Chapter 3.1
Africa's Agricultural Trade Performance and Structural Barriers

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Introduction

Africa's agricultural trade has been characterized by a persistent trade balance deficit over the past decade, with import bills consistently outpacing export revenues. With the world's fastest growing population and weak domestic food systems, imports of agrifood products are increasing rapidly, raising the dependence of the continent on external markets and its exposure to global food price volatility. This vulnerability is compounded by the limited diversification of exports, which remain concentrated in a narrow range of primary commodities subject to significant price fluctuations, thereby contributing to macroeconomic instability.

At the same time, continent-wide initiatives such as the Comprehensive Africa Agriculture Development Programme (CAADP) and the African Continental Free Trade Area (AfCFTA) aim to address these structural challenges. Both frameworks seek to strengthen agrifood systems, enhance productive capacities, promote value addition, and better align agricultural production with domestic and regional demand, ultimately contributing to more stable and resilient food markets.

In this context, expanding intra-African trade can provide significant benefits. Greater regional integration can stimulate economic growth through wider market access, foster regional value chains, and improve food security by enhancing the availability and affordability of food across borders. However, despite broad consensus on these potential benefits, the actual level and trajectory of intra-African agricultural trade remain subject to debate, partly due to data limitations and differences in measurement approaches.

This chapter, therefore, provides a comprehensive assessment of Africa's agricultural trade performance over the past decade, examining both structural trends and persistent barriers that constrain diversification, competitiveness, and deeper regional integration.

Agricultural trade performance

Evolution of trade flows

The evolution of Africa's agricultural trade between 2013 and 2023 is marked by a persistent trade balance deficit, with imports systematically exceeding exports (Figure 3.1). Over the decade, agricultural exports grew at 3% annually, rising from USD50 billion to USD66 billion. Following a period of relative stagnation from 2013 to 2019, export growth accelerated significantly towards the end of the period, increasing by 32% over the subsequent four years. However, this rebound was driven primarily by price effects rather than by structural gains in competitiveness, as reflected in the evolution of the Food and Agriculture Organization (FAO) global food price index during the same period (Traoré et al., 2025).

Importantly, the apparent dynamism in export values masks underlying structural weaknesses. Using a shift-share (market share decomposition) analysis, Laborde et al. (2019) find that changes in Africa's export performance and market shares are largely explained by sectoral and geographical specialization patterns, while the competitiveness component remains limited, and in some cases negative. This suggests that export growth has been more a function of favorable commodity composition and destination markets than of improvements in productivity or value addition.

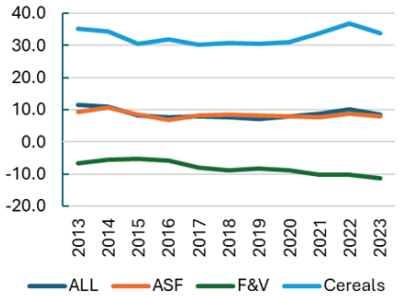
Agricultural imports followed a more volatile trajectory and grew slightly faster than exports, at an average annual rate of 3.4%. Aggregate imports remained stable at around USD70 billion from 2014 to 2019, then rose sharply, peaking at a value of USD98 billion in 2022. The surge in imports is highly correlated with the rise in global food prices caused by major supply shocks and disruptions, including droughts in major exporting countries, the Russia-Ukraine war, and the imposition of export restrictions, which pushed up international food prices.

As a result, the sustained excess of imports over exports led to a persistent trade deficit over the entire period of observation, with an aggravation at the end of the period. On average, Africa's agricultural trade deficit amounted to USD26 billion between 2013 and 2023 (Figure 1.1). A closer look at the deficit reveals the key role of cereals, which constitute the main contributor with USD28 billion. By contrast, sectors such as fruits and vegetables witnessed a surplus of USD14 billion, driven by high demand and prices in developed countries for fresh products.

Figure 1.1. Africa's total international agricultural trade (US$ billion)

Source: COMTRADE and authors[1]

Figure 1.2. Import dependency ratios (%)



Source: COMTRADE, FAOSTAT and authors

Note: ASF: animal source foods; F&V: fruits and vegetables.

Figure 1.2 further illustrates the continent's high reliance on external markets through import dependency ratios, that is, the share of net imports in total domestic supply. The ratio indicates how much of the available domestic food supply is imported and how much comes from the country's own production. Consistent with the persistent trade deficit discussed above, Africa exhibits substantial import dependency across several key agrifood categories. Cereals show the highest level of dependency, underscoring the continent's structural reliance on foreign supply for staple foods. In contrast, fruits and vegetables display negative dependency ratios, reflecting Africa's net exporter position in these products.

The sustained trade deficit and high import dependency are rooted in two interrelated structural dynamics. On the demand side, rapid population growth, rising incomes, and accelerating urbanization have led to sustained increases in aggregate food demand. On the supply side, structural constraints continue to limit domestic production capacity. These include low agricultural productivi-

ty, limited access to quality inputs and finance, inadequate farm management practices, weak infrastructure, and growing exposure to climate-related shocks.

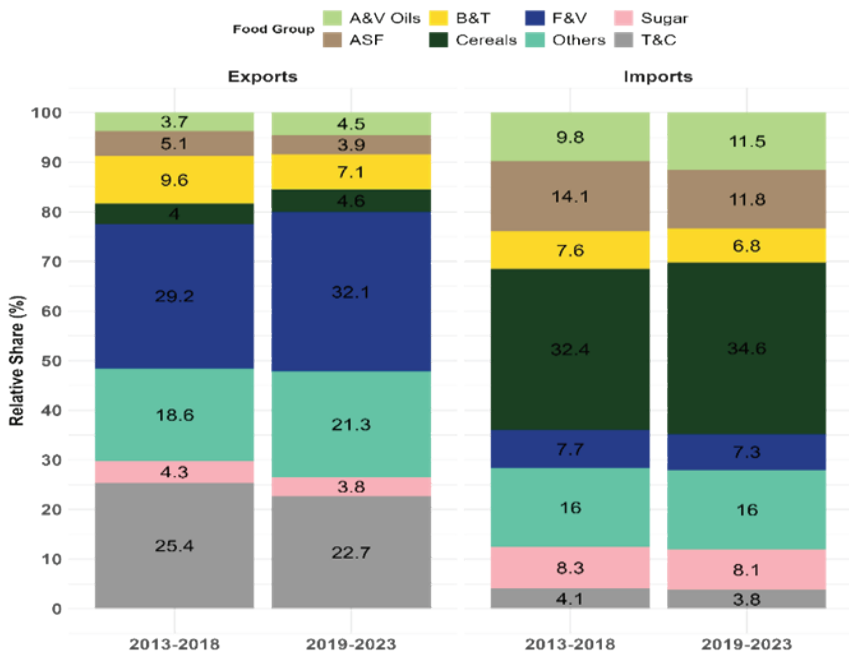
Composition of trade flows

The composition of Africa's agrifood trade with the rest of the world differs substantially between export and import sides, and reveals the key role played by a limited number of products (Figure 2). On the export side, trade is highly concentrated in a few commodity groups. They include fruits and vegetables (32.1% in 2019-2023) and stimulants (22.7% in 2019-2023), such as cocoa and cocoa preparations, tea, and coffee. Other major exports include beverages, tobacco, animal and vegetable fats and oils. It is worth noting that cotton and fibers that constituted emblematic products in the early 2000s now represent only 3% of Africa's agricultural exports, reflecting a significant structural shift in the continent's export basket.

On the import side, Africa's dependence is even more concentrated. Cereals dominate, accounting for 34.6% of total agricultural imports over 2019–2023. They are followed by animal-source foods (11.8%), animal and vegetable fats and oils (11.5%), and sugars (8.1%). The prominent share of cereals underscores the structural dependency on global markets discussed in the previous subsection. Within this category, wheat and rice represent the largest shares, accounting for 51% and 26% of cereal imports, respectively.

Rice presents a particularly noteworthy case. It has become the fastest-growing staple food in Africa, with demand increasing at an annual rate of approximately 6% (Africa Rice, 2025). Despite policy efforts to boost domestic production, structural constraints—including low productivity, limited competitiveness, and mounting climate pressures—are expected to sustain high import dependence. As a result, Africa is projected to become the world's largest rice-importing region by 2035 (Traoré et al., 2025).

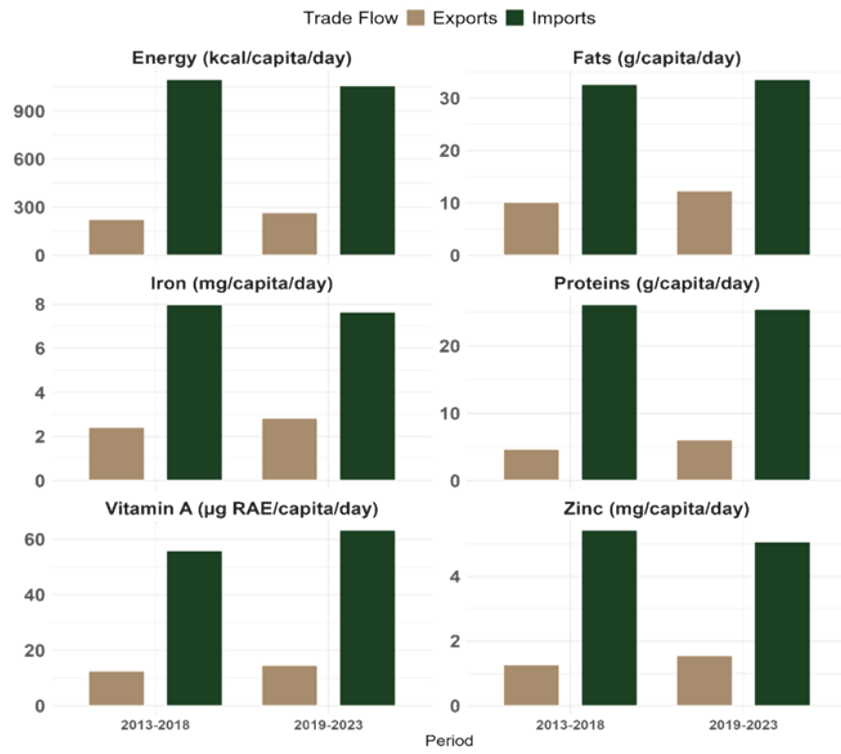
Figure 2. Composition of Africa's agrifood external trade (%)



Source: AATM 2025 (Aboushadi et al. 2025) and authors computation
Note: ASF: animal source foods; A&V Oils: Animal and vegetable fats and oils; F&V: fruits and vegetables; T&C: tea, cocoa, and coffee.

Interestingly, trade can affect diet quality and previous studies found that it plays a significant role in supplying both macro and micronutrients to Africa, providing 56% of caloric requirements and 90% of proteins requirements (Olivetti et al, 2023). Figure 3 compares the nutrient content of Africa's agrifood imports from and exports to the rest of the world. At the continental level, imports consistently exceed exports for all nutrients, confirming Africa's structural reliance on global markets to satisfy its dietary requirements. Africa's exports are largely concentrated in low-nutrient-dense or non-food agrifood products, including coffee, cotton, tobacco, flowers, tea, and certain fruits and vegetables. Imports, by contrast, are driven by income growth and changing dietary patterns and consist mainly of protein-rich foods, especially animal-source foods (meat, eggs, dairy products), and high-calorie products (cereals). In other words, Africa exports raw materials and unprocessed or minimally processed foods, while importing more processed, higher-value, nutrient-rich foods.

Figure 3 Nutrient content of Africa's total exports and imports[3]



Source: FAOSTAT

Exports concentration

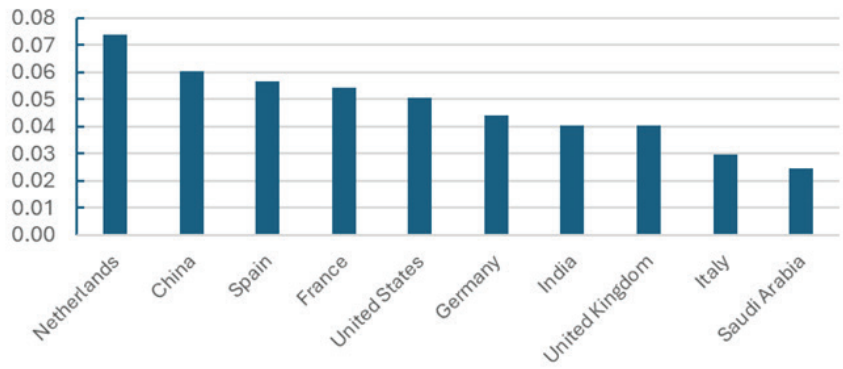
Export diversification—or conversely, export concentration—has long been a structural concern for Africa. As highlighted in the previous section, the continent's export profile remains concentrated in a limited number of products. Export diversification can be understood along two dimensions: the sectoral dimension, referring to the expansion in the range of distinct products exported, and the geographical dimension, referring to the broadening of trading partners. While both are important, policy debates have focused more on sectoral diversification.

At the sectoral level, Africa remains the second least diversified region in the world after Oceania, with diversification trends worsening during 2010–2019 compared to the previous decade (UNCTAD, 2022). The low diversification is

one of the main causes of the continent's weak integration in the global trading system and its vulnerability to world price shocks (Bouet et al. 2017; Bonaglia and Fukasaku, 2003). Structural factors help explain this pattern, including historical specialization rooted in colonial trade structures, persistent path dependencies, limited skills and technological capabilities, and insufficient industrial upgrading.

A diversified production and export base is critical for stabilizing export earnings, particularly because primary commodity prices tend to be more volatile than those of manufactured goods. Diversification is also essential for fostering economic growth, but it remains a challenge for African countries. Indeed, Africa has yet to achieve significant diversification, and the previous subsection illustrated the high level of concentration of the continent's exports, with the predominance of a few products. A similar pattern is observed with respect to trading partners. Figure 4 shows that the top ten export destinations account for 47% of Africa's total agricultural exports, with approximately 25% directed to European markets alone.

Figure 4. Top 10 Africa partners (2019-2023 average)



Source: COMTRADE and authors' computation

The analysis relies on more refined indicators of diversification or concentration. In addition to the well-established Herfindahl-Hirschman index (HHI) of concentration, a reciprocal indicator was computed (Bouët 2009; De Lombaerde and Iapadre 2012). This indicator corresponds to the inverse of the HHI and represents the number of equally sized markets (or products) that would generate the same degree of concentration as the one observed. In other words,

the higher the number of equivalent markets, the greater the level of diversification. The results are generated for both the geographical (trading partners) and sectoral (products) dimensions.

Figure 5.1 presents the geographical diversification of African countries, measured as the average number of equivalent markets by country over the period 2019-2023. While a few countries exhibit relatively more diversified (Egypt, South Africa, Kenya, Ethiopia, Nigeria, Ghana), the majority remain dependent on a limited number of partners (number of equivalent markets below 10). Countries such as Niger, Chad, Botswana, and South Sudan appear to be the least geographically diversified. As to sectoral diversification. The picture is even more concerning for sectoral diversification (Figure 5.2). With a few exceptions (Egypt, South Africa, Tanzania, and Morocco), most African countries' exports remained concentrated around a limited number of products, with Niger, Chad, Zimbabwe, and South Sudan presenting the lowest levels of diversification.

Figure 5.1 Average number of equivalent markets (2019-2023)

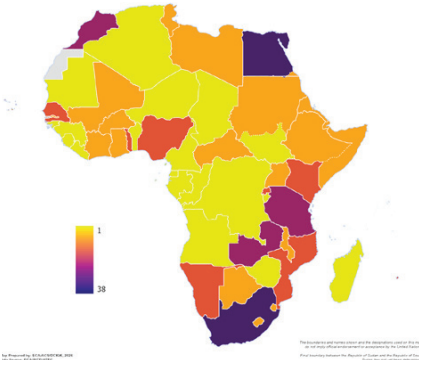
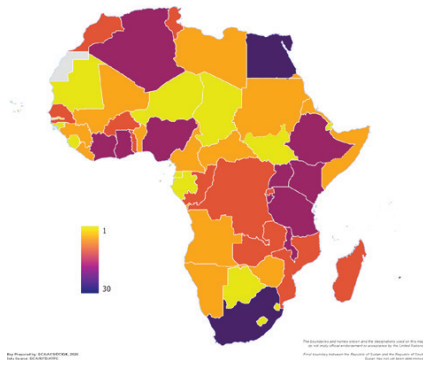


Figure 5.2. Average number of equivalent products (2019-2023)



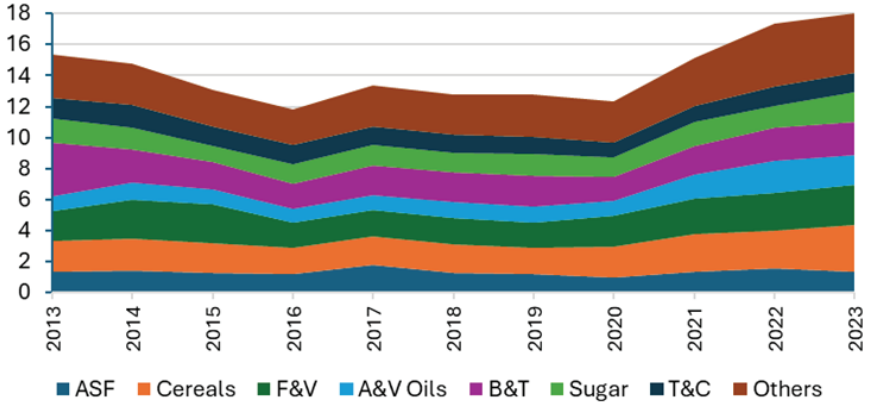
Source: Comtrade and author's design

Intra-African trade of agrifood products

Compared to Africa's trade with the rest of the world, formal intra-African agrifood trade has remained relatively stable over time. Figure 6 presents the evolution of total intra-African trade of agrifood products, along with its breakdown across the main product groups considered in this analysis. On average, intra-African trade amounted to USD14 billion with a slight increase at the end of the period and grew by 18% from 2013 to 2023, roughly half the growth rate observed for Africa's exports to external markets. The composition of the

agrifood trade has also shown only moderate changes over time. Although cereals constitute the largest category, at the aggregate level, cash crops continue to play a key role. Fruits and vegetables represent the second category of products traded, followed by beverages and tobacco, while the share of animal source foods remained fairly low and stable over the entire period. A noticeable shift is the increasing share of animal and vegetable fats and oils starting from 2020.

Figure 6 Intra- African agrifood trade 2013-2023 (USD billion)



Source: COMTRADE and authors' computation
Note: ASF: animal source foods; A&V Oils: Animal and vegetable fats and oils; F&V: fruits and vegetables; T &C: tea, cocoa and coffee

The level of intra-African trade discussed above has long been the subject of debate (Barka 2012; UNECA and ADB 2010). Many researchers argue that Africa is "under-trading", meaning trading below its potential, resulting in relatively low intra-regional trade shares. Historically, much of this debate has centered on the share of intra-regional trade (SIT), defined as the ratio of intra-regional trade to total trade.

As illustrated in Figure 7.1, Africa's aggregate intra-regional trade share remains below 20%, compared to Asia or the European Union (EU), at 42% and 52%, respectively. The level of integration is higher than the average for animal source foods and systematically below 15% for cereals. Beyond the continental average and product composition, there is also geographic heterogeneity. At the level of Regional Economic Communities (RECs), previous studies identify the Southern African Development Community (SADC) as the most integrated

region, while the Arab Maghreb Union (AMU) appears as the least integrated (Traoré et al., 2025).

However, the SIT indicator presents several methodological limitations. That includes the lack of a clear theoretical benchmark for comparison, a dynamic ambiguity when the ratio increases, and high sensitivity to geographical fragmentation (Anderson & Norheim, 1993; Frankel, 1997; Iapadre & Luchetti, 2009). This fragmentation bias can be the most significant shortcoming, as it complicates cross-region comparisons. A region composed of many small countries may appear more integrated than another with a similar aggregate GDP but fewer member states, mainly due to geographical fragmentation.

Figure 7.1 Share of intra-African agri-food trade (2013-2023)

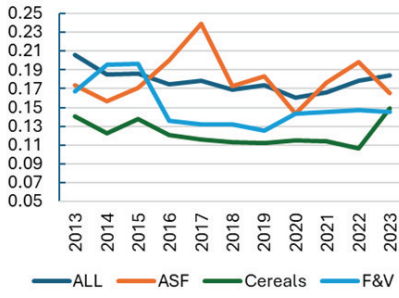
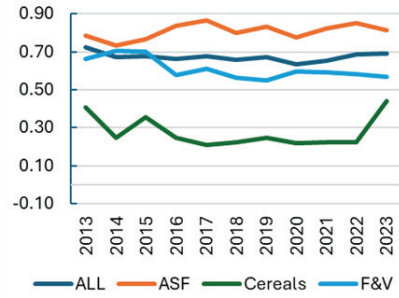


Figure 7.2 Regional trade introversion of agrifood products (2013-2023)



Source: COMTRADE and authors' computation
Note: ASF: animal source foods; F&V: fruits and vegetables

Given the limitations of the SIT, Iapadre and Luchetti (2009) proposed the regional trade introversion (RTI) index. This index is based on a modified version of the intra-regional intensity index and the extra-regional intensity index (Annex 1). Figure 7.2 presents the RTI indexes for Africa at the aggregate level and across three product groups. The results suggest that internal trade dynamics are present, with the continent appearing more introverted than extroverted overall, especially for animal source foods and relatively low for cereals, as revealed by the SIT. Unlike the SIT, the RTI index corrects for structural biases and suggests that Africa's level of regional integration is broadly comparable to that of other regions Bouet et al. 2017). Furthermore, gravity model estimates (Traore et al. 2025) conclude that, once standard trade determinants are controlled for, Africa is not systematically "under-trading" within the continent. Moreover, compared to other regions, informal cross-border trade, constitutes a

significant part of agricultural trade flows in Africa, is largely excluded from official statistics, implying that actual intra-African integration may be higher than reported (see Box 3).

Box 3. Informal cross-border trade in Africa

Informal cross-border trade is a pervasive phenomenon in Africa, especially for agricultural products. In 2023 the African Union, Afreximbank and ECA launched an initiative to develop a continental methodology for ICBT data collection in Africa. As defined in the methodology, ICBT refers to transactions in goods and services between any two or more countries that are not entered in official records and therefore are not included in the official trade statistics.

ICBT results from various factors. While poverty pushes many actors to the informal sector, high import tariffs, prohibitions, bans, and quotas do play a significant role. In addition, complex regulations, and standards, particularly sanitary and phytosanitary measures to avoid official border crossing points (Bouquet, 2003). Finaly, historical and cultural determinants explain the presence of ICBT in Africa where ethnological and linguistic links play a key role in trade (Aker et al. 2014; Little et al. 2010; Tegegne et al. 1999).

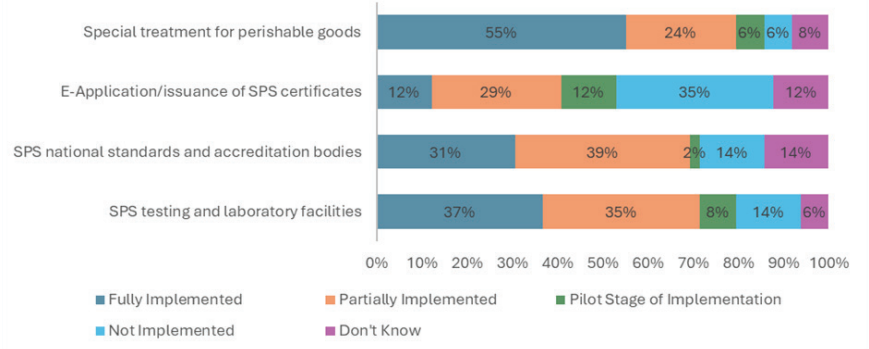
ICBT is estimated between 10% and 60% of total trade flows in the agricultural sector in Africa (Bouët et al., 2020). A comprehensive review and extrapolation performed by ECA (Gaarder et al. 2021) estimates that ICBT represents between 7% and 16% of intra-African trade and between 30% and 72% of the value of trade between neighboring countries. Another recent assessment in West Africa concludes that intra-ECOWAS agrifood trade is six times higher than what is officially reported (OECD/SWAC, 2025).

The continental methodology for ICBT data collection, which was adopted by the 38th Ordinary Session of the Assembly of Heads of States and Government of the African Union in February 2025, is being rolled out in several countries (ECA forthcoming) and will contribute to building a comprehensive and consistent picture of ICBT in the continent.

Trade facilitation gaps as structural barriers to agricultural trade

Agricultural trade facilitation measures can reduce transaction costs along supply chains, improve market access for small-scale farmers, and contribute to food security and poverty reduction. The United Nations Trade Facilitation (UNTF) Survey[31] identifies four measures related to agricultural trade facilitation, all focusing on SPS requirements: testing facilities, national standards bodies, electronic SPS certificates, and special treatment for perishable goods. These measures are particularly important for agricultural products, which face unique trade barriers due to their perishable nature and stringent health and safety requirements, making efficient border procedures essential for preserving product quality and ensuring market access.

Figure 8. State of Africa's implementation of agricultural trade facilitation measures in 2025



Source: authors' computation based on UNTF Survey on Digital and Sustainable Trade Facilitation (2025)

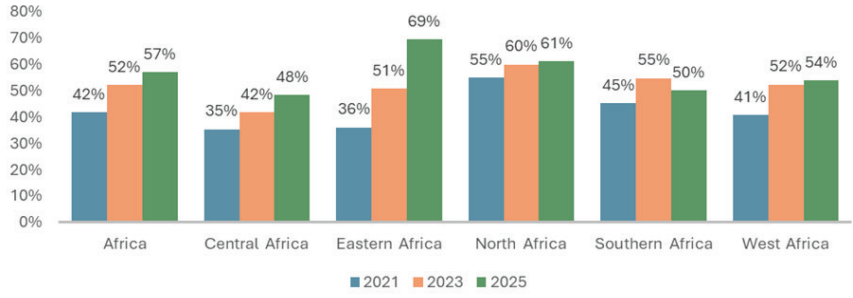
Figure 8 reveals uneven progress in the implementation of agriculture trade facilitation measures, with advances in some areas but persistent gaps in others. The digitalization of SPS procedures, particularly the electronic application and issuance of SPS certificates, remains the weakest area. Only 12% of countries report full implementation, while 35% indicate no implementation. This signif-

31 The Global Survey on Digital and Sustainable Trade Facilitation currently covers over 180 economies and 62 measures related to the WTO's Trade Facilitation Agreement (TFA) as well as to paperless trade and the UN treaty on cross-border paperless trade in Asia and the Pacific (CPTA). The survey is conducted jointly by all five UN Regional Commissions, UNCTAD and a growing number of global and regional partners every two years.

icant gap suggests that digital transformation is a major bottleneck, undermining efficiency, transparency, and competitiveness in agricultural trade.

Institutional frameworks also reveal shortcomings. Although national standards and SPS accreditation bodies show moderate advancement, a high share of partial implementation (39%) and "don't know" responses (14%) suggest institutional weaknesses and limited awareness or coordination. By contrast, SPS testing and laboratory facilities show relatively stronger performance, with 37% of countries reporting full implementation and 35% partial implementation. Nevertheless, 22% remain at pilot or non-implementation stages, reflecting ongoing infrastructure and resource constraints. In comparison, Special treatment for perishable goods stands out as the most widely implemented measure, with 55% of countries reporting full implementation. This suggests a policy prioritization of time-sensitive agricultural exports. Overall, the figure underscores the need to accelerate digital transformation, strengthen institutional capacity, and promote more consistent implementation across countries.

Figure 9. Evolution of implementation of agriculture trade facilitation measures, in Africa globally and across sub-regions, 2021, 2023, 2025



Source: The UNTF Survey on Digital and Sustainable Trade Facilitation (2025) and authors' computation.

The overall implementation of agriculture trade facilitation measures across African regions between 2021 and 2025 reveals a generally positive but uneven trajectory of progress (Figure 9). At the continental level, implementation has risen 15 percentage points since 2021, reaching 57% in 2025, indicating a gradual strengthening of trade facilitation frameworks for agriculture, likely driven by sustained reform efforts at the national level and under regional integration initiatives, particularly within RECs (Box 4).

All regions, except Southern Africa, recorded improvements over the period, though at varying speeds and from different starting points. North Africa consistently exhibited the highest level of implementation, rising from 55% in 2021 to 61% in 2025, reflecting relatively more advanced regulatory and institutional systems. Eastern Africa showed the most significant progress, jumping from 36% in 2021 to 69% in 2025, suggesting accelerated reforms and investment in trade facilitation mechanisms. West and Central Africa also made steady gains, albeit at more moderate rates. In contrast, Southern Africa experienced a decline between 2023 and 2025, falling from 55% to 50%, indicating potential implementation challenges or reform slowdowns.

Box 4. Status of WTO trade facilitation agreement implementation in africa

We situate the above findings within the broader context of Africa's implementation of the WTO Trade Facilitation Agreement (TFA). Overall, Africa has made significant progress in implementing key provisions of the WTO-TFA, particularly those in Category A, which are applied upon entry into force. Measures such as pre-shipment inspection (Art. 10.5), detention (Art. 5.2), movement of goods (Art. 9), temporary admission (Art. 10.9), and separation of release (Art. 7.3) exhibit high total implementation rates, reflecting strong procedural alignment and facilitating trade across sectors, including agriculture.

However, other measures remain less implemented, highlighting areas for improvement. Authorized operators (Art. 7.7), risk management (Art. 7.4), test procedures (Art. 5.3), general disciplines on fees and charges (Art. 6.1), and single window (Art. 10.4) show lower implementation rates, particularly in Category A, indicating that these provisions are not yet fully operational. Strengthening these measures would help reduce trade bottlenecks, especially for perishable agricultural products.

Overall, while Africa has made steady progress in adopting agricultural trade facilitation measures, the continent continues to lag behind other regions, notably South-East and East Asia (67%) and South Asia (63%) (United Nations, 2025), highlighting the need for accelerated reforms and stronger implementation. Limited SPS infrastructure and procedures may be one of the factors contributing to this disparity, potentially constraining countries' ability to access

international markets and achieve food security objectives. Addressing these constraints is therefore essential to strengthen trade, improve food safety, and support sustainable development outcomes. Table 1 highlights the top and bottom five Trade Facilitation Agreement (TFA) measures in Africa, with a note on their relevance to agriculture.

Box 5. Agricultural trade trends (country examples)

In 2025, the United Nations Economic Commission for Africa (ECA) supported 6 countries to strengthen their national statistical capabilities for trade data disaggregation and analysis (ECA forthcoming). The results of this project painted a mixed picture of the trade sector's contribution to the economy through direct trade gains, employment and consumption patterns. In Rwanda, for instance, since 2020, agricultural products, specifically rice (HS 100630), and pasta (HS 190219have featured in the top 5 traded products. In 2023 and 2024, mackerel fish (HS 030354) was also on the list of the top 5 products. In Zambia, frozen jack, and horse mackerel (HS 03055) and durum wheat (HS 100119) have featured in the list of top 5 products traded since 2019. Between 2020 and 2024, Côte d'Ivoire's trade focuses on high-value cash crops and agro-industrial raw materials, particularly coffee derivatives (HS 090111) latex (HS 400110) and cocoa (HS 180100). In Chad, staple crops and processed foods, including wheat flour (HS 110100), paddy rice (HS 100610) and pasta (HS 190219) ranked among the top five traded products. These patterns underscore the significance of raw agricultural commodities and agro-processing products in trade composition of the countries.

Table 1: Top and bottom five Trade Facilitation Agreement (TFA) measures in Africa

	Measures	Total Implementation (%)	Breakdown (%) (A / B / C)	Relevance for Agriculture
Top 5	Art. 10.5 – Pre-shipment inspection	100	77.8 / 11.1 / 11.1	Ensures the quality and safety of agricultural exports, reducing delays at borders
	Art. 5.2 – Detention	100	72.2 / 22.2 / 5.6	Minimizes unnecessary detention of agricultural shipments, preventing spoilage
	Art. 10.9 – Temporary admission of goods	94.5	79.2 / 15.3 / 0	Allows temporary import of inputs and equipment for agro processing
	Art. 7.3 – Separation of release	94.5	66.7 / 16.7 / 11.1	Reduces bottlenecks at customs, ensuring the timely release of perishable goods
	Art. 9 – Movement of goods	94.4	83.3 / 11.1 / 0	Facilitates faster transit of agricultural products across borders
Bottom 5	Art. 7.7 – Authorized operators	72.2	11.1 / 27.8 / 33.3	Facilitates trusted operator schemes to reduce inspection times for agricultural exporters
	Art. 7.4 – Risk management	66.7	16.7 / 0 / 50	Supports targeted inspections, preventing unnecessary delays of perishable goods
	Art. 5.3 – Test procedures	61.1	27.8 / 0 / 33.3	Ensures timely and standardized testing of agricultural products to meet import/export requirements
	Art. 6.1 – General disciplines on fees and charges	61.1	22.2 / 33.3 / 5.6	Reduces unpredictable fees that can affect the costs of agricultural trade
	Art. 10.4 – Single window	44.5	0 / 5.6 / 38.9	Enables the submission of documents through a single platform, critical for the timely clearance of agricultural goods

Source: WTO-TFA database and authors' computation (accessed on 12/02/2026)

Conclusions

This chapter assessed Africa's agricultural trade performance over the past decade and identified persistent structural imbalances requiring coordinated and sustained policy action. Persistent trade deficits, high dependence on cereal imports, limited product and partner diversification, and exposure to global price shocks underscore the fragility of the continent's agricultural trade structure. Although intra-African trade and informal cross-border exchanges provide important resilience mechanisms, their full potential remains underexploited.

Addressing these challenges calls for a comprehensive reform agenda at the continental level. First, accelerating agricultural productivity growth through improved access to inputs, climate-resilient technologies, irrigation, and extension services is essential to reduce import dependency. Second, export diversification strategies must be strengthened by promoting agro-processing, value addition, and integration into regional and global value chains. Third, closing trade facilitation gaps, particularly in SPS infrastructure, testing laboratories, digital certification systems, and border procedures, should be prioritized to lower transaction costs and enhance competitiveness.

Regional cooperation frameworks, notably under the AfCFTA and RECs, provide critical platforms to harmonize standards, streamline trade procedures, and scale up digital solutions. Finally, targeted support for small and medium enterprises (SMEs), youth, and women traders, who play a central role in informal and cross-border agricultural trade, will be crucial to ensuring that agricultural trade contributes not only to economic growth, but also to food security, resilience, and inclusive development across Africa.

References

AfricaRice. 2025. "Why Rice Matters to Africa." AfricaRice. https://www. africarice.org/why-rice-matters-for-africa

Aker, Jenny C., M. W. Klein, S. A. O'Connell, and M. Yang. 2014. "Borders, ethnicity and trade". *Journal of Development Economics* 107: 1-16. https://doi.org/10.1016/j.jdeveco.2013.10.004.

Anderson, K., and H. Norheim. 1993. "From Imperial to Regional Trade Preferences: Its Effect on Europe's Intra- and Extra-regional Trade." *Weltwirtschaftliches Archiv* 129: 78–102.

Barka, H. B. 2012. Border posts, checkpoints, and intra-African trade: challenges and solutions. African Development Bank.

Bonaglia, F. and K. Fukasaku. 2003. "Export diversification in low-income countries: an international challenge after Doha". OECD Development Center Working Paper No. 209.

Bouquet, C. 2003. "L'artificialité des frontières en Afrique subsaharienne. Turbulences et fermentation sur les marges." *Les Cahiers d'Outre-Mer—Revue de géographie de Bordeaux* 56 (222): 181–198

Bouët, A., B. Cissé and F. Traoré. 2020. "Informal cross-border trade in Africa". in Bouët, Antoine, Odjo, Sunday Pierre, and Zaki, Chahir, eds. 2020. Africa Agriculture Trade Monitor 2020. Washington, DC: International Food Policy Research Institute (IFPRI).

Bouet, A., L. Cosnard and D. Laborde. 2017. "Measuring trade integration in Africa", *Journal of Economic Integration* 32(4): 937- 977.

Gaarder, E., D. Luke and L. Sommer. 2021. "Vers une estimation préliminaire du commerce transfrontière informel en Afrique". Addis Abeba: UNECA.

Dedehouanou, F., B. Dimaranan, and D. Laborde. 2019. "Competitiveness of African Agricultural Value Chains." In *Africa Agriculture Trade Monitor Report 2019,* edited by A. Bouët and S. Odjo, 73-99. Washington, DC: International Food Policy Research Institute (IFPRI).

Frankel, J. 1997. Regional Trading Blocs in The World Economic System. Washington, DC: Institute for International Economics.

Iapadre, L. and F. Luchetti. 2009. "Trade Regionalisation and Openness in Africa." European Report on Development.

Lesser, C. and Moisé-Leeman, E. 2009. Informal cross-border trade and trade facilitation reform in Sub-Saharan Africa. *Trade Policy Working Papers* No. 86. Paris: OECD.

Little, P. D., A. Sarris, and J. Morrison. 2010. "Unofficial Cross-Border Trade in Eastern Africa." In *Food Security in Africa: Market and Trade Policy for Staple Foods in Eastern and Southern Africa*, edited by A. Sarris and J. Morrisson, 158–181. Cheltenham, UK: Edward Elgar Publishing.

OECD/SWAC. 2025. Intra-regional Food Trade in West Africa. New Evidence, New Perspectives. OECD. Paris.

Olivetti, E., J. Collins, S. Odjo and D. Laborde. (2023). "Intra-African agricultural trade: recent trends and nutritional content", in Africa Agriculture Trade Monitor 2023, edited by S. P.Odjo, F. Traoré, and C. Zaki. Kigali and Washington, DC: AKADEMIYA2063 and International Food Policy Research Institute.

Tegegne, T., A. Azeze, and A. Gebremariam. 1999. "Cross-Border Livestock Trade and Food Security in the Southern and Southeastern Ethiopia Borderlands." OSSREA Development Research Report 1, Organization for Social Science Research in Eastern and Southern Africa, Addis Ababa.

Traoré, F., P. Mamboundou, I. Diop, and A. Sy. 2025. Africa's agrifood trade: The state of play. Better Diets and Nutrition Report. Washington, DC: International Food Policy Research Institute. https://hdl.handle.net/10568/179185.

Traoré, F., D. Laborde Debucquet, D. del Prete, M. Sanchez and I. Diop. (2025). "The rice value chain in Africa", in Africa Agriculture Trade Monitor 2025, edited by S. P.Odjo, F. Traoré, and C. Zaki. Kigali and Washington, DC: AKADEMIYA2063 and International Food Policy Research Institute.

United Nations Trade and Development (UNCTAD). 2022. Economic Development in Africa Report 2022. Rethinking the Foundations of Export Diversification in Africa – The Catalytic Role of Business and Financial Services. Geneva.

UNCTAD. 2023. Compilation guidelines for the measurement of gender-in-trade statistics. Geneva: United Nations.

UNECA and African Development Bank (AfDB). 2010. Assessing Regional Integration in Africa IV: Enhancing Intra- African Trade, Volume 4. United Nations Publications.

United Nations. 2025. Digital and Sustainable Trade Facilitation: Global Report 2025 Based on the United Nations Global Survey on Digital and Sustainable Trade Facilitation.

World Trade Organization (WTO). 2015. Speeding Up Trade: Benefits and Challenges of Implementing the WTO Trade Facilitation Agreement. Geneva, Switzerland: World Trade Report.

Annexes

Annex 1. Modified regional trade introversion (RTI) index

This indicator is based on a modified version of the intra-regional intensity index ($MIRTI_R$) and the extra-regional intensity index ($MERTI_R$). The RTI index is defined as follows:

$$RTI_R = \frac{MIRTI_R - MERTI_R}{MIRTI_R + MERTI_R}$$

where r and s represent countries; R is region R; $X_{s,s'}^{\cdot}$ is the total exports of country s to country s'; $X_{r,.}^{\cdot}$ is total exports of country r; and $X_{.,r}^{\cdot}$ is total imports of country r.

$$MIRTI_R = \frac{SIT_R}{\beta_R} = \frac{\frac{\sum_{s\epsilon R}\sum_{s'\epsilon R}\left(X_{s,s'}^{\cdot} + X_{s',s}^{\cdot}\right)}{\left(\sum_{r\epsilon R}\left(X_{r,.}^{\cdot} + X_{.,r}^{\cdot}\right)\right)}}{\frac{\sum_{s\epsilon R}\sum_{s'\notin R}\left(X_{s,s'}^{\cdot} + X_{s',s}^{\cdot}\right)}{\left(\sum_{r\notin R}\left(X_{r,.}^{\cdot} + X_{.,r}^{\cdot}\right)\right)}}$$

$$MERTI_R = \frac{(1 - SIT_R)}{(1 - \beta_R)}$$

With β_R representing region R's share in trade with the rest of the world.

Since both $MIRTI_R$ and $MERTI_R$ are positive, RTI_R is bounded and falls between −1 and +1. Values between 0 and +1 reflect that the region is more introverted than extroverted, and values between −1 and 0 suggest the opposite.