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Building Value Chains in Africa: Obstacles and Opportunities in the Current Trade Landscape

Arnaud Persenda[1]

Abstract: The African continent faces a critical moment as the climate crisis intensifies alongside major geopolitical and economic shifts in the global economy (rise of China, hyperglobalisation, trade wars, green trade policies, etc.). Those shifts have led to a deep reconfiguration of global supply chains which can pose both risks and opportunities for African economies. Most African countries remain trapped in a pattern of specialisation based on low-value natural resource exports, with limited manufacturing capacity and marginal roles within GVCs. Foreign dominance in supply chains and restrictive trade regimes have further constrained industrial upgrading. This paper examines provides an overview, of the difficulties facing African countries in the GVCs. It explores the historical and structural barriers to industrial upgrading, including power imbalances in GVCs, the pressure to liberalise trade, and the erosion of policy space. It also analyses the potential of new regional initiatives, particularly the African Continental Free Trade Area (AfCFTA), to support industrial development through regional integration, collective bargaining, and coordinated industrial policy. The paper calls for a rethinking of Africa's place in global production, anchored in regional value chains and strategic industrial policy. It especially highlights that, to succeed in a process of sustainable structural transformation, there is a need to develop domestic linkages (consumption, production, fiscal, and technological) and emphasises the importance of building intra-African supply chains led by African manufacturers.

Keywords: Global value chains, Industrial policy, Africa, AfCFTA, Trade liberalisation, Regional integration, Sustainable structural transformation

JEL codes: F13, F23, F54, F63, L16, O25, O55,

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1. Introduction

Although African countries are among the lowest contributors to greenhouse gas emissions, the continent is already among the most at risk from climate change with projections indicating worse to come (WMO 2024). These risks include desertification, biodiversity loss, water shortages, reduced food production, droughts, floods, extreme heat, increased human morbidity and mortality, and extreme weather events. This vulnerability is further exacerbated by the continent's rapidly growing population, which is expected to reach nearly $2.5 billion by 2050 (IPCC, 2023). To tackle these problems, it is essential to enhance resilience to climate-related shocks, reduce dependence on activities at risk from climate change (mainly in the primary sector), and diversify economic activity to ensure a swift recovery when shocks hit, including the domestic production of critical goods needed during emergencies. To effectively mitigate and adapt to these challenges, African nations must mobilise significantly more resources for productive investment, access technologies that are not yet widely available to them, and profoundly change the structure of their economy.

The African continent will need to undergo a process of sustainable structural transformation to turn these challenges into opportunities (Kozul-Wright, 2024). We define structural transformation as changes in the activities and sectors of the economy with the potential for sustained job creation and high productivity growth, particularly through increased capital formation and cumulative technological improvements (Andreoni et al., 2021). However, in the context of the climate threat, structural transformation even in low-income low-emitting countries will involve jumping into entirely new processes and products. A comprehensive industrialisation strategy is necessary to move on all these fronts.

If African countries succeed in meeting this challenge, they will not only establish the kind of virtuous development circles that have eluded most of them in the past but also capitalise on the increasing global demand for the outputs of sustainable, green industries. This transformation will, however, require significant changes in how African economies operate, including the development of new institutions, adjustments in rent distribution, and the construction of new infrastructure (Andreoni and Chang, 2022).

Key to a sustainable structural transformation across the African region is the development of production capabilities. Developing production capabilities in Africa involves fostering inter-industrial linkages. This includes the development of production, consumption, fiscal, and technological linkages between local industries (Andreoni, 2019; Hirschman, 1958). We will define this system of interlinked industries with complementary capabilities as Local Production Systems (LPS). The creation of LPS is important as it strengthens local capabilities while enhancing the competitiveness of domestic industries. Moreover, by fostering collaboration among firms and economic actors, LPS can facilitate knowledge transfer, encourage innovation, and improve productivity, ultimately contributing to long-term economic development at the regional and national levels (Andreoni, 2019).

An important aspect of the industrialisation process is the ability to acquire knowledge of more advanced technologies and production processes, mainly but not exclusively, from advanced economies and adapt these to local conditions. While cost is likely a significant obstacle to such transfers, the main challenge often lies with mastering a process of learning by doing. One approach, used in some earlier industrialisation episodes, is to host the entire production chain of foreign firms by offering a protected

domestic market to sell to or, using sizeable financial incentives, with the prospect of launching an export drive to third markets.

In the case of Africa, however, this approach is limited by the absence of both sizeable domestic markets and available fiscal space. A widely suggested alternative approach to compensate for these weaknesses is integrating local industries into parts of Global Value Chains (GVCs) including through the use of Special Economic Zones (Oqubay et al., 2020). A value chain describes the series of activities—design, financing, fabrication, assembly, marketing, distribution, and post-sale support—needed to conceive, produce and deliver a particular good (and in some cases services) to its final user. Their global dimension refers to the international organisation of these activities, which are increasingly divided among multiple firms in different countries. The strategy of some East Asian countries to integrate into GVCs and subsequently diversify into a range of economic activities, as they caught up with the West, is often cited as the ideal model, and the reason behind what is called the "Asian Miracle" (World Bank, 1993).

This development strategy has, so far, failed to bring about a significant transformation in Africa. While some African countries have long been integrated into upstream tasks in commodity chains, primarily in agriculture and mining, they have been unable to leverage their position to move towards greater economic diversification. Similarly, those countries, especially in North Africa, that have managed to enter manufacturing value chains by attracting large Transnational Companies (TNCs), have also remained stuck in low value-added segments of these chains. The bulk of those countries' value added is captured by the lead TNC and their high-end suppliers (Andreoni, 2019).

This paper will examine the relationship between value chain participation and the development of LPS in Africa. More precisely, it will focus on the processes of collective learning, linkage development and value addition within these systems, to identify choke points and constraints that policymakers will need to address to see improved outcomes (Andreoni, 2019).

The starting point is a recognition that GVCs are not based on a chain of independent economic actors; rather, they are driven by lead firms whose control over strategic links in the chain, gives these firms coordinating power over upstream and downstream actors. Lead Firms determine where value is created within the chain and allow them to capture rents from other actors.

Moving away from this subordinate position and strengthening learning capacities will involve fostering the emergence of African-led manufacturing chains. This in turn requires:

- The development of local production systems across the continent
- Analysing the readiness of African countries for the emergence of African Original Equipment Manufacturers (OEMs)
- Identifying the policies required to transition toward African Original Brand Manufacturing (OBM) and fostering the creation of regional value chains driven by African economic actors.

In this overview chapter, and in the subsequent outputs of this series, we will focus on a select group of key countries and products. The countries are Egypt, Morocco, Nigeria and South Africa, chosen for their diverse geographical, historical, and economic profiles, their regional economic influence, and their economic ability to drive the reconfiguration of new supply chains in Africa. The analysis will focus on two supply chains: (i) The Electric Vehicle supply chain, which relies on critical minerals sourced in Africa. (ii) The food processing supply chain, which provides multiple examples of supply chain upgrading within

Africa. Both are considered essential for Africa's sustainable industrialisation and illustrate the continent's position within the Global Value Chain.

The empirical work of the paper focuses on the merchandise trade, due to the difficulty of having reliable data on services trade, especially in Africa. Three main databases will be used for the following study. The first is the BACI-CEPII Database from Gaulier & Zignago (2010), which, at the beginning of the study, covers the period from 1995 to 2022. It includes data on over 5,000 products exchanged between more than 200 countries and territories at the Harmonised System 6-digit level, including all African countries. Regarding data on Input-Output linkages, we will rely on the ICIO-OECD database (ICIO, 2020.), which measures inter-industry linkages between 76 countries and territories from 1995 to 2020. Finally, to measure value-added, the article uses the TIVA Database, which is derived from the ICIO-OECD and provides data on production and value-added for 76 countries and territories from 1995 to 2020 (Guilhoto et al., 2022). Both ICIO and TIVA provide data for 8 African countries Egypt, Cameroon, Cote d'Ivoire, Morocco, Nigeria, Senegal, South Africa and Tunisia.

The rest of the chapter is divided into five sections. The second section discusses the major changes in the organisation of the value chain at the global level, the shift in the gravity of trade toward China, and the rise of protectionism in the West. The third section provides an overview of the African trade landscape, highlighting African colonial heritage, discussing the rise of Chinese imports, and the state of intra-African trade. The fourth section discusses the position of African countries in GVCs and the lack of development of local supply chains on the continent. The fifth section discusses the institutions of trade in Africa, first addressing the rules of trade imposed on African countries and then the institutions established to support trade by African countries. The fifth section concludes.

2. The Reconfiguration of Global Value Chains

2.1 The general context

In the 1980s, occurred three political phenomena (UNCTAD, 2018): the end of the East–West divide, which opened new markets and sources of labour in socialist and ex-socialist countries for Western companies; the shift in developing countries from import substitution strategies to export-oriented development strategies; and the promotion by western-led multilateral institutions of a more strident liberal ideology. Williamson's (2004) Washington Consensus was the codification of this ideology. Economically, it translated into the promotion of rules protecting international investment, the flexibilisation of labour markets, the reduction in tariff barriers, increased protection of personal and intellectual property, and the reduction of the role of the state. Those rules were first pushed on newly opened countries through international financial organisations, and consolidated (particularly during the 1990s) with the negotiation of Free Trade Agreements, bilateral investment treaties and Investor–State Dispute Settlement rules (A deeper discussion on the effect of those institutions can be found in Section five).

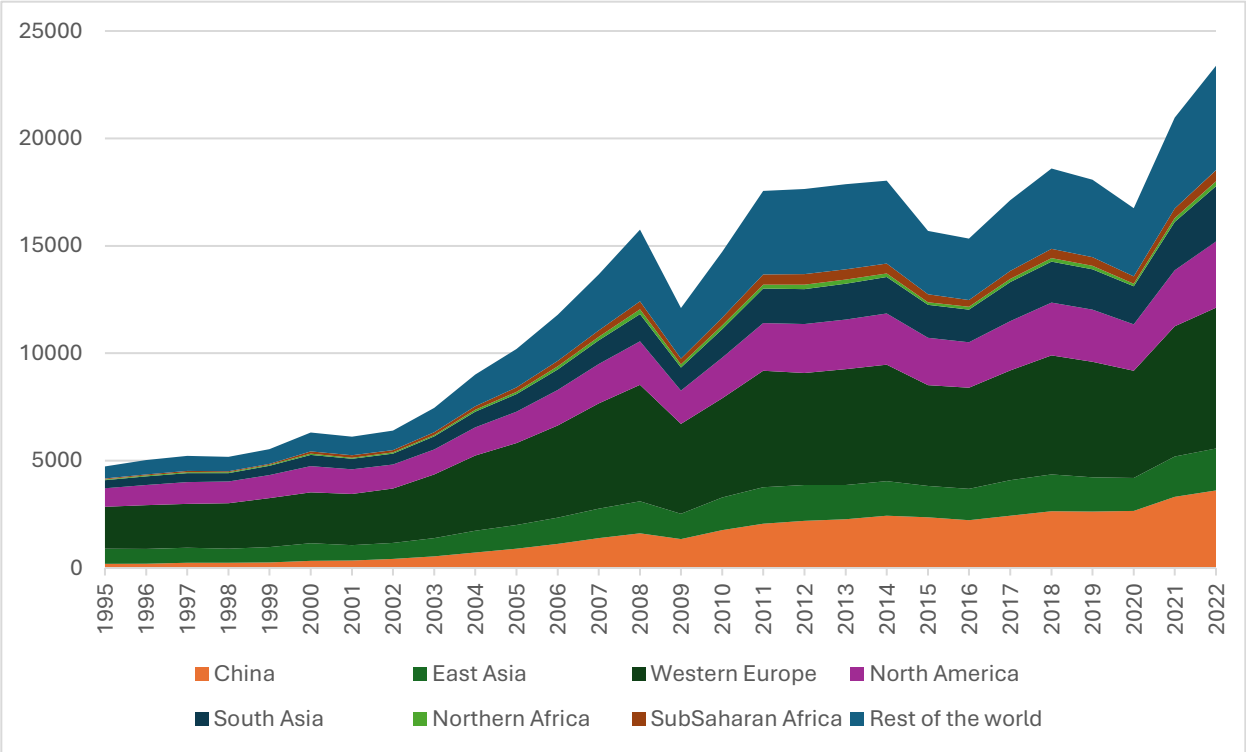


Figure 1. Total gross exports by region in billion USD

Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010).

This change in the global political economy, along with changes in technology, set the stage for a rapid expansion in international trade.

Additionally, the reduction in international coordination costs due to the emergence of new communication technologies, along with low transportation and trade costs, allowed for the separation of

different tasks in the production process and their offshoring at the global level through the spread of value chains (Baldwin, 2006)

This process of reorganisation of production activity within GVCs is still ongoing, fuelling this current phase of "hyper-globalisation". In three decades, total exports went from $4,730 billion in 1995 to $23,379 in 2022 (Figure 1).

TNCs are the main actors in GVCs, as they extend their reach to an increasing number of countries. Since the mid-1980s TNCs have increased their market share, size and reach abroad through a series of mergers and acquisitions. This translates into acquiring foreign competitors in countries, both developed and developing, that have liberalised their capital markets and privatised state enterprises. This acquisition has been done with the aim to access markets, especially in newly opened socialist countries and take advantage of economies of scale and scope. An example is the wave of European companies buying recently privatised industries in Eastern Europe (Berend, 2009). Similarly, TNCs expanded their value chains to newly opened countries to benefit from low labour costs. This was the case in Eastern Europe for German companies (Pavlínek, 2015), or in China for Korean and Japanese companies (Gereffi, 1999). A similar process occurred in Africa in which foreign companies took ownership of African companies to access African markets but also to access African natural resources (Simutanyi, 2008; Daniel, 2005; Craig, 2001; Young, 1991).

The result has been the emergence of powerful international firms operating in increasingly concentrated markets. This led to an increasingly heightened ability, for international firms, to influence both input costs and the price of final products. Their market power has been extended and protected with the help of FTAs, and particularly the inclusion of clauses linked to intellectual property rights. This strategy applies not only to innovation and knowledge-intensive companies, but also to industries considered low-technology. This can be explained only in part by the incorporation of innovations and designs into the value chain but more generally by the deployment of intangible assets to generate rents for the lead firm. Each of these elements increases the market power of companies that own the required intangible assets (patents, copyrights, etc.)(*WTO*, 2012). This means that even in a global context that promotes free trade, these intangible assets act as barriers for new entrants, especially in developing countries (UNCTAD, 2018).

Another aspect is that the intangible nature of the value of traded goods and the global reach of companies allow for profit-shifting strategies. One example is when a subsidiary of a TNC operates in a local market but holds its intellectual property elsewhere, often in a tax haven. From the profit made in the country, the company deducts the cost of using the intellectual property by paying excessive royalties to its subsidiary in the low-tax country. These types of strategies make it harder for developing countries, especially fiscally limited African countries, to collect tax from TNCs (Gabanatlhong et al., 2024; Wier, 2020; UNCTAD WIR, 2015).

2.2 The reconfiguration in trade flows

These changes in the organisation of production and trade have helped reconfigure the international trade landscape over the past few decades. The regions which have seen the biggest increases in total exports

in the last 30 years are Western Europe[1], which increased total exports by $4.5 trillion; North America (USA, Canada, Mexico), which increased total exports by $2.3 trillion; and East Asia (China, Japan, Korea, Taiwan), which increased total exports by $4.6 trillion. With China alone contributing $3.4 trillion (see Figure 1).

This is partly due to the development of regional value chains in those three blocks, which are at the core of international trade (Figure 2, 2002). In the early 2000s, the USA, Germany, and Japan (with China) were key hubs for regional trade in their respective regions. The USA dominates trade in North America. Trade between the USA and Mexico, for instance, follows an offshoring relationship in which intermediate goods are shipped to Mexico for intermediate stages of production before being re-exported to the USA. Germany plays a central role in Europe, offshoring part of its production to Eastern European countries to benefit from low-cost and skilled labour. A key difference, however, is that Germany neighbours other developed countries with which it also engages in supply-chain trade, such as Austria, the Netherlands, and France. Finally, Japan and China's relationship also initially revolved around offshoring. However, the dynamics of trade among these countries have shifted over time (Baldwin & Lopez-Gonzalez, 2015).

Trade flows between core regions intensified during the period, while trade flows that does not involve the core regions and their immediate neighbours are of a smaller size (See Figure 2). Concerning trade between core regions and peripheral regions[2], the only region that experienced an increase in exports between 2012 and 2022 toward all regions is East Asia (See Table 6). South Asia and Eastern Europe increased their trade flows within their respective regions and with all core regions during this period. North America and Western Europe reduced their exports only in Ex-USSR region and Sub-Saharan Africa.

North Africa and Sub-Saharan Africa exhibit distinct export dynamics. Regarding trade with core regions, North Africa increased its exports only to Western Europe, while Sub-Saharan Africa expanded its trade with both Western Europe and East Asia. Concerning, South-South trade, North Africa increased its exports to South Asia, the Middle East, the Ex-USSR region, and Sub-Saharan Africa. Sub-Saharan Africa, in contrast, increased its exports to Eastern Europe, South Asia, and the Middle East. African countries decreased their exports toward the American continent and the Pacific.

Among other peripheral regions, the Ex-USSR is the only one that experienced a decline in trade, with decreases in total exports, total imports, and intra-regional trade. This decline can partly be attributed to sanctions imposed on Russia following its invasion of Ukraine in 2022. However, the Ex-USSR region increased its exports to all regions in Asia, as well as to Central and South America. It also expanded its imports from East Asia, the Middle East, and North Africa.

Additionally, total intra-regional trade decreased in most peripheral regions, with the only exceptions being Eastern Europe, South Asia, and the Middle East. Core-to-core trade increased from $6,942 billion to $9,322 billion. There are more exports from the periphery to the core than in the reverse direction.

[1] Western Europe is defined as the group of European countries that were not part of the communist bloc during the Cold War.
[2] The periphery regions are defined as non-core region.

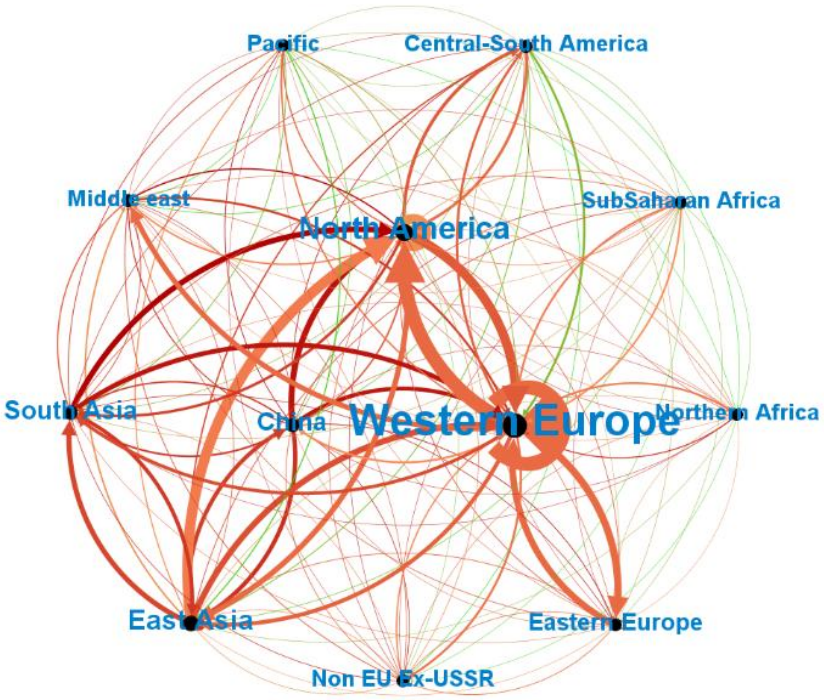


Figure 2.a Global network of merchandise trade, 2002

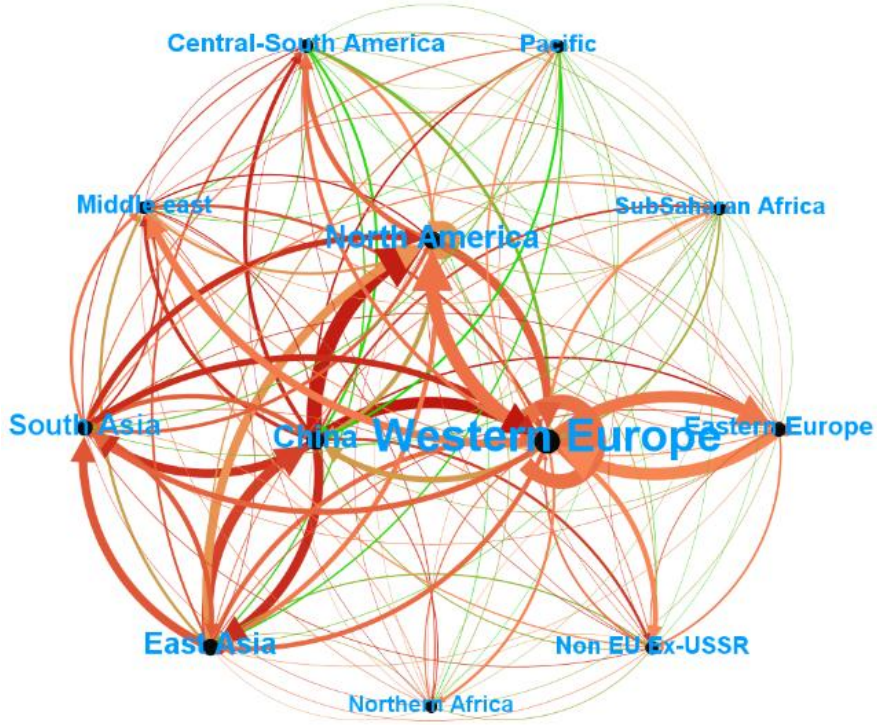


Figure 2.b Global network of merchandise trade, 2012

Percentage of manufacturing in total exports

0 100

Figure 2. Global network of merchandise trade

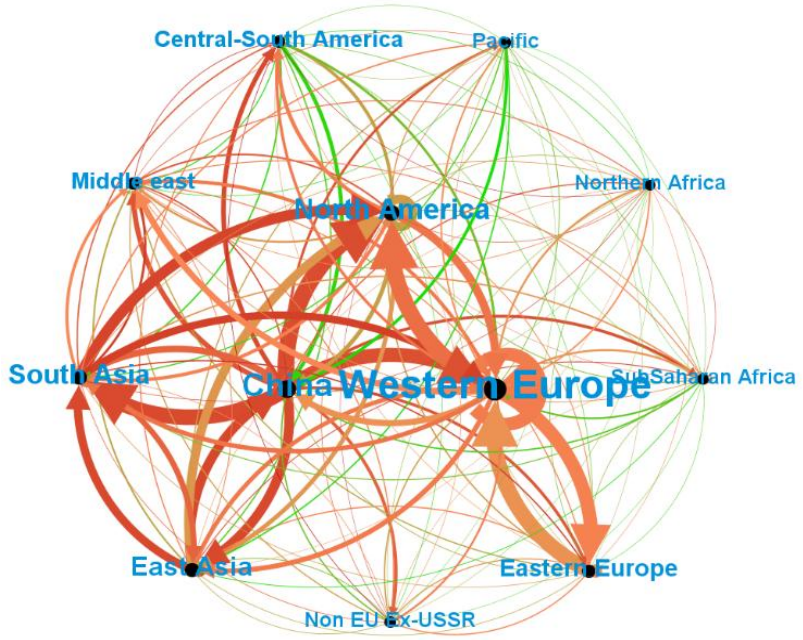


Figure 2.c Global network of merchandise trade, 2022
Note: Percentage of manufacturing in total exports.
0 100

Figure 2. Global network of merchandise trade

Note: To provide a more accurate description of the dynamic China is separated from East Asia. Table 6 provides the corresponding values for the years 2012 and 2022. Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010).

Finally, despite its increase, intra-periphery trade in 2022, at $3,378 billion, remains lower than exports from the periphery to the core for both 2022 ($5,139 billion) and 2012 ($3,877 billion).

This two-speed integration into GVCs has had the effect of further marginalising African countries, as most of the trade-intensive manufacturing goods, especially the trade in goods that can improve productivity, which are capital goods and intermediary inputs, occurs between core economies.

2.3 The Rise of China

In the early 2000s, China and Japan had similar levels of exports. However, over time, China expanded its exports until it became one of the main trade partners at the global scale (Zhu et al., 2014) (see Figure 2, 2012). The centre of gravity of the world trade, which was originally between the USA and Western Europe, shifted eastward toward China (see Figure 2). China has become the world's largest exporter of merchandise, exporting goods worth $3.42 trillion in 2023 (*Observatory of Economic Complexity*, 2025).

China is now one of the top exporters in most sectors, with market dominance ranging from light manufacturing and heavy industries to chemicals (Ferrarini & Scaramozzino, 2015; Hidalgo, 2009). Additionally, China has become a major destination for natural resource trade, especially due to its processing capabilities and large industrial demand. In this context, Chinese companies are now deploying their own supply chains in Asia and Africa while simultaneously gaining market share in global markets.

Technology conglomerates like Huawei, Xiaomi, and ZTE are now capturing market share even in developed economies. These companies are at the forefront of many innovations in frontier technologies such as semiconductors, electric vehicles, and self-driving cars.

This surge in Chinese exports has been addressed by the two other blocks by using protectionist policies. Both the European Union (EU) and the US government have established trade restrictions on Chinese goods. Particularly green goods Chinese exports, such as EVs and solar panels (Global Trade Alert, 2024). US restrictions on imports of Chinese goods have led to a shift in trade flows (Alfaro & Chor, 2023). As the US engages in trade wars with China, the US is increasing its imports from non-aligned countries (Alfaro & Chor, 2023). Those non-aligned countries are also increasing their imports of Chinese products, particularly in goods similar to those they export to the US. This means that direct trade between the US and China is being replaced by indirect trade involving a connector country such as Vietnam and Mexico (Alfaro & Chor, 2023; Gopinath et al., 2025).

China's emergence as the factory to the world has provoked a geopolitical response from advanced economies through a variety of trade and technology measures aimed at slowing its advance. This has been compounded by the response to the Russian invasion of Ukraine which has led to an increase in sanctions, tariffs, and policies targeting Russian exports but also extending to other countries. The war and the resulting sanctions have had negative consequences on the supply of agricultural goods to Africa, as Russia and Ukraine are two major suppliers (Balma et al., 2024).

A second Trump presidency increases the risk of trade wars between the three blocks (the USA, Europe, and China). Trump's tariffs are not solely targeted at Chinese imports but also at a broader range of countries including Canada, Mexico and members of the European Union. These tariffs are likely to be met with retaliation. With further rounds of escalation possible.

These trade policies do not rely solely on targeted tariffs; they are also accompanied by subsidies for domestic companies in both domestic markets and for supporting exports (European Parliament, 2021; The White House, 2021). These rising subsidies justified by Chinese trade have also had a negative impact on developing countries, including African countries, faced with heightened trade barriers.

However, the rivalry between the Western world and China can be used as an opportunity for African countries to negotiate better terms for their industrialisation—better terms in their integration into global value chains, increased knowledge transfer, and improved negotiations in both bilateral and multilateral agreements.

3. African Trade Landscape

Sixty years after a wave of independence struggles freed Africa from colonial rule, many countries in the region continue to exhibit a pattern of economic specialisation and integration inherited from their colonial past. They remain active in similar sectors and have preserved their economic ties with their former colonisers. Africa's share of global trade remains at levels similar to those of 60 years ago, while 45 of the 53 countries in Africa are still officially classified as commodity-dependent (UNCTAD, 2022). Trade within Africa remains marginal, with only a few countries on the continent engaged in intra-regional trade. One significant change in recent years has been the emergence of China as a major trade partner and source of foreign direct investment. China has become the main destination for Africa's exports of extractive minerals, while Chinese industries are increasingly interested in African markets. The important question for African policymakers is whether this changes their position in the international division of labour or locks them into a more familiar pattern of hyperspecialization?

3.1 Legacy of European Trade

The African continent remains strongly influenced by centuries of colonialism. Under European rule, it underwent profound structural and geopolitical changes that saw the establishment of national economic entities based on the export of primary commodities, while relying on trade with colonial powers both for markets and for non-primary imports.

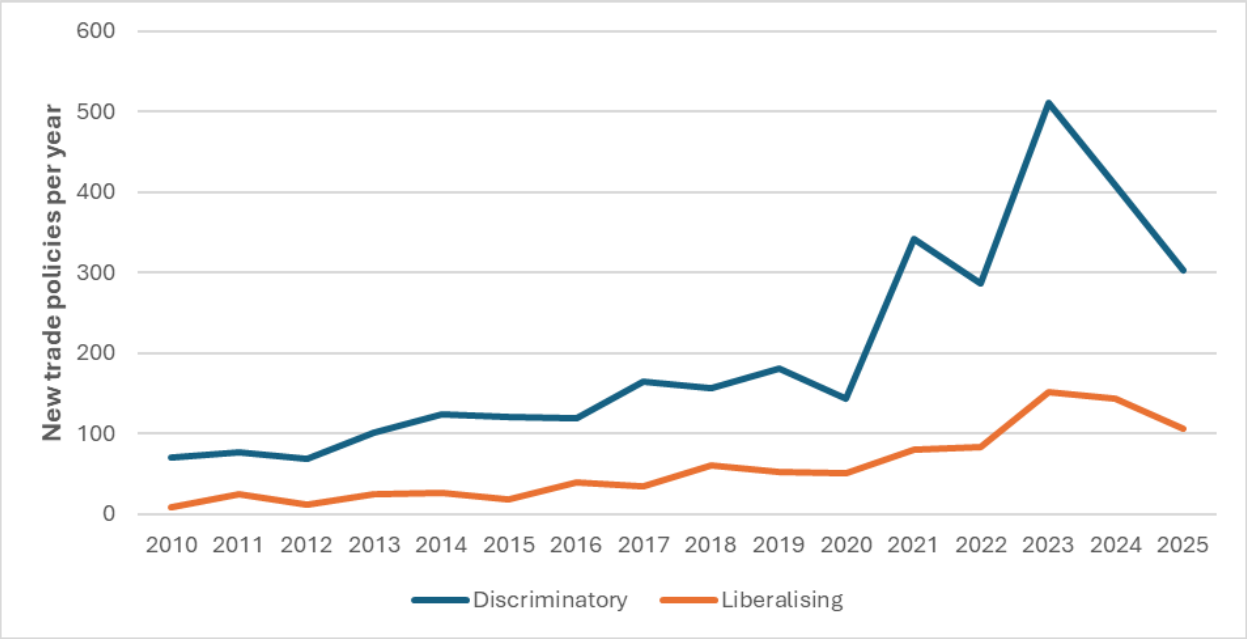


Figure 3. Rise in Protectionist Policies

Note: To monitor the evolution of trade policies, the Global Trade Alert classifies every governmental policy based on whether it is liberalising trade or discriminatory against other countries. Source: Global Trade Alert.

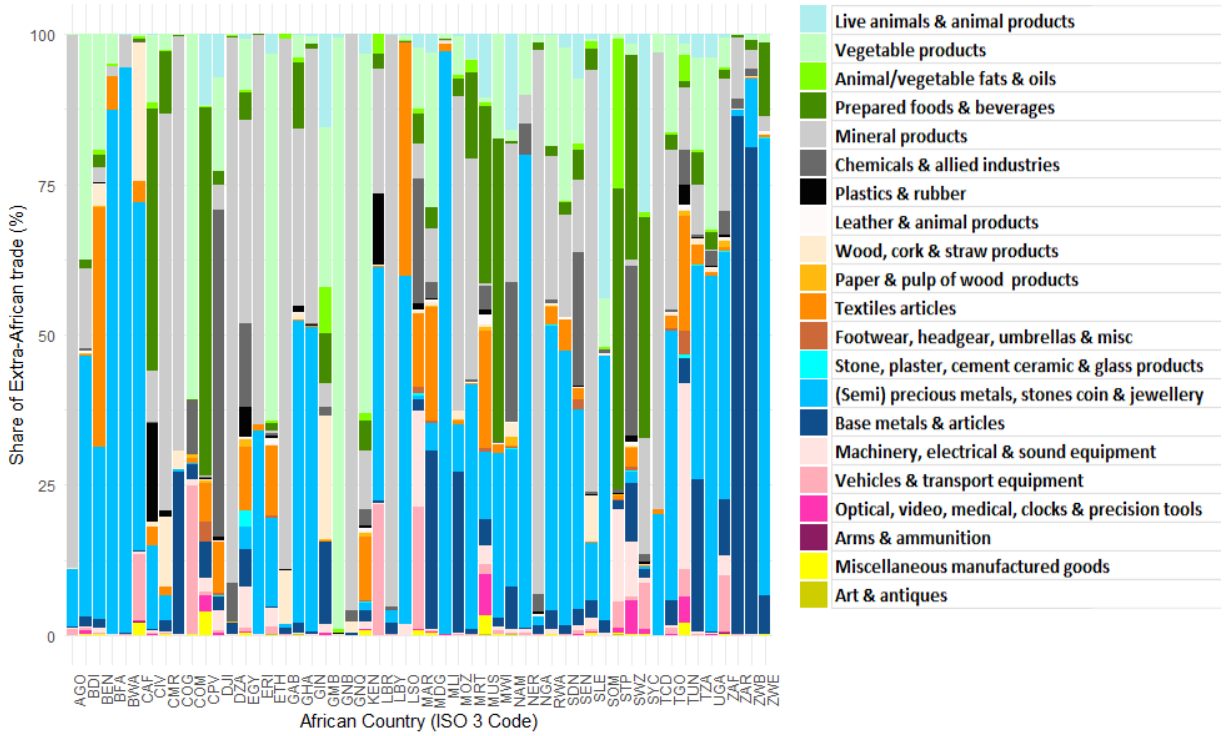


Figure 4 Shares of HS sections in the Extra-African Exports of African Countries (2022)

Note: The correspondence table for Country ISO Code can be found in Appendix Table 5.

Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010).

Manufacturing industries were discouraged while exports from the colonies that competed with the coloniser's products were banned (Austin et al., 2017; Chang, 2002). As such, supply chains in colonial Africa generally involved extracting natural resources, growing cash crops and shipping those products to Europe for further processing. This extractivist mode of production did require significant investments, particularly in infrastructure, but institutionalised violence and forced labour were an intrinsic part of an economic model that generated highly unequal outcomes with limited development impacts (Cogneau et al., 2018; Frankema & Van Waijenburg, 2014). A telling example is rubber extraction in the Congo Free State (Anstey, 1971; Peemans, 1975).

To this day, economic capacity, infrastructure, and institutions reflect the legacies of this period (See Box 1). This history is also reflected in the way many African countries are integrated into GVCs involving the extraction of natural resources with little domestic processing or linkages to the wider economy. While some countries have diversified across several primary commodities, such as Senegal or Côte d'Ivoire, African countries can generally be categorised into distinct groups based on their primary export sectors:

1. Agricultural and Animal-Based Food Exporters: These economies primarily export agricultural commodities such as coffee, tea, cocoa, nuts, flowers, vanilla, cotton, or animal products, including fish. They are highly dependent on global agricultural markets and often face challenges such as price volatility and climate change. They struggle with value addition, relying on foreign countries

for further processing. Notable countries in this category include Guinea-Bissau, Ethiopia, Comoros, and Seychelles.

2. Oil and Gas Exporters: This category encompasses economies that depend on hydrocarbon exports, including crude oil, refined petroleum, and natural gas. These countries rely heavily on hydrocarbon revenues, making them vulnerable to global Oil and Gaz price fluctuations. The leading oil and gas exporters include Algeria, Angola, Nigeria, Libya, Cameroon, and the Republic of Congo.

3. Mineral and Metal Exporters: These economies are highly dependent on the extraction and export of mineral resources such as gold, diamonds, platinum, cobalt, copper, bauxite, and uranium. While they occupy an upstream position in GVCs, they often struggle with processing and value addition, relying on foreign countries for transformation. Major countries in this category include the Democratic Republic of the Congo, Ghana, Botswana, Mauritania, and Zambia. Some of these countries are also key exporters of highly prized commodities known as critical minerals. An emerging advantage that some mineral exporters have is in the area of "critical minerals". These minerals have become central in a number of cutting-edge industries in the digital and green economies. In some cases, they are co- or by-products of other minerals rather than mined for themselves. The production of those minerals, therefore, tends to be inelastic and depends on the economic sustainability of the primary mineral extracted (Bellois & Ramdoo, 2023).

4. Manufacturing Exporters: These economies have developed more advanced industrial capabilities linked to the automotive sector, chemicals, electronics, pharmaceuticals, textiles and even aerospace components. They tend to benefit from higher levels of foreign direct investment and a better integration into GVCs. Leading countries in this category include South Africa, Egypt, Morocco, and Tunisia.

Table 1 provides a summary of the African balance of trade with the rest of the world. The African continent is a net exporter in only five sectors. The two main sections in this category are the Mineral Products section and the (Semi-) Precious Metals, Stones, Coin & Jewellery section.

While Mineral Products is the largest export sector for the African continent, it is also the largest import. There are two main explanations. The first is the wide variety in natural resource endowments, especially in the "Mineral fuels, mineral oils; bituminous substances; mineral waxes" section (27)[3]. Some African countries, such as Nigeria, Algeria, Libya and Angola, are rich in oil resources, while others are not. The second explanation is that oil-rich African countries do not necessarily have the processing capabilities to refine crude oil for domestic consumption. Exporting to third countries for transformation, and reimporting the processed oil, can solve this problem. Nigeria in 2022, for instance, exported $52 billion of Crude petroleum while importing $21 billion of refined petroleum.

The next largest imports are in the machinery, electrical and sound equipment, highlighting the African continent's dependence on capital goods, followed by vehicle transport equipment and the chemicals and allied industries. Finally, the African continent is also a net food importer. In Animal products, Vegetable products and processed food section.

[3] The African continent exported $278 billion of Oil while importing $139 billion of Oil.

Table 2 provides a breakdown of the direction of exported goods. In the aggregate, the European continent remains the main destination for manufactured goods, but Asia is replacing Europe as the destination for extractive commodities.

Box 1: Infrastructure for Trade in Africa

In Africa, most of the transportation systems (roads and railways) are a legacy of colonial times. Colonial authorities believed that investment in transport infrastructure and the reduction of transport costs would inevitably lead to economic development. However, most of the infrastructure left by these colonial authorities was designed to facilitate the extraction and export of products to Europe (Cogneau et al., 2018; Peemans, 1975). For instance, most railways connect mining regions to seaports. These infrastructures were also built to enable the transport of troops for military purposes or to support colonial administration. The structure of the transportation network was not intended to foster regional supply chains or facilitate industrial development, especially since little effort was made to connect colonies to one another. Since then, most African countries have added little to the stock of roads inherited from the colonial era. Due to civil wars and a lack of investment, some countries (such as Burkina Faso, Ethiopia, and Mozambique) experienced a decrease in their mileage of roads between 1963 and 1997. Currently, Africa lacks the quality and quantity of transport infrastructure necessary to connect it to the global arteries of commerce and industry (Njoh, 2008)

Figure 5 Map of trade infrastructure in Africa

Source: Infrastructure Maps (2025)

Table 1: Trade balance of the African continent by HS product sections (2022)

	Name	Exports	Imports	Balance
1	Live animals & animal products	7.266	15.963	-8.697
2	Vegetable products	34.782	48.572	-13.790
3	Animal/vegetable fats & oils	2.548	13.985	-11.437
4	Prepared foods & beverages	19.743	27.627	-7.885
5	Mineral products	321.064	148.193	172.871
6	Chemicals & allied industries	31.962	67.311	-35.349
7	Plastics & rubber	7.371	37.519	-30.148
8	Leather & animal products	1.129	2.078	-0.949
9	Wood, cork & straw products	4.795	4.441	0.354
10	Paper & pulp of wood products	2.071	12.042	-9.971
11	Textiles articles	21.181	35.505	-14.324
12	Footwear, headgear, umbrellas & misc	1.458	6.789	-5.331
13	Stone, plaster, cement ceramic & glass products	1.972	8.047	-6.075
14	(Semi) precious metals, stones coin & jewellery	132.040	5.216	126.824
15	Base metals & articles	64.562	52.926	11.637
16	Machinery, electrical & sound equipment	22.221	115.287	-93.066
17	Vehicles & transport equipment	22.836	71.416	-48.580
18	Optical, video, medical, clocks & precision tools	1.718	10.846	-9.129
19	Arms & ammunition	0.178	0.980	-0.802
20	Miscellaneous manufactured goods	1.533	11.308	-9.774
21	Art & antiques	0.212	0.000	0.212

Note: In billion USD. Only African-Non-African trade is accounted. Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010).

Relative to other export destinations, the Americas and Oceania are a minor destination of exports for African goods. For some HS Sections, the African market is the main destination of exports. For instance, 58% of African exports in the Paper & Pulp of wood section were directed toward other African countries. This is notably the case for the Chemical & Allied industries: 33% of African exports in this section go toward other African countries. This section includes fertilisers. Notably, while animal products are aimed mainly at African markets, vegetable products go mostly to European markets.

In terms of imports, the main source of manufactured products is not Europe but Asia. Europe, along with South America, is the primary supplier for most agro-food products, except for animal/vegetable wax and oil to Africa. Europe is also the main source of military hardware and precision tools. Other African countries are a major source of imports only in one sector: the (semi)precious metals and jewellery category.

Table 3 provides a breakdown of the 5 biggest destinations of exports by African countries. It highlights several key trends in trade relationships:

China has emerged as a dominant trade partner, frequently appearing as the top export destination for many African countries, particularly those rich in raw materials such as Angola, the two Congos, and South Africa. This reflects China's increasing demand for minerals, metals, and energy resources. The Middle East, particularly the United Arab Emirates, is also a key market for African exports, likely due to the strong demand for gold and precious metals, with Dubai serving as a major global refining and trading hub. Similarly, India also figures among Asia's trade partners, though on a lesser scale compared to China and the UAE. Overall, this trend signals a growing shift towards South-South trade linkages.

European countries continue to play a significant role; however, former colonial powers are struggling to remain the primary export destinations for their former territories. In 2022, of the 24 African countries once ruled by France, France was the main export destination only for Tunisia and ranked second for just four former colonies/mandates: Cameroon, Madagascar, Morocco, and Niger. Likewise, the United Kingdom is not a major export destination for African countries, appearing only as the third largest for Seychelles and the fourth largest for Liberia. In contrast, other European countries such as Switzerland, the Netherlands, Spain, and Italy feature more prominently, partly due to their roles as key entry points to the European market. The United States also appears as a significant export destination for some countries, such as Kenya and Madagascar.

While most of the trade partnerships are with non-African countries, some African countries do appear in those rankings. For instance, the biggest export destination in intra-African trade is South Africa, followed by Mali, the DRC and Kenya. These flows are influenced by geographical proximity, as neighbours tend to trade more extensively with each other.

Table 2 Trade by HS Section (2022)

Origin of Africa's Import by HS Section (%)	Africa	Asia	Europe	N. America	Oceania	S. Americ
Live animals & animal products	19.87	13.15	36.31	1.20	8.76	20.71
Vegetable Products	13.98	17.74	40.32	4.89	3.39	19.69
Animal/vegetable wax, fats & oils	14.77	63.33	12.72	0.11	0.06	9.00
Prepared foods, tobacco & beverages	26.31	23.80	30.84	1.26	0.30	17.50
Mineral products	17.46	41.54	38.09	0.61	0.39	1.90
Chemicals & allied industries	18.02	34.31	42.49	2.15	2.11	0.92
Plastics & rubber	9.77	62.77	26.69	0.21	0.24	0.33
Leather, animal skin, gut & animal products	6.21	72.41	18.97	0.13	0.52	1.77
Wood, cork & straw products	16.39	33.88	47.66	0.12	0.18	1.77
Paper & pulp of wood products	15.91	32.01	48.37	0.35	0.61	2.74
Textiles articles	9.35	72.47	17.58	0.22	0.20	0.18
Footwear, headgear, umbrellas & misc	6.88	86.14	6.31	0.08	0.06	0.53
Stone, plaster, cement ceramic & glass products	14.35	61.54	23.53	0.11	0.13	0.34
(Semi) precious metals, stones, pearls, coin & jewellery	43.12	32.77	19.60	3.82	0.59	0.10
Base metals & articles	17.32	57.84	23.51	0.28	0.25	0.81
Machinery, electrical & sound equipment	6.48	55.21	36.52	0.85	0.41	0.55
Vehicles & transport equipment	7.85	56.21	32.60	2.28	0.19	0.87
Optical, video, medical, clocks & precision tools	5.52	37.94	53.13	2.27	0.91	0.23
Arms & ammunition	5.66	26.86	61.07	0.42	0.81	5.17
Miscellaneous manufactured goods	5.32	76.96	17.08	0.23	0.12	0.30
Art & antiques	12.67	14.16	70.72	0.32	1.97	0.16

Destination of Africa's Export by HS Section (%)	Africa	Asia	Europe	N. America	Oceania	S. America
Live animals & animal products	38.57	29.53	29.51	0.70	0.54	1.16
Vegetable Products	17.41	35.88	43.69	2.17	0.52	0.32
Animal/vegetable wax, fats & oils	53.20	11.61	31.10	1.90	0.34	1.85
Prepared foods, tobacco & beverages	30.70	21.80	44.03	2.09	0.68	0.70
Mineral products	9.57	36.70	50.15	1.01	0.53	2.05
Chemicals & allied industries	33.51	19.73	30.16	2.11	0.90	13.60
Plastics & rubber	38.38	20.28	38.22	1.34	0.31	1.47
Leather, animal skin, gut & animal products	14.62	28.43	51.96	2.33	1.35	1.32
Wood, cork & straw products	19.30	50.64	28.62	1.16	0.24	0.04
Paper & pulp of wood products	58.29	27.26	12.49	0.60	0.50	0.87
Textiles articles	19.06	24.12	53.29	1.99	0.56	0.97
Footwear, headgear, umbrellas & misc	27.42	3.71	67.61	0.80	0.30	0.15
Stone, plaster, cement ceramic & glass products	44.64	19.90	30.64	1.33	1.14	2.35
(Semi) precious metals, stones, pearls, coin & jewellery	4.64	74.45	17.02	2.61	0.95	0.33
Base metals & articles	17.72	56.87	21.37	1.28	2.30	0.46
Machinery, electrical & sound equipment	27.97	12.18	55.88	1.22	0.85	1.90
Vehicles & transport equipment	20.37	8.39	67.49	1.43	1.38	0.93
Optical, video, medical, clocks & precision tools	34.82	18.40	41.93	1.56	2.09	1.20
Arms & ammunition	15.21	55.00	9.57	0.11	19.35	0.76
Miscellaneous manufactured goods	42.69	12.45	42.20	0.81	0.97	0.88
Art & antiques	5.71	29.66	58.40	4.07	1.70	0.46

Note: Origin and destination of African trade by HS section
Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010).

Table 3 Five main destination of exports by African countries

Country	Rank 1		Rank 2		Rank 3		Rank 4		Rank 5		Country	Rank 1		Rank 2		Rank 3		Rank 4		Rank 5	
	Name	%	Name	%	Name	%	Name	%	Name	%		Name	%	Name	%	Name	%	Name	%	Name	%
AGO	CHN	40	IND	9	NLD	7	FRA	7	ARE	7	MAR	ESP	18	FRA	17	IND	6	ITA	5	BRA	4
BDI	ARE	32	COD	14	CHN	5	SDN	5	DEU	4	MDG	USA	18	FRA	15	CHN	13	JPN	11	DEU	4
BEN	BGD	26	ARE	25	IND	21	CHN	4	EGY	3	MLI	ARE	74	CHE	17	AUS	5	CHN	1	TUR	1
BFA	CHE	74	ARE	7	MLI	4	SGP	2	CIV	2	MOZ	IND	22	ZAF	9	KOR	8	ITA	7	CHN	6
BWA	ARE	27	BEL	18	IND	15	ZAF	10	HKG	6	MRT	CHN	24	CAN	12	ARE	12	ESP	9	TUR	6
CAF	ARE	40	ITA	11	PAK	10	CHN	10	FRA	6	MUS	ZWE	11	ZAF	11	FRA	10	MDG	8	USA	7
CIV	CHE	9	MLI	8	NLD	8	USA	6	FRA	5	MWI	ARE	21	BEL	12	TZA	6	KEN	5	ZAF	5
CMR	NLD	19	FRA	15	IND	14	ESP	10	CHN	8	NAM	ZAF	28	BWA	11	CHN	10	ZMB	5	FRA	4
COD	CHN	54	SGP	5	ARE	5	HKG	4	TZA	4	NER	ARE	69	FRA	9	CHN	9	NGA	3	MLI	2
COG	CHN	39	IND	20	ARE	15	ITA	5	VNM	4	NGA	ESP	13	IND	12	FRA	7	USA	7	NLD	6
COM	TUR	23	IND	19	ARE	9	USA	9	IDN	8	RWA	ARE	32	COD	25	THA	5	USA	3	ETH	3
CPV	ESP	56	PRT	12	ITA	9	USA	6	IND	5	SDN	ARE	43	CHN	16	ITA	8	EGY	8	TUR	4
DJI	ETH	61	CHN	17	IND	7	JOR	2	CAF	1	SEN	MLI	18	IND	16	CHE	11	USA	8	CHN	4
DZA	ITA	29	ESP	12	FRA	12	USA	5	KOR	5	SLE	CHN	54	BEL	12	ARE	6	DEU	4	NLD	4
EGY	TUR	8	ITA	6	USA	6	ESP	6	IND	5	SOM	ARE	50	OMN	30	BGR	3	IND	3	KWT	2
ERI	CHN	52	ARE	33	KOR	9	JPN	2	MDG	2	SSD	CHN	44	ITA	26	SGP	12	JPN	9	ARE	8
ETH	ARE	17	USA	13	DEU	6	SAU	6	SOM	6	STP	NLD	26	FRA	11	BEL	11	PRT	8	AGO	6
GAB	CHN	43	KOR	8	ITA	7	IND	7	IDN	5	SWZ	ZAF	66	KEN	5	NGA	3	COD	3	MOZ	3
GHA	ARE	24	CHE	17	USA	14	IND	10	CHN	10	SYC	ARE	18	FRA	17	GBR	9	MUS	9	JPN	8
GIN	CHN	37	IND	27	ARE	25	CHE	3	ESP	2	TCD	DEU	25	CHN	21	ARE	20	TWN	12	FRA	10
GMB	IND	31	CHN	23	ITA	7	CHL	7	PRT	5	TGO	ARE	26	IND	11	CIV	11	ZAF	6	BFA	6
GNB	IND	92	CIV	2	TGO	2	NLD	1	KOR	1	TUN	FRA	22	ITA	16	DEU	14	ESP	4	LBY	4
GNQ	ZMB	21	ESP	15	CHN	15	IND	10	ITA	6	TZA	IND	27	ARE	11	ZAF	9	KEN	5	RWA	5
KEN	USA	10	UGA	9	PAK	7	NLD	7	RWA	6	UGA	ARE	31	IND	12	HKG	9	KEN	8	ITA	7
LBR	CHE	28	FRA	8	DEU	8	GBR	8	POL	6	ZAF	CHN	16	USA	7	DEU	7	IND	6	JPN	6
LBY	ITA	26	ESP	10	DEU	9	CHN	7	FRA	6	ZMB	CHE	30	CHN	18	COD	10	PCN	10	ARE	7
LSO	ZAF	37	USA	28	BEL	19	ARE	6	GBR	3	ZWE	ARE	57	ZAF	18	CHN	7	BEL	4	MOZ	2

Note: Colours correspond to continents. Yellow for Africa, Blue for Asia, Pink for Europe, Green for America, White for the rest. Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010).

3.2 Rise of Chinese trade in Africa

In 2009, China surpassed the United States to become Africa's largest trading partner and has since increased its trade to rival that of the European Union. Although this growth has fluctuated Chinese trade with Africa increased from less than $50 billion in 2005 to over $250 billion in 2023. As noted above, China is the main export partner for multiple African countries. For instance, 54 per cent of the Democratic Republic of the Congo's (DRC) exports, or $15.6 billion, went to China in 2022. In 1995, those exports amounted to just $1.46 million, representing less than one per cent of DRC's total exports. Among these exports, 43.2 per cent consisted of refined copper, while 36.9 per cent were cobalt.

Figure 6 illustrates the asymmetric nature of Chinese trade with Africa, with most African countries running a trade deficit with China. By comparison, Figure 7, presents the same data for the USA. China consistently recorded a major trade surplus with Africa from 2011 to 2022. This surplus peaked around 2015, coinciding with the commodity price shocks of 2015 (Chuhan-Pole, 2015). The export surplus rose again in 2018. The US followed a different trajectory in its trade with the continent, marked by a persistent trade deficit. While US exports to Africa remained relatively stable, the value of imports dropped sharply in 2014. At a more disaggregated level, both China and the USA run a trade surplus with most individual African countries. The discrepancy between aggregated and disaggregated US exports is due to the fact that the volume of trade with countries where the US has a trade surplus is lower than with those where it has a trade deficit.

The surge of Chinese imports may have negative effects on industrialisation prospects in the region due to the strong price competitiveness of Chinese firms compared to their African counterparts (Torreggiani & Andreoni, 2023; Busse et al., 2016 ; Edwards & Jenkins, 2015). Chinese exports create competition in African domestic markets, but also in markets to which African countries export. In the case of South Africa, this means a reduction in market share for companies exporting to other sub-Saharan countries (Edwards & Jenkins, 2014). Chinese companies are also competing in markets, which countries with some industrial capacity might see as potential areas for upgrading. This is particularly the case in low and medium-technology manufacturing sectors such as the apparel industries (Edwards & Jenkins, 2015). For African countries to upgrade their industries, trade protectionist measures may be required to counter the import competition from Chinese companies.

China has longstanding political and economic connections with Africa, going back to the Bandung Conference of 1955, but these have grown rapidly in recent decades. Its economic interests have focused on accessing Africa's raw materials, such as oil, gas, cobalt, tantalum, coltan, and other metals and minerals, which help sustain Chinese industrial output, and increasing manufactured exports to the growing African market, particularly higher value-added manufactured goods such as transportation equipment, machinery, electronic products, and consumer items (Shinn, 2023).

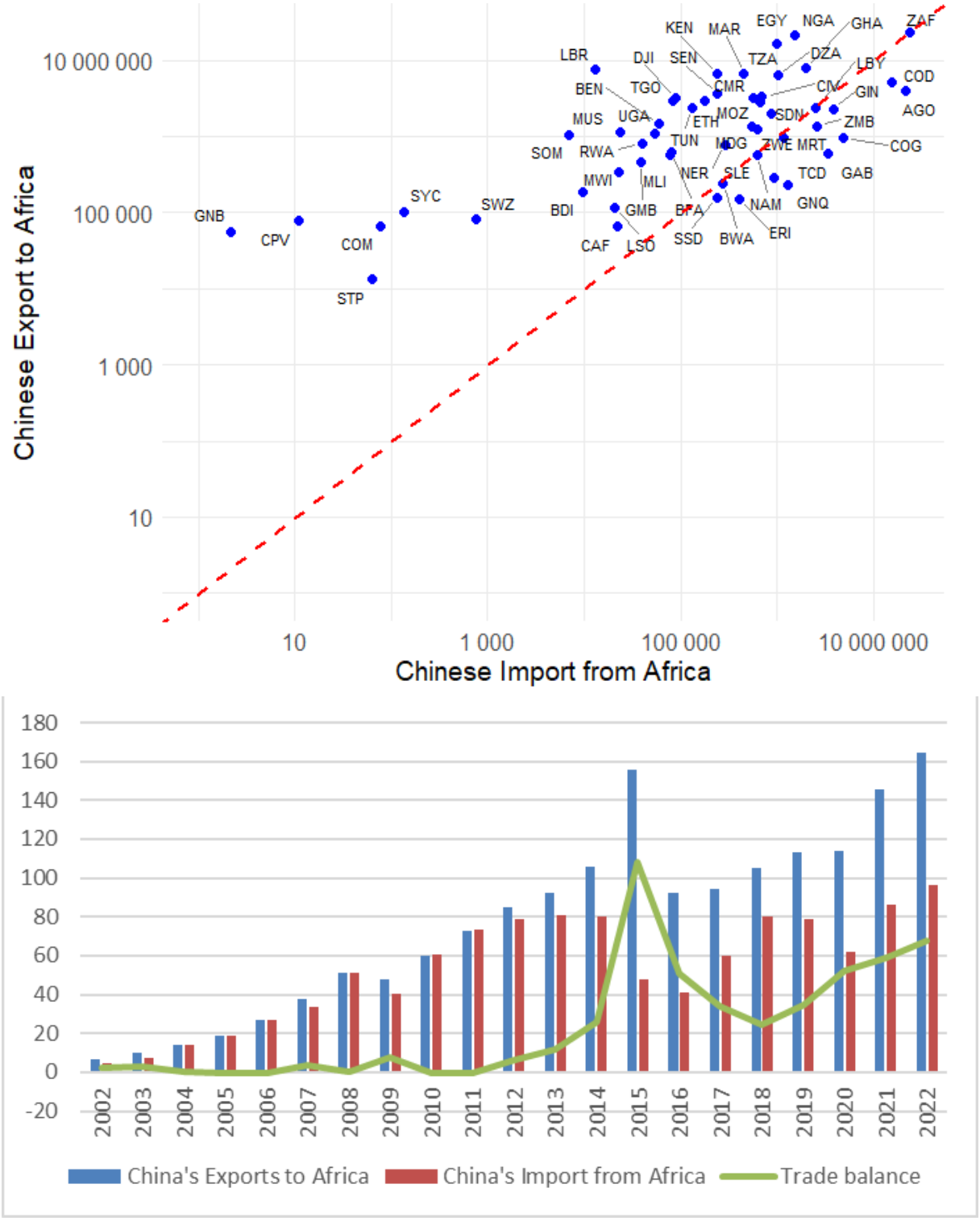


Figure 6: Chinese Trade with Africa (2022, million USD)

Note: Correspondence table for Country ISO Code can be found in Appendix Table 5.
Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010)

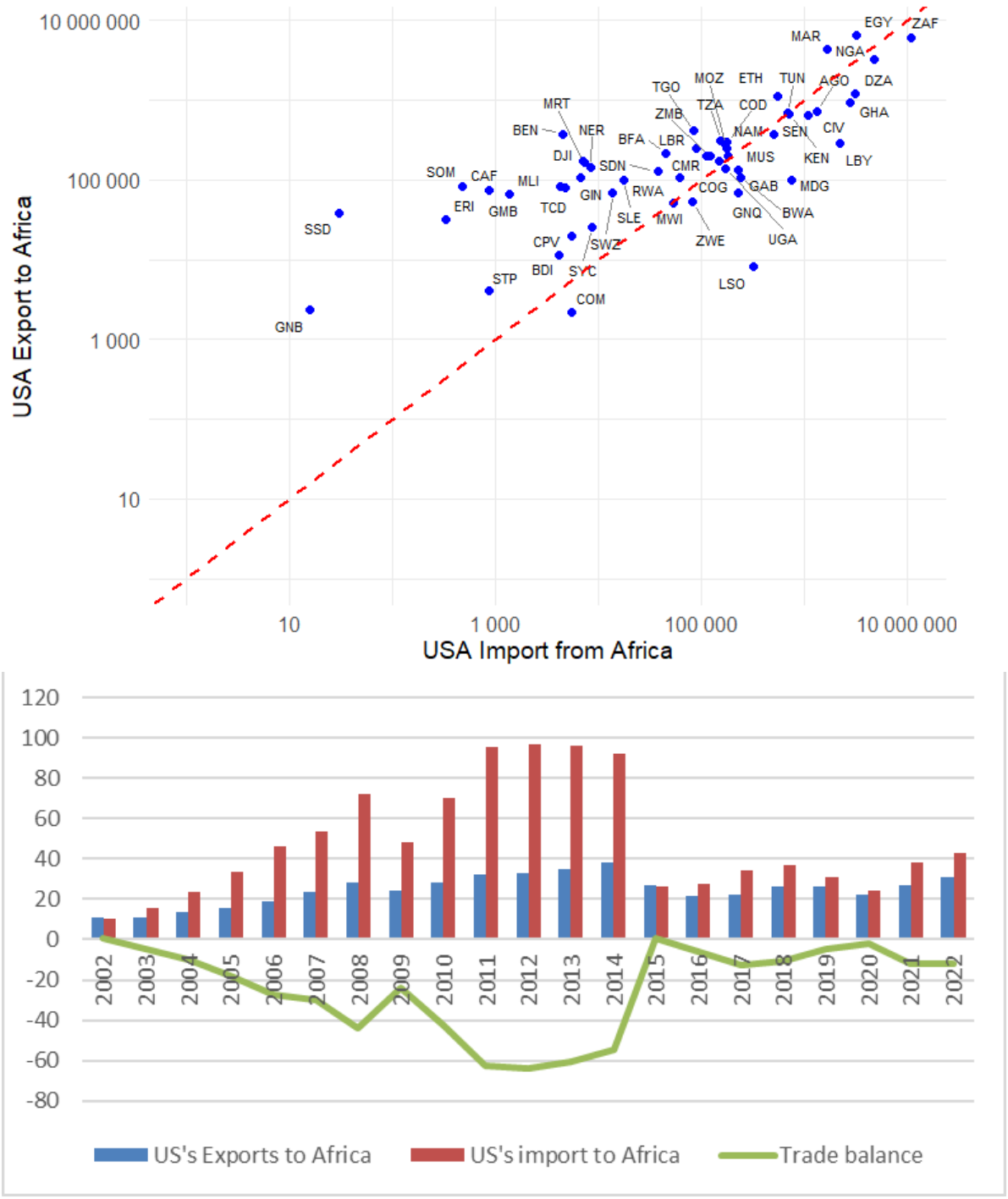


Figure 7: USA Trade with Africa (2022, million USD)

Note: Correspondence table for Country ISO Code can be found in Appendix Table 5.
Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010)

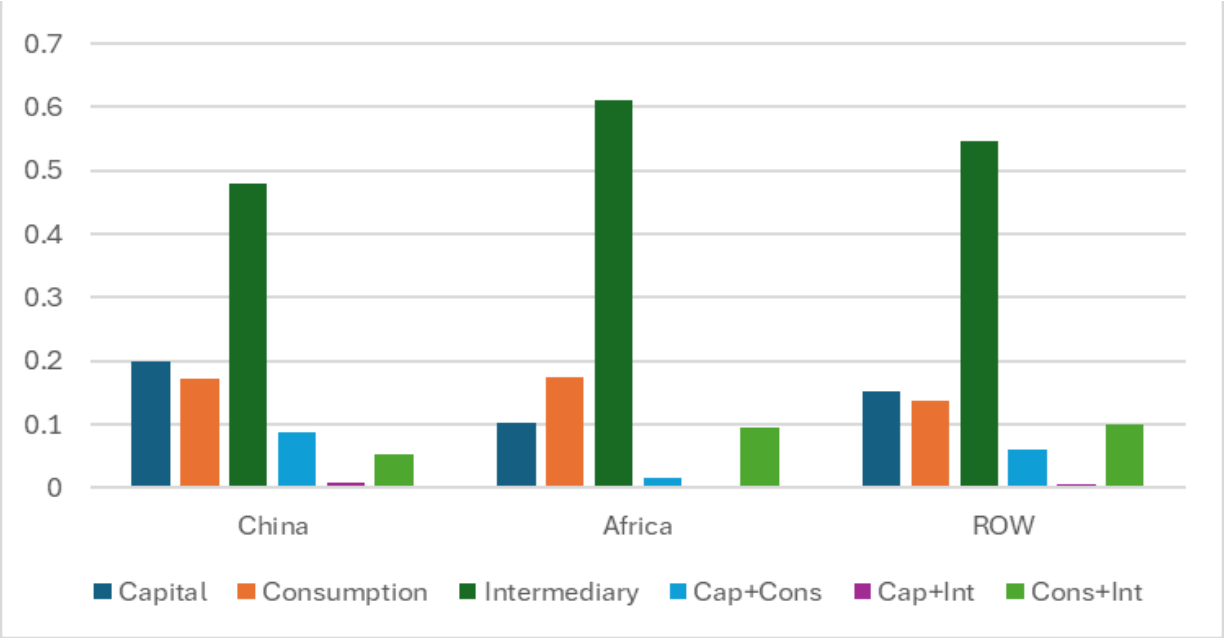


Figure **8**: African import by regions and End Use (2022)

Note: The Broad Economic Categories classify HS goods into capital goods, intermediate goods, consumption goods and dual-use goods. A disaggregated table at the country level is provided in Annexe in Table 8
Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010).

Figure 8 provides a summary of the specificities of Chinese exports to Africa. African countries primarily import intermediary goods from China. However, compared to other regions, China exports fewer intermediary goods and more capital and consumption goods. This suggests that, at the country level, Chinese exports are more likely to increase competition with African products.

Trade with China is not necessarily negative for African firms. While trade in final products from China increases competition for local companies, trade in intermediary inputs can support the industrialisation process of African firms (Darko et al., 2021). While Chinese companies are also the main providers of intermediary inputs this is still on a relatively small scale. However, they are more likely to export capital goods. These capital goods can improve the competitiveness of African firms, as Chinese companies use technologies that are closer to those needed by African businesses.

3.3 Too Few Players in African Regional Trade

As noted earlier, African countries primarily produce low-value-added commodities which are exported to countries with processing capacity. While some African countries, like South Africa and Rwanda, are developing processing capacity, the countries with the necessary capabilities are generally located outside the continent. It is in this light that the discussion of the development of intra-African trade emerges, as it is seen as a platform for upgrading within the supply chain (Arndt & Roberts, 2018).

Given the current structure of trade, it is not surprising that trade between African countries remains limited. In 2022, it accounted for $197.2 billion, representing 13.8 per cent of total African trade and three per cent of global trade. In contrast, intra-regional trade in Asia exceeds 55 per cent of total Asian trade, while in Europe, the figure surpasses 70 per cent.

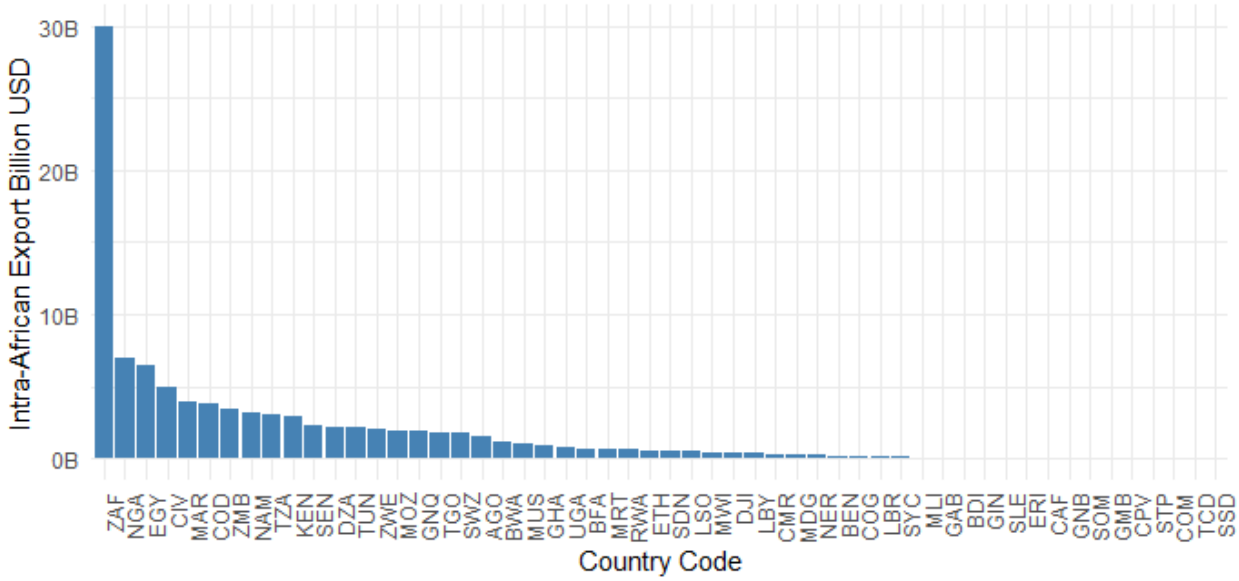


Figure 9 African Intra-African Exports (2022)

Note: Correspondence table for Country ISO Code can be found in Appendix
Table 5. *Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010).*

This makes Africa the continent with the lowest level of intra-continental trade. Furthermore, only a few countries account for most of the intra-African trade. The leading exporter in 2022 was South Africa, with intra-regional exports exceeding $30 billion, while the second largest, Nigeria, exported less than $7 billion to its African counterparts. The next major exporters were Egypt, Côte d'Ivoire, and Morocco. Figure 10 sheds better light on the network structure of intra-African trade. Intra-African trade displays a hub-and-spoke structure, in which a few regional players act as suppliers to their neighbouring countries. South Africa stands out, trading with most Sub-Saharan countries, particularly with those in southern Africa. However, other countries also act as regional hubs: Egypt is the main exporter in North Africa, especially to its neighbours, while Nigeria and Côte d'Ivoire are the leading traders in West Africa. Most intra-African trade flows remain sub-regional, with the largest volumes occurring between neighbouring countries.

To improve intra-African trade, governments have negotiated regional trade agreements, some of which have, on paper at least, aspired to a high level of integration, such as customs and monetary unions. The effectiveness of those institutions in generating regional trade has, however, exhibited varying results (See Figure 11). The East African Community (EAC) shows the most dynamic growth in intra-community trade. With trade surging since the early 2000s, mainly driven by Kenya and the DRC. The West African Economic and Monetary Union (WAEMU), by contrast, has experienced steady but slower growth, with Côte d'Ivoire as the main driver of trade. The Economic and Monetary Community of Central Africa (CEMAC) exhibited a promising increase in Intra-Community trade between 2005 and 2014, but has sharply declined since then. Cameroon, Equatorial Guinea and Congo are the main traders in the community. Southern African Customs Union (SACU) has the highest trade volumes, dominated by South Africa, peaking around 2013 before stabilising. SACU remains the most mature and stable trade bloc.

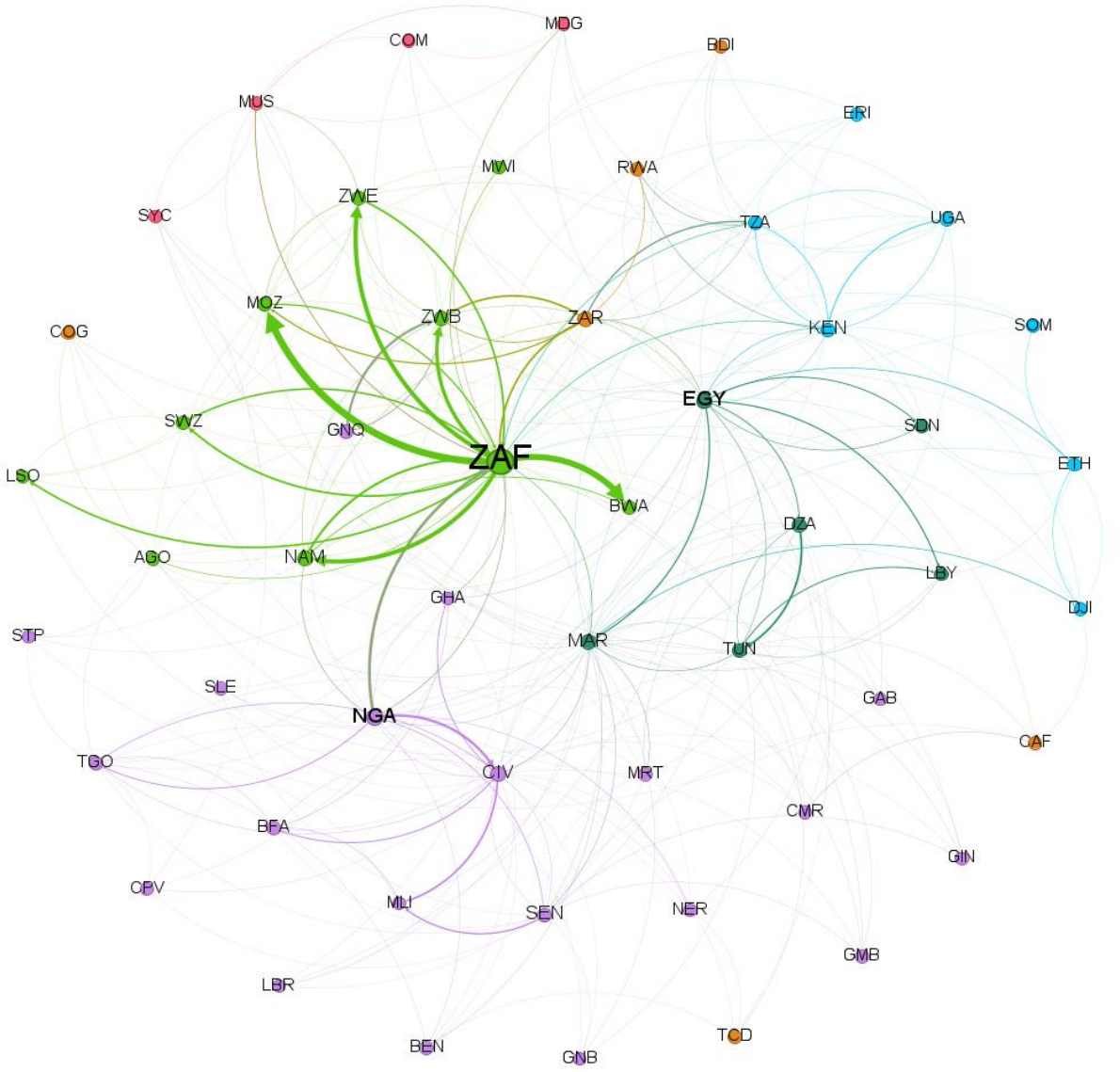


Figure 10 Intra-African trade network (2022)

Note: Intra-African trade in 2022: Network modelling of the five main African import origins for every African country. Links are weighted by flow size. Colours correspond to African regions: West Africa= Purple, Southern Africa=Light green, Eastern Africa=Blue, Central Africa=Orange, Northern Africa=Deep green, Indian Ocean=Red. Correspondence table for Country ISO Code can be found in Appendix

Table 5. *Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010).*

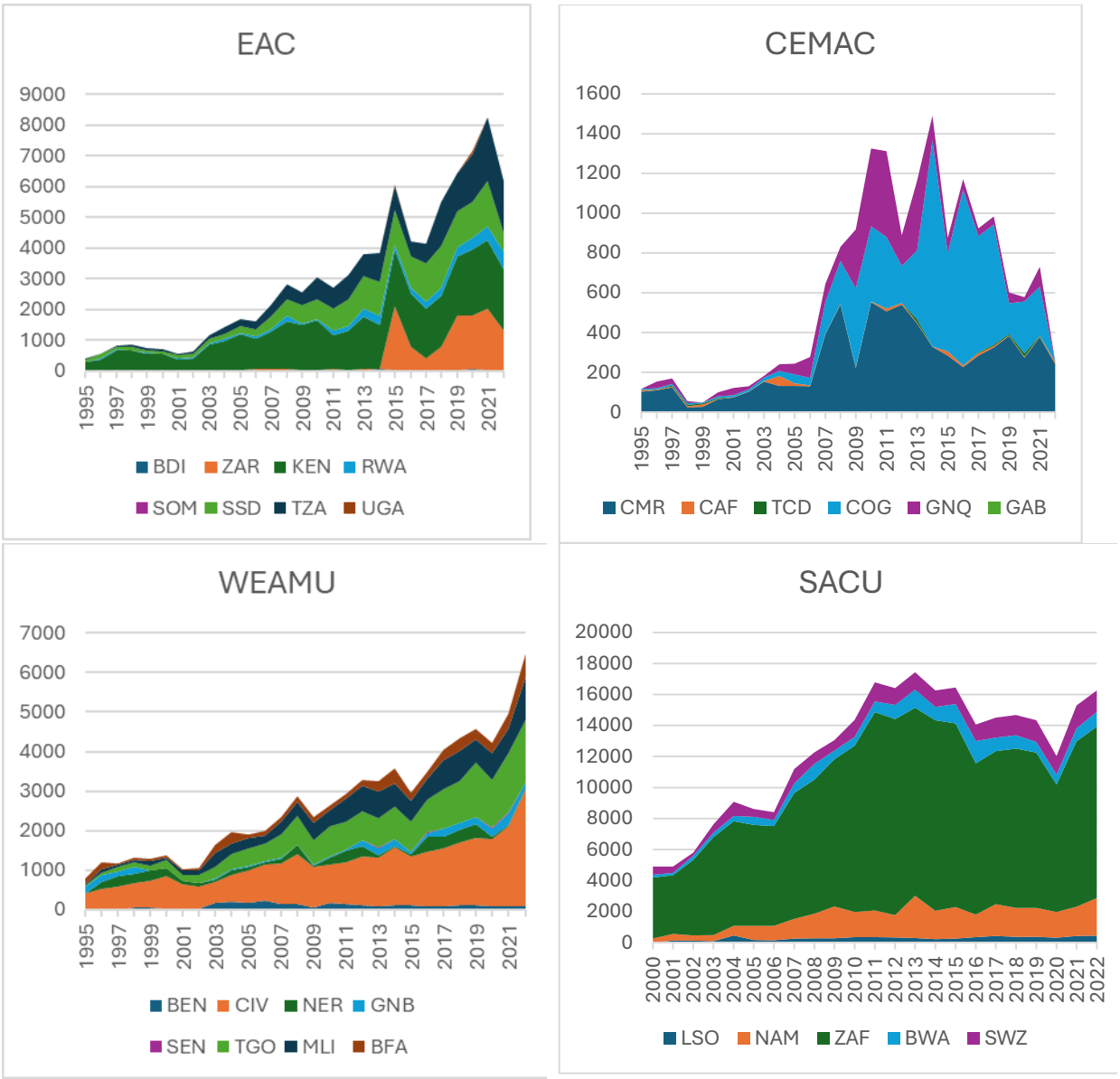


Figure 11 Intra-Community Trade in Million USD

Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010). Trade agreement membership is set to the year of 2022. Separate trade data by country for the SACU are provided only from 2000.

To better assess the effectiveness of those trade agreements, Figure 12 provides the share of intra-community trade over the total change in trade. This measure highlights varying levels of regional trade integration. EAC and WEAEMU maintain relatively higher trade shares, with EAC peaking around 2015, while WEAEMU and SACU's trade shares remain stable but stagnant. CEMAC consistently exhibits the lowest trade levels. Overall, intra-African trade remains low, underscoring the need for stronger regional integration efforts, industrial policies, and the successful implementation of AfCFTA.

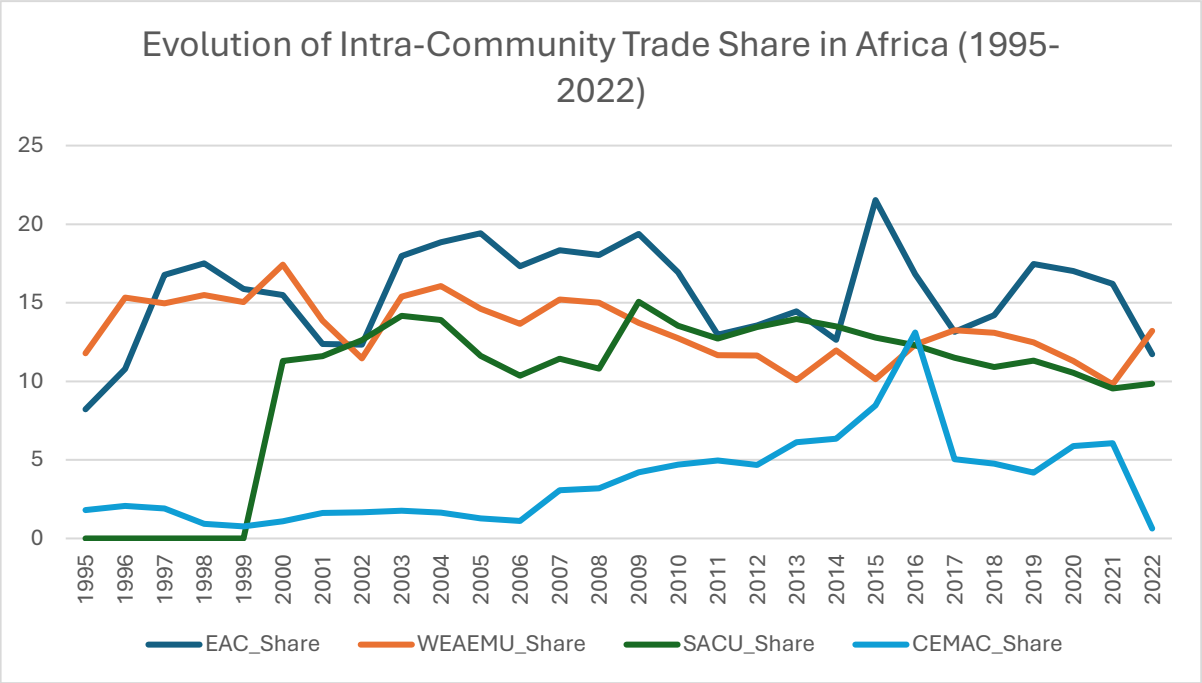


Figure 12: Share of Intra-Community Trade

Source: Author's calculations[4] using the BACI-CEPII Database (Gaulier & Zignago, 2010). Note: Trade agreement membership is set at 2022. Separate trade data by country for the SACU are provided only from 2000.

Intra-African trade is more diversified than non-African trade (see Figure 13), as it is less dominated by trade in natural resources. Furthermore, 45 per cent of intra-African trade in 2022 is in manufacturing, albeit dominated by just three countries South Africa, Egypt and Morocco which produce half of the manufactured goods traded in Africa. Based on BEC end-use classification, Intra-African trades are more likely to be in intermediary goods, compared to the other sources of exports (see Figure 8). Capital and Consumption goods trade is much smaller. The types of products exported are concentrated, in a few sectors; (1) Mineral fuels followed by (2) machinery and mechanical appliances, (3) Fertilisers, (4) Iron and Steel and (5) Vehicles (African Trade Report, 2023).

This means that African countries are less likely to compete with each other in their domestic markets. Compared to China and the ROW, Capital goods trade is lower in Africa. This can imply a lack of production capabilities for capital goods in Africa, which means that African countries will need to rely on non-African capital goods producers for subsequent industrialisation.

The concentration of production capabilities in a few manufacturers in North Africa and South Africa reflects the fact that the main driver of intra-African trade is geographic localisation and the level of industrialisation. As such, those regional hubs are the most likely winners from the creation of an African

[4] *Share of Intra-Community Trade*= $\frac{\sum \text{Intra community exports}}{\sum \text{Total exports}}$

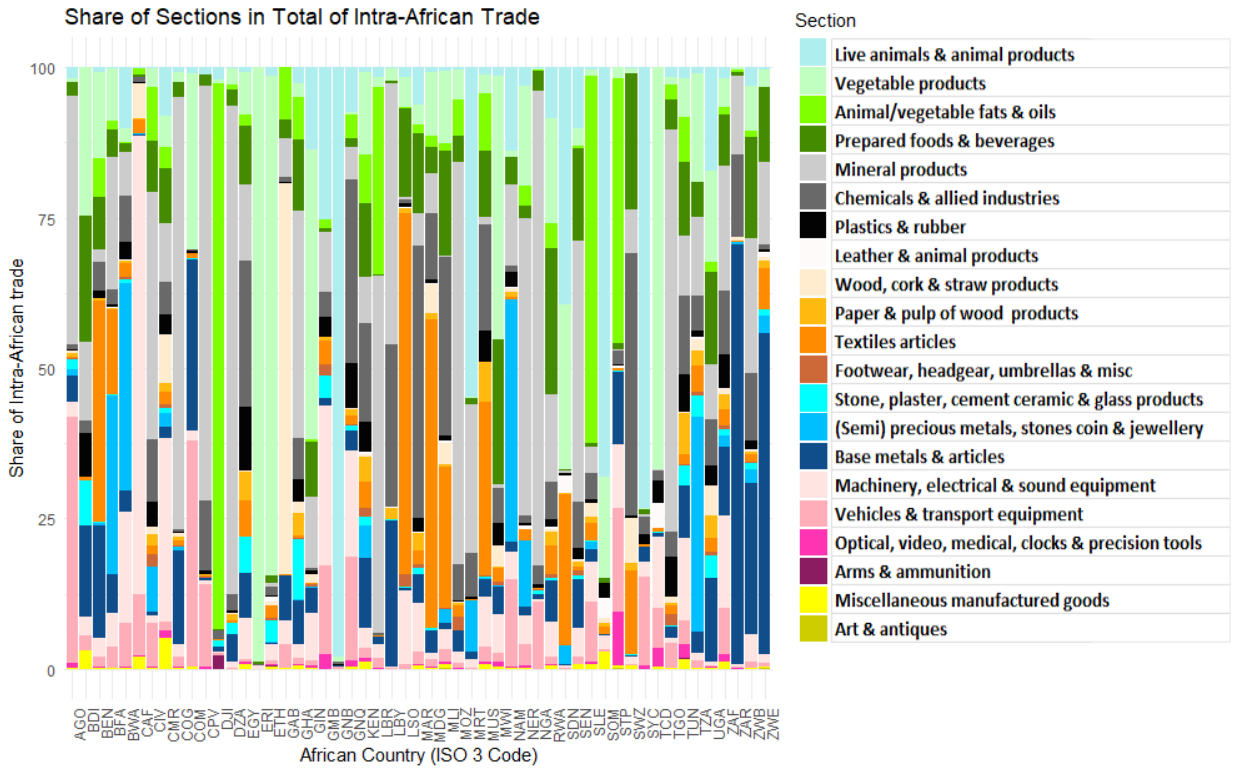


Figure 13 Shares of each HS Section in the Intra-African Exports of African countries

Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010)

common market if this is not accompanied by more widespread industrialisation and diversification across the region.

4. Untied or tied down? Africa's experience with GVC participation?

Differences in economic specialisation are partly a reflection of the countries' position in GVCs. The North African countries of Morocco and Tunisia are involved through manufacturing tasks as subsidiaries of foreign-led supply chains. Most other African countries, meanwhile, are stuck in a subsidiary position within commodity chains, with undiversified economies and weak regional linkages. They are mostly located in an upstream position of those chains, as extractors of natural resources. These resources are then generally sent to countries with the required processing capabilities, most of which are located outside Africa (in Europe or Asia).

However, even for the former group, their position has not led to the development of local production systems, nor has it resulted in the emergence of major African manufacturers able to compete with foreign companies. Although the emergence of China as a major trading partner has disrupted longstanding economic (and political) ties with former colonial powers, to date, this has followed a familiar pattern in terms of the structure of Africa's trade. This raises the question of how African countries might make better use of their participation in value chains.

Value chains can be broadly categorised into two types, depending on their governance structure and organisation. Understanding the risks and opportunities involved in participating in value chains in Africa requires distinguishing between the two. The first type is supplier-driven and the second is buyer-driven (Ponte et al., 2019). Supplier-driven chains are coordinated by a lead manufacturer (e.g., Toyota, Intel, Samsung), typically in capital- and technology-intensive industries. In these arrangements, large TNCs manage production, processing, and distribution to maintain tight control over all the links in the chain. Value is captured by those TNCs that control production and technology. In contrast, buyer-driven value chains are led by powerful retailers and brand owners (e.g., H&M, Walmart, Nike), who set their requirements and outsource production to manufacturers. Value is captured by those in contact with the market and consumers, as retailers and brands identify needs and set prices for production. Differentiating these models is crucial for understanding Africa's role in global trade, as both types of supply chains face different challenges for upgrading.

4.1 Africa's subordinate position in the value chain

a. Africa's position in Supplier-Driven Value Chains

Africa's position in supplier-driven value chains is generally limited to two positions. African countries are upstream as a source of raw natural resources. Those resources will be exported to more industrialised economies before being reworked into a variety of final products. Alternatively, countries can serve as the place of assembly for a final good using imported components and related services provided by the lead firm.

Supplier-driven chains are characterised by the control exerted by the administrative headquarters of the TNCs, e.g., Airbus or Renault in Morocco. They are commonly found in capital- and technology-intensive industries such as automobiles and computers and operate in oligopolistic markets with a global reach. These headquarters are predominantly located outside of the African continent in more developed economies. The economic actors that drive value chains are called lead firms. These actors decide the structure of the supply chain, what is produced and where, as well as the pricing of components and the final product.

Box 2: Example From the Electric Battery and Vehicle Production in Africa

An example of a supplier-driven supply chain of growing interest to some African countries is the EV supply chain. African countries are located both upstream in the extraction of natural resources and downstream in the case of Morocco, at the assembly stage.

African countries have an upstream position in the lithium-ion battery supply chain. For context, lithium-ion batteries are used in a wide range of technologies (including mobile phones, laptops, cameras, power tools, medical equipment and devices, electric motorbikes, electric vehicles, energy storage, and medical, industrial, military or aerospace equipment). The critical minerals required for their production are lithium, nickel, manganese, and cobalt, and many of these minerals originate from Africa (Ramdoo, 2022).

These minerals are considered critical due to their high economic importance and their scarcity (Hendriwardani & Ramdoo, 2022). As such, these resources are key to the production of many in-demand industrial outputs.

In 2022, using the data from the Observatory of Economic Complexity (2025), the following countries are identified as major exporters of critical minerals for the manufacture of Lithium-ion batteries:

- China is the largest exporter, accounting for 63 per cent, of total nickel ore exports. Zambia exports 4.66 per cent of nickel ore, while Madagascar and South Africa export 4.91 per cent and 4.62 per cent, respectively, of total raw nickel exports.
- South Africa is the largest exporter of manganese ore, with 39.7 per cent of the export market, followed by Gabon with 24.5 per cent. Overall, 73 per cent of manganese ore exports come from African countries.
- The DRC is the largest exporter of cobalt ore, representing 84.1 per cent of total exports.
- Lithium is mainly exported from China.

Based on trade data, the African continent is a major source of critical mineral extraction. However, looking at the example of the EV supply chain shows a different picture. African countries are mainly represented at the upstream level (mineral extraction). Chinese industrial hubs, however, have captured the midstream and downstream stages of the value chain, from mineral processing to the production of final goods (see Ramdoo (2022). Most refineries and smelting facilities for critical minerals are in China, making China's material processing capacities indispensable for producing batteries for EVs. This also gives China a competitive advantage in downstream activities, as it has most of the components and battery cell manufacturing capacity.

On the other hand, Egypt, Morocco, Tunisia, and South Africa have successfully built car manufacturing industries through industrial policies and FDI-led development. Over the past 50 years, for instance, Morocco has transitioned from a domestic, state-owned car manufacturer (SOMACA[5]), which assembled vehicles for Renault and Fiat for the domestic market, to attracting major TNCs such as Groupe Renault, PSA, Tesla, and their suppliers. Morocco is now the leading exporter and manufacturer of electric vehicles (EVs) in Africa, accounting for 99 per cent of the continent's EV exports, valued at $93.5 million. For reference, global EV exports amount to $93 billion. These production hubs in Africa are increasingly attracting Chinese manufacturers interested in entering European supply chains (Oxford Business Group, 2020).

Some African countries are also aiming to develop their own home-grown electric car industry. While these projects tend to be small-scale, a few brands are emerging across the continent. In Uganda, Kiira Motors Corporation, a state-owned enterprise, has developed the Kayoola electric city bus and the Kiira EVS electric car. In Ghana, Kantanka Automobile, a private company, has introduced the Kantanka electric car. In East Africa, Rwanda and Kenya have introduced Ampersand, a private company focused on electric motorcycles to provide affordable and eco-friendly transport solutions. Kenya is also home to Mobius Motors, which has produced models such as the Mobius I, II, and III, designed for the African terrain. Meanwhile, South Africa's EV. Africa has launched the City Blitz electric car, marking the country's contribution to clean energy mobility (Energy For Growth, 2022).

As such, lead firms can play an important role in industrialisation as they are a primary source of capital goods, technology transfer, and knowledge in the value chain (Andreoni, 2019). However, lead companies have little incentive to contribute to the host countries catching up to the industrial leaders. Nor are lead companies interested in allowing their resources and knowledge to spillover to domestic firms and potential competitors. Lead manufacturers are more likely to use their market power to create barriers to entry, through standards, patents, copyrights and trademarks. Moreover, equipment manufacturers in Africa are often assigned tasks that don't allow the supplier to make sufficient profits to invest in R&D or enhanced training which could facilitate technological transfer. Additionally, since African countries generally lack the necessary skills and capabilities, they are usually left with only low value-added tasks, with little prospect for knowledge transfer.

The key challenge for African policymakers is how to use the interaction with those Lead companies to gain capabilities and build more autonomous production capacity. At a later stage, reducing reliance on these manufacturers and foreign value chains becomes crucial for domestic suppliers to become fully independent companies. Finally, if the process is successful, these new companies can rejoin the global value chain as leading firms willing and able to develop their own value chains. (Andreoni et al., 2021).

b. Africa's Position in Buyer-Driven Value Chains

Similar to supplier-driven chains, African countries in (foreign-led) buyer-driven supply chains tend to be in a subsidiary position. Buyer-driven value chains, however, are organised differently. These chains, commonly found in labour-intensive consumer goods, tend to be dominated by large retailers, brand-named merchandisers, and trading companies. These companies control a network of contractors in various exporting countries. The contractors are Original Equipment Manufacturers (OEMs) that produce goods according to the specifications of brand owners. The profit from organising buyer-driven supply chains comes from design, sales, marketing, and financial services. The control of these large companies mainly comes from their knowledge of the target market. As their products are design- and marketing-intensive, large companies can invest large amounts of money in product development, advertising, and computerised store networks to create and sell their products.

African companies are generally positioned as suppliers of raw materials, while other countries handle light manufacturing to produce finished goods. Buyer-driven supply chains operating in Africa can be found in the textiles and apparel sector (Saad & Youness, 2024; Brandenburg et al., 2022; Musau, 2021; Cao et

[5] Société Marocaine de Constructions Automobiles

al., 2017), the jewellery industry (Munier, 2016; Mbayi, 2011; Rudnicka et al., 2010), or the food supply chain. Similarly to supplier-driven supply chains, extraction occurs in Africa, while the transformation from raw materials and other more value-adding tasks tend to occur in more industrialised countries.

Box 3: Example from the food processing supply chain in Africa

Structural change has historically been defined as a shift from low-productivity agricultural resources to high-productivity manufacturing. However, the development of high-productivity, capital-intensive agrifood supply chains now requires capabilities as sophisticated as those in any other manufacturing supply chain (Andreoni et al., 2021). These value chains, which once involved simple tasks like picking, cutting and washing, have expanded to include new processes that require industrial capabilities such as marketing, R&D, logistics, mechanisation, and agrochemical technologies. Many of these tasks are now taking place in Africa, contributing to the continent's growing agro-industrial sector. Food processing aims to transform food from its raw state into a more durable form. Practices like pasteurisation and refrigeration play an important role in improving food safety, reducing post-harvest losses, and increasing the shelf life of agricultural products.

Similarly to other sectors, African countries are mainly positioned as exporters of raw and low-value-added vegetable and animal products. In agri-food supply chains, retailers source sugar and fruit from sub-Saharan Africa (Adams, 2019; Kongai et al., 2018; Kiezebrink et al., 2015; Kalinda & Chisanga, 2014; Duguma et al., 2001), wine and grapes from South Africa (Andreoni et al., 2021; Ponte, 2007), spices like vanilla, and nutmeg from Madagascar and Ethiopia (Andriamparany et al., 2023; Agize, 2016). In the cocoa sector, 70 per cent of total cocoa bean exports come from Africa, with Côte d'Ivoire alone accounting for 37 per cent of those exports (*Observatory of Economic Complexity*, 2025). Since many African countries depend on raw food exports, increasing processing in the agrifood sector is not only a key strategy for reducing risks from climate change but also a potential source of industrial learning that can be applied to other sectors requiring similar capabilities. However, for African countries, upgrading agrifood supply chains remains a difficult task.

African farmers have limited access to key inputs. The market for industrial inputs (grain, fertilisers, etc.) is concentrated among a small number of firms with a history of collusion (Roberts, 2019). Farmers must rely on imported inputs and therefore face high costs for logistics, freight, and storage (Kaziboni & Roberts, 2022). Most fertilisers are imported by sea, but countries without seaports must transport them by road through neighbouring countries. However, as fertilisers pass through multiple intermediaries before reaching rural areas, their price increases (AGRA, 2019).

While some fertiliser imports come from non-African countries like Russia, fertiliser can also be sourced within Africa from African companies. Fertiliser production in Africa is concentrated in six countries: Egypt, Tunisia, South Africa, Algeria, Nigeria, and Morocco, and is dominated by companies such as Indorama Eleme in Nigeria, MOPCO in Egypt, and Sasol in South Africa. The African continent's total fertiliser exports, amounting to $7.82 billion in 2023, exceeded its total imports of $5.26 billion. Improvements in intra-African transport and trade can therefore significantly enhance access and reduce prices for smaller farmers (Ornella & Fan, 2024). Similarly, the seed market is concentrated among a small number of multinational companies (e.g., Bayer-Monsanto, Syngenta, etc.).

The market, however, has seen an expansion of large-scale dealers in agricultural inputs and agro-conglomerates operating directly in Africa. Some of these trading groups are non-African, such as Cargill and ETG, while others are domestically owned (Sitko et al., 2018). These companies provide a wide range of services, including offering credit to farmers, storing, transporting, and selling inputs, while simultaneously purchasing farmers' output and selling it to other actors for processing. Due to the concentration of these actors, they can capture a large portion of the rent by buying outputs at a low price and selling them at a higher price.

Food processing companies vary in size depending on the country. In South Africa, the maize-milling industry is concentrated, while in Zambia, it is dominated by small and medium-sized companies. However, large firms, especially vertically integrated companies, have been able to leverage their size

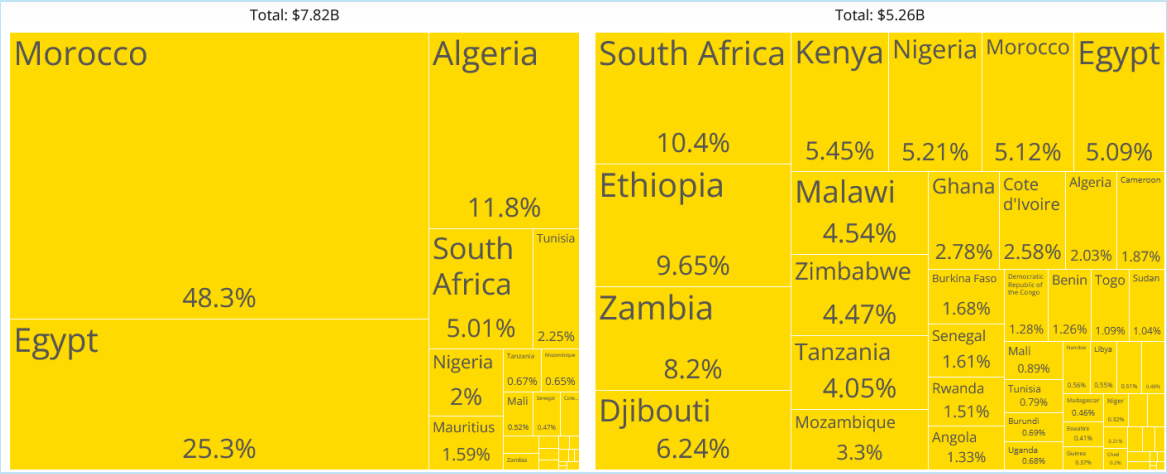


Figure 14 Largest exporters and importers of fertiliser in Africa in 2023

Source: (*Observatory of Economic Complexity*, 2025)

to invest in better technology, increase capacity, and improve their competitiveness.

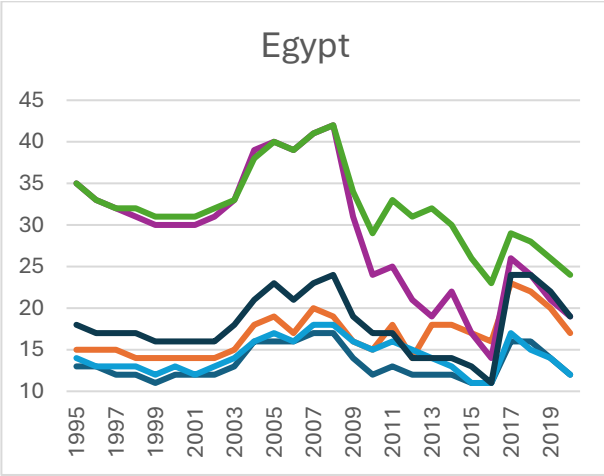
Finally, key actors in this supply chain are supermarkets—both large international chains and domestic ones—as they act as lead firms within these supply chains. They set the standards for food and packaging and determine the quantity to be delivered by the dealers (Kaziboni & Roberts, 2022).

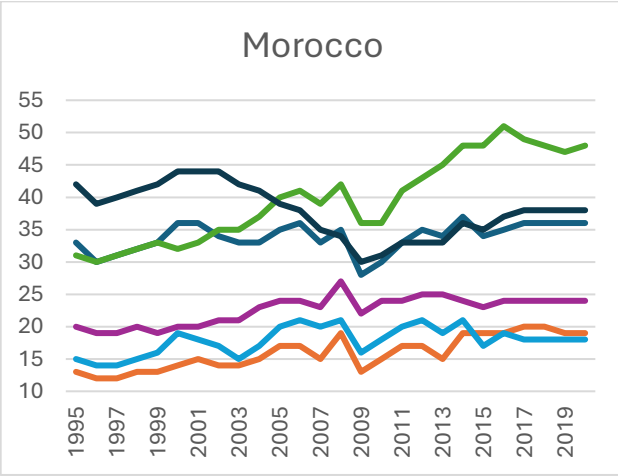
c. Backward integration to the GVC and export upgrading in Africa

Rather than remaining suppliers of unprocessed resources, many African countries are focusing on integrating into global and regional value chains, aiming to industrialise and diversify their economies by attracting FDI, and benefiting from backward integration. The initial aim is to gain capabilities in the labour-intensive stage of industrial development by joining the GVC. Once sufficient capacity has been established, the aim becomes reducing dependence on foreign linkages and developing domestic production capacities. The last stage would see African countries compete at the global level.

Figure 15 shows the share of foreign value added (FVA) in the percentage of gross exports for a selected group of manufacturing industries from 1995 to 2019. This measure can be considered a proxy for the development of backward linkages. When FVA increases, it means a larger share of exported goods and services consists of imported intermediate inputs, indicating deeper integration into international supply chains. A decrease in FVA suggests that a country is producing more of its inputs domestically, implying stronger domestic production networks. High FVA can indicate integration into GVCs, but it does not necessarily mean an economy is moving up the value chain. It could also reflect dependence on foreign suppliers.

Egypt's FVA trends are volatile, with Motor Vehicles and Machinery experiencing an increase in the early 2000s, peaking around 2005–2010, before declining significantly. Textile, Pharmaceutical and Processed Food have relatively stable but lower FVA. The sharp drop in FVA after 2015 across multiple industries suggests a shift towards domestic production or trade disruptions, possibly due to the currency devaluation that occurred in 2016 that made foreign products more expensive. While lower FVA may indicate reduced reliance on foreign inputs, it could also signal challenges in maintaining integration within global value chains.





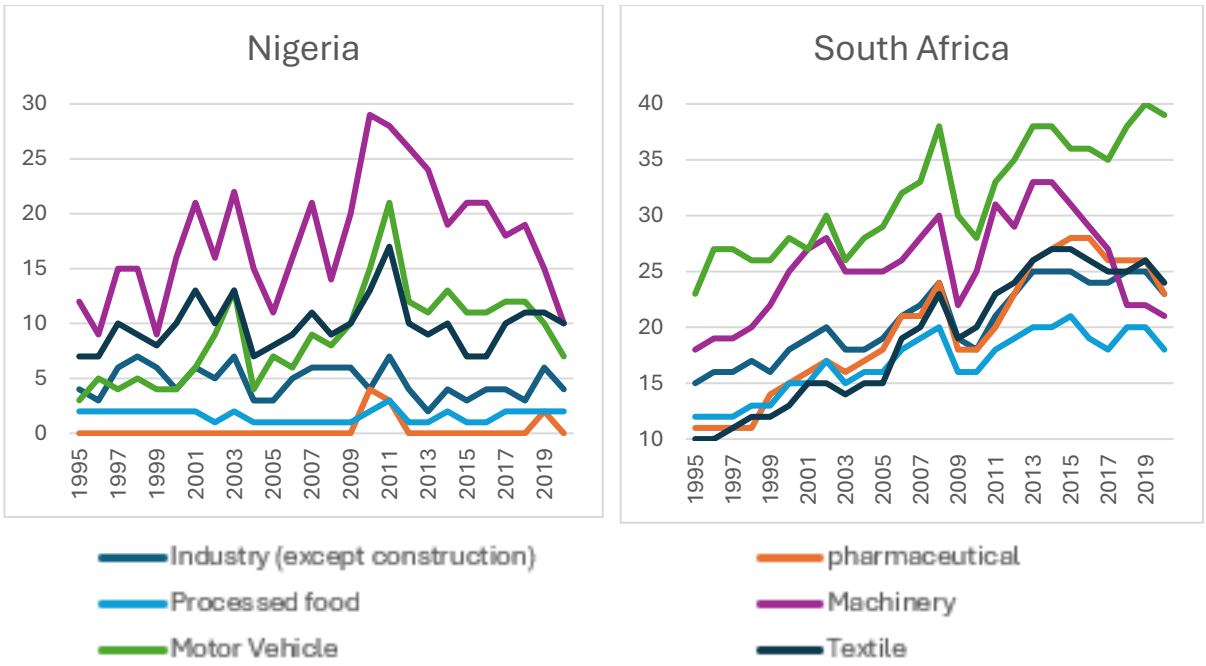


Figure 15 Foreign value added in the percentage of gross exports
Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010)

Unlike Egypt, Morocco has a more stable and steadily increasing FVA, indicating stronger integration into global value chains. The Motor Vehicle sector stands out with the highest and fastest-growing FVA, surpassing 50 per cent by 2019, reflecting Morocco's success in attracting foreign car manufacturers and integrating into the automotive supply chain. The sustained increase in FVA, especially in Motor Vehicles, suggests that Morocco has successfully positioned itself as a key supplier in global production networks, benefiting from foreign investment. Textiles have a high FVA, showing steady reliance on foreign inputs, while Pharmaceutical, Processed Food, and Machinery have lower and relatively stable FVA levels.

In South Africa, FVA has increased over time, indicating a growing reliance on imported inputs and deeper integration into global value chains. The Motor Vehicle sector has the highest FVA, consistently above 40 per cent in recent years, reflecting its strong dependence on foreign components. Textile, Machinery, Pharmaceutical, Processed Food, and General Industry show lower but still rising dependence on foreign inputs.

Nigeria's FVA is highly volatile with sharp fluctuations in sectors like Machinery and Motor Vehicles, indicating inconsistent integration into global value chains. Machinery had the highest peaks in FVA (above 30 per cent) around 2010 but declined significantly afterwards, suggesting a drop in reliance on foreign inputs, possibly due to import restrictions or shifts in industrial policy. The Motor Vehicle sector also peaked around 2010 but later declined, indicating reduced foreign component use. Other industries, including Pharmaceuticals, Processed Food, and Textiles, have low and relatively stable FVA, reflecting a weaker presence in global production networks. Nigeria's economy is largely resource-driven, with less emphasis on manufacturing integration. There have clearly been different experiences amongst middle-income African countries in their participation in GVCs, particularly since the global financial crisis, with Morocco and South Africa exhibiting the strongest trends, of backward integration in the GVC. For Egypt

and Nigeria the increase in backward integration in manufacturing to the ended after 2008 financial crisis. This can imply two things, a process of deindustrialisation or an increased reliance on domestic value chains.

To assess whether these countries are experiencing deindustrialisation or increasing reliance on their domestic value chains, we use two indicators. The first is the share of exports by level of technological intensity (see Figure 16). The second is the Economic Complexity Index (ECI, see Figure 17), which measures a country's ability to export goods that only countries with sophisticated production systems can produce. The ECI is widely used in the economic complexity literature as a proxy for a country's level of economic capabilities (Hausmann et al., 2013; Hausmann & Hidalgo, 2010). The ranking used in this paper comes from the *ECI Rankings* (2025), and refers to the position among the 89 countries with continuous rankings from 1998 to 2023.

Despite following different paths in their integration into global value chains, both Egypt and Morocco have increased the share of medium- and high-technology intensity products in their exports between 1995 and 2022. In Egypt, the increase is mainly in high-tech manufacturing[6], meanwhile in Morocco it is primarily in medium-tech manufacturing. The country has managed to upgrade the technological intensity of its exports while increasing domestic value added. To achieve this, Egypt attracted significant FDI. For instance, it recorded the highest percentage of FDI in electronics and electrical sectors between 2017 and 2020. The government policy, however, was to promote joint ventures and domestic ownership, instead of fully foreign-owned companies (OECD, 2021).

This is reflected in the stability of Egypt's ranking in the Economic Complexity Index, moving from 64th out of 89 in 1998 to 60th position in 2023. Morocco's strategy of attracting foreign manufacturers has shown success, with the country recording the largest improvement in economic complexity among the four countries, rising from 75th to 69th position. The measurement of the technological intensity of exports is slightly less relevant for Nigeria due to the fluctuating value of its overly dominant oil sector. The decrease in backward integration into global value chains is coupled with stability in Nigeria's position in the ECI ranking 87th in 1998 and 88th in 2023, making it the least complex of the four countries but also one of the worst-ranked in the listed countries.

South Africa shows an overall decline in the share of labour-intensive and resource-intensive manufacturing, as well as in low-technology manufacturing. But these are being replaced by a rise in unprocessed exports. The economic complexity of its exports has also fallen steadily, from being the 30th most complex country out of 89 to 53rd in 2023. This may reflect a process of deindustrialisation, where intermediate goods are increasingly replaced by imports. In South Africa, the rise in backward integration goes hand in hand with a drop in export complexity and a reduction in productive capabilities. The fall in economic complexity particularly suggests a decline in the diversity of complex goods being exported.

[6] The three main exports in high-tech manufacturing in 2022 by far in the category are: (1) "Color TV receivers, monitors & projectors" ($842 million), (2) Ignition & Wiring Sets for Vehicles, Aircraft & Ships ($424 million), (3) Parts for Radio/TV Transmit-Receive Equipment (n.e.s.) export destinations ($372 million).

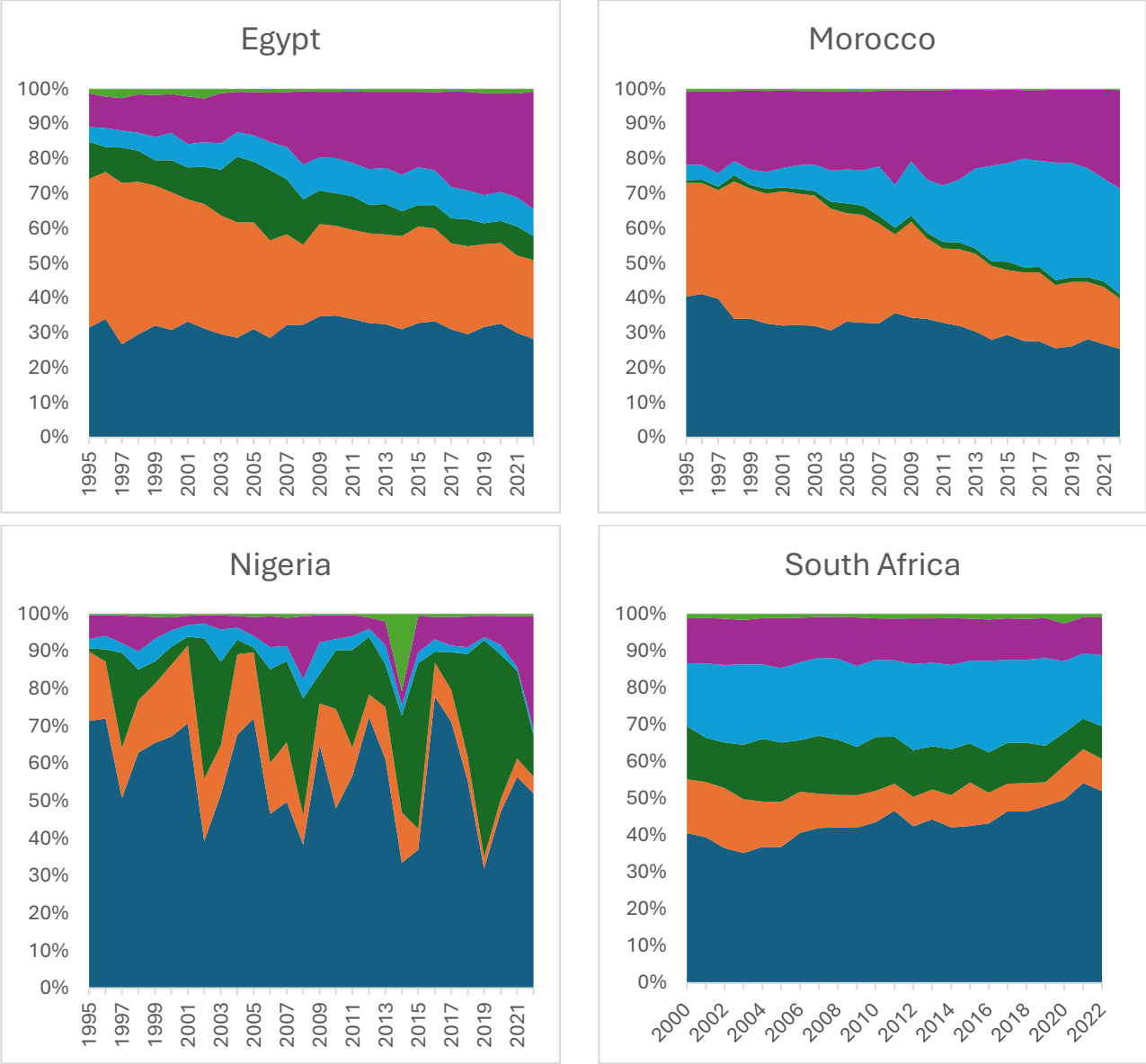


Figure 16 Share of goods from each technological intensity level in total exports

Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010) Note: Product classification is based on UNCTAD (2002). ***Primary commodities:*** *composed of unprocessed (e.g., Animals, vegetables, spices, wood, fibre, minerals) and processed products (e.g., Butter, flour, chocolate, Alcoholic beverage, tobacco, synthetic rubber, cork, fertilizers).* ***Labour-intensive resource-based manufacturing*** *(e.g., Garment, paper, glass, pottery, toy).* ***Low tech. manufacturing:*** *Metals primary and parts (e.g., pig Iron, steel tubes, aluminium sheet) and Manufacture of metal (e.g., Railway track, containers, motorcycle, floating structure, plumbing).* ***Medium tech. manufacturing:*** *e.g., Rubber, machinery and machine part (Agricultural, textile, automotive, power generation…), household equipment, cars.* ***High tech. manufacturing*** *(e.g., Chemicals, pharmaceuticals, cosmetics, plastics, dyes, fertilisers, explosives, office and telecom equipment, medical and optical instruments, photographic and cinematographic gear, aircraft parts, and watches).* ***Unclassified*** *(e.g., Weapon, Live animals, musical instrument, arts)*

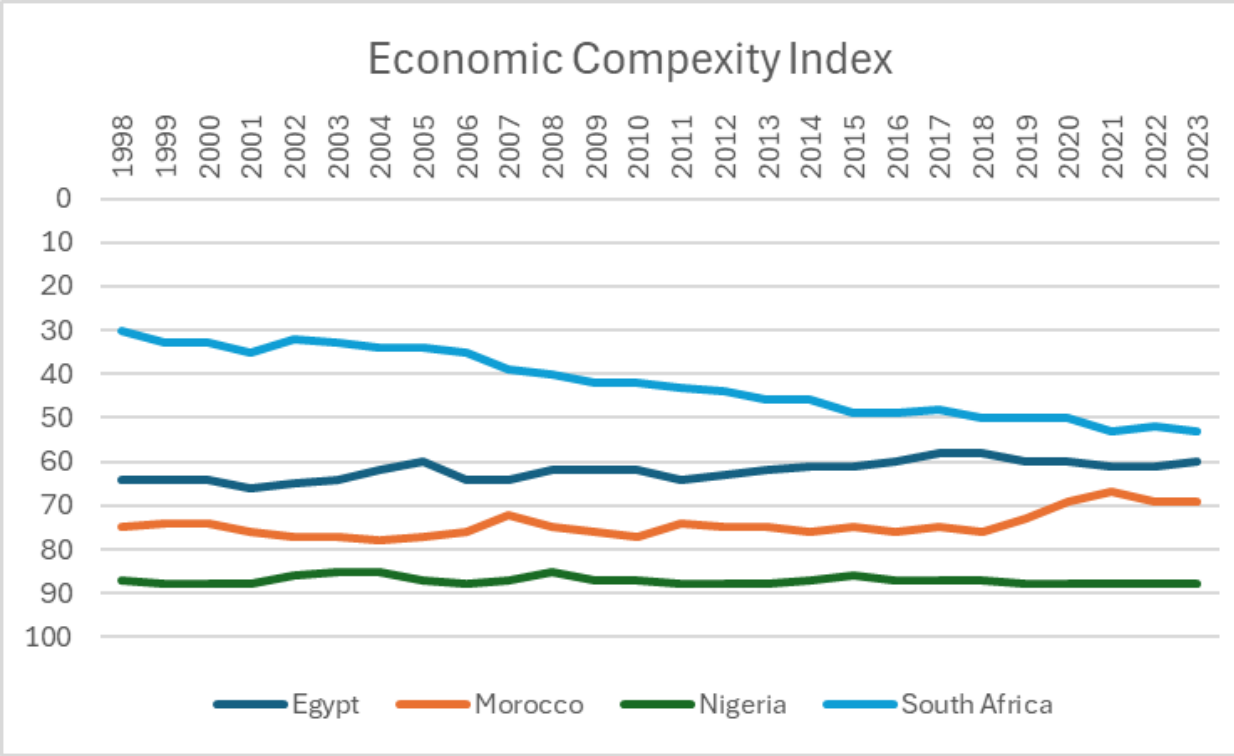


Figure 17 Changes in the Ranking of Economic Complexity Index of export

Source: *ECI Rankings* (2025)

4.2 Learning Processes in Africa

a. The FDI-led development strategy and the risk of creating dual economies

The goal behind the FDI-led strategy of countries, such as Morocco and Tunisia, was to industrialise by integrating into the European supply chains, leveraging their low labour costs, skilled workers, and proximity to European markets to attract foreign companies. Developing countries in turn would benefit from higher tax revenues, better-quality jobs, and technology transfer. The hope was this strategy would bring spillover gains to the wider economy, triggering a virtuous circle of rising investment, productivity, jobs and income.

The risk is creating an economy dependent on foreign companies and developing a "maquiladoras syndrome" (Ellingstad, 1997). This occurs when a developing country establishes an economy divided into three distinct groups of companies:

- Competitive Foreign-Dominated Firms: These companies, often foreign-owned, primarily source their inputs from other foreign-owned companies locally or through imports. Their main focus is exporting to foreign markets.
- Technologically Lagging Domestic Companies: This group constitutes the majority of the formal economy and consists of companies that are technologically behind.
- Small informal companies: with neither of the firms in the formal economy able to absorb the growing working population, most jobs are created in the informal sector with very low wages and precarious working conditions.

The challenge is two-fold in this foreign direct investment (FDI)-led strategy:
The first challenge lies in developing vertical linkages between foreign-owned companies and local suppliers. Vertical linkages link economic actors hierarchically to each other along sectoral value chains. Foreign-owned companies often struggle to establish supply chains based on existing local suppliers. This difficulty arises because local suppliers may not exist, or if they do, they often fail to meet the scale, quality, competitiveness, and standards required by foreign companies. If foreign companies are only interested in low-cost workers, they can pressure salaries downward by threatening to leave. They can also relocate if another country offers lower costs. This phenomenon has been called the relocation "caravan." Countries such as Czechia, Poland, Slovakia, and Romania have seen some of their plants relocated to other low-cost countries like Ukraine. The emergence of a dense network of middle-sized and large-sized local suppliers is therefore necessary to benefit from foreign investments in the long run. (Jurgens et al., 2008).

The second challenge lies in the lack of development of horizontal linkages in those countries. Horizontal linkages connect economic actors operating at the same stage of the value chain or across different sectors in the economy (Andreoni, 2019; Hirschman, 1958). Figure 21 depicts the domestic inter-industry networks in Egypt, Morocco, Nigeria and South Africa, with and without international trade. Across all selected countries, as well as other African countries in the ICIO database, the majority of sectoral inputs come from abroad. A central finding is that the wholesale and retail trade; repair of vehicles sector emerges as both the largest importer and the most interconnected sector in each economy. This implies that a significant share of goods sold by domestic retailers originates from foreign sources. Furthermore, this sector sits at the core of domestic inter-industry exchanges, reinforcing its role as a key conduit for both local and imported products. However, compared to international linkages, domestic inter-industry linkages remain underdeveloped, limiting the scope for backward and forward integration between sectors within each economy. Creating such linkages is key to a flourishing local production system.

b. The Development of LPS in Africa

In all four countries, foreign sectors are the primary destination for outputs from many domestic industries, generating recurring cycles of import-dependent production and re-exportation. This structure reflects reliance on global markets, where domestic industries source inputs from abroad, process them and then re-export a significant share of their outputs. It is important to note that the analysis does not capture intra-sector trade within each country, which could further nuance the patterns of inter-industry exchanges.

From a learning perspective, African companies participating in foreign value chains can become stuck performing relatively unsophisticated activities (processing or assembling). African companies may also be subject to "value-chain delinking" when more price-competitive firms emerge or new quality standards are introduced (Andreoni et al., 2021).

While Morocco and South Africa show greater sectoral complexity, with stronger service-sector integration, Egypt and Nigeria exhibit a more extractive-oriented structure, where primary sectors drive economic cycles with limited domestic spillovers. Among them, South Africa remains the most industrially

integrated economy, demonstrating the potential for developing stronger backward and forward linkages across industries.

The development of those linkages is important as they are the backbone of the LPS and, through wider inter-industry linkages, the economy more generally (Boehm, 2018; Hirschman, 1958).

Among those linkages are production, consumption, fiscal linkages and technological linkages:

- Production linkages as input provision (backward linkages): When a sector's growth creates demand for inputs from other domestic industries (e.g., a car manufacturing industry increasing demand for locally produced steel and tyres). In such cases, domestic suppliers will attempt to supply another industry.

- Production linkages as output utilisation (forward linkages): When a sector's output serves as an input for other industries (e.g., steel production supplying raw materials for the construction and machinery industries). The domestic production of an output pushes producers to identify additional uses within other parts of the economy. As many inputs in Africa are imported, African economies lack the connections between producers that facilitate the development of production linkages.

- Consumption linkages: Consumption linkages occur when industrial development increases incomes, leading to greater domestic demand for goods and services, which in turn stimulates further production. Growth in one sector fuels demand in others through increased purchasing power. The downward pressure on salaries from foreign companies seeking cost competitiveness reduces the government's incentive to push for price increases. Additionally, African consumers have a negative perception of domestically produced goods and prefer imported products, especially luxury goods. For non-luxury goods, African products are often undercut in price by Asian and Chinese products. This reinforces the import dependency of African countries on China for manufactured goods.

- Fiscal linkages: Fiscal linkages refer to how industrial or resource-based sectors generate government revenue through taxes, royalties, or export duties. They also describe how these revenues can then be reinvested in more productive parts of the economy. The state's ability to invest in the local production system (LPS) is limited for several reasons: tax cuts to attract foreign companies, low import and export duties due to trade liberalisation, fiscal optimisation by large companies, and the presence of a large informal sector.

- Technological linkages: Technological linkages refer to the spillover effects of technology, knowledge, and innovation from one sector or firm to others, leading to industrial upgrading and productivity improvements. These linkages can occur through learning-by-doing, training, research collaboration, or technology transfer.

c. The Need for African Led Manufacturing chains

The importance of the need for lead manufacturers cannot be understated, as they can play multiple roles in the industrialisation process. They act as "organising agents" in the African economy, coordinating economic actors located upstream and downstream in the value chain. Due to their scale and capabilities, they can learn how to reliably meet foreign standards and join foreign supply chains through backward or forward linkages with major foreign producers and retailers. The lack of reliable local partners that can produce sustained quantities on a large scale is one of the main reasons why foreign companies rely on foreign suppliers, even if they are located in emerging economies. As non-tariff barriers become more stringent and standard requirements become more complex, it is crucial to have economic actors in Africa able to meet these standards. This facilitates their ability to join foreign supply chains and to export to foreign markets. The more stringent the standards they can meet, the easier it is for them to trade in both less regulated and more regulated economies.

Furthermore, if these manufacturers are less dependent on foreign companies, they would be able to benefit from developing and upgrading their own supply chain. They would be able to invest in both forward (marketing) and backward (sourcing) linkages, and from the learning that developing these linkages generates.

In this sense, the development of African Original Brand Manufacturers is crucial for the development of African economies. The ability of African companies to sell their products domestically or abroad under their own brand enables new opportunities for upgrading. Domestic companies would be able to use strategies for product differentiation to establish brand-name prominence in domestic, regional, and international markets and therefore extract value from brand recognition. Being an Original Brand Manufacturer and having independent marketing services enhances the ability of these companies to learn the preferences of foreign buyers, including international standards for the price, quality, and delivery of export merchandise.

5. Institutional Infrastructure for Trade in Africa

Beyond the structural limits imposed by their hyperspecialisation, African countries are pushed to enforce rules that limit their ability to implement industrial and trade policies that could support a more transformative growth path. From multilateral organisations pushing for trade liberalisation to North-South bilateral trade agreements, African countries have seen a reduction in their (often already limited) policy space, which restricts their capacity to apply effective industrialisation policies. They are pressured to enforce Northern countries' intellectual property rights, protect foreign investment, and comply with production standards, each of which acts as a barrier to entry into new markets. To reduce their dependence on non-African countries, African policy-makers are advocating reforms to existing multilateral agreements and developing new regional trade agreements, the biggest and most ambitious of which is the AfCFTA.

5.1 Global trade regimes

a. Multilateral agreements, trade and African policy space

What African countries trade influences the development of their industrial capacities, and these trade flows are shaped by international trade rules. Among African countries, the Least Developed Countries (LDCs) particularly benefit from a series of agreements that offer near tariff-free trade, especially in raw materials, food and textiles, with countries of the Global North. However, by reinforcing existing patterns of trade these rules also affect the ability of African countries to upgrade their economies by limiting their policy space and, in particular, the capacity to implement industrial policies.

Policy space is defined as the freedom and ability of governments to identify and pursue the most appropriate mix of economic and social policies to achieve equitable and sustainable development (Trade and Development Report, 2014). The World Trade Organisation's (WTO) multilateral agreements, the International Monetary Fund's (IMF) Structural Adjustment Programmes, and various regional and bilateral trade agreements have restricted Africa's policy space in exchange for the promise of improved market access and increased foreign investment (Chang, 2006).

These policies have been promoted as necessary and labelled as "good institutions" for a healthy economy by developed countries (Williamson, 2004). However, they were rarely applied by developed economies when they were industrialising (Chang, 2002). In addition, these policies also lead to a loss of tariff revenue for African governments, ceteris paribus, squeezing their fiscal space.

The following section will review the major trade policies imposed on African economies and the consequences on African policy space.

Trade Liberalisation and Tariff

As a general policy of the WTO, and as a condition for loans from the IMF, trade liberalisation policies were adopted by (and at times imposed on) many African countries. These policies involve the removal or reduction of tariff and non-tariff barriers and the opening of African domestic markets to foreign exports.

The most-favoured-nation clause negotiated by the General Agreement on Tariffs and Trade (GATT), for instance, limits African countries in their ability to create industry-specific trade deals with other countries, as they would then have to provide similar tariff rates to third parties.

The general reduction of tariffs to a low uniform flat rate (3–5 per cent) reduces the possibility of devising targeted trade policies adapted to their economic context. With low tariffs, countries cannot apply different tariffs for different industries. However, developing countries should have the flexibility to reduce tariffs for mature industries and to increase tariffs for infant industries, especially as these countries move up the skill ladder. In doing so, they limit African countries' ability to emulate the examples of Asian countries like Japan or South Korea in applying an import substitution policy. Trade-liberalised countries are limited in their ability to use tariff and non-tariff barriers. It is therefore harder to protect domestic industries from more competitive foreign manufacturers and to use these tariffs as a source of government income, even if these countries have limited tax-collecting capacities.

Property Rights

The Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement, established in 1995, along with bilateral and regional trade agreements, allows large companies to protect their intellectual property in developing countries. This policy sets minimum standards for intellectual property (IP) protection. These policies regulate the process of knowledge transfer, as African countries must pay royalties to use foreign IP. They must also comply with foreign patents, limiting their ability to catch up and adopt frontier production technologies. A special provision was added to the TRIPS Agreement to allow WTO members, especially in developing countries, to produce or import patented pharmaceutical products under a compulsory license. However, the patent holder still receives compensation, and these products are intended for domestic consumption only (Andreoni et al., 2019). During the COVID-19 pandemic, South Africa requested a waiver to allow the production of patented vaccines and COVID-19 treatments, but this waiver was rejected by G7 countries and vaccine producers, despite support from over 100 developing nations (Singh et al., 2023; Haakonsson & Richey, 2007; May, 2006).

Business behaviour

Similarly, the Agreement on Trade-Related Investment Measures (TRIMS) and the General Agreement on Trade in Services (GATS) (Andreoni et al., 2019), limit the ability of African countries to impose specific policies on foreign companies such as:

- Local content requirements: Requiring foreign firms to use a certain percentage of domestically produced inputs and services.
- Export requirements: Forcing foreign investors to export a portion of their production.
- Foreign exchange restrictions: Limiting access to foreign currency based on trade performance.
- Trade balancing measures: Requiring firms to balance their imports with equivalent export earnings.
- Employment requirements: Countries cannot force foreign service firms (e.g., banks, telecoms, retail) to hire local workers unless specifically negotiated.
- Market access restrictions: African countries must be careful about limiting foreign ownership in key service sectors once they make commitments under GATS.

Those agreements reduce the tools available to African governments to control foreign companies operating within their territories. As such, it is more difficult for African countries to use these companies to enforce their industrial and economic policies, including the development of domestic supply chains and employment requirements.

Investor–State Dispute Settlement

Investor–State Dispute Settlement (ISDS) mechanisms further constrain the policy space of African governments by allowing foreign investors to challenge domestic policies that affect their profits. These mechanisms embedded in bilateral investment treaties (BITs) and free trade agreements (FTAs), grant multinational corporations the right to sue national governments in international arbitration tribunals, often bypassing domestic legal systems. In the context of African industrial development, ISDS provisions have been used to challenge state interventions aimed at fostering local value addition, industrial upgrading, and resource control. For instance, efforts by African governments to promote local entrepreneurs, enforce technology transfer, or nationalise strategic industries have led to costly legal disputes with foreign investors (*Investment Dispute Settlement Navigator | UNCTAD Investment Policy Hub*, 2025). Such cases deter African policymakers from implementing industrial policies that could replicate the successful state-led industrialisation strategies of East Asian economies. Furthermore, ISDS cases often result in substantial financial penalties for African states, diverting resources away from industrial development and reinforcing economic dependence on export-oriented raw material extraction. The power imbalance in ISDS arbitration, where cases are often adjudicated in institutions based in the Global North, exacerbates Africa's vulnerability to legal challenges that protect foreign corporate interests over domestic industrial ambitions (Qumba, 2021; Ofodile, 2019).

b. Trade protectionism in the Global North

North-South agreements

While WTO rules still allow a range of industrial policies for emerging countries, developed countries have used their stronger leverage to gain greater concessions through regional and bilateral agreements, further reducing African policy space.

Through these, developed economies have been able to impose conditions that are stricter than those of the WTO multilateral framework. These requirements include policies that can be seen as positive, such as stronger human rights protections, labour laws, and environmental regulations. However, these are likely to impose high cost burdens on developing country firms. They also include provisions with more questionable objectives, such as stricter intellectual property (IP) laws, stronger foreign ownership protections, free-market economy requirements, liberalisation commitments, regulatory alignments, and governance reforms.

Adherence to Developed Economies' Standards

Within these North-South trade agreements, clauses enforce developed economies' production standards. Similarly, an increasing range of policies in the Global North conditions access to domestic markets on compliance with these standards (e.g., the Carbon Border Adjustment Mechanism, CBAM). To illustrate this, the European Union, the main destination for African exports, acts as a standard-setter in many industries (Bradford, 2020). Standards play a crucial role as they serve as benchmarks, signalling to customers and final consumers compliance with health, safety, environmental, and quality criteria during the manufacturing and sourcing process. Adopting international standards is essential for enabling companies to integrate into Global Value Chains (GVCs), as these standards provide credibility regarding product characteristics. Furthermore, standards enhance efficiency in an increasingly fragmented supply chain (i.e., spread across multiple countries and suppliers) by ensuring that intermediary inputs (components, materials, or semi-finished products) are compatible and can function together seamlessly.

In the automobile industry, for example, standards ensure that parts made by different suppliers (e.g., brakes, engines, electronics) fit together in the final product.

While compliance with standards is easier for companies that are already established producers and have the required production capabilities to update their practices, many manufacturers in Africa do not have this ability. These standards act as non-tariff barriers for African manufacturers who cannot adopt European production practices. For manufacturers that can comply, following standards increases production costs as they must invest in R&D, Capital, and training to adapt to new manufacturing practices. However, these increased costs do not necessarily translate into higher prices, as African companies operate in competitive markets and their Northern suppliers, usually, European retailers, have strong market power to keep prices low. This results in reduced profits for those manufacturers.

African manufacturers have to contend with an increasing number of standards and regulatory bodies, which increase their production costs and barriers to entry into new sectors *(Andreoni, 2019; Nadvi, 2008)*. As production standards are increasingly enforced by bilateral agreements with Northern countries, African countries are increasingly losing their regulatory ability. Since production standards are set by countries, regulatory organisations, and manufacturers in the Global North, African countries are increasingly put in the position of being standard-takers. Furthermore, Northern actors control the standard-setting agenda, influence the regulatory bodies that oversee compliance with the standards, and are able to enforce standards that are suitable for their manufacturers and impose them abroad.

Protectionism in developed economies. An increasing number of African exports, especially from the Least Developed Countries (LDCs), face increased limitations in terms of market access due to policy-induced competitive disadvantages. In 2023, 83.7 per cent of LDC goods exports faced trade barriers or policy-induced competitive disadvantages. More than 20 per cent of LDC goods exports are facing more than 20 policy-induced hurdles to compete in foreign markets (Glauber, 2023). This often outweighs any gains in market access due to trade liberalisation (see Figure 18).

A new development in the trade policy of European countries is the introduction of the Carbon Border Adjustment Mechanism (CBAM). Set to take effect in 2026, this policy aims to apply carbon pricing to imports entering the European Union. Its objective is to encourage companies to reduce the carbon emissions linked to supply chains located outside the European continent. It also aims to level the playing field for the EU's domestic industry, which is subject to the Carbon emission trading scheme, whereas foreign companies are not. Finally, it seeks to prevent carbon leakage, whereby European companies relocate their supply chains to countries with lower environmental standards.

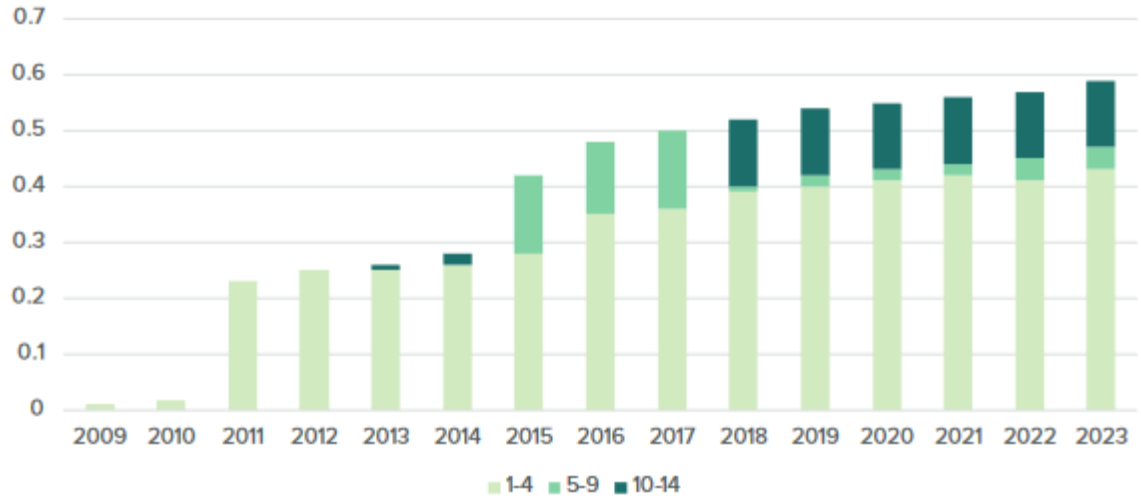
Although the CBAM currently targets a limited number of carbon-intensive products (such as cement, iron, steel, aluminium and fertilisers), of which the African countries are not major suppliers, there is a risk that the mechanism will be extended to a broader range of products. If the European Commission (2022) continue its current objective and extends the mechanism to a broader range of products, it can have significant implications for African economies. Since the European market is the main destination for non-resource based African products, African companies' risk of either paying a higher trade cost to Europe, paying a high price to upgrade or being shut out of European supply chains (UNCTAD, 2022). An alternative would be that African countries develop their own carbon monitoring systems, and potentially regional carbon markets (African Climate Foundation & Firoz Lalji Institute for Africa, 2023).

Table 4 Trade Agreement in Africa

	East African Community (EAC)	Common Market for East and South Africa (COMESA)	South African Development Community (SADC)	Economic Community ofWest African States (ECOWAS)	West African Economic and Monetary Union (WAEMU)	South African Customs Union (SACU)	Economic and Monetary Community of Central Africa (CEMAC)	African Continental Free Trade Area (AfCFTA)
Tariffs on manufactured goods	✓	✓	✓	✓	✓	✓	✓	✓
Tariffs on agricultural goods	✓	✓	✓	✓	✓	✓	✓	✓
Export taxes	×	✓	✓	×	✓	×	✓	✓
Customs	✓	✓	✓	✓	×	✓	×	✓
Competition policy	✓	✓	✓	×	✓	✓	✓	✓
State aid	✓	✓	✓	×	×	×	✓	×
Antidumping	×	✓	✓	✓	×	×	✓	✓
Countervailing measures	×	✓	✓	×	×	×	×	✓
STEs	×	×	×	×	×	×	×	✓
TBTs	✓	✓	✓	×	×	✓	✓	✓
GATS	✓	✓	✓	✓	✓	×	✓	✓
SPS measures	✓	✓	✓	×	×	✓	✓	✓
Movement of capital	✓	✓	×	✓	✓	×	✓	✓
Public procurement	✓	×	×	×	×	×	×	×
IPRs	✓	×	×	×	×	×	×	✓
Investment	✓	✓	✓	×	×	×	×	✓
Environmental laws	✓	✓	×	✓	×	×	✓	×
Labor market regulations	✓	✓	×	×	×	×	×	×

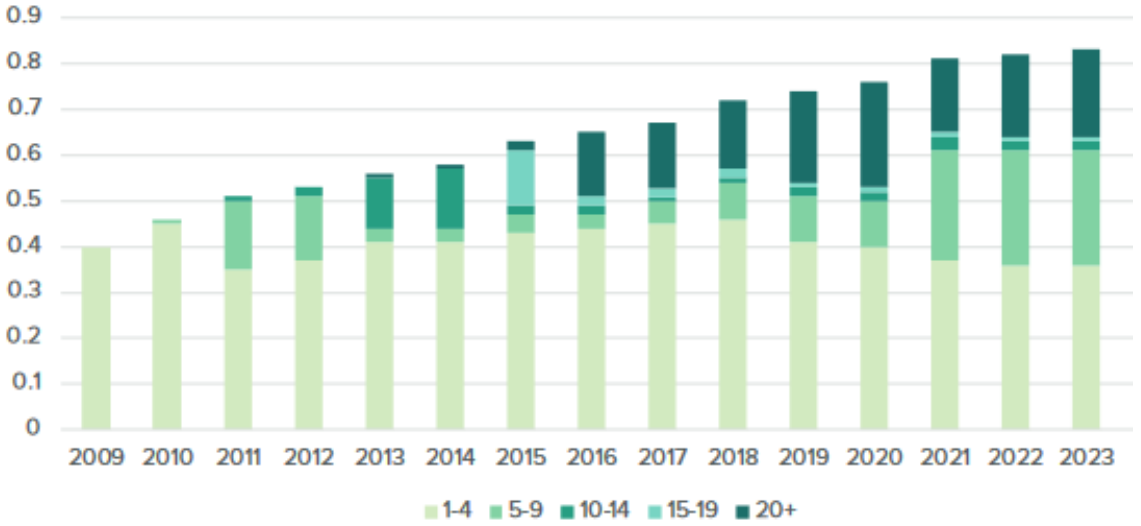
Note: ✓ = policy area covered; × = policy area not covered; AfCFTA = African Continental Free Trade Area; GATS = General Agreement on Trade in Services; IPRs = intellectual property rights; PTAs = preferential trade agreements; SPS = sanitary and phytosanitary; STEs = state trading enterprises; TBTs = technical barriers to trade. Source: The African Continental Free Trade Area: Economic and Distributional Effects (2020)

Currently, however, the main difficulty arises not from tariffs but from trade subsidies. A large share of African exports competes against subsidised competitors. These foreign competitors benefit from subsidies both in their home countries and in their exports to third countries. African countries, therefore, face difficulties exporting to the European Union, which is the biggest destination for African exports, as well as to other major markets like the United States and China. They also face difficulties exporting to other countries where these competitors are also exporting, including within Africa. For instance, the Common Agricultural Policy (CAP), established by the European Union (EU), provides heavy subsidies to European farmers, ensuring price stability and food security within the EU. This policy has several negative consequences for African producers, as they do not benefit from a similar instrument.



18.a Share of LDC goods exports facing improved market access conditions

Edit: The number below represents the number of policy-induced trade reforms that facilitate the access of a given good from an LDC to a foreign market, which were not present before the 2008 financial crisis.



18.b Share of LDC goods exports facing policy-induced competitive disadvantages abroad

Figure 18 Changes in the market access of Least Developed Countries

Edit: The number below represents the number of policy-induced competitive disadvantages faced abroad by a given good, which were not present before the 2008 financial crisis.
Source: (Glauber, 2023)

5.2 African Trade Regimes

African regional arrangements

Despite the continent's large population, most African countries have small economies. The collective GDP of the African continent is $2.8 trillion in 2024, while France alone has a GDP of $3 trillion. Under these conditions, it is difficult for African companies to grow in size and achieve sufficient economies of scale to be competitive at the international level. Moreover, given their economic structure, most countries will remain dependent on imported goods, particularly capital-intensive and higher technology products for the foreseeable future. Searching for scale by selling to external markets is therefore a necessary part of the region's transformation strategy.

Exporting to advanced economies will continue to comprise primary products but might be difficult in other areas since those markets are already dominated by large players and have high barriers to entry often of an intangible nature. Neighbouring regions, however, have lower barriers to entry and therefore provide better opportunities to scale up and upgrade. These countries are also more likely to have similar levels of development, preferences, and legal frameworks. As a result, regional trade is an important step towards gaining scale.

It is in this context that the discussion on regional trade agreements emerges. These agreements aim to increase intra-African trade and create regional value chains. However, as many African countries export similar products to their neighbours, the gains from trade are limited. This has created incentives for many African countries to include provisions in trade agreements to restrict trade in sectors where they are specialised to protect local industries. This, in turn, reduces the impact of trade agreements in Africa.

An issue with these multiple overlapping regional economic communities is their unnecessary degree of complexity, creating a "spaghetti bowl", (Bhagwati, 1995) of interwoven trade agreements with different levels of tariffs, regulations and authorities. Countries can find themselves in multiple regional economic communities adding to costs and regulatory uncertainty. For instance, Tanzania is part of the Common Market for Eastern and Southern Africa (COMESA), the EAC, Global System of Trade Preferences among Developing Countries (GSTP) and the Southern African Development Community (SADC). The AfCFTA aims to harmonise those regulations.

On the other hand, increasing the amount of trade agreements for a country improves the market access of its companies. Hur, Alba, and Park (2010) show that countries that have multiple trade agreements benefit from increased trade flows, often amplifying their economic influence in global trade networks.

African Continental Free Trade Area (AfCFTA)

The African Continental Free Trade Agreement (AfCFTA) is the flagship of the African Union *Agenda 2063: The Africa We Want*, (2015). It has the goal of furthering economic integration, improving export performance, addressing infrastructure deficits, developing digital infrastructure, ensuring energy availability, maintaining peace and stability, and facilitating trade between African countries. The AfCFTA came into force in May 2019. It is a continent-wide free trade agreement, with 54 of the 55 member states of the African Union. Funded by the African Union, it aims to reduce barriers to trade between African countries.

Among its objectives are:

- Creating institutions for the establishment of a single, liberalised market (e.g., increased intellectual property rights protection, the creation of a Pan-African payment and settlement system).
- Creating institutions to implement regulatory measures that can, for instance, improve sanitary standards.
- Reducing barriers to capital and labour to facilitate investment (e.g., increased investment and property rights protection).
- Developing regional infrastructure.
- Establishing a continental customs union (90 per cent tariff liberalisation, establishment of rules of origin, creation of institutions to identify hindrances to trade).

A significant milestone for the organisation is the establishment of a system of rules of origin for African products. This policy will be helpful in facilitating the traceability of African products, as it increasingly becomes a requirement for participation in regional GVCs. It will also be a major tool to distinguish products made in Africa from those made outside of the continent. The goal is to provide lower tariffs for the former goods.

One of the interests of this project is to favour intra-African trade. As part of South-South trade, intra-African trade is expected to be skill-intensive compared to North-South trade flows (Amsden, 1980, 1986). Based on current data, the leaders in intra-African trade in merchandise are South Africa, Egypt, and Morocco. A more concerted effort to develop and implement industrial policies will be required in other countries to ensure that the extra trade generated is not captured by a small set of regional production hubs.

Since lower tariffs and protectionist measures may generate adjustment costs, the development of the AfCFTA is expected to create winners and losers. Especially with respect to trade liberalisation, the AfCFTA has the potential to reinforce structural imbalances between countries. The continent is home to both countries at an advanced stage of industrialisation and those still focused on primary production. Trade liberalisation under the AfCFTA will make it difficult for the latter to apply infant industry protection. Therefore, the opening of African markets to more diversified regional powers will reinforce the dominant position of the diversified countries while dampening the growth of lagging countries (Andreoni et al., 2019).

This concern has partly been addressed by African Union leaders. The organisation aims to develop an adjustment fund to compensate those who lose from the transition. Ideally, this fund would be financed by the largest economies on the continent. Currently, three per cent of goods are excluded from lower tariffs.

Another risk is that several African countries developing bilateral agreements with external actors may become areas where AfCFTA trade barriers are circumvented to bring in goods from outside. Furthermore, albeit a smaller problem, without large African manufacturers, those countries may become assembly hubs for semi-finished goods that will flood African markets. Improving the position of African industries in global value chains, while enabling African actors to have more agencies in their production to allow a process of learning by doing, will require rethinking the organisation of supply chains in Africa.

For instance, it will require the emergence of African-led large companies, as only those types of companies can decide and organise what is produced and in which countries.

While the AfCFTA provides multiple tools for modernisation, it can also reduce the ability of African countries to industrialise, as they are pushed into lower tariffs before developing competitive industries. While some of these policies have been abused in the past by African governments to protect industries that hindered industrialisation, they remain a major and efficient tool to extract rent from taxing foreign trade while protecting local industries. Overall building institutions to discuss and organise the transition of African countries will be extremely important for managing the establishment of supply chain in Africa. In this sense, the AfCFTA should be a political construction and not solely an economic one.

6. Conclusion and future research

The African continent is at a crossroads. The climate challenge is intensifying at a moment when the world economy is undergoing major geopolitical and economic changes. An important part of these changes is due to the shift in the gravity of production and trade towards Asia. In 50 years, China has moved from a subsidiary position within the GVCs to becoming one of the main players in these reconfigurations. In response to this threat, and also due to a general trend towards strengthening security and resilience to shocks, Western countries are returning to protectionism and industrial policies. One of the consequences of this shift is further changes in the organisation of GVCs as countries seek to reshore production and favour neighbouring countries at the expense of other (potentially hostile) countries.

African countries will need to adapt to this reconfiguration of global value chains. Due to the history of colonialism, most African countries are currently stuck in an impoverishing pattern of specialisation. They mainly provide natural resources with low added value, which are then sent to other regions with greater manufacturing capabilities. For those countries that have found niche participation in manufacturing GVCs, they are mostly integrated at the lower end of the value chain. Their participation in GVCs by integrating foreign supply chains has not led to significant development of their domestic production systems. The power imbalance between large foreign companies and domestic firms has stymied an upgrading of the capabilities of local manufacturers.

The development of national champions in manufacturing has also been hindered by foreign actors in other ways. The large importation of final goods into Africa increases competition for domestic producers, who lack scale and resulting productivity gains. At the same time, African companies struggle to protect themselves from foreign competitors and implement effective industrial policies due to budget constraints and reduced policy space. This reduction in policy space is the result of external pressure to liberalise trade, reduce unequal treatment between foreign and domestic companies, enforce strong intellectual property rights, and limit governments' ability to intervene directly in the economy. These policies were pushed by countries that are major players in GVCs, using both multilateral organisations (WTO, IMF, etc.) and bilateral agreements, through which they can pressure smaller ones into signing unequal treaties.

African countries have begun to address these issues through new regional arrangements, most notably the AfCFTA, to develop intra-African trade, achieve economies of scale through regional trade, and strengthen collective bargaining in order to negotiate joint industrial policies and ensure better multilateral deals. This may help African governments to defend themselves against major global players. However, as the AfCFTA pushed for trade liberalisation amongst its members, failure to significantly enhance their industrial capabilities will merely deepen economic imbalances to the benefit of the larger and more advanced regional economies such as South Africa, Egypt, and Morocco.

In this light, the supply chain research stream of the CSST will extend the analysis in four directions. The first two directions examine the consequences of rising tariff and non-tariff barriers on African exports, and subsequently their effect on the upgrading prospects of African industries. The last two papers discuss how to establish supply chains in Africa: first, from the perspective of the most developed African economies, through the establishment of green supply chains; then from the perspective of the least developed African economies, by discussing the hurdle of importing intermediary goods.

The **first paper** studies the effect of the rise of tariffs on industrialisation in Africa. Tariffs are expected to be the main tool for trade policy used in Trump's second presidency. Those tariffs are expected to launch a new trade war between the three blocks of the world economy, the US, China and the EU. As tariff barriers rise between these blocks, especially since the tariff barriers are implemented unevenly, we can expect significant reconfiguration of trade flows. We can also expect the emergence of trade buffer zones.

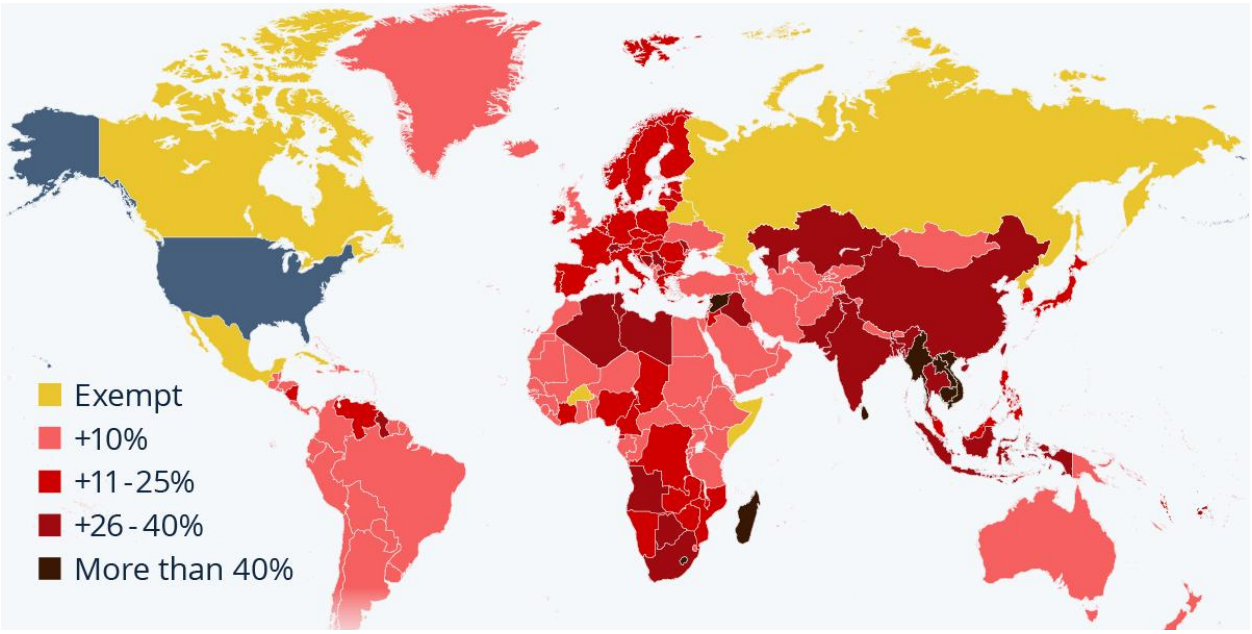


Figure 19: Trump's Reciprocal Tariffs Announced in April 2025

Source: The infographic was created by *Statista* (2025) based on White House data.
Note: Additional tariffs are imposed on top of existing tariffs. A few products are exempt steel and aluminium and their derivatives (including car parts), bullion (including gold), copper, energy (including oil), minerals not available in the US (including critical minerals), pharmaceuticals, semiconductors, and lumber.

We define a trade buffer zone as a neutral country during a trade war that acts as a trade and production hub, from which economic actors can buy goods from one side of the war to sell them, with or without processing, to the other side. Examples include Morocco, Mexico, and Vietnam (Gopinath et al., 2025; Iyoha et al., 2024; Telquel, 2024.; Alfaro & Chor, 2023).

In this paper, we investigate whether being a buffer zone influences on domestic value added and the local production system of the country. More specifically, we examine whether it can generate linkages (consumption, production, fiscal and technological linkages) with the rest of the economy, which might serve as a source of industrial upgrading. We also explore the potential for African countries to become buffer zones, based on their market access.

The **second paper** aims to adopt a similar approach to study the rise of non-tariff barriers on African exports. In this paper, the focus shifts to green trade policies and the reconfiguration of supply chains that they can generate in Africa. The newest and major development in this category is the activation, in 2026, of the CBAM. This policy has the effect of establishing a carbon pricing market on companies exporting

carbon-intensive products (cement, iron and steel, aluminium, fertilisers, electricity, or hydrogen) to the European market. Companies that want to export to the common market after 2026 are expected to assess the carbon footprint of their supply chains and internalise it in their production costs through a carbon market.

As it stands, this policy is expected to have a limited impact on African countries, as they are not major exporters of these products to Europe. However, an expansion of this policy to a wider range of products runs the risk of strongly impacting African countries, as Europe is the main destination for African manufactured goods. Once extended, this policy is expected to trigger a major reconfiguration of supply chains involving African companies. There may be winners and losers in Africa, with some countries able to upgrade their supply chains, while others fall further behind or become delinked altogether due to their limited ability to adapt.

The second paper will analyse the reconfiguration created by CBAM and its effects on African countries. These policies can, for instance, lead to increased competition in Africa from companies that have been shut out of European markets. It will especially discuss the potential redirection of African exports towards other regions, particularly African markets. Finally, we will assess how changes in market destinations can open new opportunities for upgrading for African companies.

The **third paper** discusses how African countries can leverage their access to critical minerals to move up the value chain and support the establishment of green supply chains in Africa. Some African countries are key actors in the production of green goods such as EV batteries, solar panels, and wind turbines. These countries are mainly involved in upstream tasks, particularly extraction. While they possess abundant resources that are essential for producing green technologies, they generally lack the capabilities to process them. As a result, raw materials tend to be exported to countries with the necessary processing capacities, especially China.

At the same time, there are African countries with the potential to develop green industries, based on their existing capabilities and resources (natural, fiscal, technological…). However, these countries have yet to develop such industries and climb up the supply chain, despite having the required capabilities to do so.

This third paper aims to investigate what missing elements are preventing these African countries from developing the absent segments of the value chain. The leading hypothesis in this paper is that, in addition to the required capabilities and access to natural resources, an organising actor—a lead manufacturer—with the right capabilities to coordinate supply chains is also needed. We will identify cases where countries have managed to move up or down the value chain and highlight the key role of lead manufacturers in making this possible. We then assess which African countries possess the necessary capabilities and resources to develop green industries, and finally, we discuss which industrial policies are required to support the rise of such manufacturers in those countries.

The **last paper** discusses the ability of African countries to access critical inputs and its effect on industrialisation. Industrialisation requires a steady and growing supply of critical inputs (e.g. fertilisers, minerals, oil and pharmaceuticals), which, in the African context, might be subject to limitations. Those limitations can be attributed, for instance, to global shortages, supply chain failures or foreign exchange constraints.

However, the paper makes the case that even in "normally" operating markets, African countries can have difficulties accessing those goods, both in terms of price and quantities. African countries might be subject to constraints in terms of product prices, as some inputs can be too expensive to buy for small companies. Limitations in terms of quantity or availability can also stem from patenting rights or barriers to entry.

In this study, we first measure whether African countries are importing critical inputs at a higher price compared to other countries. We then analyse the market structure of those products to identify bottlenecks in the supply of these goods in developing markets. Finally, we test whether importing from other African countries can alleviate some of these constraints.

With the reconfiguration of global trade, African countries risk being disconnected from major supply chains. The rise of China in global supply networks, coupled with increasing Western protectionism, may create an impetus for African countries to focus more on servicing the African market. The creation of the AfCFTA signals a growing interest in regional economic integration. With joint investments in industrial capacity-building, improved infrastructure to facilitate intra-African trade, and increased bargaining power for African countries, the 21st century might truly be the African century.

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Appendix

Table 5 Country ISO code

Country Name	Country Code	Country Name	Country Code	Country Name	Country Code	Country Name	Country Code
Algeria	DZA	**Djibouti**	DJI	**Madagascar**	MDG	**Sierra Leone**	SLE
Angola	AGO	**Egypt**	EGY	**Mali**	MLI	**Somalia**	SOM
Benin	BEN	**Equatorial Guinea**	GNQ	**Malawi**	MWI	**South Africa**	ZAF
Botswana	BWA	**Eritrea**	ERI	**Mauritania**	MRT	**South Sudan**	SSD
Burkina Faso	BFA	**Ethiopia**	ETH	**Mauritius**	MUS	**Sudan**	SDN
Burundi	BDI	**Gabon**	GAB	**Morocco**	MAR	**Swaziland**	SWZ
Cameroon	CMR	**Gambia**	GMB	**Mozambique**	MOZ	**Tanzania**	TZA
Cape Verde	CPV	**Ghana**	GHA	**Namibia**	NAM	**Togo**	TGO
Central African Republic	CAF	**Guinea**	GIN	**Niger**	NER	**Tunisia**	TUN
Chad	TCD	**Guinea-Bissau**	GNB	**Nigeria**	NGA	**Uganda**	UGA
Comoros	COM	**Kenya**	KEN	**Rwanda**	RWA	**Western Sahara**	ESH
Congo	COG/ZAR	**Lesotho**	LSO	**Sao Tome And Principe**	STP	**Zambia**	ZWB
Dem. Rep. Congo	ZAR	**Liberia**	LBR	**Senegal**	SEN	**Zimbabwe**	ZWE
Cote D'Ivoire	CIV	**Libya**	LBY	**Seychelles**	SYC		

Table 6 Change in inter-region trade flows between 2012 and 2022 (in billion USD)

		Core of the global economy						Periphery															
		North America		Western Europe		East Asia		Eastern Europe		South Asia		Northern Africa		Central-South America		Middle East		Non EU Ex-USSR		Subsaharan Africa		Pacific		Total Export	
	Exporters	2012	2022	2012	2022	2012	2022	2012	2022	2012	2022	2012	2022	2012	2022	2012	2022	2012	2022	2012	2022	2012	2022	2012	2022
Core	North America	586	746	322	479	275	394	14	33	110	177	13	15	383	521	81	78	17	6	25	22	35	37	1861	2508
	Western Europe	430	680	2950	3686	341	516	377	618	217	222	92	88	159	166	266	291	156	71	105	100	54	56	5147	6494
	East Asia	686	969	509	802	843	1050	76	159	580	1076	35	42	259	354	193	266	110	144	87	153	98	157	3476	5172
Periphery	Eastern Europe	20	43	404	681	17	28	154	285	9	14	7	11	8	13	30	41	58	46	5	9	2	5	714	1176
	South Asia	179	438	214	349	395	594	17	45	422	613	14	16	51	81	115	144	16	12	49	72	63	78	1535	2442
	Northern Africa	24	13	118	123	17	13	2	7	11	18	10	8	7	6	19	23	1	1	5	7	1	1	215	220
	Central-South America	474	596	151	162	169	252	9	12	58	75	11	13	220	216	27	41	10	6	15	13	5	7	1149	1393
	Middle East	137	101	209	267	467	456	16	48	282	328	32	47	16	27	174	245	20	33	36	55	8	7	1397	1614
	Non EU Ex-USSR	21	20	268	191	100	169	93	87	22	61	15	9	10	12	53	61	135	55	4	4	1	1	722	670
	Subsaharan Africa	58	32	134	144	91	114	3	5	53	71	4	3	20	8	18	54	2	1	87	78	7	4	477	514
	Pacific	16	22	23	30	171	301	1	3	52	89	2	2	5	6	11	12	1	0	4	4	26	19	312	488
	Total import	2631	3660	5302	6914	2886	3887	762	1302	1816	2744	235	254	1138	1410	987	1256	526	375	422	517	300	372	17005	22691

Note: A more aggregated version can be found in the Annexe in Table 7 Core-Periphery trade (2012-2022)*Table 7*

Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010).

Table 7 Core-Periphery trade (2012-2022)

	Core		Periphery	
	2012	2022	2012	2022
Core	6942	9322	3542	4852
Perphery	3877	5139	2644	3378

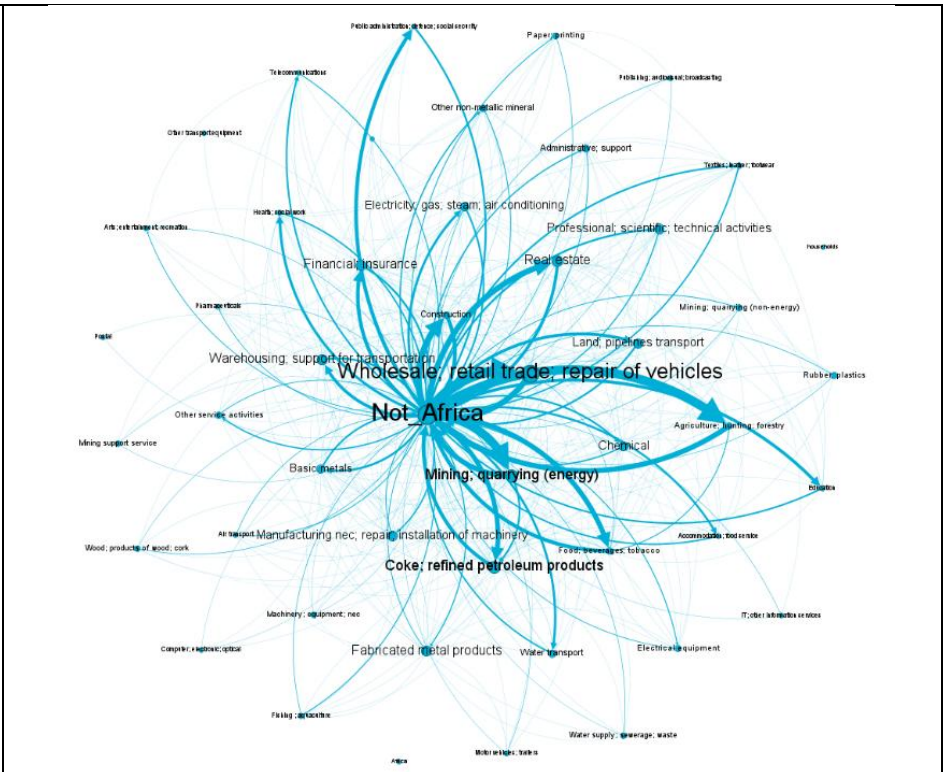
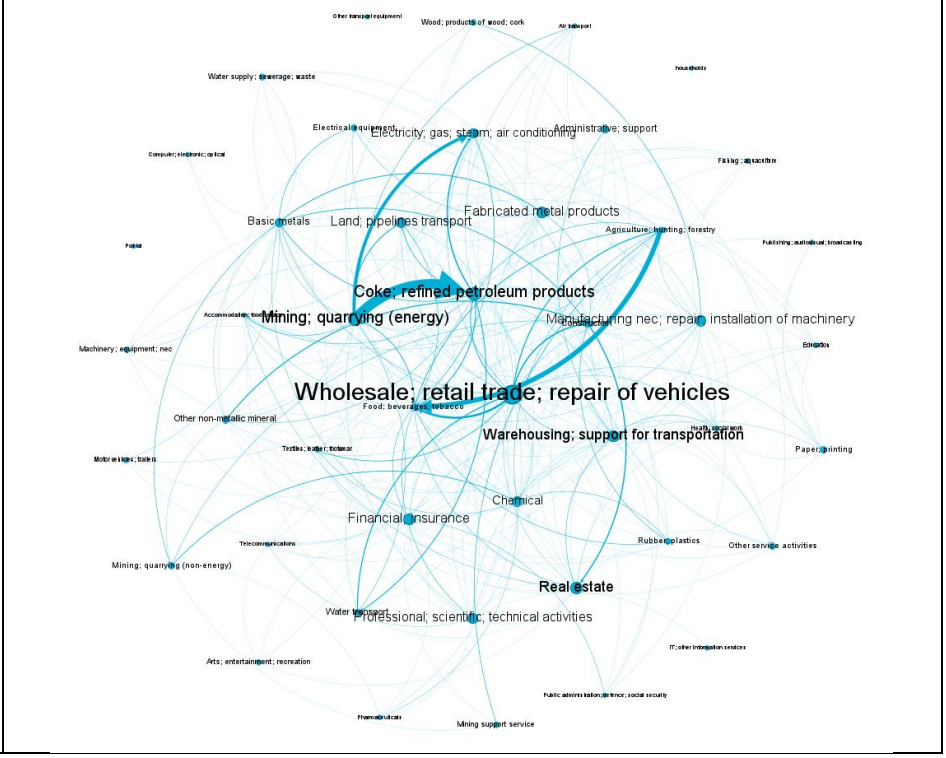
Note: ***Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010).***

Figure 20 Origin of import by Countries (2022)

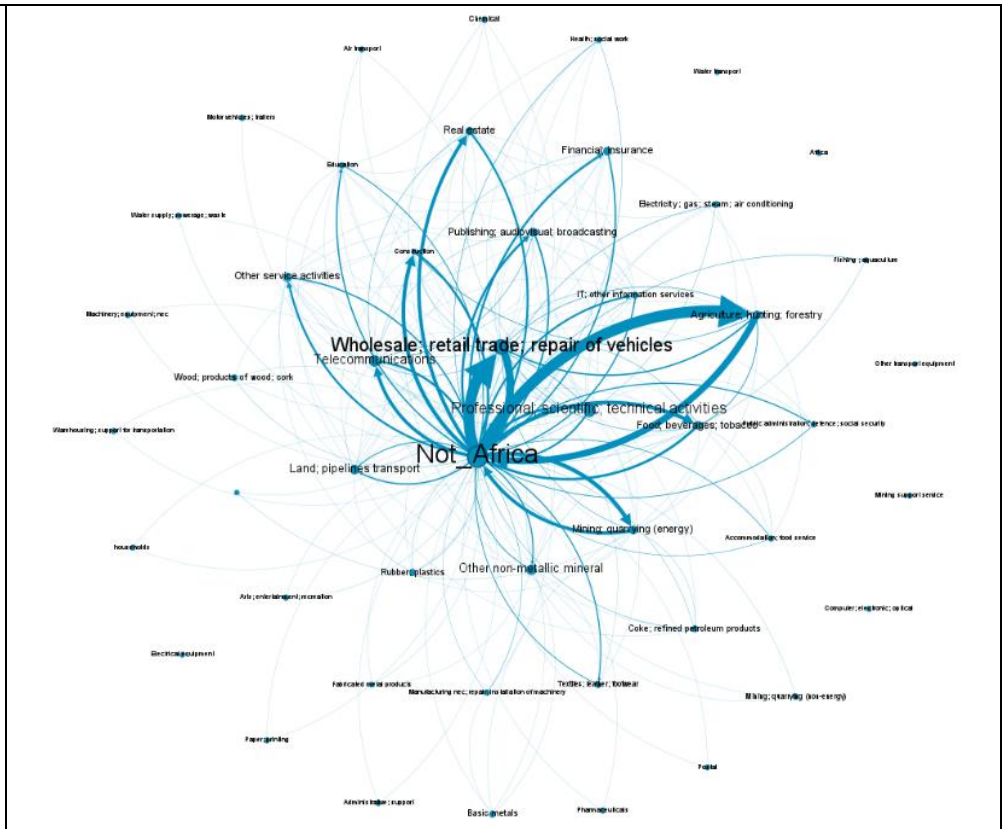
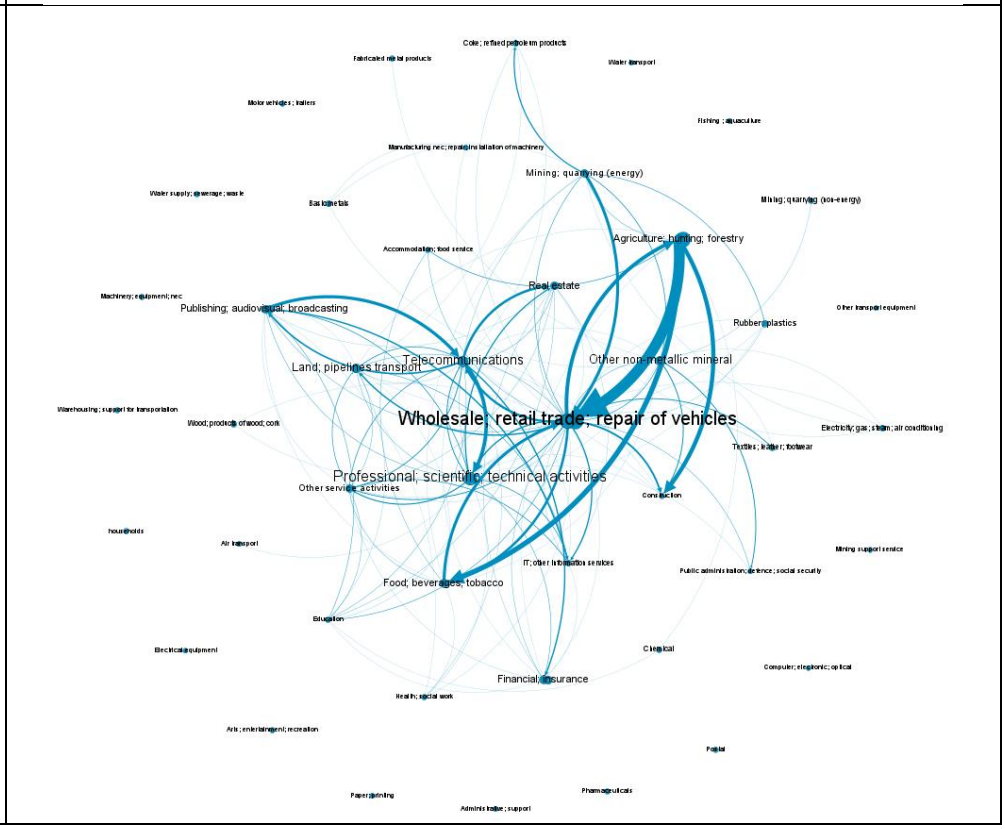
Note: Correspondence table for Country ISO Code can be found in Appendix

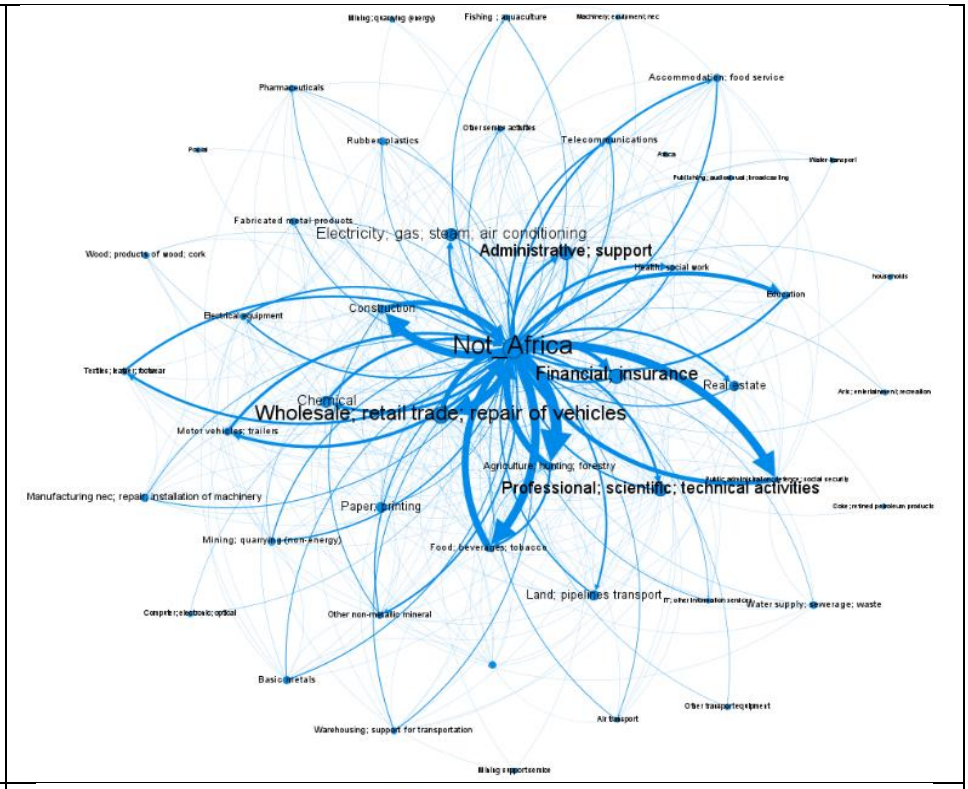
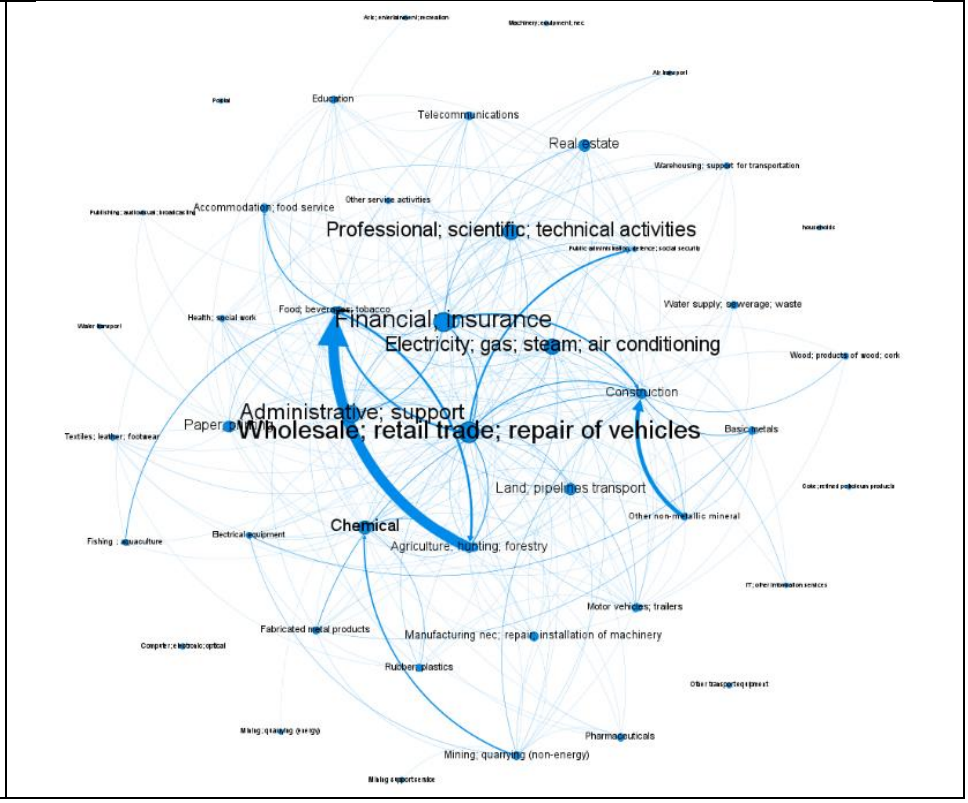
Table 5*. Source: Author's calculations using the BACI-CEPII Database (Gaulier & Zignago, 2010).*

Figure 21 Inter-Industry linkages.

Inter-industry linkages in Egypt for 2020, with international trade. *Flow sizes are based on the relative size of the largest flow compared to the smallest. Not_Africa and Africa are aggregators representing trade flows outside Africa and to other African countries, respectively. Final demand not included.*	
Inter-Industry in Egypt flows without international trade	

Source: Author's computation using OECD-ICIO.

Inter-industry linkages in Nigeria for 2020, with international trade.	
Inter-Industry in Nigeria flows without international trade	

Inter-industry linkages in Morocco for 2020, with international trade.	
Inter-Industry in Morocco flows without international trade	

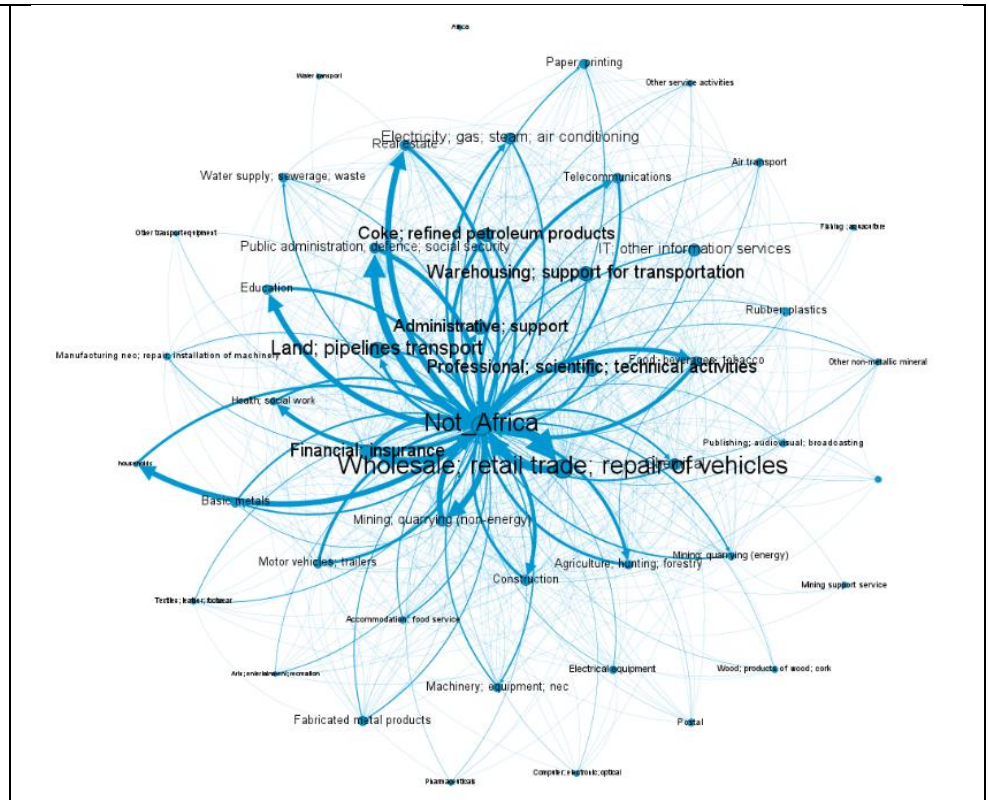
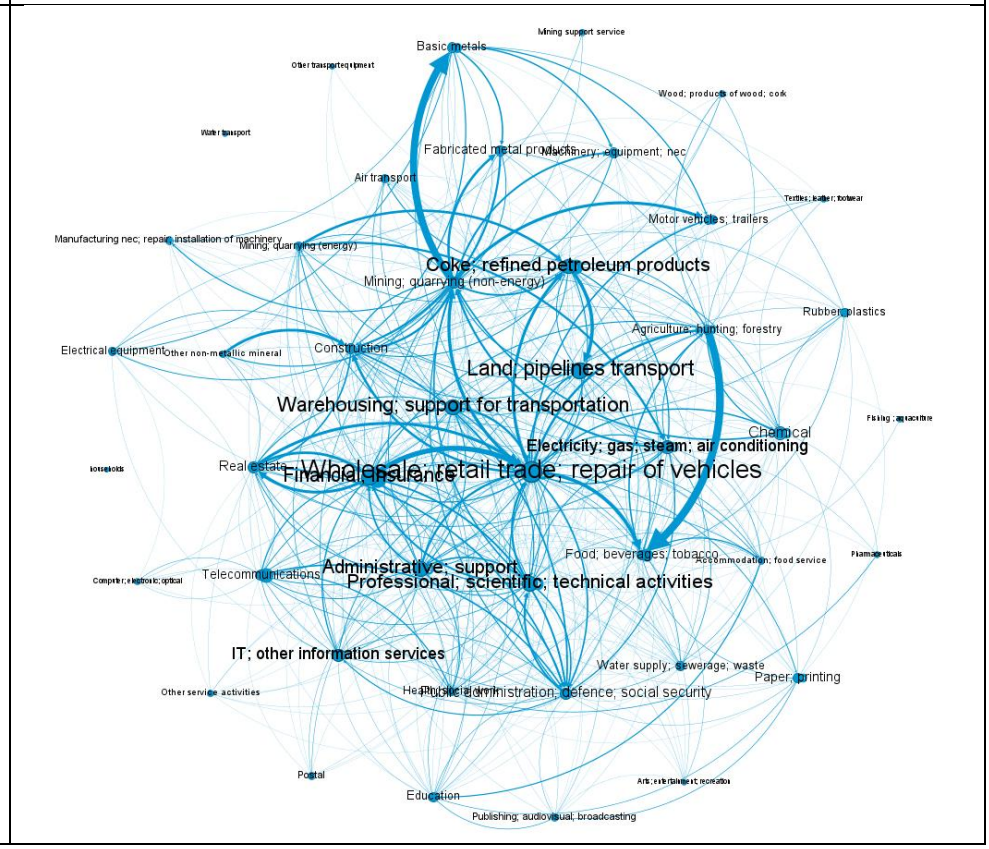
Inter-industry linkages in South Africa for 2020, with international trade.	
Inter-Industry in South Africa flows without international trade	

Table 8 African Import by origin and end-use categories

China	Capital			Consumption			Intermediary			Cap+Cons			Cap+Int			Cons+Int		
ISO (3)	China	Africa	ROW	China	Africa	ROW	China	Africa	ROW	China	Africa	ROW	China	Africa	ROW	China	Africa	ROW
AGO	810	455	1960	661	151	2060	1455	503	4557	293	30	656	23	5	71	294	66	108
BDI	33	11	78	39	77	45	90	236	212	7	5	56	3	1	3	22	30	6
BEN	133	57	273	264	150	1318	838	392	1144	84	11	249	5	1	6	100	114	26
BFA	131	43	360	128	353	445	296	786	965	66	17	165	2	1	15	72	230	39
BWA	59	432	224	38	993	116	95	1583	286	42	214	77	3	28	3	10	1218	120
CAF	25	114	100	9	78	86	24	81	97	5	2	26	1	1	2	6	23	7
CIV	782	313	2181	663	577	2055	1190	2944	4432	225	30	453	15	1	28	140	130	95
CMR	370	218	463	876	117	992	1385	396	1726	230	4	235	30	1	16	270	8	43
COG	110	980	461	192	110	713	448	208	804	45	5	92	3	0	10	42	47	22
COM	9	2	10	15	29	103	35	14	71	4	1	15	0	0	0	4	2	1
CPV	15	4	107	34	16	290	26	8	285	8	2	43	0	0	3	2	1	5
DJI	453	12	328	673	90	939	1780	743	1774	173	2	488	20	0	9	158	23	36
DZA	1026	85	2866	1001	123	3236	3603	1140	18094	315	33	1129	46	0	98	280	32	183
EGY	2716	79	7069	1341	326	6726	10068	1895	51815	1378	23	2428	113	0	522	678	32	840
ERI	70	2	33	5	1	64	68	6	134	3	0	14	1	0	2	2	0	3
ETH	1190	20	1194	486	163	886	1824	1466	4424	304	26	618	24	1	42	230	57	90
GAB	217	59	1437	84	77	493	195	142	990	23	9	127	3	0	18	22	22	21
GHA	767	633	1423	1441	544	2232	3058	1156	4514	333	46	864	40	2	31	284	30	87
GIN	467	49	302	472	245	844	1077	279	833	106	6	295	17	0	11	140	44	19
GMB	31	7	55	79	82	381	324	144	342	25	6	64	2	0	2	20	9	7
GNB	5	5	13	23	40	79	21	53	65	4	2	9	0	0	1	3	3	2
GNQ	54	187	100	34	17	247	108	5	209	10	1	27	0	0	2	24	0	4
KEN	852	127	1375	1132	658	1080	2498	1745	6308	483	62	629	47	2	30	379	230	127
LBR	3236	40	8365	109	51	421	265	98	524	25	3	81	3	1	5	53	9	9
LBY	301	96	867	791	720	3485	787	922	3490	291	40	1280	26	1	25	172	228	94
LSO	9	95	11	3	414	10	104	688	157	3	49	20	0	5	0	3	105	3
MAR	1147	59	4501	1196	405	4257	3558	1564	36112	906	75	2742	54	0	170	314	322	643
MDG	160	84	265	130	77	576	698	513	1724	57	20	115	4	2	8	118	45	24
MLI	105	53	362	134	399	304	170	1013	841	99	36	219	1	2	10	71	122	36
MOZ	414	367	5201	251	679	601	930	5412	3577	91	50	162	46	12	18	141	403	52
MRT	84	83	305	326	226	714	457	382	1797	31	5	141	6	0	6	63	55	49
MUS	172	54	356	258	294	1071	458	562	1464	172	48	362	11	2	15	50	157	43
MWI	104	73	131	28	173	53	145	480	435	27	24	49	1	2	4	32	40	15
NAM	107	861	512	105	946	221	277	1350	1259	48	182	54	3	28	8	21	526	8
NER	236	18	413	110	204	680	449	324	521	28	7	90	1	0	7	46	145	58
NGA	3600	191	3241	3918	386	3185	10335	1171	13373	1306	27	1794	102	2	78	1192	72	248
RWA	179	34	286	230	317	399	474	1093	847	84	19	161	10	0	7	66	83	17
SDN	325	29	638	560	294	2088	851	841	2719	115	24	260	16	0	18	167	89	63
SEN	492	103	1332	668	317	1842	1542	1114	3930	193	10	504	21	0	15	197	108	83
SLE	86	27	106	178	53	331	240	70	329	18	1	82	4	0	3	41	5	12
SOM	77	6	167	208	342	2089	626	48	1302	62	2	383	5	0	11	69	59	20
STP	1	27	8	4	3	42	8	3	35	1	2	7	0	0	0	2	0	1
SWZ	13	142	34	21	360	50	140	787	248	8	55	16	1	7	1	5	151	3
SYC	11	25	607	17	52	281	35	85	242	10	4	59	1	0	4	5	6	5
TCD	55	7	134	44	22	197	132	47	167	21	0	58	0	0	3	29	5	15
TGO	193	57	272	862	154	865	1054	1137	1578	380	8	399	17	0	6	167	155	29
TUN	415	23	1997	186	198	1289	1587	501	14296	386	31	797	29	0	63	142	1461	156
TZA	1223	225	1346	1004	275	657	2560	2304	3899	374	30	504	50	1	21	315	103	110
UGA	442	106	648	231	406	315	920	1113	2133	111	14	396	15	1	23	125	79	63
ZAF	4045	1000	9100	3918	1622	6193	9576	10655	28749	4031	20	5830	381	3	536	888	1327	450
ZAR	1358	460	591	550	1015	866	2288	2368	2588	222	58	418	24	8	21	270	257	58
ZWB	467	599	631	114	600	185	672	2752	1675	41	110	226	5	9	16	78	180	48
ZWE	585	809	446	73	520	187	479	2680	780	24	106	83	5	10	8	57	439	33
	29967	9647	65285	25917	16541	58884	72323	58002	234872	13331	1597	26051	1240	140	2035	8081	9087	4359

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