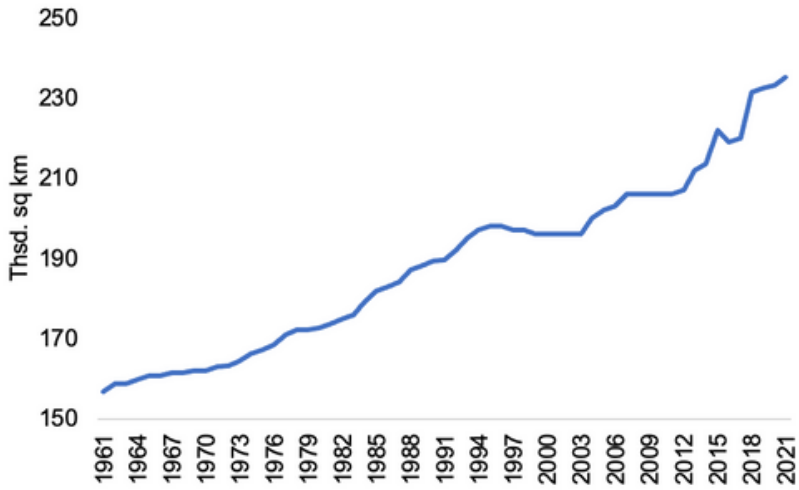


Figure 74. Agricultural land in Cote d'Ivoire

Source: World Bank Database

According to FAO's AQUASTAT, as of 2005, only 1.1% of the cultivated land have been equipped for irrigation (72.8 thousand hectares). Additionally, 16.3 thousand hectares are classified as unequipped water-managed areas. These lands are cultivated marshes and lowlands. The total water-managed area is only 1.4% of the total cultivated area. Generally, irrigation in not developed in Cote d'Ivoire (FAO, 2005b). The 2005 data is the latest available, as no updates were published either by Ivorian government or FAO's AQUASTAT.

Livestock production

Game meat is the primary livestock commodity produced in Cote d'Ivoire with 156.5 thousand tons produces in 2021. It is followed by chicken and cattle meat, chicken eggs, and meat of cattle. As of 2021, 70, 38, and 32 thousand tons of chicken meat,

meat of cattle, and milk of cattle were produced. Number of chicken eggs produced was 1.5 billion, which is equal to approx. 66 thousand tons.

Over the last two decades, the structure of livestock production did not change significantly. Production amounts of both cattle milk and meat increased just by 19% and 15%, respectively, over the 2001-2021. Game meat production have been growing gradually and increased by 40% over the mentioned period. The highest growth rate is observed for chicken eggs and meat production, which increased by two and three times, respectively, over the last decade (Figure 75).

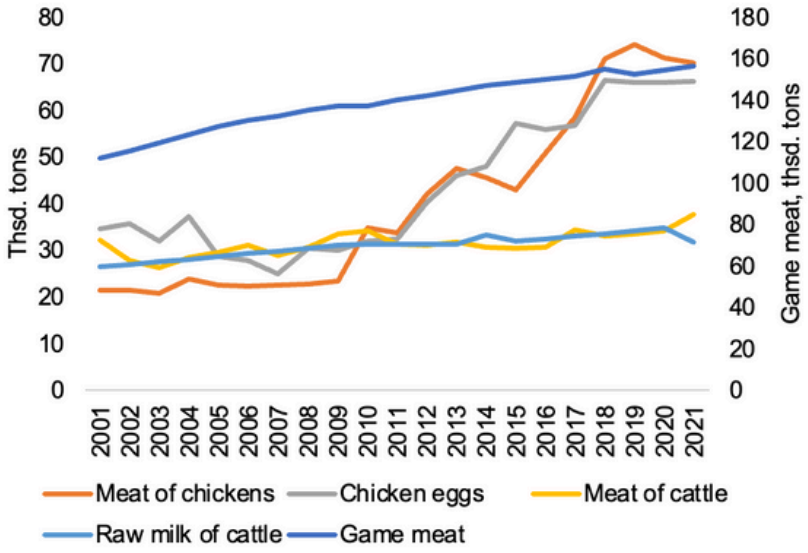


Figure 75. Livestock commodities production in Cote d'Ivoire, 2000-2021

Source: FAOSTAT

Chicken is the most widespread type of livestock in the country, with 88 million heads in 2021. It is followed by goats, sheep, cattle, and pigs. Throughout the period of 2001-2021, numbers of live cattle, sheep and pigs stock showed minor increase. Numbers of goats and sheep have been growing rapidly since the 2015. Meanwhile, chicken population started to grow since late 2000s and increased by approx. 3 times over the period of 2001-2021 (Figure 76).

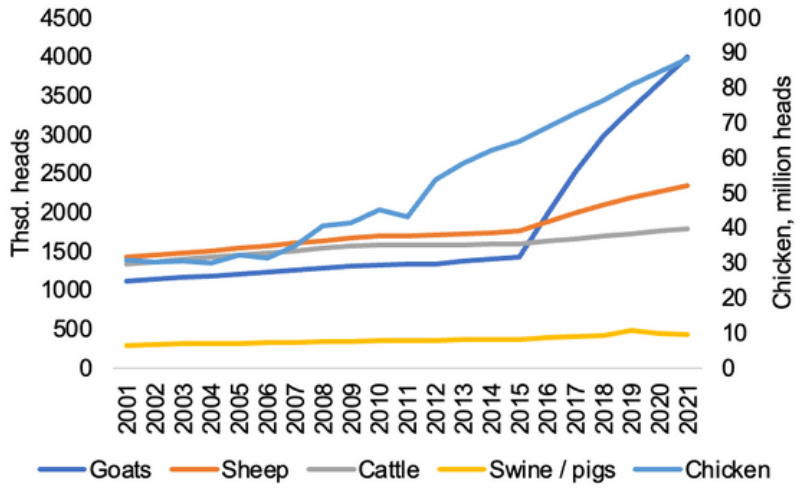


Figure 76. Live animals stock in Cote d'Ivoire, 2001-2021

Source: FAOSTAT

Processing sector

No recent data is available regarding the share of processing sector in GDP and its total output. The latest available information is 1996. As of this year, value added produced by processing sector amounted to 4.6% of the GDP (World Bank Database, 2023).

Primary processed products are vegetable oils, beer of barley, cotton lint, and raw sugar. Vegetable oils are extracted from palm kernels, coconuts, groundnuts, and cottonseeds. Also, cotton lint and seeds are actively processed. No data on livestock processed commodities production amount is available. Over the last 20 years, structure of commodities produced did not changed significantly (Figure 77).

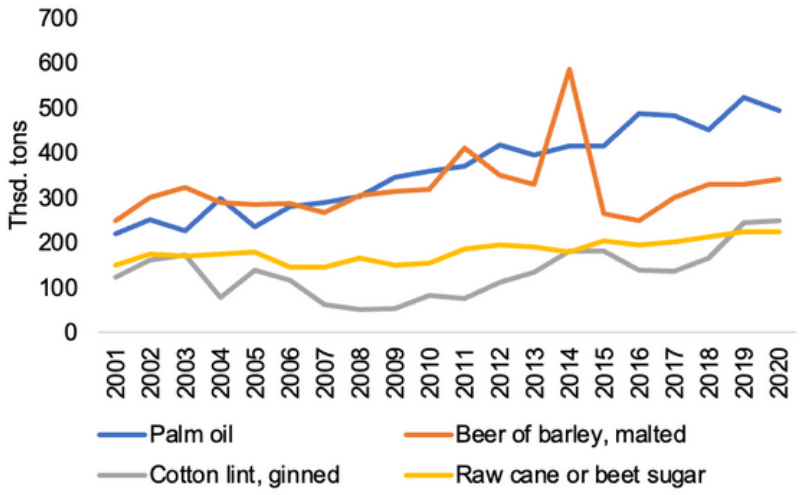


Figure 77. Processed commodities production

Source: FAOSTAT

3.4. CHALLENGES IN AGRICULTURE

Lack of technology and outdated farming practices

Many farmers in Cote d'Ivoire continue to rely on traditional farming methods with limited access to modern agricultural techniques, including improved seeds, fertilizers, and pest control measures. This results in suboptimal crop yields, which can impact food security and farmers' incomes. Besides that, the Cote d'Ivoire economy heavily depends on a few key cash crops – primarily cocoa and oil palm, in addition to staples like yams and cassava. This lack of crop diversification can make the agricultural sector vulnerable to fluctuations in global commodity prices. Due to the lack of crop diversification, sector is vulnerable not only in face of economic factors, but due to crop diseases and pests as well. Cocoa, a major cash crop, is particularly vulnerable to black pod disease and pests such as cocoa mirids. These threats require constant monitoring and management, often involving the use of pesticides and disease-resistant varieties. In smaller farms, which often do not have spare resources and easy access to crop protection measures, diseases could lead to severe harvest losses and drop in incomes (Jaloh et al., 2013).

Environmental and sustainability issues

Unsustainable land use practices, deforestation, and soil erosion have led to land degradation in some regions of Cote d'Ivoire. This degradation affects soil fertility and reduces the overall sustainability of agriculture in affected regions. No centralized programs of land reclamation have been established in Cote d'Ivoire. On the other

hand, due to poverty, private farmers often could not afford the land reclamation investments. Another environmental factor is the climate change. Cote d'Ivoire is vulnerable to its impacts, including unpredictable rainfall patterns, prolonged droughts, and more frequent extreme weather events. These changes can lead to crop failures and food insecurity. Most of the mentioned impacts could be handled with a proper irrigation and/or drainage systems, which are not well developed in the country. The inadequate irrigation systems and water management practices contribute to water scarcity in some areas, limiting farmers' ability to grow crops effectively, especially during dry periods (Kouassi et al., 2021).

Infrastructure and access to markets

Many farmers, especially those in remote or rural areas, face challenges in accessing markets for their produce. Poor transportation infrastructure and lack of market information can lead to reduced income and post-harvest losses. This issue is intensified by the absence of proper storage facilities. Farmers often struggle to preserve the quality of their crops after harvest. This results in increased post-harvest losses. Additionally, smallholder farmers often lack access to credit and financial services, making it difficult for them to invest in modern farming technologies or storage facilities, purchase inputs, and expand their operations (Jaloh et al., 2013).

Social and governance issues

Land tenure issues, including disputes over land ownership and boundaries, can disrupt agricultural activities and discourage long-term investments in land improvements. Meanwhile, inconsistent and/or poorly enforced agricultural policies and regulations create uncertainty for farmers and investors. Additionally, disparities persist in Cote d'Ivoire's agricultural sector, with women often having limited access to resources, land ownership, and decision-making power. This inequality hampers the sector's overall development and potential (Zossou et al., 2017).

3.5. AGRICULTURAL POLICY OVERVIEW

Macroeconomic profile

The economy of Cote d'Ivoire shows a consistent growth trend since 2012. GDP per capita saw a significant increase of 60% since 2011, reaching 2,430 USD in 2022 (World Bank, 2023). This places Cote d'Ivoire in close proximity to its regional neighbors in terms of per capita GDP, such as Ghana (2,040 USD) and Nigeria (2,450 USD). Comparatively, these figures are substantially higher than those of neighboring countries like Burkina Faso (632 USD per capita), Guinea (994 USD per capita), Liberia (647 USD per capita), and Mali (749 USD per capita). Notably, inflation in the country has remained consistently low over the past few decades, not exceeding an annual rate of 7% (Figure 78).

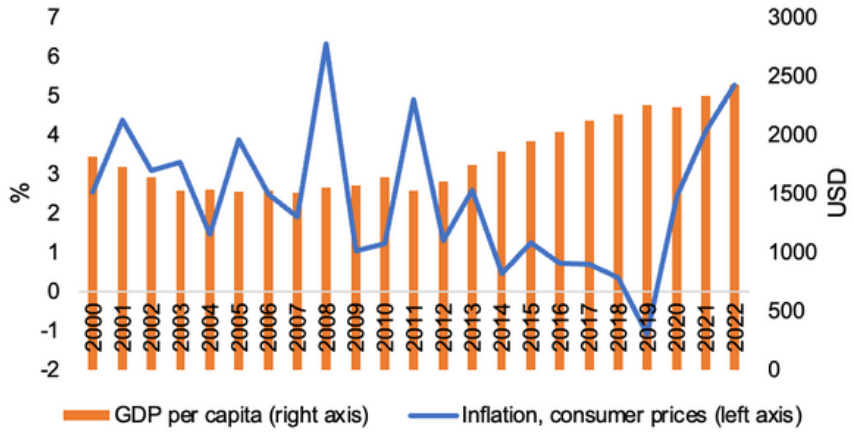


Figure 78. Cote d'Ivoire macroeconomic indicators

Source: The World Bank

Agricultural policy

Agricultural policy in Cote d'Ivoire was primarily focused on the objectives of reducing poverty rate and enhancing self-sufficiency in food demand, as evidenced by its emphasis on agriculture in Economic Development Plans. Key tools which were utilized in order to promote fair agricultural growth encompass government fiscal policies, subsidies, and taxation incentives. These measures were coupled with initiatives aiming at encouraging private investments and the funding of vital services like extension and research, as well as strategic investments and compensatory measures to address market failures.

One of the pivotal program policies implemented over the last few decades was the **National Program for Agricultural Development 1992-2015** (Plan Directeur de Dévelopement Agricole – PDDA 1992-2015). This program placed an emphasis on enhancing sector competitiveness, primarily through actions such as privatization, dissolution of monopolies and oligopolies, price liberalization, and fostering institutional development within the agri-food sector (World Bank, 2019).

Another important initiative of the Ivorian agricultural policy was the **National Agricultural Investment Plan (NAIP)** in 2010-2015, prioritizing mobilization of substantial private investments to bolster agricultural growth at a rate of 9% per year. It included reforms in the cocoa and cotton sectors, an introduction of a new Forestry Code, and public money targeted at modernizing the management system in agriculture. The government expenditures to agriculture in the period of the NAIP totaled 1 billion USD, according to FAOSTAT. However, the NAIP of 2010-2015 has not mobilized large financial inflows to the sector, unlike the **Second National Agricultural Investment Plan 2017-25 (NAIP2).**

Private and international development flows to agriculture have increased substantially since 2015, reaching, on average, 218 million USD in 2015-2021 compared to 81 million USD in 2008-2014 (Figure 79). The Investment Plans also allowed credit flows to the agriculture boost (Figure 80), averaging 192 million USD since 2011.

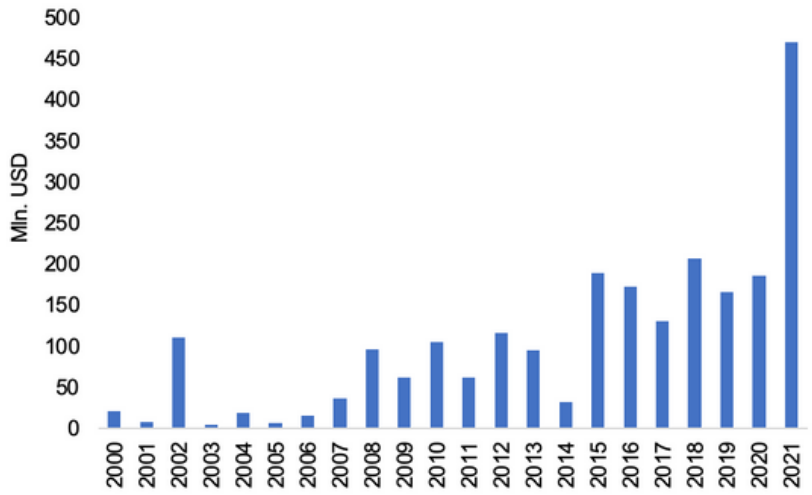


Figure 79. Development flows to agriculture

Source: FAOSTAT

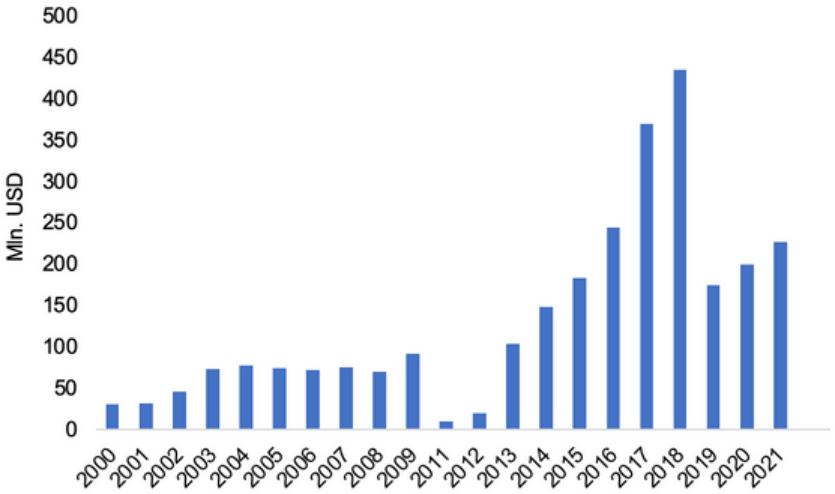


Figure 80. Credit to agriculture

Source: FAOSTAT

In 2021, the government of the country introduced a revised National Development Plan, unveiling a fresh strategy for the period spanning 2021-2025. In light of the challenges related to low value added in the sector and limited credit access for agricultural producers, the primary goals of the plan are to enhance the productivity and output of rice, foster the development of processing industries for cash crops, boost agricultural mechanization and improve access to financial resources for the producers (JICA, 2023). As an example, there was a deliberate effort to reduce the number of rice varieties from hundreds down to a range of 5-7 varieties. This was done to harmonize and enhance the quality of input supply. Additionally, the government has taken steps to directly provide rice seeds to farmers, with the goal of supporting producers by distributing 26,000 metric tons of seeds annually, a significant increase from the current 3,500 metric tons (USDA, 2023d).

In addition to the mentioned plans and initiatives, Cote d'Ivoire has also engaged in various international frameworks, such as the Sustainable Development Goals (SDGs) initiated by the United Nations, the fifty-year pan-African development vision Agenda 2063, and the Comprehensive Africa Agriculture Development Program (CAADP) as part of the collective Malabo Declaration adopted by African countries in June 2014. However, the presence of a multitude of diverse strategies and plans, at times conflicting with one another or prioritizing different aspects of the agricultural sector, coupled with subpar institutional performance, has hindered the successful transformation of the sector towards higher productivity and self-sufficiency (Diallo et. al, 2020).

3.6. COTE D'IVOIRE: SUMMARY

Cote d'Ivoire is one of the fast-growing countries in West Africa with a total population of approx. 27.5 million people. Since late 2000s, an increase in population's welfare and food security was observed. This trend prevailed throughout 2010s and persisted in the beginning of 2020s. Share of undernourished population dropped by roughly 10 percentage points over the last decade, but is still noticeable at the level of 8% as of 2020-2022. As compared to neighboring countries in West Africa, Cote d'Ivoire stands slightly above the regional average in terms of economic development, food security and nutrition adequacy. WFP operations primarily targets children malnutrition with 72% of its expenditures devoted to providing school meals and take-home rations.

Growing food imports played an important role in improvement of Ivorian food security. Over the last decade it increased from 1.9 to 3.4 billion USD in monetary value. Main imported food products are cereals, fish, beverages, and meat. Agri-food exports value have been growing slowly in recent years. It increased from 5 billion USD in 2013 up to 7 billion in 2022. Commodity structure is dominated by cocoa. In 2013-2022 it made up approx. 75% of the Ivorian agri-food exports on average. Geographic structure of both agri-food import and export is quite diversified. The main supplying markets are France, Vietnam, and India, the main importing markets are Netherlands, USA, and Belgium. Amount of Ukrainian trade with Cote d'Ivoire is insignificant, as the imports value usually barely exceeds 2 million USD, with the main commodities being cereals (wheat) and sunflower oil.

Agriculture is one of the quintessential sectors of the Ivorian economy, as it employs 45% of the working population, as of 2021. It has been growing rapidly in 2010s, with the 2 times decrease in monetary value of production (in constant terms).

The main crops produced are yams and cassava (mostly for domestic consumption). The main export crops are cocoa beans and oil palm fruit. Over the last 30 years, the amount of agricultural land increased by 45.5 thousand square kilometers (approx. 24%). However, only a small portion of this land is equipped for irrigation (72800 hectares, 1.1%). In the sown areas crop structure, cocoa trees, yams, cassava, and tree nuts are dominating. These crops take up 18%, 6%, 5%, and 9% of the total sown areas as of 2021. Livestock sub-sector of Ivorian agriculture is dominated by chicken goods (eggs and meat) and cattle (milk and meat).

The main challenge that holds back development of Ivorian agriculture is the lack of technology and outdated farming practices. Many farmers in Cote d'Ivoire continue to rely on traditional farming methods with limited access to modern agricultural techniques, including improved seeds, fertilizers, and pest control measures. Additionally, infrastructure imperfections contribute to it as well. Many farmers, especially those in remote or rural areas, face challenges in accessing markets for their produce. Poor transportation infrastructure and lack of market information can lead to reduced income and post-harvest losses. This issue is intensified by the absence of proper storage facilities.

The economy of Cote d'Ivoire experienced stagnation from 2000 to 2011, followed by a consistent growth trend since 2012. During this period of growth, the GDP per capita saw a significant increase of 60% since 2011, reaching USD 2,430 USD in 2022. At the

same time, agricultural policy in Cote d'Ivoire was primarily focused on the objectives of reducing poverty rate and enhancing self-sufficiency in food demand, as evidenced by its emphasis on agriculture in Economic Development Plans.

Another important initiative of the Ivorian agricultural policy was the National Agricultural Investment Plan (NAIP) in 2010-2015, prioritizing mobilization of substantial private investments to bolster agricultural growth at a rate of 9% per year. Since 2015, Private and international development flows to agriculture have increased substantially, reaching, on average, 218 million USD in 2015-2021 compared to 81 million USD in 2008-2014.

In 2021, the government of the country introduced a revised National Development Plan, unveiling a fresh strategy for the period spanning 2021-2025. In light of the challenges related to low value addition in the sector and limited credit access for agricultural producers, the primary goals of the plan are to enhance the productivity and output of rice, foster the development of processing industries for cash crops, boost agricultural mechanization and improve access to financial resources for the producers.

REFERENCES

Banson, K., Nguyen, N., Bosch, O. (2015). Systemic Management to Address the Challenges Facing the Performance of Agriculture in Africa: Case Study in Ghana. Systems Research and Behavioral Science. Vol 33 (4), pp. 544-574

Banson, K., Nguyen, N., Bosch, O. (2014). Using systems archetypes to identify drivers and barriers for sustainable agriculture in Africa: a case study in Ghana. Systems Research and Behavioral Science in Press

Diallo, S., Fofana, I., Diallo, M. (2020). African commitments for agricultural development goals and milestones for Cote d'Ivoire. AGRODEP Working Paper 0041. Washington, DC: International Food Policy Research Institute (IFPRI)

FAO. (2005a). AQUASTAT Country Profile – Ghana. Food and Agriculture Organization of the United Nations (FAO). Rome, Italy

FAO. (2005b). AQUASTAT. Country Profile – Côte D'Ivoire. Food and Agriculture Organization of the United Nations (FAO). Rome, Italy

FAO. (2016). AQUASTAT Country Profile – Nigeria

FAOSTAT. (2023). Food, beverages and tobacco (% of value added in manufacturing), Manufacturing, value added (% of GDP) - Cote d'Ivoire.United Nations (FAO). Rome, Italy

FMARD. (2022). National rice development strategy II (2020-2030). Federal Ministry of Agriculture and Rural Development, Federal Republic of Nigeria

Ghana Business News. (2009). The challenge of agriculture in Ghana: what is to be done?

Jalloh, A., Nelson, G., Thomas, T., Zougmoré, R., Roy-Macauley, H. (2013). West African agriculture and climate change: A comprehensive analysis. IFPRI Research Monograph. Washington, D.C. International Food Policy Research Institute

JICA. (2023). Republic of Cote d'Ivoire JICA Country Analysis Paper (JCAP) Summary

King, C. (2008). Community resilience and contemporary agri-ecological systems: reconnecting people and food, and people with people. Systems Research and Behavioral Science 25(1): 111

Kouassi, J-L., Gyau, A., Diby, L., Bene, Y., Kouamé, C. (2021). Assessing Land Use and Land Cover Change and Farmers' Perceptions of Deforestation and Land Degradation in South-West Côte d'Ivoire, West Africa. Land; 10(4):429

NEPAD. (2003). AU 2003 Maputo Declaration on Agriculture and Food Security. Ghana Cocoa Board

Nitag Consults Limited. (2009). Review and Stock Taking Report, Agricultural Development

Olukunle, O. (2013). Challenges and Prospects of Agriculture in Nigeria: The Way Forward. Journal of Economics and Sustainable Development, Vol. 4, No. 16

USDA. (2023.a). Nigeria: Grain and Feed Update. Attaché Report (GAIN). NI2023-0008

USDA. (2023.b). Nigeria: Oilseeds and Products Annual. Attaché Report (GAIN). NI2023-0005

USDA. (2023c). Ghana: Ghana Oilseeds Voluntary. Attaché Report (GAIN). GH2023-0006

USDA. (2023d). Côte d'Ivoire: Grain and Feed Annual. Attaché Report (GAIN). IV2023-0002.
World Bank. (2017). Ghana - Agriculture sector policy note: transforming agriculture for economic growth, job creation, and food security (English). Washington, D.C
World Bank. (2019). Côte d'Ivoire - Agricultural Sector Update (English). Washington, D.C
World Bank. (2022). Nigeria Poverty Assessment
World Bank. (2023). Poverty & Equity Brief: Ghana
World Bank. (2023). Poverty & Equity Brief: Cote d'Ivoire
WFP. (2022a). Ghana. Annual Country Report
WFP. (2022b). Cote d'Ivoire. Annual Country Report
Yankson, P., Owusu, A., & Frimpong, S. (2016). Challenges and Strategies for Improving the Agricultural Marketing Environment in Developing Countries: Evidence From Ghana. Journal of Agricultural & Food Information, 17(1), 49–61
Zossou, E., Arouna, A., Diagne, A., Agboh-Noameshie, R. (2017). Gender gap in acquisition and practice of agricultural knowledge: case study of rice farming in West Africa. Experimental Agriculture, 53(4), 566-577