Current Capabilities and Future Potential of African Textile & Apparel Value Chains

Focus on West Africa

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CURRENT CAPABILITIES AND FUTURE POTENTIAL OF AFRICAN TEXTILE & APPAREL VALUE CHAINS

FOCUS ON WEST AFRICA

Lindsay Whitfield

DECEMBER 2022

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Current Capabilities and Future Potential of African Textile & Apparel Value Chains: Focus on West Africa

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This is a study commissioned by the Tony Blair Institute for Global Change for the African Continental Free Trade Area (AfCFTA) secretariat, aiming to add to the current debate on the AfCFTA Rules of Origins in Textiles and Apparel and the potential for developing textile and apparel regional value chains in the continent.

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EXECUTIVE SUMMARY

African countries export very little of what is traded within apparel global supply chains and across the African continent, except in the case of cotton, but import a large amount of what the rest of the world produces. Africa's fabric and apparel production is biased towards cotton, especially in yarn and fabric production, with little participation in production and export of man-made fibre, yarn and fabric. Most apparel exports from the continent come from North Africa, followed far behind by East and Southern Africa. Apparel exports from the African continent go largely to Europe and then North America.

Currently, only 8% of Africa's textile and apparel imports are supplied by other African suppliers. Southern Africa and especially South Africa is the largest supplier of intra-African imports of apparel. Inputs and intermediate textile products account for a significant share of intra-African textile and apparel imports in Southern, East and North Africa. Notably, under the free trade area in the Southern African Development Community, trade in clothes and home textiles increased, but trade in fibre, yarn and fabric did not significantly change. Overall, intra-African sources still account for a small share of these countries' overall supplies of imported inputs, which indicates a substantial untapped potential.

West Africa produces about 60% of Africa's cotton but accounts for the bulk of its exports outside the continent, accounting for about 5% of the world cotton production and about 15% of world exportation. However, West African countries have little modern production capabilities in spinning, weaving, knitting or dyeing. A significant portion of the population in West Africa buys wax print cloth and has their clothes tailor made. The majority of the greige fabric used by the wax printing companies in Cote d'Ivoire and Ghana, which supply the rest of the sub-region, is imported from Asia. Only Ghana has industrial or mass apparel production for export, and it is small, comprised largely of two firms that started exporting in the late 2010s with foreign investment. Ghana and Cote d'Ivoire have some small-scale local firms producing for the domestic market, but most of these firms do not have the capabilities to grow into large firms that could produce using industrial methods. The governments of Togo, Cote d'Ivoire and Ghana are adopting new strategies to develop apparel exports in their countries. However, only the Togolese government has started implementing its strategy, which centres on an eco-industrial park and vertically integrated knit factories established through a public-private partnership with Arise Integrated Industrial Platform.

Given the disruptions to globalized apparel supply chains during the Covid-19 pandemic and the resulting increased cost of shipping, buyers in the US and Europe are looking for shorter supply chains that are more resilient in the face of global shocks. Localization and regionalization of apparel production closer to end-markets are attractive to global apparel brands and retailers. However, global apparel buyers are no longer concerned just with cost, quality and speed to market when making sourcing decisions. They now must balance those criteria with sustainability goals.

Given the global trends outlined in this report that will reshape textile and apparel global supply chains over the next five to ten years, the textile and apparel industry should be reconceived as a sunrise and not a sunset industry. New fibre and recycling technologies are in a phase of fast innovation to produce more sustainable and circular man-made fibres. The raw material for clothing production will become manufactured fibres that rely on advancements in chemical technologies and biofabrication. Virgin cotton will be of less importance, as it is replaced by natural fibres that are less resource intensive and by man-made cellulosic fibres that feel like cotton. In the transition stage, cotton will move to organic and regenerative as well as become blended with other natural and man-made cellulosic fibres. Future fibres will have a high technology content and require licensing technology, both man-made cellulosic fibres and the new wave of synthetics that seek to replace polymers.

African countries have the opportunity to build sustainable textile and apparel industries from the start, which can give them a competitive advantage as apparel-supplying countries in South and Southeast Asia do not (yet) have 'green' industries. The cost of renewable energy technology is falling and renewable energy technologies to power industries are evolving. New fibre and recycling technologies also offer a window of opportunity to leapfrog into the next generation of technologies. Taking advantage of this window of opportunity requires that the African government look forward and not backward, that they think in terms of building new and not rebuilding the existing textile industries.

African textile and apparel domestic and regional value chains should be based on mastering the next generation of fibre production and recycling technologies. Such a strategy involves taking risks to invest in building the knowledge and skills required for this new technology, but not taking risks will mean that African countries miss the opportunity to move to the technological frontier. Furthermore, African countries can go beyond becoming competitive in the new textile and apparel global supply chains but also use them to drive broader green industrialization processes. Such a strategy also involves building diversified regional textile bases as well as regional value chains, which can harness the efforts of more economies and larger market demand as well as create a stronger platform of capabilities with which to engage in global export markets.

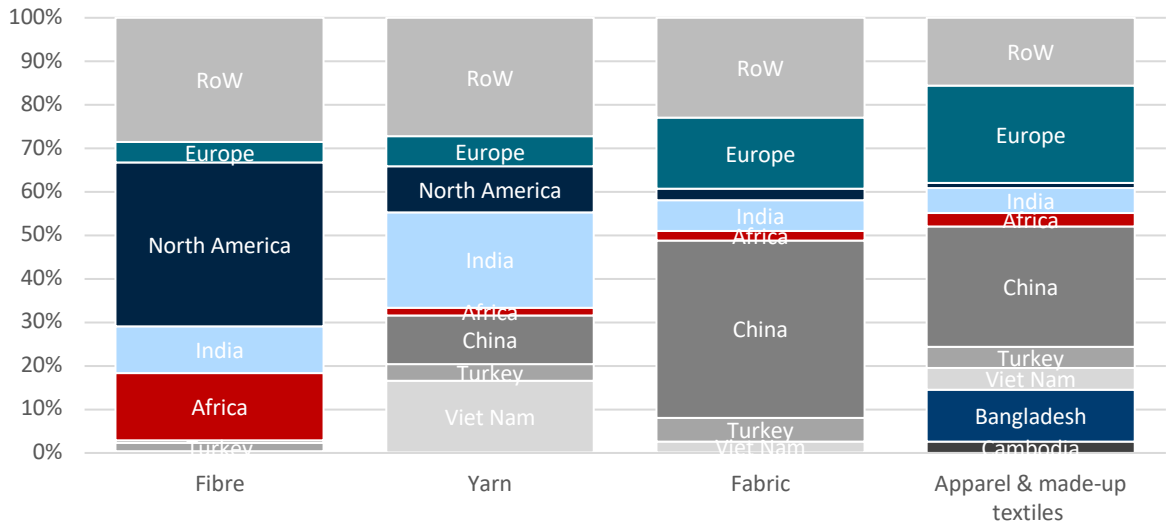
AfCFTA negotiations on the rules of origin for the textile and apparel sector are on-going, and the AfCFA Council of Ministers responsible for trade is still working on reaching a consensus. The evidence assembled in this report shows that the textile production capabilities in the major apparel producing and exporting countries in Sub-Saharan Africa are not significant enough to support trade under a double transformation rule. Therefore, major investments in spinning, knitting, weaving, dyeing, and finishing are required before countries could take advantage of the preferential market access for textile and apparel in the AfCFTA with a double transformation rule. The quantitative and qualitative evidence presented in this report on the impact of the double transformation rule under SADC indicates that it did not encourage new investments in textile production, and thus regional integration was limited by existing textile production capabilities.

Trade rules are not strong enough incentives to encourage investments in textile production. In general, trade policy is a rather blunt instrument for addressing a task that requires a range of more sophisticated industrial policy tools. Instead of relying solely on trade policy tools, governments should design and develop industrial policies that actively support the learning processes of local firms. Part of the industrial policy tool kit to support local firm learning is attracting the 'right kind of foreign direct investment' and assisting local firms in leveraging technology from these foreign firms. Governments also need to make public investments in creating the industry-specific knowledge and skills for textile and apparel, which includes building the foundation for moving into new fiber and recycling technologies through investment in basic chemistry education and supporting partnerships in research between local and foreign firms and researchers.

1. AFRICA'S PRODUCTION, EXPORT AND IMPORT LEVELS IN GLOBAL PERSPECTIVE

African countries export very little of what is traded within apparel global supply chains and across the African continent, except in the case of cotton, but import a large amount of what the rest of the world produces. To be specific, Africa accounts for 15% of world cotton fibre exports, but only a small share of world exports of yarn (2%), fabric (2%) and apparel and made-up textile exports (3%), as shown in Figure 1. In contrast, Africa accounts for a relatively large share of world imports of fabric (14%) and used apparel (30%), as shown in Figures 2 and 4. It accounts for smaller shares of world imports of cotton fibres (3%), yarn (5%), and apparel and made-up textiles (2%).

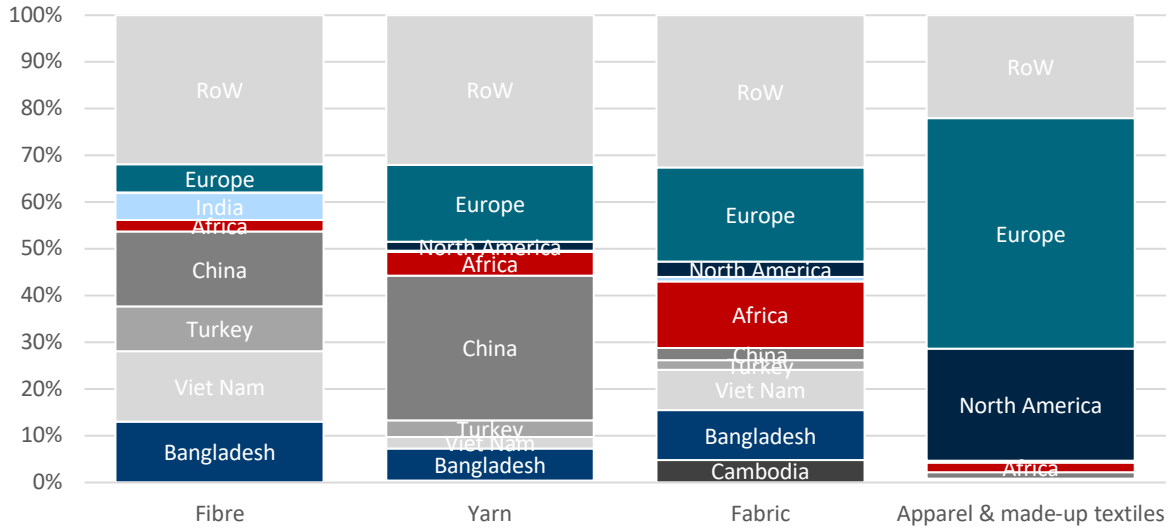
Figure 1. Exports: Share of world exports of cotton products, by country and value chain segment, average 2017-2019



Source: Graph produced by Jamie MacLeod based on CEPII-BACI reconciled trade flows. *Notes*: RoW is Rest of World

Europe, North America and other wealthy countries such as Japan still account for the lion's share of world imports of final consumption apparel and made-up textile goods, as they have higher purchasing power and economically larger markets. Large emerging economies such as China and India largely supply their own domestic markets but have not yet become major destination markets for other developing economies. Some European countries are still major exporters of fabric and apparel, while North American countries are still large fibre and fabric exporters.

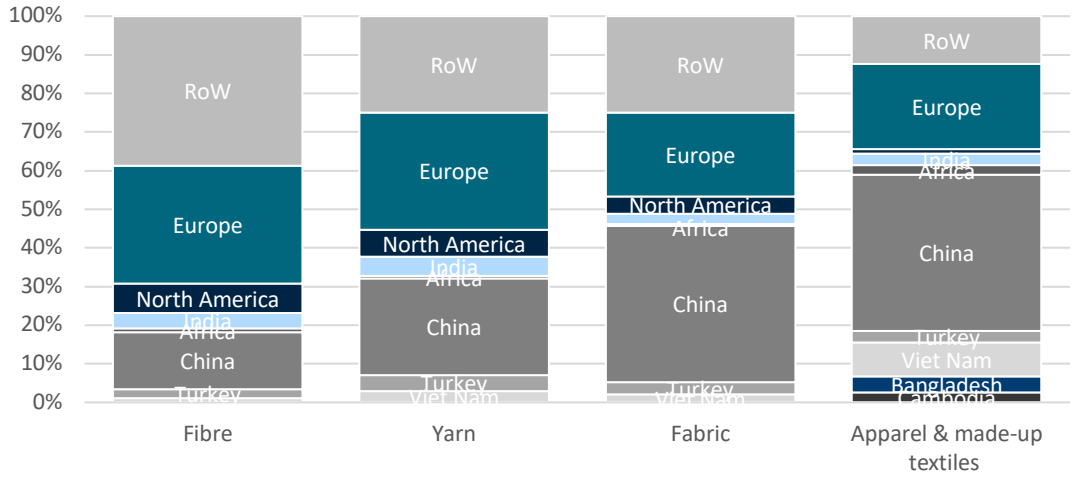
Figure 2. Imports: Share of world imports of cotton products, by country and value chain segment, average 2017-2019



Source: Graph produced by Jamie MacLeod based on CEPII-BACI reconciled trade flows. *Notes*: RoW is Rest of World

Exports of man-made-fibre products, fossil fuel-based as well as man-made cellulosic, are more concentrated than that of cotton (Figure 3). China and Europe account for half of the world exports in each segment of the value chain, from fibres to finished goods. African countries have a very small role in the world exportation of man-made fibre goods. Africa's fabric and apparel production is biased towards cotton, as indicated by the relatively low share of world imports of man-made fibres (5%), yarns (6%), and fabrics (9%). China, Turkey, Vietnam, Cambodia and Bangladesh are the main exporters of man-made fabrics and finished goods. North America and Europe remain the major destination markets for those finished goods.

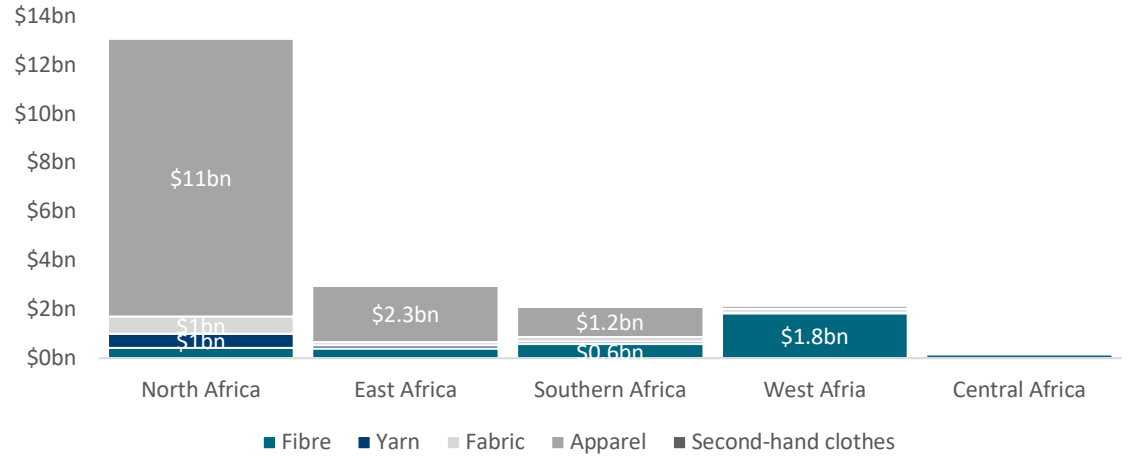
Figure 3. Share of world exports of man-made-fibre products, by country and value chain segment, average 2017-2019



Source: Graph produced by Jamie MacLeod based on CEPII-BACI reconciled trade flows. *Notes*: RoW is Rest of World

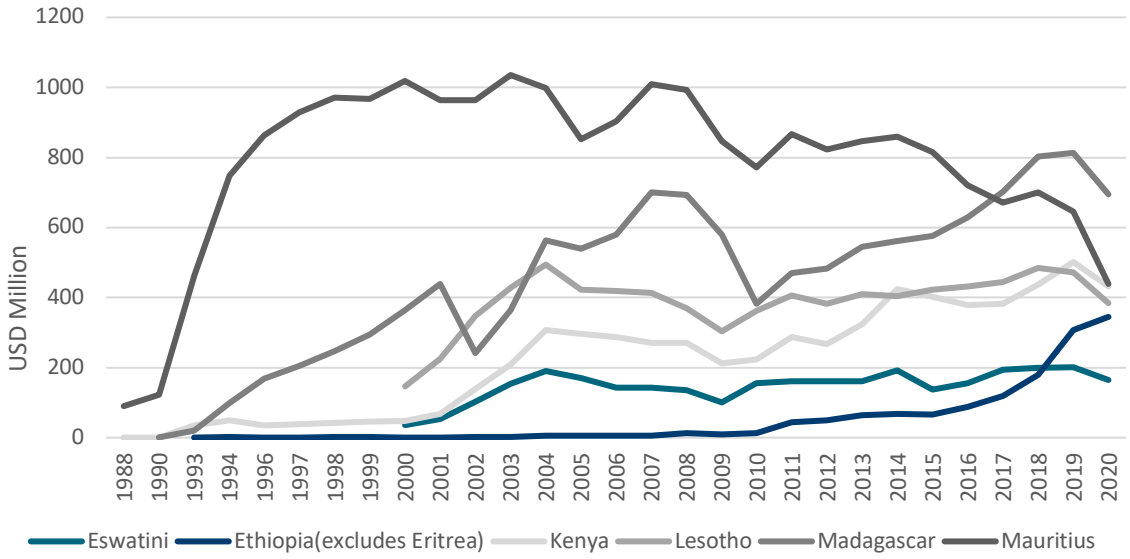
Most apparel exports from the African continent come from North Africa, followed far behind by East and Southern Africa (Figure 4). West and Central African countries do not have significant apparel exports, and West Africa predominantly exports cotton fibres. Apparel exports from the continent go largely to Europe and then North America. The largest Sub-Saharan African apparel exporting countries to US and European markets are Madagascar, Mauritius, Kenya, Lesotho, Ethiopia and Eswatini, in that order (Figure 5).

Figure 4. Africa's textile and apparel exports, by region and value-chain segment, average 2017-2019



Source: Graph produced by Jamie MacLeod based on CEPII-BACI reconciled trade flows. *Notes*: Apparel products here include made-up textiles.

Figure 5. Apparel exports from top Sub-Saharan Africa exporter countries, 1988-20

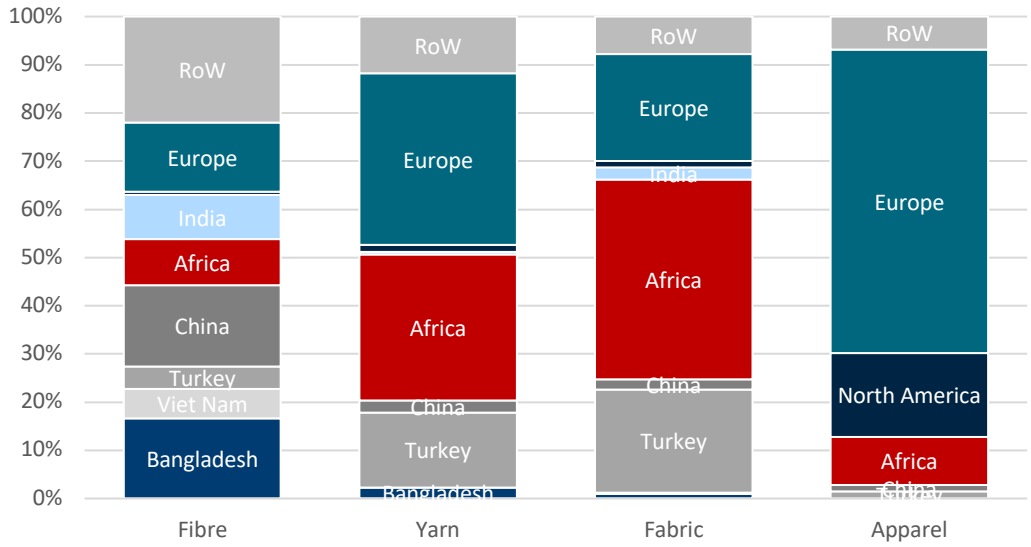


Source: UN COMTRADE 2022.

There is some intra-African trade in apparel, as Figure 6 shows, which is discussed in the next section. In terms of yarn and fabric, Europe is still important but intra-continental trade is

greater than it is for fibre and apparel. However, the total trade value in fabric and yarn is very small, as shown in Figure 4, which indicates that of the small amount, a significant portion is traded on the continent in regional value chains such as southern Africa.

Figure 6. Destination of Africa's textile and apparel exports by value-chain segment, average2017-2019



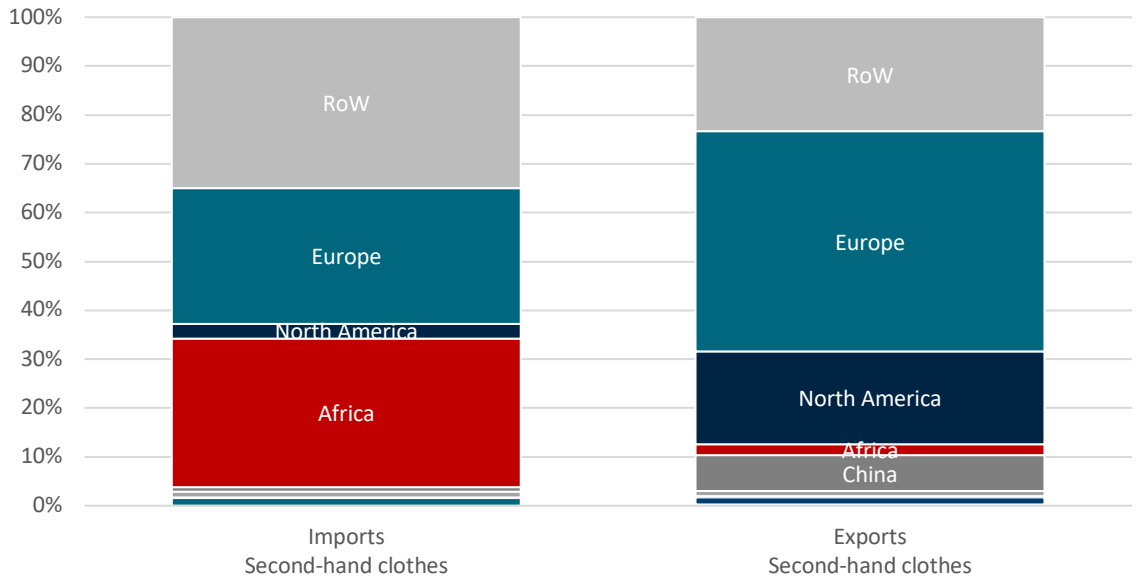
Source: Graph produced by Jamie MacLeod based on CEPII-BACI reconciled trade flows. RoW is Rest of World.

Second-hand clothing is the final segment of apparel global value chains. After consumption, particularly in European and North American countries, clothes are imported into other markets as second-hand and worn items for further consumption and, in some cases, recycling and re-processing. Africa is the world's largest market for second-hand clothes, accounting for just over 30% of world imports (Figure 7). In 2018, the US blocked East African countries' attempt to ban second-hand clothing imports through negotiations at the East African Community by threatening to withdraw those countries' preferential access to the US market with the African Growth and Opportunity Act. In the end, only the Rwandan government decided to go ahead with the tariff increase and eventual ban on used clothing. As a consequence, the US withdrew its AGOA status on the basis that the trade policy went against the conditions of AGOA, which included eliminating barriers to US trade and investment.[1] The US acted based on lobbying from the association of second-hand clothing exporters in the US, which demonstrates the lucrative market in African countries as well as the inability of many African governments to stand up to the US government, given the importance of the US market for African exports. In effect, Africa is an important segment in the global waste

[1] Wolff, E.A. 2021. The global politics of African industrial policy: The case of the used clothing ban in Kenya, Uganda and Rwanda. *Review of International Political Economy* 28(5): 1308-1331.

management system of clothing, given the excess of clothing produced as a result of the fast fashion business model adopted by global apparel brands and retailers in the 1990s.[2]

Figure 7. Share of world imports and exports of second-hand clothing by region, average 2017-2019



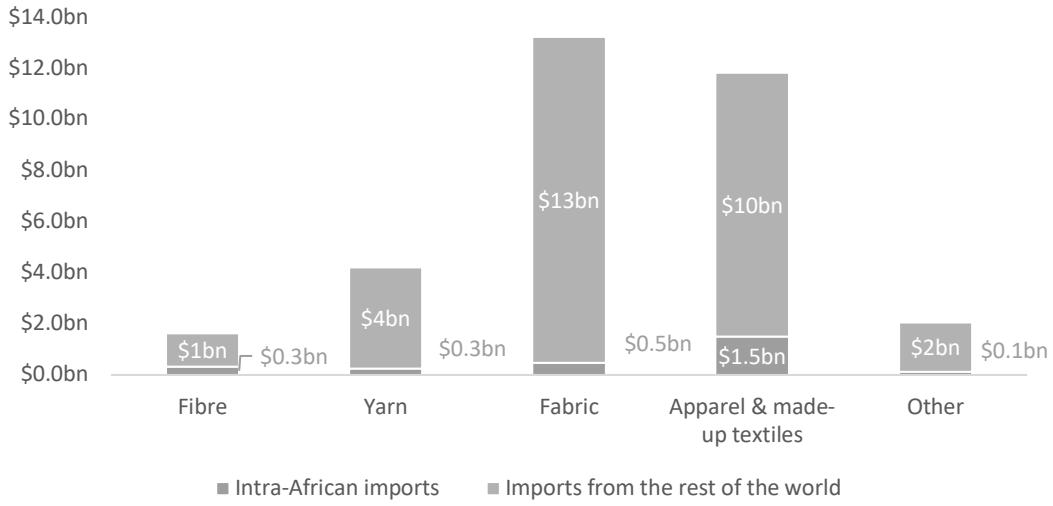
Source: Graph produced by Jamie MacLeod based on CEPII-BACI reconciled trade flows. *Notes*: RoW is Rest of World

2. INTRA-AFRICAN TEXTILE AND APPAREL TRADE

Figure 8 shows the share of Africa's import demand for each segment of the value chain that is supplied by intra-African suppliers, and Figure 9 shows in more detail the sources of imported apparel. The most significant portion by far comes from China. Figure 8 also shows that Chinese imports have largely displaced imports from other Asian countries and the rest of the world but not substantially displaced intra-African trade, which was already small in 2000 but has shrunk even further. Currently, only 8% of Africa's textile and apparel imports are supplied by other African suppliers.

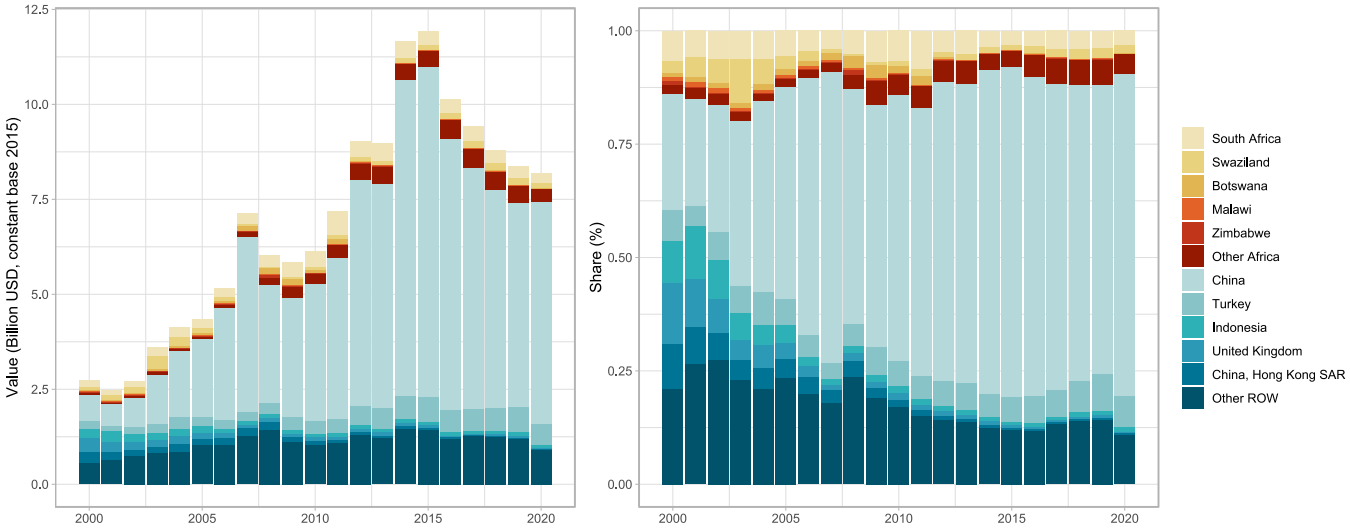
[2] On the fast fashion model, see the summary of the literature in L. Whitfield, K. Marslev, and C. Staritz. 2021. Can apparel export industries catalyse industrialization? Combining GVC participation and localization. SARChI Industrial Development Working Paper Series, WP 2021-01.

Figure 8. Share of Africa's textile and apparel import markets supplied by African exporters, by value-chain segment, average 2017-2019



Source: Graph produced by Jamie MacLeod based on CEPII-BACI reconciled trade flows.

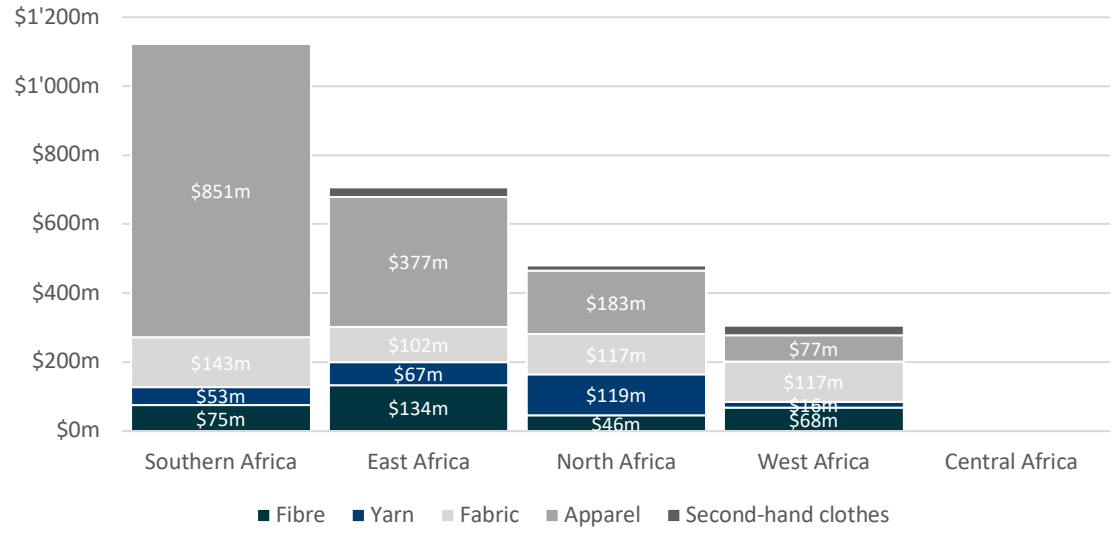
Figure 9. Sources of African Apparel Imports: African vs. other sources, 2000-2020



Source: Graph produced by Kristoffer Marslev based on CEPII-BACI. Trade values are estimated as FOB. Trade values have been deflated according to the USD deflator (https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS?locations=US).

Southern Africa and especially South Africa is the largest supplier of intra-African imports of apparel (Figure 10). South Africa accounts for 25% of the continent's total exports within the continent. Eswatini and Lesotho also have large amounts, and notably these are countries where many South African-owned apparel factories have re-located, as discussed below.

Figure 10. Exporters of intra-African textiles and apparel, by region and value-chain segment, average 2017-2019



Source: based on CEPII-BACI reconciled trade flows. *Notes*: Apparel products here include made-up textiles.

Not only is South Africa the main supplier of apparel within intra-Africa trade, but it is also the largest destination, or end-market. South Africa accounts for 30% of all intra-African textile and apparel imports on the continent, while Lesotho and Eswatini import large shares of inputs and intermediate textile goods. Inputs and intermediate textile products also account for a large share of intra-African imports into Madagascar, Kenya and Mauritius, highlighting the regional value chains around apparel exports already existing in Southern Africa. Inputs and intermediate textile products account for a large share of intra-African textile and apparel imports in several north African countries, including Algeria, Morocco, Tunisia and especially Egypt, as well as in West Africa, by Nigeria and Cote d-Ivoire. Appendix A includes further data on intra-regional trade on which these general points are based.

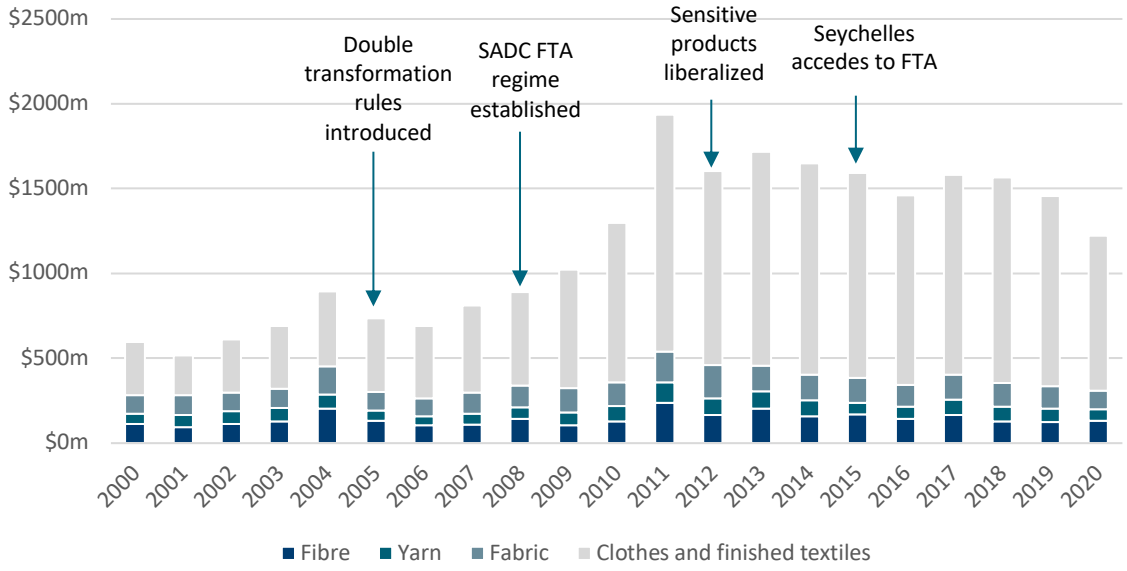
However, intra-African sources still account for a small share of these countries' supplies of imported inputs, which indicates a significant untapped potential. Regional value chains thus far are limited to using regional cotton, with some spinning, weaving and knitting capacity located in Southern Africa, East Africa and North Africa that supports a small trade in intermediate inputs (yarn and fabric).

2.1. Textile and Apparel Trade within SADC: what lessons can be drawn?

The free trade area in the Southern African Development Community (SADC) was established in 2008 with double transformation rules of origin enforced in 2009, which coincided with an increase in the trade of clothes and finished textiles in Southern Africa (Figure 11). The double transformation rule means that two changes in tariff headings are required for textile and apparel, but SADC rules permit full cumulation of origin among member states. For purposes of determining origin, SADC member states are considered one territory, which makes it possible for them to jointly comply with rules of origin. In other words, any processing

operation carried out in any of the SADC member states may be considered for cumulation purposes, with origin attributed to the country in which final processing or manufacturing takes place. Notably, trade in clothes and home textiles has increased since SADC was established, but trade in fibre, yarn and fabric did not significantly change.

Figure 11. Intra-SADC textile and apparel exports, Real $2019



Source: Graph produced by Jamie MacLeod using UN Comtrade via WITS.

Notes: Clothes and finished textiles comprise HS61-63 as well as HS57 (carpets, rugs etc), but excludes HS6309 (worn clothes). Fibre, yarn and fabrics are the relevant sub-headings within HS50-59.

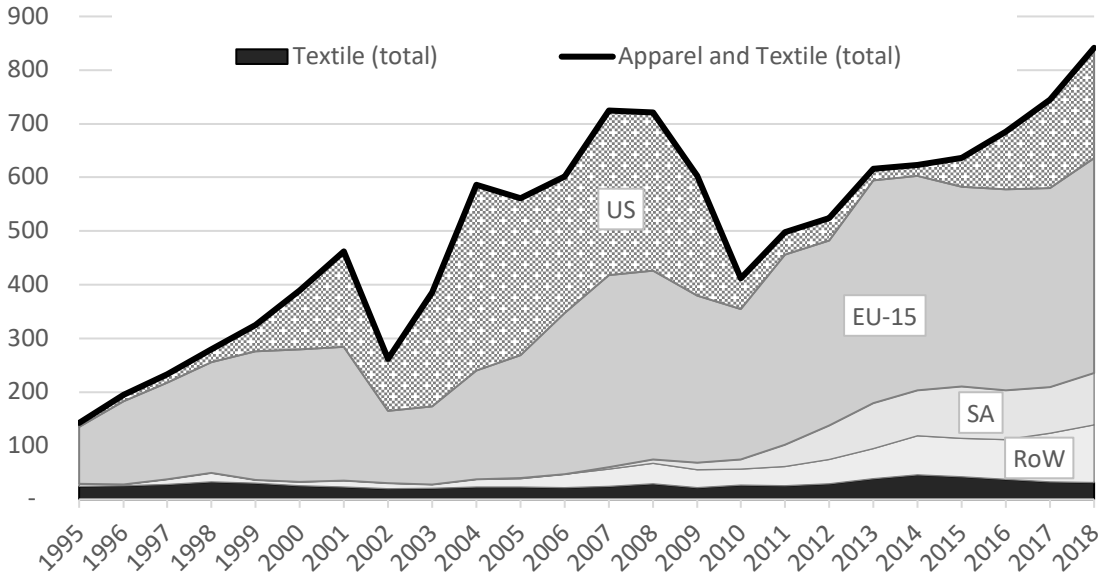
The increase in clothing traded within SADC cannot be attributed only or primarily to the free trade area and the double transformation rule of origin. The change in SADC trade rules coincided with several other events that caused South African retailers and Mauritian apparel suppliers to focus more on regional markets.[3] The South African government initiated quotas on Chinese apparel imports between 2007 and 2008, which led South African retailers to look for

[3] This paragraph and the next paragraphs regarding Mauritius, Madagascar, Lesotho and Eswatini are based on fieldwork carried by the author and her colleague Cornelia Staritz in these countries. The evidence presented here has been published in academic journal articles and working papers: Local supplier firms in Madagascar's apparel export industry: Upgrading paths, transnational social relations and regional production networks, *Environment and Planning A: Economy and Space,* 2021, 53(4):763-784; Can Apparel Export Industries Catalyse Industrialisation? Combining GVC Participation and Localisation, SARChI Industrial Development Working Paper Series, WP 2021-01, March 2021; Industrial Hubs and Technology Transfer in Africa's Apparel Export Sector, in A. Oqubay and J.Y. Lin (Eds) *The Oxford Handbook on Industrial Hubs and Economic Development*, Oxford: Oxford University Press, 2020, pp.931-49. See also M. Morris and C. Staritz, 2016, Industrial Upgrading and Development in Lesotho's Apparel Industry: Global value chains, foreign direct investment, and market diversification, *Oxford Development Studies* 45(3): 303-320; and M. Morris, C. Staritz, and J. Barnes, 2011, Value Chain Dynamics, local embeddedness and upgrading in the clothing sectors of Lesotho and Swaziland, *International Journal of Technological Learning, Innovation and Development* 4(1/2/3): 96-119.

alternative sourcing options. Furthermore, Mauritian apparel firms predominantly supplied the European market, but the Eurozone crisis between 2008 and 2012 created the incentive for them to diversify to other end-markets, as market demand in Europe declined as well as unit prices paid by European apparel buyers. Mauritian apparel firms also increased their investments in apparel assembly factories in Madagascar, keeping product design and marketing functions in Mauritius—a strategy of delocalization that had started already in the 1990s but halted due to political instability in Madagascar in the early 2000s. By the mid-2010s, the Mauritian apparel industry was characterized by 12 large firms, and six of those firms had major investments in Madagascar.[4] Apparel factories that remained in Mauritius focused on producing fast fashion products, while Mauritian apparel factories in Madagascar were used to sew long run, basic products using fabric produced in Mauritius, though one Mauritian firm moved its textile production to Madagascar. Madagascar became the largest apparel exporter among Sub-Saharan African countries by 2017, driven primarily by Mauritian investment, which increased at a greater pace than other foreign and local investments.

South Africa became an important end-market for apparel exports from Mauritius and Madagascar, driven predominantly from Mauritian firms operating in Madagascar. Locally owned firms in Madagascar experimented with supplying the South African market, but they specialized in high value products for the European market and found the prices of South African buyers too low. Mauritian firms and some of the larger locally owned firms in Madagascar were better able to align their business strategies with the basic products in high volumes demanded by South African retailers. Figure 12 shows this growth in apparel exports from Madagascar to South Africa.

Figure 12. Total Apparel and Textile Exports from Madagascar (in USD millions)



[4] Of these 12 firms, 11 were Mauritian (with 3 in the same business group) and one was from Hong Kong.

Source: Created by the authors using UN COMTRADE database, accessed in 2020. Apparel represents HS92 61+62; textile represents HS92 50-60+63; exports represent partners' imports. Note: Values are in nominal USD and thus may exaggerate absolute growth or downplay decline, but the emphasis here is on relative market shares.

Lesotho and Eswatini were also able to take advantage of preferential access to the South African market under SADC, even with the double transformation rule of origin, while other countries such as Malawi were not. Both Lesotho and Malawi had a small apparel industry prior to AGOA in which firms were exporting, but the two countries took different paths because of the type of foreign investment and the government policies and public investments that attracted that investment.

South African and Taiwanese apparel firms opened factories in Lesotho in the 1980s to avoid sanctions on South African exports to Europe and the US due to the Apartheid regime and to take advantage of lower labor costs and Lesotho's duty-free access to Europe under the Lome Convention and its special rules of origin allowing for single transformation. Taiwanese investments were also politically motivated as Lesotho was among the few countries that had diplomatic relations with Taiwan until 1994, and so the Taiwanese government encouraged foreign investments in the country. Eswatini also had diplomatic relations with Taiwan and received some investments as well. However, apparel exports in these countries only started on a larger scale with the coming into force of AGOA in 2001.

Apparel exports in Lesotho and Eswatini came from two types of the investors. The first included Asian investors focused on the US market, including Taiwanese but also Chinese and Hong Kong apparel firms. The second included South African apparel manufacturers that moved apparel production to Lesotho and Eswatini starting in 2005/06 as part of their business strategy to create flexible manufacturing and lower costs to be able to compete with the apparel that South African retailers sourced from Asian firms in terms of price, quality and speed to market. South African firms kept their product design and marketing in South Africa, like Mauritian firms, but largely supplied the South African domestic market—benefiting from duty free access to South Africa through the Southern African Customs Union. The governments in Lesotho and Eswatini had policies to attract foreign investment, including building factory sheds in industrial estates with tailored government services and some incentives for foreign firms to invest in training. However, there were very few locally owned apparel export firms in Lesotho and Eswatini.

Lesotho and Eswatini had very little textile production. In Eswatini, there was one vertically integrated firm and one spinning mill, all owned by Asian firms; in Lesotho, there was one vertically integrated firm and one woven textile mill. Most fabric imports in Lesotho came from Asia, while Eswatini sourced one-third of its imported fabric from South Africa. South African apparel firms in Eswatini were more integrated into the SADC/SACU regional value chain and geared to South African retailers, especially after the loss of AGOA in 2015; while those in Lesotho focused on workwear and corporate wear. Most firms exporting to the US

market from these countries relied on preferential market access under AGOA and relatively cheap wages.

In Malawi, the textile and apparel industry focused on the domestic market and exporting to South Africa to take advantage of the bilateral trade agreement in the 1990s.[5] There were also some Taiwanese apparel firms operating in Malawi prior to AGOA, but the country did not experience any foreign investment in response to AGOA. Investors were not attracted to the country due to non-tariff barriers such as high transport costs and long lead times to the land locked country, lack of factory shells and services tailored for manufacturing firms, and poor infrastructure and high cost of utilities. In 2000, 78% of apparel exports went to South Africa, 19% to the European Union, and 2% to other SADC countries. However, the South African government terminated the bilateral trade agreement in 1999 on the grounds of a surge of imported clothing from Malawi said to be transshipments from outside the country and shifted to the position of double transformation rules of origin within SADC to avoid such transshipments.

The double transformation rule of origin did not undermine Malawi's access to the South African market, nor did it spur investments in Lesotho and Eswatini that allowed those countries to access the South African market. Rather, it was the type of foreign investors operating in the countries and government policies that made the sector attractive for foreign investments as well as exogenous factors such as SACU. The point to make here and repeated throughout the report is that trade policy, especially strict rules of origin, do not on their own create the incentives required to spur investments in textile and apparel production.

2.1.1. SADC T&A Regional Value Chain: Regional Integration vs Asian Imports

Looking closer at the textile and apparel regional value chain in SADC is instructive of the degree of regional integration compared to dependence on Asian imports. It can tell us something about existing production capabilities in the region and where there are gaps, or where the existing production is uncompetitive with Asia. On the flip side, such an analysis also indicates the untapped potential of intra-Africa trade.

Mauritius is the second largest exporter of intra-African textile and apparel (after South Africa), with South Africa as its main end-market for apparel. Almost all the cotton that Mauritius imports comes from the continent, but imports of other fibres, yarn and fabric predominantly come from outside the continent (Figure 13). Mauritius has production

[5] This paragraph is based on data from 'Rules of origin as a key to the AfCFTA success: Lessons that can be drawn from the regional experience', D. Ndonga, 15 March 2021, Afronomics Law website, accessible at https://www.afronomicslaw.org/category/analysis/rules-origin-key-afcftas-success-lessons-can-be-drawn-regional-experience#:~:text=The%20SADC%20RoO%20have%20elaborated,to%20qualify%20for%20preferential%20treatment; and the Garment Production in Malawi working paper authored by E. de Haan, M. Koen, and N. Mthembu, produced by SOMO and Workers College, available at https://www.somo.nl/wp-content/uploads/2003/10/Garment-Production-in-Malawi.pdf.

capacity in cotton spinning, weaving and knitting, so the bulk of imported 'other fibre', yarn and fabric imports must be in man-made synthetics. In 2017, the textile production capacity included two spinning companies.[6] Tianli is a cotton spinning company established by a Chinese company in 2003, which grows cotton in Madagascar and spins it in Mauritius to sell to Mauritian firms and for export, including to knit textile mills in South Africa. The other, Ferney Spinning Mill, produces woolen yarns for flatknitting, and is part of the Ciel Textile Group. Mauritius has about four knit textile mills which are all part of vertically integrated textile and garment companies but may export some of their production to South Africa: CDL (linked to Tropic Knits), World Knits, RT Knits and CMT. There are two woven textile mills: CFL produces woven fabric for causal and formal shirts and is linked to garment firms in the Ciel Textile Group, and Denim d'Ile produces denim fabric but largely uses it within its vertically integrated denim garments factory. Mauritius has about 12 large textile and apparel companies that account for at least 70% of its exports, and then there are over a hundred small and medium companies that produce apparel for export and the domestic market. Mauritius imports very little apparel from the rest of the continent (Figure 13).

Given the strong links between Madagascar and Mauritius through Mauritian investment, one would expect significant flows of Mauritian fabric to Madagascar. However, Figure 14 shows that Madagascar sources less than 25% of its fabric from Mauritius. This statistic most likely is the result of other foreign firms and local firms operating in the country producing apparel that requires fabric which is not available in Mauritius. The Asian companies operating in Madagascar produce products made from synthetic fabric for the US market. Local firms export niche products largely to European countries that require specific fabrics for goods such as formal dresses and technical workwear.[7]

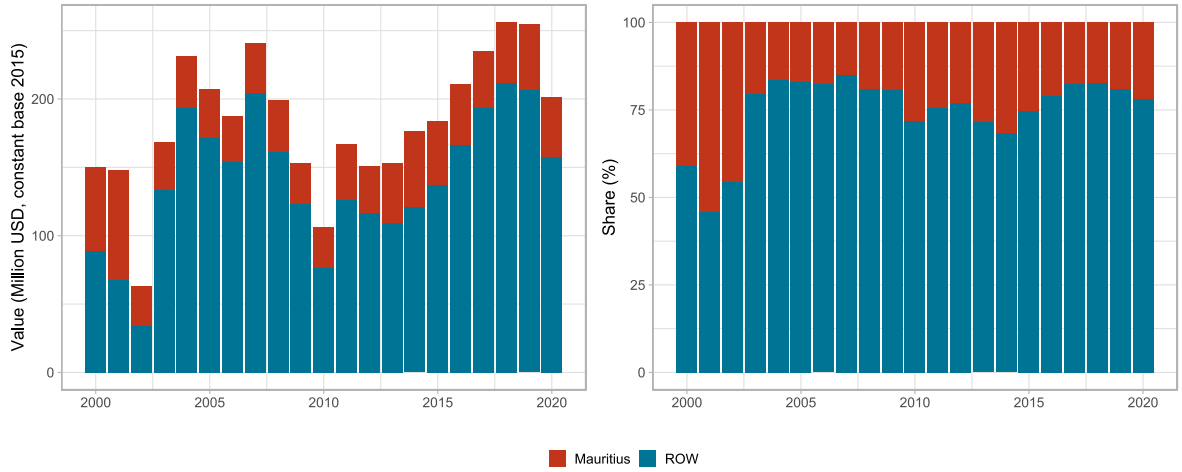
[6] This paragraph is based on research by the author during fieldwork in Mauritius between September and October 2017. Of the 12 largest apparel and textile exporting companies, 5 were interviewed as part of that research. The author also conducted interviews with staff at Enterprise Mauritius, the government agency responsible for promoting exports, and at MEXA, the textile and apparel industry association.

[7] This paragraph is based on insights from the author's research in Madagascar carried out between 2016 and 2018. See 'Local supplier firms in Madagascar's apparel export industry: Upgrading paths, transnational social relations and regional production networks', L. Whitfield and C. Staritz, *Environment and Planning A: Economy and Space,* 2021, 53(4):763-784

Figure 13. Mauritius: Imports of Fibre, Yarn, Fabric, Apparel and Used Apparel by region, 2000-2020, in value and share

Source: Graph produced by Kristoffer Marslev based on CEPII-BACI. Trade values are estimated as FOB. Trade values have been deflated according to the USD deflator (https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS?locations=US).

Figure 14. Madagascar: Fabric imports, 2000-2020, in value and share



Source: Graph produced by Kristoffer Marslev based on CEPII-BACI. Trade values are estimated as FOB. Trade values have been deflated according to the USD deflator (https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS?locations=US).

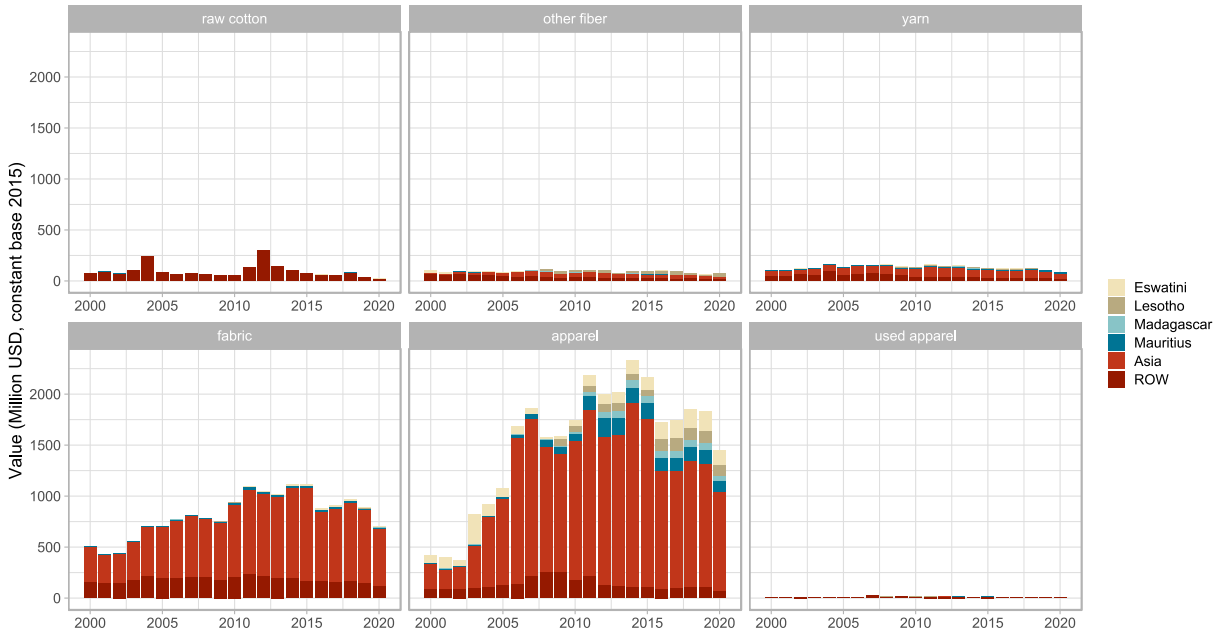
As Figure 15 shows, South Africa sources very little of its fabric from SADC members. In contrast, it does import a significant amount of apparel from SADC countries, but Asia still accounts for the bulk of its apparel imports. Comparing Figures 14 and 16, South Africa apparel exports are slightly more than one-fifth the value of its apparel imports. The textile and apparel industry in South Africa has remained largely focused on the domestic market, which is still relatively protected. While the country has significant spinning, weaving and knitting capacity compared to other African countries, only a small share of it produces yarn and fabrics used in the garment industry, with the rest used for home textiles, upholstery, and non-garment products such as tents as well as inputs into other industries.[8] There is capacity in South Africa to produce synthetic yarn for technical textiles, but there is not much capacity in spinning to produce polyester yarn for clothing. There is very limited spinning capacity in South Africa for both cotton and polyester yarn. There are only a few woven mills in the country that produce cotton and polyblend fabrics, but there are many medium and small circular knitting mills. These textile mills source some cotton yarn locally but import polyester and polyblend yarns from Mauritius and Asia.

As a result, South African garment factories producing for the domestic market as well as exporting rely on imported fabric to a significant extent, especially synthetic fabric. Much of the clothing on the domestic market sold in local retailer chains is made of polyester or polyblends, as it is cheaper than cotton and more durable. Figure 15 illustrates that almost all

[8] Research by Frank Flatters in 2002 showed this to be the case. See 'SADC Rules of Origin: Undermining regional free trade', report prepare for TIPS, Johannesburg. The author's fieldwork in South Africa in August 2022 largely confirms that this situation is still the case. The fieldwork was part of research to map the apparel and textile production and capabilities in the country. This phase of the mapping included an analysis of existing lists of textile and apparel firms to discern the products that they produced. It also included a survey with apparel and textile firms, through face-to-face interviews that took place at the firms, in Cape Town, Durban, Pinetown, Hammarsdale, Pietermaritzburg, Lady Smith and Harrismith. This mapping will be completed later in 2022.

the fabric imported into South Africa comes from outside the African continent, predominantly from Asia (Figure 15).

Figure 15. South Africa: Textile and Apparel Imports, 2000-2020, in millions USD



Source: Graph produced by Kristoffer Marslev based on CEPII-BACI. Trade values are estimated as FOB. Trade values have been deflated according to the USD deflator (https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS?locations=US).

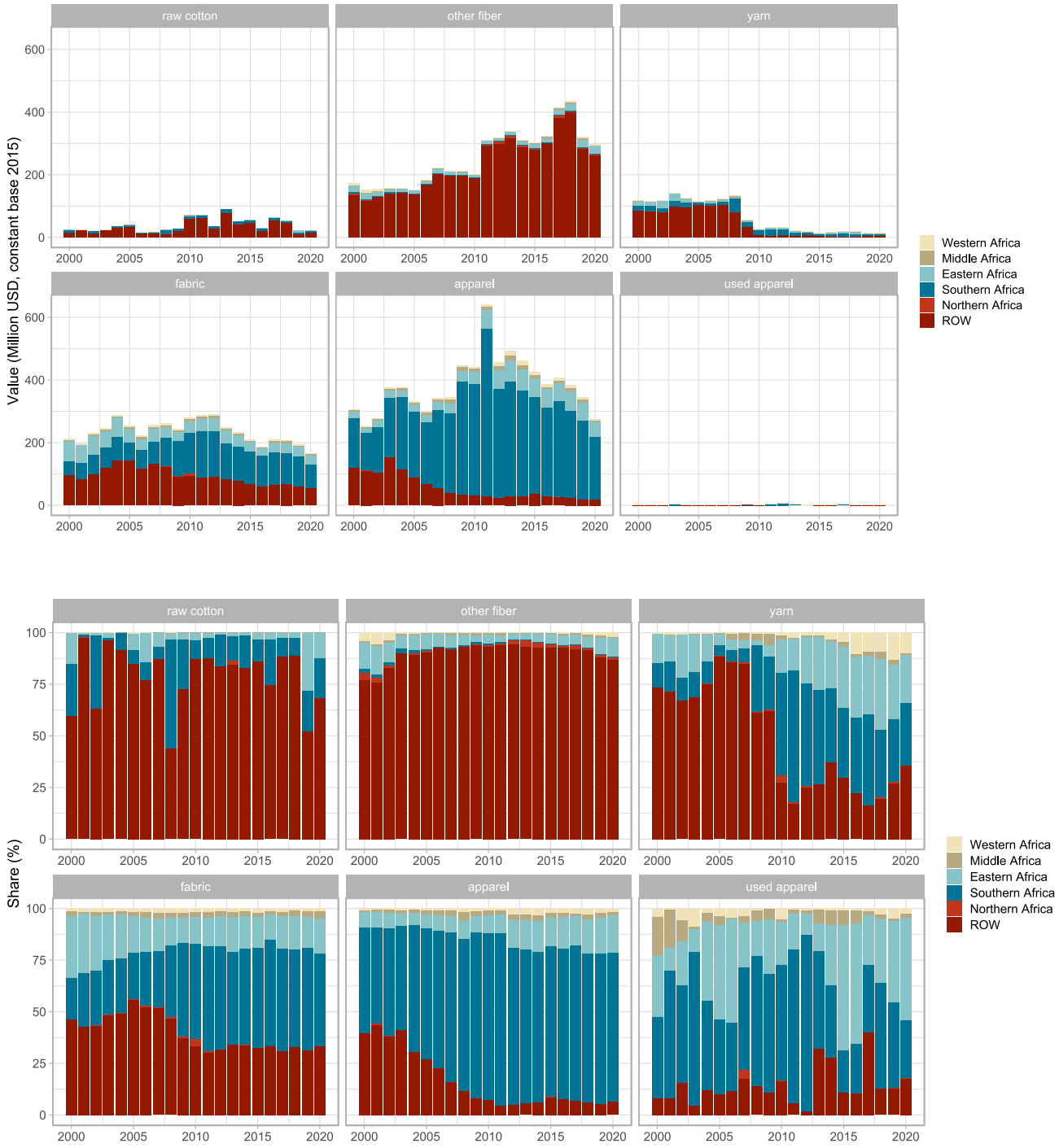
Figure 16 indicates what South Africa exports by region and by segment of the textile and apparel value chain. South Africa exports most of its cotton and 'other fibre' outside Africa. Within the category 'other fibre', its exports include wool and other fine animal hair as well as synthetic staple fibres made from polyesters, acrylic and polypropylene and synthetic filament tow made of nylon or other polyamides. In contrast, South Africa exports most of its yarn, fabric and apparel within Africa, especially to Southern Africa.

Figure 17 presents the top ten apparel products that South Africa exports by region, which go predominantly to East and Southern Africa. Its apparel exports consist of cotton and synthetic products, but are dominated by woven trousers, overalls and shorts as well as knit t-shirts. Given that South Africa has little textile production capacity in synthetic woven fabric, a significant amount of the fabric used to produce apparel products that are exported from South Africa to other African countries comes from outside the continent.

The analysis of quantitative and qualitative evidence on trade flows and production capacities of SADC member countries shows that even in the region of Africa with the most developed apparel regional value chains, these value chains are largely oriented to Europe and North America and rely heavily on imported inputs from Asia. The double transformation rule of

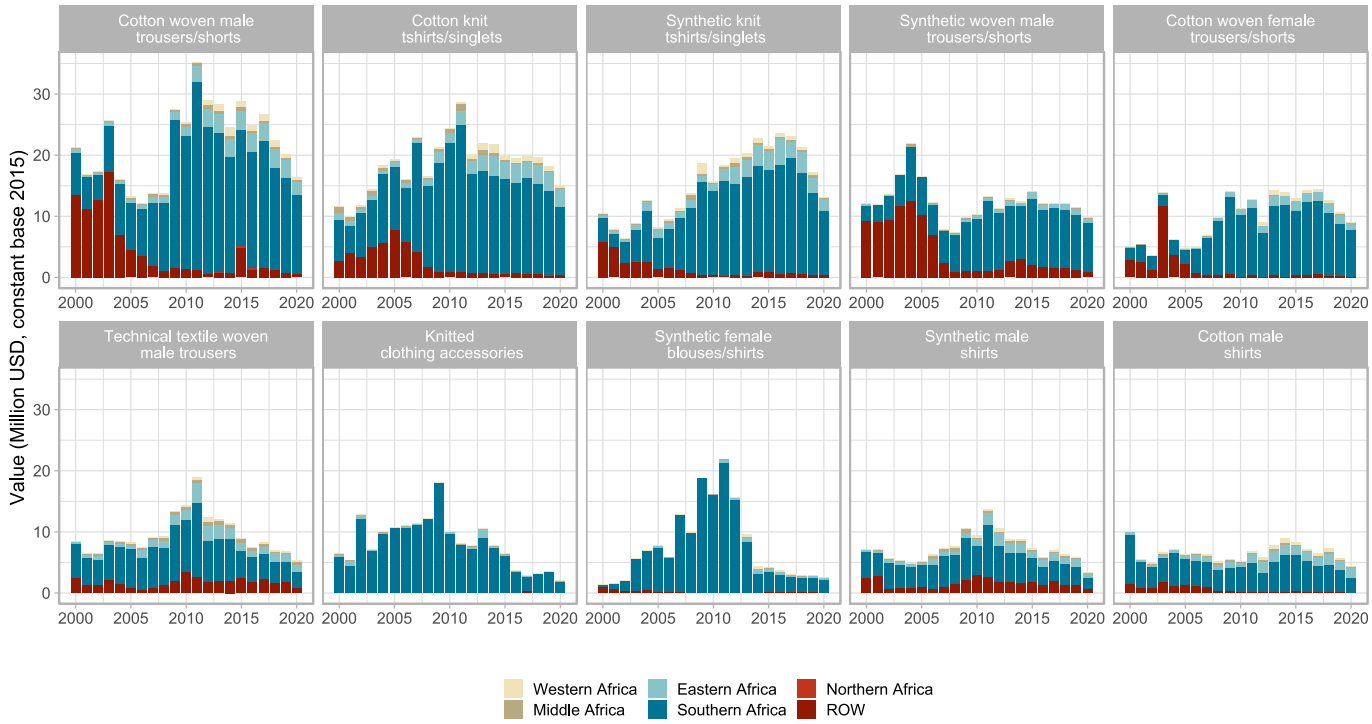
origin in SADC did not on its own lead to greater regional integration. The increased regional integration that occurred was based on existing textile production capabilities. There is no evidence to suggest that it encouraged new investments in textile production in South Africa, Mauritius or Madagascar. Thus, regional integration was limited by existing textile production capabilities, which led SADC member countries to continue to rely on imported inputs, especially from Asia. This was especially the case for apparel exporting firms that require speciality fabrics not available in the region.

Figure 16. South Africa: Textile and Apparel Exports by Region, 2000-2020, in value and share



Source: Graph produced by Kristoffer Marslev based on CEPII-BACI. Trade values are estimated as FOB. Trade values have been deflated according to the USD deflator (https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS?locations=US).

Figure 17. South Africa: Top 10 Apparel Exports by Region, 2000-2020



Source: Graph produced by Kristoffer Marslev based on CEPII-BACI. Trade values are estimated as FOB. Trade values have been deflated according to the USD deflator (https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS?locations=US).

3. GLOBAL TRENDS RESHAPING TEXTILE AND APPAREL GLOBAL SUPPLY CHAINS

Given the disruptions to globalized apparel supply chains during the Covid-19 pandemic and the resulting increased cost of shipping, buyers in the US and Europe are looking for shorter supply chains that are more resilient in the face of global shocks. Localization and regionalization of apparel production closer to end-markets are attractive to global apparel brands and retailers. However, global apparel buyers are no longer concerned just with cost, quality and speed to market when making sourcing decisions. They now must balance those criteria with sustainability goals.

African countries have the opportunity to build sustainable textile and apparel industries from the start, which can give them a competitive advantage as apparel-supplying countries in South and Southeast Asia do not (yet) have 'green' industries. The cost of renewable energy technology is falling and renewable energy technologies to power industries are evolving. New fibre and recycling technologies also offer a window of opportunity to leapfrog into the next generation of technologies.

3.1. US and EU Apparel Buyers Seeking Shorter and Transparent Supply Chains

Since the Covid-19 pandemic, supply chain disruptions have been at the top of the agenda of global apparel brands and retailers.[9] Their search for cheap production costs produced complex, fragmented and opaque supply chains, where buyers do not know all of their suppliers and cannot trace materials through the chains. Recent or expected legislation in the US and European countries on due diligence and eradicating forced labor are moving the global fashion industry to the point where US and European apparel brands and retailers are expected to take responsibility for the actions of their suppliers. Additionally, the business strategies of apparel buyers are leading them to prioritize verticality, nearshoring and transparency in their supply chains.

Apparel buyers want to source from countries that have yarn and fabric production, or can source these raw materials from nearby countries, in order to increase speed to market and flexibility. By flexibility, buyers are looking at suppliers firms that have access to a diverse fabric supply nationally or regionally, which includes a large range of texture and dye materials and R&D in fabric production that can keep up with fashion trends. In fact, industry experts say that verticality (vertical integration of spinning, fabric and apparel assembly in the same location) is now more important than cheap labor costs. This is why China still has the largest share in the global apparel market, even though its share is declining. The next largest supplier countries are Vietnam, Bangladesh, India and Indonesia—all of which have fabric production. Notably, Vietnam's capacity to produce fabric is largely the result of Chinese foreign direct investment in textile mills.

In addition to verticality, global apparel buyers are seeking to diversify their sourcing away from China and to source apparel closer to end markets in the US and EU, which is referred to as nearshoring, as a result of buyers' business strategies and recent geopolitical issues. The growth of sales through online stores increases the importance of speed to market. Digitalization allows buyers to capture more and better data on consumer preferences, which they are trying to use to lower their inventory and reduce their turnaround time, both of which increase their cash flow.

Furthermore, the alleged human rights abuses in the Xinjiang Uyghur Autonomous Region of China led to US sanctions and then the Uyghur Forced Labor Prevention Act (UFLPA), which the US Congress passed in December 2021 and came into effect in June 2022. Already in 2021 the US Customs and Border Protection issued a Withhold Release Order that blocked all imports from the Xinjiang Production and Construction Corps, which produces one-third of the cotton in China and is the second largest cotton grower after India. Many global apparel

[9] This sub-section draw on the following sources: interview with Andres Saldias, independent industry consultant for USAID, 07/11/2022; 'Nearshoring takes hold: "We can't have all of our eggs in the China-Asia basket"', C. Dobrosielski, 02/02/2022, Sourcing Journal; 'Sourcing; 'As Forced Labor Scrutiny Grows, Industry Needs to React', J.M. Chua, in the 2022 Sourcing Report, pp.24-28; 'The Industry's Complex Uyghur Cotton Problem', J.M. Chua, in the 2021 Sourcing Report, pp.4-7.

retailers and brands were identified in various NGO reports as sourcing fabric from textile mills in Xinjiang that allegedly use forced labour. As a result, brands such as Patagonia and H&M Group cut ties with their textile suppliers there. The subsequent passage of the UFLPA expands the block on imports to all goods made partly or wholly in Xinjiang, as it assumes products are made using forced labour. It puts the burden of proof on importers to demonstrate that no part of the goods was produced using forced labour. The law applies to EU and Japanese brands and retailers selling in the US market. Given that Xinjiang produces 85% of China's cotton, which accounts for about 20% of the global supply, the global apparel supply chain implications are significant. Buyers are seeking alternatives to sourcing cotton, yarn, and fabric from China and investments in the traceability of cotton from farm to garment.

Asian supplier countries such as Bangladesh, Cambodia and Vietnam use cotton yarn and fabric from China, and they will have to develop traceability methods to show that their products do not have cotton from Xinjiang or did not use forced labour. Even Pakistan suppliers are buying cotton yarn from China. Asian suppliers do not have traceability systems in place yet, which require using technologies such as blockchain and DNA testing. US buyers are aware and are trying to find new suppliers with vertical integration, which can show that cotton, yarn, and fabric production does not come from China.

The drive for shorter and more transparent supply chains has led to renewed interest among US buyers in sourcing from Central American countries, which benefit from duty free access to the US market under the United States -Central America- Dominican Republic Free Trade Agreement. US Buyers' interest in Central America combined with CAFTA 'yarn forward' rules of origin is driving new investments in textile production by Asian supplier firms. The yarn forward rule means that qualifying textile and apparel products must be made using yarn and fabrics from the US or Central America-Dominican Republic countries. However, this rule has been there since CAFTA entered into force and did not lead to foreign investments in yarn and fabric production until recently.[10] The main driver is US buyers' interest in nearshoring and an alternative to China, which provides the business case for supplier investments. For example, Hansae, the second largest Korean first tier apparel manufacturer, is investing in textile production in Guatemala. The investment is in collaboration with an existing locally owned company, Imperial Group, which is the only vertically integrated textile firm in the country; Hansae's investment will expand Imperial's spinning and knitting capacity. While Hansae already had apparel assembly factories in Guatemala and the Central America region, it stated clearly that its textile investment was to strengthen its vertical capabilities of sewing, R&D, yarn, and fabric production in order to benefit from the trend of nearshoring sourcing

[10] CAFTA entered into force between the United States and El Salvador on March 1, 2006, Honduras on April 1, 2006, Nicaragua on April 1, 2006, Guatemala on July 1, 2006, the Dominican Republic on March 1, 2007 and Costa Rica on January 1, 2009.

strategies of US buyers.[11] An industry expert working in the region indicated that Indian textile firms are also looking to invest in Guatemala, based on commitments from US buyers.

African countries could also benefit from the moves towards shorter and transparent apparel supply chains, playing a similar nearshoring role for Europe, but to do so they need to have yarn and fabric production. Currently, as shown in this report, the continent has very limited spinning and textile production. US and EU buyers see African countries as attractive alternatives to sourcing from China, but given the limited textile base their sourcing from most African countries is dependent on AGOA, where the rules of origin allow apparel manufacturers in African countries to use imported fabric ('third party fabric'). Without the single transformation rule, industry experts indicate that US buyers would switch to Central American countries. Currently there is more US buyer interest in sourcing from Central America than there is capacity among suppliers there.[12]

In order not to be dependent on AGOA, to be a more attractive sourcing location, and to capture more of the value in apparel supply chains, African countries need to increase their textile production that can meet the speed, quality and cost standards of US and European end-markets. Political instability in Ethiopia has created some negative perspectives on sourcing from Sub-Saharan Africa, with PVH and H&M withdrawing most orders from suppliers there. However, other recent developments indicate more optimistic perspectives. A Sri Lankan supplier firm with an apparel factory in Kenya has established a collaboration with a textile mill in Tanzania to supply fabric to its Kenyan factory. It worked with the mill to achieve a quality fabric approved by its US buyers. However, this Sri Lankan supplier firm is also interested in investing in Mexico, to take advantage of CAFTA and the nearshoring trend. Apparel buyers are content with having just apparel assembly in Africa. Thus, the drive will have to come from African government policies to attract textile investments from first tier foreign supplier firms. The case of Togo discussed later in this report is an example of how African governments can leverage foreign expertise to attract foreign investments in verticality.

3.2. Sustainability Shift in Western End-markets

In 2020, the global fashion industry was estimated to account for at least 4% of greenhouse gas emissions globally, equivalent to the combined annual emissions of France, Germany, and the United Kingdom.[13] It also accounted for 20% of global wastewater discharge into rivers and seas. Within apparel and footwear global supply chains, 71% of greenhouse gas emissions came from the production process, with the remainder generated by transport, packaging, retail operations, usage (wash and drying), and end-of-use in landfill or incineration. In the

[11] Hansae expands Central America industrial complex with new sustainable, vertical facility', Guest Editorial, 18/10/2022, Sourcing Journal.
[12] Interview with Andres Saldias, independent industry consultant for USAID, 07/11/2022, online.
[13] Fashion on Climate: How the Fashion Industry Can Urgently Act to Reduce its Greenhouse Gas Emissions. McKinsey & Company, 2020.

production process, the bulk of emissions came from the energy-intensive cultivation and production of raw material, yarn, and fabric. With global textile production concentrated in Asia, emissions in these stages were driven by reliance on hard coal and natural gas to generate electricity and heat. Raw material production of cotton and man-made fibres accounted for the largest amount of GHG within the production process. Fibre production and wet processes in fabric production have the highest impact on water usage, chemical use and wastewater discharge, with wet processes in textile mills noted as a major source of biodiversity and freshwater pollution.

Clothing production doubled in the past fifteen years due to the fast fashion business model of global apparel brands and retailers.[14] More than half of that ends up in landfills and incinerators in less than a year. The negative environmental impact is set to triple by 2030 as production increases due to the growing world population and rising incomes in emerging economies. The global fashion industry must adopt circular economy principles because making more clothes with virgin resources will not keep the global fashion industry within planetary boundaries. Circular economy principles include designing out waste and pollution, keeping products and materials in use, avoiding the use of non-renewable resources and preserving renewable ones.

European country governments and the European Union Commission have been at the forefront of the sustainability shift in the global fashion industry. The European Commission states that European consumption of textiles has the fourth highest impact on the environment and climate change, after food, housing and mobility.[15] In 2018, the European Union Commission adopted a circular economy package that requires member states to ensure that textiles are collected separately, and the Waste Directive requires member states to set up such schemes by 2025 at the latest. This action was the first step in the use of regulation to create circular fashion: the re-use and recycling of clothing and the use of sustainable raw materials.[16] The EU European Green Deal (2019), the Circular Economy Action Plan (2020), and the Industrial Strategy (2020) all identified textiles as a priority sector in which the EU can pave the way toward a carbon-neutral, circular economy. The EU Strategy for Sustainable and Circular Textiles, published in March 2022, aims to implement commitments made in these documents. It includes new design requirements for textiles under the Ecodesign for Sustainable Products Regulation, setting mandatory minimums for the inclusion of recycled fibres in textiles. The proposed regulation would make sustainable textiles the norm in the EU and ban the destruction of unsold products under certain conditions, including

[14] Ellen MacArthur Foundation. 2017. A new textiles economy: Redesigning fashion's future. http://www.ellenmacarthurfoundtion.org/publications; Ellen MacArthur Foundation. 2020. Vision of a circular economy for fashion. http://www.ellenmacarthurfoundtion.org/publications.

[15] Questions and Answers on the EU Strategy for Sustainable and Circular Textiles, 30 March 2022, European Commission.

[16] Environmental impact of the textile and clothing industry: what consumers need to know, European Parliamentary Research Service Briefing, January 2019.

unsold and returned textiles. It aims to reduce the 'throwaway' culture by boosting the market for recycled fibre and requiring apparel sold in Europe to be longer lasting and easier to repair.

The EU textile strategy also proposes to harmonise EU rules on extended producer responsibility for textiles and economic incentives to make products more sustainable through 'eco-modulation of fees'. It will support research, innovation and investments needed for this green transition and address challenges related to halting the export of textile waste. The EU Commission proposal for new EU rules on waste shipments will only allow the export of textile waste to non-OECD countries if they can demonstrate their ability to manage it sustainably

The European Commission is also proposing a Corporate Sustainability Due Diligence Directive for very large companies to address negative impacts on human rights and the environment, both in their own operations and in their global supply chains. This proposal builds on the momentum created by recent due diligence laws passed in the UK, France, the Netherlands and Germany. These laws have different degrees of regulatory strength including the legal right to remedy for the rights holders, penalty fines and/or exclusion from public tendering.

In response to this existing and anticipated legislation, brands and retailers are adopting strategies to reduce their scope 1, 2 and 3 greenhouse gas emissions. Scope 3 refers to emissions downstream in the supply chain from their textile and apparel suppliers: the source of most of the emissions in the global fashion industry. Of the top ten global buyers, most have targets to reduce scope 3 emissions by at least 20% by 2030, with H&M having the most ambitious goal of 56% reduction of scope 3 emissions (Table 1). H&M is providing loans to some of its suppliers to finance investments in biomass boilers, to move away from coal. H&M also has the ambitious goal of 100% renewable energy use in its entire supply chain, with Adidas and VF adopting more modest targets. On sustainable fibers, H&M again has the highest goal of 100% recycled or sustainable fibers in its products by 2030, with all other buyers having substantial goals, except for TJX (US based), Uniqlo (Japan) and Shein (China). Based on a survey among apparel brands and retailers undertaken in 2021, a McKinsey report shows that 1 in 3 respondents said they plan for more than 90% of their product to be made with sustainable fibres by 2025. Twenty-one percent of respondents aim to replace at least 30% of their virgin cotton with recycled cotton by 2025.[17]

[17] 'Revamping fashion sourcing: Speed and flexibility to the fore', McKinsey Apparel CPO Survey 2021 by the Apparel, Fashion & Luxury Group, McKinsey & Company, November 2021.

Table 1: Top Ten Apparel Brands/Retailers' Sustainability Goals*

Corporation	Revenue in $million (2021)	Goals on GHG 1 & 2 emissions (own operations)	Goals on GHG 3 emissions (supply chain)	Goals on renewable electricity in supply chain	Concrete goals on fibers
TJX	48.549	55% reduction by 2030 (2017 baseline)	None	None	None
Nike	46.716	70% reduction by 2030 (2015 baseline)	0% increase until 2025 (2020 baseline)	None	50% sustainable or recycled materials by 2025.**
Inditex	30.919	90% reduction by 2030 (2020 baseline)	20% reduction by 2030 (2020 baseline)	None	100% cotton and polyester from more sustainable sources by 2023. 100% Polyester and Linen from more sustainable sources by 2025.
Adidas	24.049	30% reduction by 2030 (2017 baseline)	30% reduction by 2030 (2017 baseline)	Adoption of renewable energy for core apparel and textile suppliers	'Nine out of ten Adidas articles should be sustainable, meaning that they are made with environmentally preferred materials'
H&M	21.970	56% reduction by 2030 (2019 baseline)	56% reduction by 2030 (2019 baseline)	100% renewable energy by 2030 in entire supply chain	100% recycled or more sustainable by 2030. 30% recycled fibers by 2025.***
Fast Retailing (Uniqlo)	19.414	90% reduction by 2030 (2019 baseline)	20% reduction by 2030 (2019 baseline)	None	None
GAP	16.670	90% reduction by 2030 (2017 baseline)	30% reduction by 2030 (2017 baseline)	None	100% BCI Cotton by 2025, now at 79%. 45% of polyester from recycled sources (rPET), currently at 10%.
Shein	15.700	42% reduction by 2030 (2021 baseline)	25% reduction by 2030 (2021 baseline)	None	None
VF	11.841	55% by 2030 (2017 baseline year).	30% reduction by 2030 (2017 baseline)	Support for selected suppliers to install renewable energy	100% cotton sourced is grown in the U.S., Australia or under a third-party cotton growing scheme by 2026 (currently at 79%). 50% of polyester will originate from recycled materials by 2026 (currently 26%).
PVH	9.154	30% by 2030 (2017 baseline)	30% reduction by 2030 (2017 baseline)	None	Sourcing 100% of sustainable cotton (GOTS, BCI, Organic) and viscose by 2025. 100% of polyester by 2030.

Notes: *Top ten apparel brands/retailers ranked by corporate revenue (2021). ** Apparel EPMs: Recycled Polyester, Organic Cotton, Recycled Cotton, Third Party Certified Cotton. *** See Table with categories: I think more sustainable fibers apply to category A-C, and they want to avoid D. https://hmgroup.com/wp-content/uploads/2021/11/HM-Group-Material-Categorisation-2021-1.pdf.

Sources: Data was collected in corporations' sustainability impact reports (FY 2021), and via the progress report of the Science-Based Target Initiative (2021). Science-Based Target Initiative (2021): Progress Report 2021 https://sciencebasedtargets.org/reports/sbti-progress-report-2021.

This wave of regulation is catalysing investments in innovations around alternative fibre technologies and chemical recycling technologies. There is a limited amount of organic cotton on the global market, 50% of which was supplied by India, but the recent exposure of fraudulent practices in organic cotton certification in India has cast doubt on the certification process and posed reputational risks for buyers.[18] There is clearly a higher global demand for organic cotton than there is supply. In response, non-profit organizations as well as apparel buyers are supporting farmers in India as well as other countries to produce regenerative organic cotton.[19] For example, J.Crew has pledged to source 100% of its fibers sustainably by 2025, as cotton makes up 70% of the company's material footprint. It started a pilot in 2021 to support regenerative cotton growing farms in the US, instructing some of its textile suppliers to buy from these farms. VF has also pledged to source 100% of its top nine materials from regenerative, responsibly sourced renewable or recycled sources by 2030, and it is supporting pilots in India to switch to regenerative cotton production.[20]

Additionally, apparel buyers are looking into virgin materials that use less energy to produce such as hemp as well as man-made cellulosic fibres, as alternatives to virgin cotton. Viscose is an existing semi-synthetic cellulose fibre made from types of wood, but it is not considered very sustainable. Apparel buyers are supporting, and even investing in, start-up firms pioneering technologies to create sustainable man-made cellulosic fibers through various methods, including recycling textile waste, converting agro-waste from crops into natural fibres, and using microbes to produce fibres from agro-waste. Some of the most prominent examples include Renewcell's Circulose fiber (Sweden), Infinited Fiber's Infinna fiber (Finland), Birla's La Reviva fiber (India) and Evrnu's NuCycl technology (US).[21] These firms have patented (or patent pending) technology that recycles textile waste into a cellulosic fiber that can replace virgin cotton in spinning. Clear market signals of support and offtake agreements from apparel brands and their textile providers were crucial to allow these firms to raise financing for commercialization. In addition, buyers like H&M and Levi's took direct shares in Renewcell.

[18] That Organic Cotton T-Shirt May Not Be as Organic as You Think, by Alden Wicker, Emily Schmall, Suhasini Raj and Elizabeth Paton, 13 February 2022, *The New York Times*.

[19] Regenerative agriculture refers to agricultural practices that aim to help support biodiversity, enhance water cycles, improve soil health and sequester carbon--practices such as rotational grazing, cover cropping and no-till farming.

[20] See 'Why J.Crew Group is Regenerative Farming's New Champion', J. M. Chua, 08/11/2022, Sourcing Journal; 'Can Regenerative Agriculture Fix India's Organic Cotton Industry', https://the-ethos.co/regenerative-organic-cotton-india/; and https://www.vfc.com/news/featured-story/98803/three-things-you-didnt-know-about-regenerative-agriculture.

[21] See for example, 'Finland wants to transform how we make clothes', M. Savage, 04/11/2022, BBC News; 'Renewcell's commercial-scale factory: dawn of a new era?', A. Harrell, 10/11/2022, Sourcing Journal; 'Evrnu Raises 9 Million USD to close the textile lifecycle loop', J. Binns, 03/10/2019, Sourcing Journal.

Recycled polyester technologies are also developing rapidly. Polyester is the most popular material used in textile production due to its price and performance, representing 52% of global fibre production.[22] To date, most 'recycled polyester' fibres used in apparel production comes from recycling plastic bottles. However, this solution is not very sustainable as it depends on producing new plastic bottles and does not address polyester waste in used clothing. For real progress to happen, innovations are required in textile-to-textile recycling processes. New technologies in polyester fiber recycling from textile include the Green Machine technology developed through a collaboration between H&M Foundation and the Hong Kong Research Institute of Textiles and Apparel. It is the first technology that can separate blends fibers and extract the polyester for use in making new polyester fibers. This technology has been licensed to a textile firm in Indonesia and in Turkey, as well as a firm in Cambodia, as test cases for commercialization, with buyers such as VF committing to take the product. Buyers are waiting to see the cost of the recycled polyester at the commercialization stage. Worn Again, a UK company, has also developed polymer recycling technology that converts polyester and polycotton blended fabric into new polyester fibers, and it also received funding from H&M.[23]

Besides recycling existing cotton and polyester clothing, innovations are required to produce the next-generation materials such as bio-synthetic that have the properties of synthetic material and can be used to replace fossil fuels.[24] We are likely to see such bio-synthetic materials in the near future as investments are made in this area, driven by the EU legislation and buyers' shifting demands that are creating new market opportunities for alternative fibres. Some global apparel buyers see this sustainability shift as a way to create a competitive advantage in a highly competitive industry by shifting early and are investing in companies creating new fibre and recycling technologies.[25]

Buyers are looking for suppliers that can help them realize the shift to more sustainable and circular economy business models. Some large buyers are piloting these models. First-mover buyers will set the new standard in the industry, and other buyers will imitate. Sustainable production will become the norm.

3.3. Windows of Opportunity for African Countries

These trends create a window of opportunity for African countries. Buyers are looking to source from countries that are closer to Europe and the US and that have the raw materials, and they prefer firms that operate an integrated yarn-to-apparel setup to decrease the supply

[22] Textile Exchange, 2021, Preferred Fibre and Materials Marketing Report.
[23] See for example, 'H&M goes all in on Garment-chomping "Green Machine" amid chorus of recycling critics', J.M. Chua, 07/12/2021, Sourcing Journal; 'Green Machine launch planned to address Cambodia textile waste', H. Abdulla, 14/101/2021, Just-Style.com; http://www.wornagain.co.uk.
[24] 2025 Recycled Polyester Challenge: First Annual Report, July 2022, Textile Exchange.
[25] Based on the author's observations and interviews with apparel brands and retailers as well as fibre technology firms at apparel and textile trade fairs, combined with online research regarding new fibre technologies and start-up firms in this sector.

chain costs and pollution. Buyers will consolidate their supplier lists, reducing the number of supplier firms from which they source and focusing on those that can deliver on 'green' production as well as digitalization, small batch sizes, vertical integration and preferably a multi-factory international footprint. African countries can capitalize on this opportunity, but it requires building production capacities in cotton spinning, weaving, knitting and finishing fabrics.

Trends relating to China could drive greater interest from Chinese textile producers to set up textile mills in African countries. The increasing cost of labor in China and Southeast Asian countries can give African countries a competitive advantage, but labor costs alone do not drive foreign investments in textile and apparel. Textile investors need minimum volumes to be profitable and thus seek to ensure there is sufficient local demand for fabric by apparel factories as well as low electricity prices.

The raw material for clothing production will become manufactured fibres that rely on advancements in chemical technologies and biofabrication. Virgin cotton will be of less importance, as it is replaced by natural fibres that are less resource intensive and by man-made cellulosic fibres that feel like cotton. In the transition stage, cotton will move to organic and regenerative as well as become blended with other natural and man-made cellulosic fibres.

Future fibres will have a high technology content and require licensing technology, both man-made cellulosic fibres and the new wave of synthetics that seek to replace polymers. These technologies may have spillovers into other manufacturing sectors, resulting in something similar to the technological advancements in chemistry that led to the polymer revolution in the 1930s. The use of polymers started with the production of nylon, which was first commercialized for women's hosiery but then led to the 'world of plastics'. Synthetic fibre production based on polymer technology and the petro-chemical industry led to linkages and knowledge spillovers in the domestic economies of Northeast Asian countries. More generally, innovations that drove industrialization historically occurred in textile, where fast technological change was occurring in textile equipment (spinning and weaving) and then in petro-chemicals and fibre production. Apparel assembly was never the source of dynamism behind textile-driven industrialization.[26] African countries should not miss the next technological shift linked to textile production.

[26] These trends related to innovations in textile and the history of industrialization in the West and Northeast Asia are based on the author's research that will be published in a forthcoming paper.

4. PRODUCTION CAPABILITIES, EXPORTS AND IMPORTS IN GHANA, COTE D'IVOIRE, AND TOGO

Cote d'Ivoire predominantly exports raw cotton and a small amount of wax print cloth. In West Africa, a significant portion of the population buys wax print cloth and has their clothes tailor made, in traditional and modern styles. Vlisco, a company from the Netherlands, has a dominant market position in the luxury and medium range prints, with printing factories in Cote d'Ivoire and Ghana that also export to other countries in the region. The lower end segment is comprised of cheaper wax print fabrics, which does not use the extensive printing system of layering colors, much of which is imported from China.

None of the three countries have modern production capabilities in spinning, weaving, knitting or dyeing. The greige fabric used by the wax printing companies is imported, except for a small amount sourced locally in Ghana. Only Ghana has industrial or mass apparel production for export, and it is small, comprised of two firms that started exporting in the late 2010s with foreign investment. Ghana and Cote d'Ivoire have some small-scale local firms producing for the domestic market, but most of these firms do not have the capabilities to grow into large firms that could produce using industrial methods.

The governments of Togo, Cote d'Ivoire and Ghana are adopting an export-oriented strategy for the industry. Currently, Togo is the only country of the three where the government has started implementing that strategy. Central to the Togo government's strategy is leveraging foreign investment and technological capabilities in both textile production and garment assembly. The government is co-investing with Arise Integrated Industrial Platform (IIP) to build an industrial park that will attract foreign investments textile and apparel factories. Central to this approach is establishing two vertically integrated knit textile and apparel factories in the industrial park initially managed by Arise IIP, with which to demonstrate the opportunities for textile production in Togo using regional cotton as well as to provide a textile base that makes it attractive for foreign apparel firms to locate in the park. The existence of export quality fabric locally shortens the lead time in production and allows apparel firms located in the industrial park to achieve speed to market in Europe and the US. The Togolese government's strategy is to use foreign apparel firms to help local investors enter the apparel industry and learn to export. However, this strategy is underway and likely will take five years to achieve, underscoring the importance of having a longer-term vision.

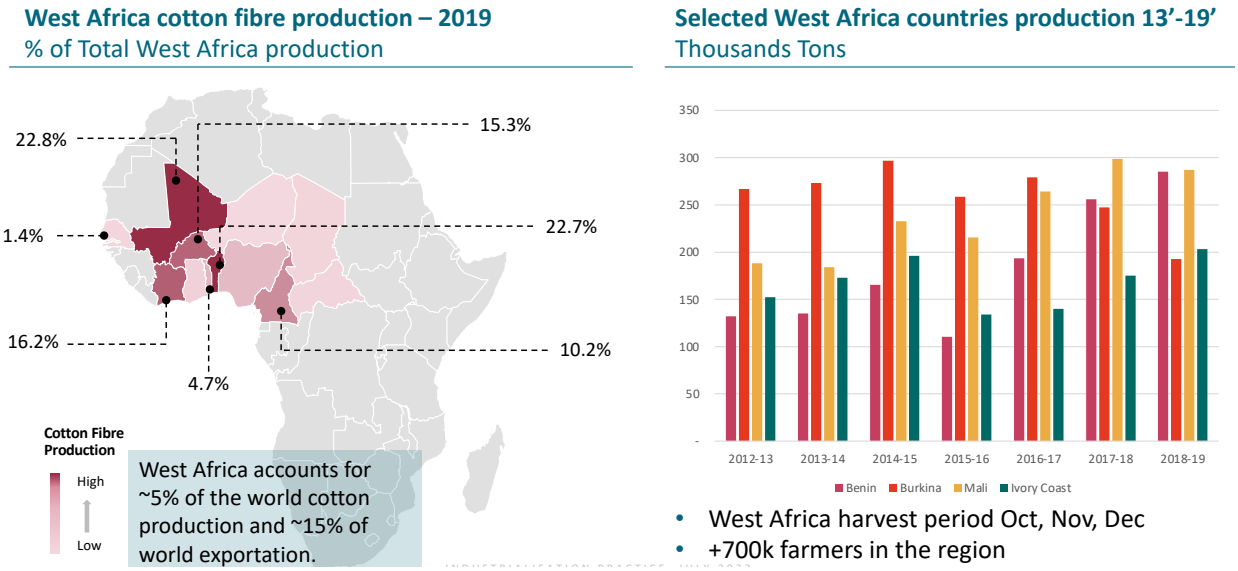
4.1. Cotton Production and Exports in West Africa, in comparative perspective

In 2019, West Africa's cotton fibre production accounted for approximately 5% of the world cotton production and approximately 15% of world exportation. West Africa produces about 60% of Africa's cotton but accounts for the bulk of its exports outside the continent (Figure 18). There is cotton production in the North, East and Southern Africa regions. Approximately 10% of the cotton fibre produced on the continent is traded internally (Figure 5).

The largest exporters of cotton fibre in 2019, ranked in order, were Mali, Benin, Cote d'Ivoire, Burkina Faso and Cameroon. Cotton is grown mostly by smallholder farmers in rotation with

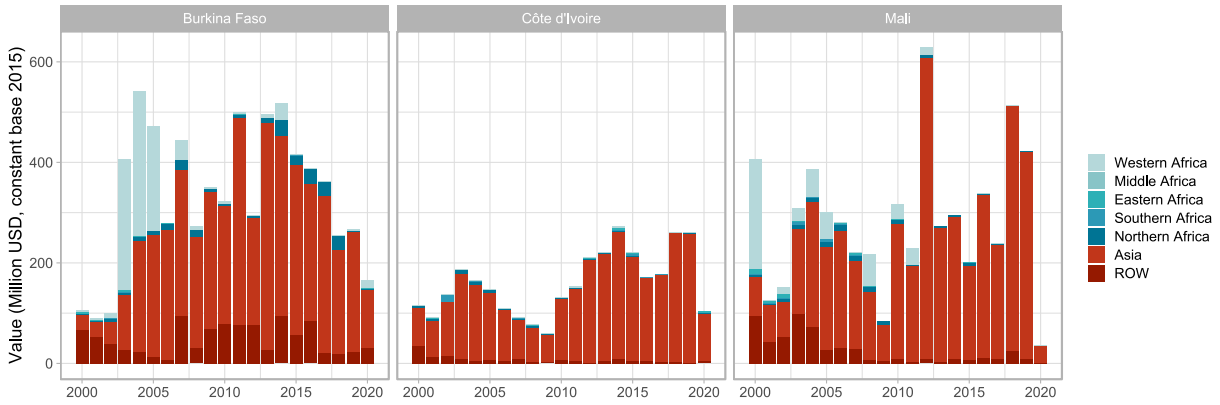
other crops, is mostly rainfed, and harvested by hand. However, smallholder production typically uses fertilizers and pesticides, but production practices are more sustainable than conventional cotton grown in other parts of the world in terms of resource use intensity. Hand harvesting guarantees a better preservation of the characteristics of the fibre but requires more vigorous cleansing at the ginnery. Production yields in West Africa are lower than in Asia and the US, due to limited access to water, use of machinery, and soil exhaustion. The highest yield is in Cameroon with 1200 kg/ha, compared for example to 1720 kg/ha in China.

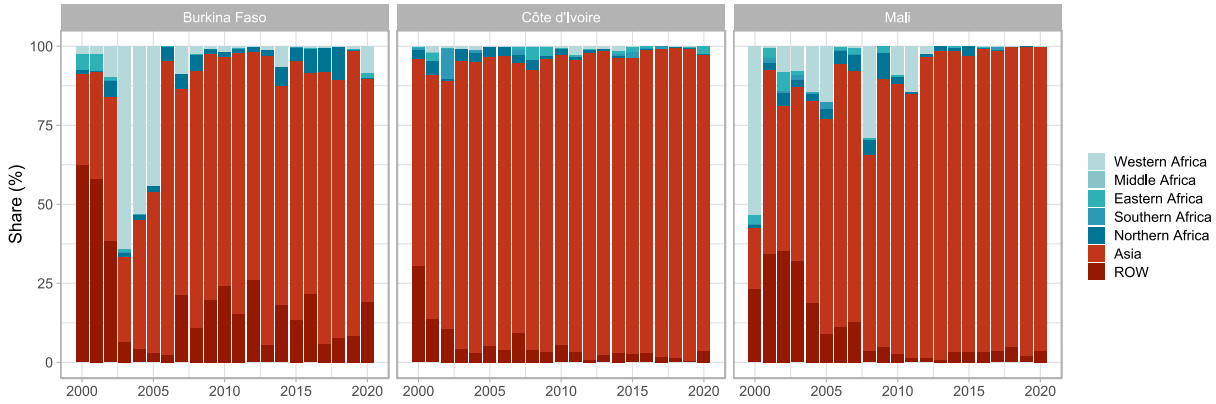
Figure 18. West African Cotton Production Indicators



Source: TBI industrialisation Practice.

Figure 19. Cotton Exports from Burkina Faso, Cote d'Ivoire and Mali by region, 2000-2020





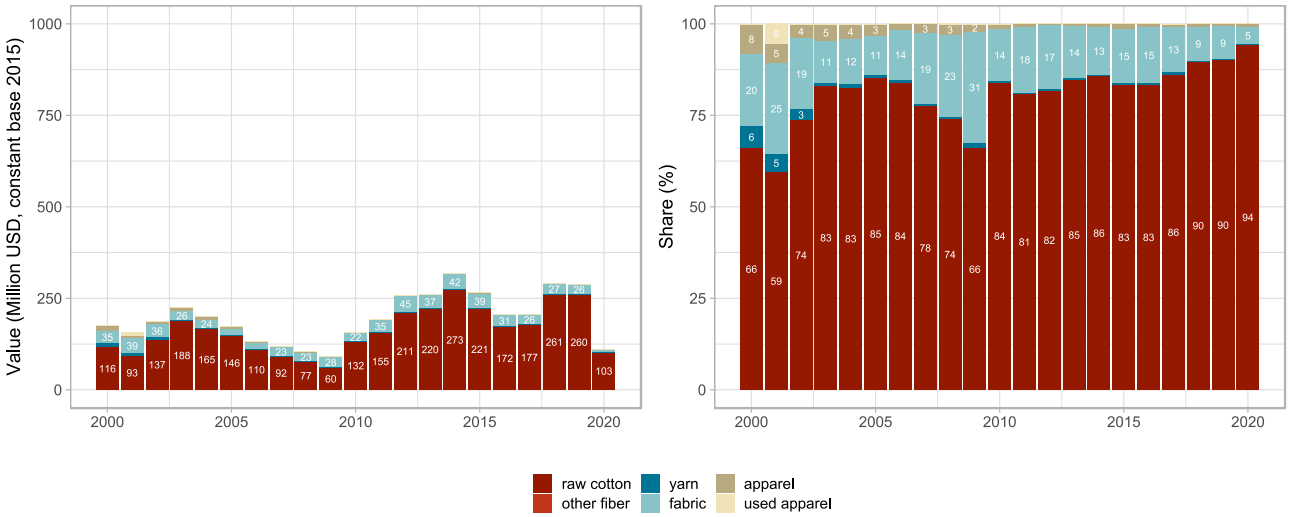
Source: Graph produced by Kristoffer Marslev based on CEPII-BACI. Trade values are estimated as FOB. Trade values have been deflated according to the USD deflator (https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS?locations=US).

4.2. Cote d'Ivoire

Cote d'Ivoire is the second largest producer of cotton seed on the continent, after Benin. Cotton production and export declined during the period of political conflict in the 2000s but increased in the 2010s as the privatized ginning factories and new factories made investments in ginning capacity and supported cotton seed production by smallholder farmers. Fabric exports declined because of the collapse of the small spinning and weaving sub-sector, which largely exported yarn, greige fabric and some garments regionally. Existing fabric exports are comprised largely of wax print cloth, again largely to the region. Cote d'Ivoire has no mass garment production, which explains the negligible apparel exports (Figure 20).

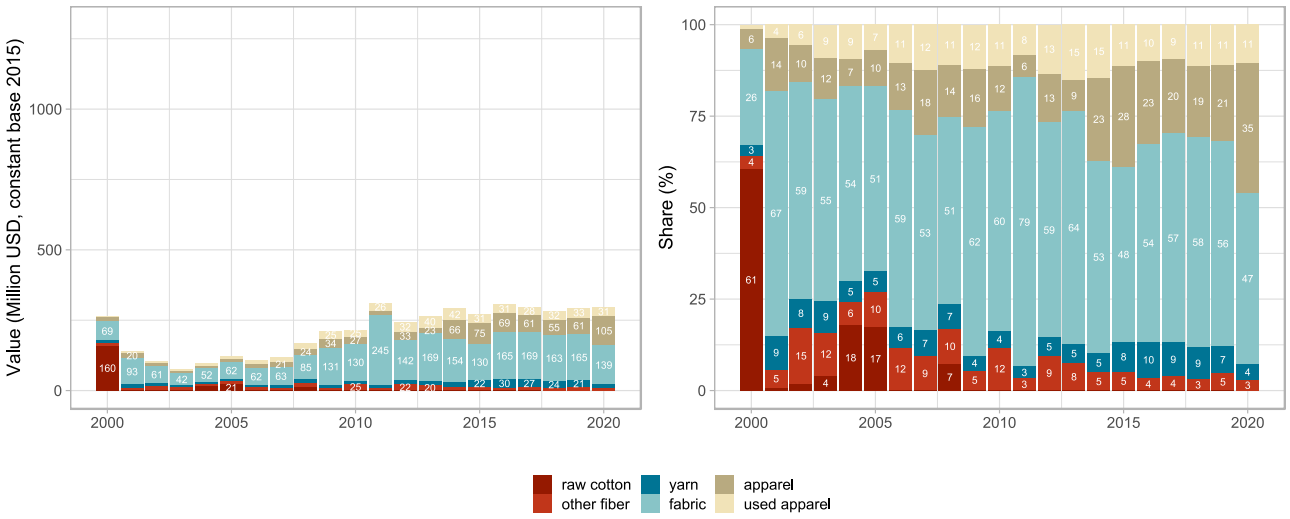
The demand for clothing is met through a combination of domestically tailored clothes using wax print cloth and imported new and used apparel. As shown in Figure 21, fabric constitutes the bulk of the country's textile and apparel imports. Fabric imports include both greige fabric used for wax printing in the country and cheap wax print fabric from Asia. Ready-made clothing imports have increased in the past decade, while used apparel imports have remained relatively constant. This trend indicates growing domestic demand for new ready-made clothing.

Figure 20. Cote d'Ivoire: Exports of Fibre, Yarn, Fabric, Apparel & Used Apparel, 2000-2020



Source: Graph produced by Kristoffer Marslev based on CEPII-BACI. Trade values are estimated as FOB. Trade values have been deflated according to the USD deflator (https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS?locations=US).

Figure 21. Cote d'Ivoire: Imports of Fibre, Yarn, Fabric, Apparel & Used Apparel, 2000-2020



Source: Graph produced by Kristoffer Marslev based on CEPII-BACI. Trade values are estimated as FOB. Trade values have been deflated according to the USD deflator (https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS?locations=US).

4.2.1. Cotton Cultivation and Ginning Capabilities in Cote d'Ivoire

The average landholding size of smallholder cotton farmers is 3 ha. There were 131,335 cotton farmers in the 2021/22 season, cultivating 475,445 ha of land and producing 539,623 MT of

seed cotton, of which 85% was of superior grade and the cotton seed yield was 1134 kg/ha. In ginning, the fibre yield was 41.8%, and 224,140 MT were exported, which has increased from 170,418 MT in 2017/2018 season (Table 1).[27] The ginners' association aims to increase the yield to 1200 kg/ha, which Cameroon has achieved, and to slightly increase ginning turnover, aiming to export 304,237 MT by 2025/2026.

Cotton production is highly regulated in Cote d'Ivoire. The sector used to be completely controlled by the government using state-owned ginning factories; it was liberalized starting in 1996. The government privatized its ginning factories and welcomed new private investments. In the 2000s, a few private investors set up new ginning factories. The privatization of government-owned ginning factories continued into the 2010s, presumably stalled by the country's civil war. The government divided the country into zones and gave each ginner an exclusive zone, where it is required to work with the cotton farmers by providing training and financing inputs in advance, and each ginner buys cotton seed from the producers or organizations that it has supervised. Cotton prices are set by the Cotton and Cashew Council every year in consultation with the ginners based on the minimum price for cotton seed and the global market index for cotton. The government subsidizes the price depending on whether the global price is lower than the government minimum price.

There are 5 ginning companies currently operating in Cote d'Ivoire: CIDT, COIC, Ivory Cotton, Global Cotton, and SECO. COIC is owned by a private Ivorian, who later bought CIDT from the government, making it the largest ginner and accounting for 50% of total cotton fibre production in the country. In the past five years it invested in new ginning machines at CIDT, increasing its ginning capacity almost threefold. CIDT has plans to build a new factory through a loan from the IFC and is investing in logistics to increase activities carried out in-house. It aims to increase production over the next five years to 150,000 MT.

SECO is a subsidiary of Olam, a major international cotton trading company. It started expanding its cotton production and ginning capacity around 2012. Initially, the government created exclusive zones around each of the state-owned ginning factories. This posed constraints for SECO, as its zone only supported one factory, so the government gave it another area to develop, and it invested in a second ginnery. It is establishing a third ginnery as it aims to increase its cotton seed production.

Ivory Cotton is largely owned by a consortium of private foreign investors, including Reinhart, also a major international cotton trading company, with a minority government share. Global Cotton is co-owned by a cotton farmer cooperative and the local investor that bought two

[27] Data in this paragraph and the next paragraphs on cotton production comes from the following sources: presentation by the President of APROCOT-CI, the association of ginners in Cote d'Ivoire, on 01/07/2022, originally in French; '*Apercu General de la Filiere Coton Ivoirienne*', document on the history of the sector, originally in French; interview with the Director General of the Olam Agriculture office in Abidjan and head of the SECO ginning factory owned by Olam on 01/07/2022 in Abidjan in English; and interview with the CEO of the ginning factory CIDT on 26/07/2022 in Abidjan in English.

state-owned textile factories (FTG and COTIVO). The production of Global Cotton is much lower than the other four ginneries (Table 2). The reason may be that both FTG and COTIVO are not doing well financially, as discussed below, and thus the ginnery may have financial problems and unable to fully support the cotton farmers.

Table 2. Indicators of Cotton Production in Cote d'Ivoire, 2021/2022 season

	CIDT	Ivoire Coton	COIC	SECO	Global Cotton	**Total**
Cotton seed weight (kg)	110,707,802	166,380,270	159,188,400	101,665,500	945,600	538,887,572
Percentage of superior cotton	86%	86%	82%	91%	91%	85%
Seed yield %	51%	51%	50%	52%	51%	51%
Cotton fibre weight (kg)	46,830,650	68,551,295	66,326,670	42,970,368	400,877	225,079,860
Fibre yield %	42.3%	41.2%	41.7%	42.3%	42.4%	41.8%

Source: Adapted by the author from original table supplied by APROCOT-CI, 2022.

SICOSA, a sixth ginning company, existed, but it had been suspended by the government from operating its zone due to failures in meeting its requirements to support farmers. As of 2022, it was providing ginning services to COIC. SICOSA was started by Louis Dreyfus, another of the big 5 international trading companies dealing with cotton, in partnership with a farmer cooperative and a ginning equipment supplier, but this initiative seems to have failed and the unit was bought by an Italian spinning company that has a textile mill in Milan to secure its cotton supply.

More than 95% of the ginned cotton in Cote d'Ivoire is exported through 10-15 international traders who secure the end-market buyers. The main international traders buying West African cotton are Cargill, ECOM, Glencore, Louis Dreyfus, Reinhart and Olam, and they are all present in Cote d'Ivoire. Ginning companies do not have the capacity to deal directly with thousands of textile mills in Asia, so they sell through international traders but ship directly to the mills in Asia.

The number of cotton farmers in Cote d'Ivoire has increased significantly over the last 5 years. The challenge now is to increase the farm size of the average farmer from 3 ha to 4 ha. The main obstacle is that farmers are not equipped to grow their farms and need support. There is no commercial cotton farming in Cote d'Ivoire, and farmers are not willing yet to consolidate their farms. Land access is a constraint for commercial investment in cotton. One ginner was of the perspective that smallholder cotton farmers would expand their holding if encouraged through the price of cotton, premium incentives, upfront financing, training, and support in acquiring equipment to move to mechanization, but that this transition would take five to ten years.

Most ginners in Cote d'Ivoire have the Cotton Made in Africa certification, which is recognized by the Better Cotton Initiative. However, in mid-2022 there were disagreements between the two bodies and negotiations were underway. Cotton seed production in Cote d'Ivoire is not organic, as farmers use pesticides. Some of the ginners recognize the opportunity for a move to organic cotton and note that the main international cotton trading companies have expressed interest in buying organic cotton.

SECO, as a subsidiary of Olam, is being pushed by Olam headquarters to move into organic cotton production. It started an organic program in 2021 with in-house experts. This first attempt was characterized by many mistakes, and the company aims to continue with the program and develop its understanding. It is also investing in research on regenerative farming through collaboration with experts outside the firm. The main aim is to invest in research and development that can create an organic farming system that does not lead to a large drop in yields. SECO referred to organic production being tried in Burkina Faso, where the yield drop was as large as from 1200 kg/ha to 8-900 kg/ha, and farmers were getting paid a 10% premium on organic cotton. This model was seen as too expensive. SECO aims to work closely with research to get varieties adapted to new techniques of production. Thus, organic production can be worth it for farmers, but more investment in research and development is required to achieve that goal. Notably, most of the ginners have traceability systems in place from village to ginning that are digitalized, which would be necessary for organic production. SECO is working on an advanced traceability program that can link from farmers to specific garment through a digital tracing platform.

4.2.2. Textile Production Capabilities in Cote d'Ivoire

There is effectively no cotton spinning, weaving or knitting production in Cote d'Ivoire, which partly explains why almost 100% of its cotton is exported.[28] Cote d'Ivoire had a textile industry in the 1970s that consisted of 8 firms, which had been established in three waves since the colonial period, but only 3 remain today and even those mills are producing very little.

Gonfreville (FTG) is the oldest textile mill, established in 1921 as a spinning mill by a colonial official and then taken over by a French commercial firm in the 1970s, which partnered with a large French textile company and a set of foreign banks to create an integrated firm with spinning, weaving, printing and garment assembly. The next four textile mills were established in the 1960s primarily as import-substituting ventures by French commercial firms (with some private Ivorian capital) that wanted to maintain their share of the Ivorian market. These firms

[28] The history of textile production is based on Mytelka, L. 1985. 'Stimulating effective technology transfer: The case of textiles in Africa', in *International Technology Transfer: Concepts, measures and comparisons* (eds) N. Rosenberg and C. Frischtak. New York: Praeger, pp. 77-126. The information on current operations of the remaining textile mills comes from an interview with the owner of UTEXI and COTIVO in 2019 conducted by Maximilien Angui and Jordan Pace (from the TBI office in Abidjan) at the site of Cotivo in Agboville, which was shared with the author; an interview with the CEO of FTG conducted online in English on 28/06/2022 by the author; and a field visit to FTG in May 2021 conducted by Thibault Chaudet-Filmont and Yann Djinphie from the TBI Office in Abidjan, the notes of which were shared with the author.

included SOCITAS, ICODI, SOTEXI and UNIWAX. They benefited from state lending in Cote d'Ivoire. Slow growth of the domestic market and limited intersectoral linkages of foreign firms led the Ivorian government to encourage foreign capital in import-substituting activities in consumer-oriented industries to move toward export-oriented manufacturing. Thus, the third wave of textile investment in the 1970s led to textile firms that were established to export: COTIVO, UTEXI and Gonfreville Grand Ensemble. COTIVO was designed to produce denim for a US firm manufacturing blue jeans in Cote d'Ivoire for export, and UTEXI and Grand Ensemble planned to export home textiles such as bedsheets to Europe. The Ivorian government took shares in six of the eight textile firms primarily to reduce the risks to foreign investors by providing capital and access to cheap loans from state institutions; it did not play a role in management or technology selection. Access to cheap capital and the interests of technology suppliers shaped the decisions of these textile mills, which lead to buying expensive machinery and poor product selection, and other state policies diminished the incentive of these firms to move toward efficient production. As a result, the planned exports were not competitive in the European market and the firms switched to producing more basic products for the domestic market. The Ivorian economy experience worsening balance of payment issues by the late 1970s, which led to a deal with the International Monetary Fund. The austerity measures demanded by the IMF led to falling domestic demand and further problems for import-substituting industries such textile and apparel.

Gonfreville (FTG) still exists. It was producing and exporting yarn, dyed yarn, greige fabric and uniform garments, primarily in the West African region, but this activity stopped with the civil war in 2003. The last investment in the company was in 2002, but with the war, it could not pay back its debts. The age of its machines now ranges between 20 and 40 years old. The company is not operational. It produces yarn and fabric for artisans in the domestic market just to maintain employees. The machines are too old to be repaired, as European companies no longer make the models and spare parts. The company was privatized, with the government retaining about a 30% stake, but the private investors, who apparently did not bring any new investment. Currently, FTG is in 'legal redress', effectively bankrupt, and the government has taken it over. The government facilitated partial debt forgiveness of up to one-third and debt rescheduling. Chinese textile companies have visited the factory and shown no interest. Foreign investors will not be interested in buying this factory because the machines and buildings have no value and will have to be completely replaced; only the land has value. The CEO of the company estimated that it would take 100 million Euros to rehabilitate the infrastructure and buy the number of new machines required to reach economies of scale (decrease per unit production costs) and supply the domestic market. Uniwax has a large demand for greige fabric, which is currently met by imports, as discussed below.

UTEXI and COTIVO also still exist. They were closed during the civil war and then sold in 2014 to a local investor. The mills primarily produced griege fabric and cotton yarn using cotton supplied by local ginners. The yarn is not fine enough to make apparel. The current state of both mills is barely operational and suffers from similar problems as FTG with old machinery.

The local owner apparently did not bring any significant investment to the mills. Cotivo is selling greige fabric to a local printing company and thread to a company making jute bags.

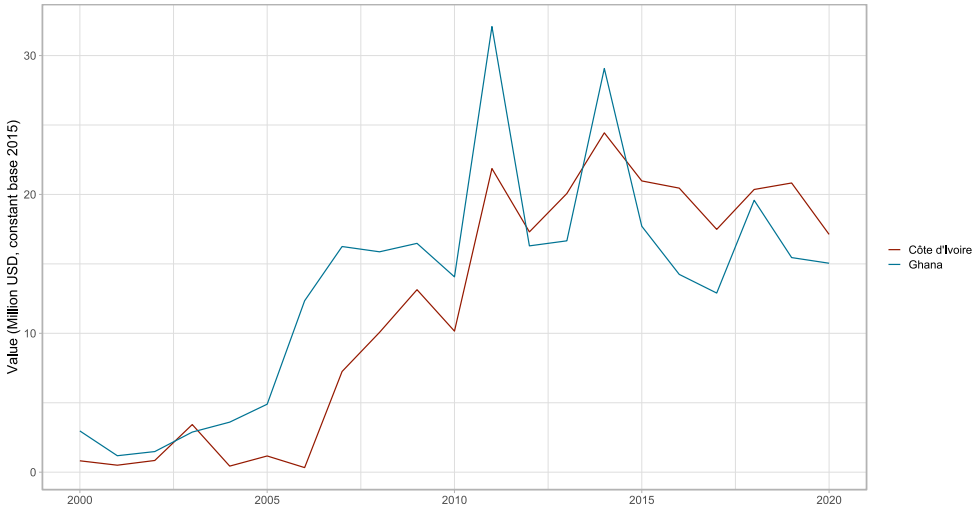
Several of the ginners, such as Olam and CIDT, are interested in investing in textile production, but they lack the expertise. Olam invested in Coton Chad, a spinning mill in Chad, but it does not have a coherent investment strategy. What is clear is that Olam would be willing to sell its cotton fibre to local textile mills, provided they are not asked to provide cotton fibre at subsidized prices.

4.2.3. Wax Printing in Cote d'Ivoire

Uniwax was established in 1966 by Vlisco to produce 100% cotton 'Dutch' wax fabric for sell in the West Africa region; it started operations in 1970.[29] During the 1970s, Uniwax purchased greige fabric from COTIVO, which shifted from producing denim fabric to cotton greige. However, the greige was too expensive, and it shifted to importing greige fabric from Asia. Today, Uniwax sources 40% of its fabric from CBT, a woven textile mill in Benin, and the rest from Asia. CBT is a joint venture between a Chinese firm and the government, which has a 49% share. However, the Chinese firm did not bring new investment in machines and the quality of the fabric is not as good as in China, but the cost is comparable because of the ECOWAS free trade area. Uniwax buys the entire production of CBT and is their sole customer. Uniwax buys about 60 million yards of greige fabric per year, of which 10-12 million yards come from Benin and the rest from China, Pakistan, and India. It has experienced structural growth in the wax print market over the last 10 years and made massive investments in their factory. However, this growth has been met with imported fabric, as is also the case in Ghana (Figure 21).

[29] This paragraph and the next draw on an interview with the Managing Director of Uniwax in Abidjan on 01/07/2022, as well as an interview with the former Managing Director in 2019 conducted by Maximilien Angui and Jordan Pace from the TBI office in Abidjan, which was made available to the author.

Figure 21. Imports of Unbleached, Woven Cotton Fabric to Cote d'Ivoire & Ghana, 2000-2020



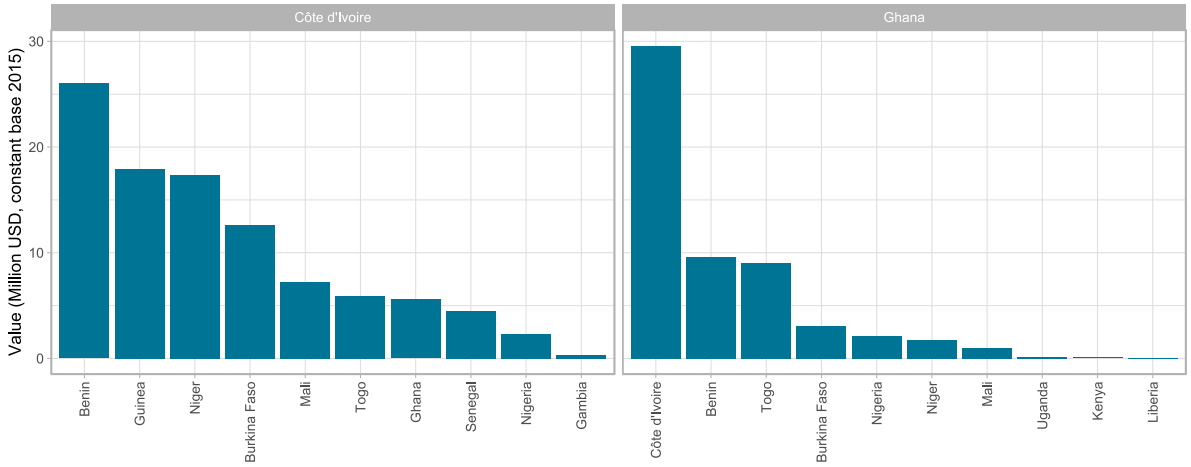
Source: Graph produced by Kristoffer Marslev based on CEPII-BACI. Trade values are estimated as FOB. Trade values have been deflated according to the USD deflator (https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS?locations=US).

According to Uniwax, it sells 70% of the wax print clothing in Cote d'Ivoire and the rest in West Africa from Senegal to Nigeria, with some small exports to Belgium and France. It sells through wholesalers who then resale in open markets and through its own retail stores, but those account for only 3-4% of sales. Figures 22 and 23 show that the majority of textile exports of Cote d'Ivoire and Ghana go to the West Africa region.$

Figure 22. Textile Exports of Cote d'Ivoire and Ghana by region, 2000-2020

Source: Graph produced by Kristoffer Marslev based on CEPII-BACI. Trade values are estimated as FOB. Trade values have been deflated according to the USD deflator (https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS?locations=US).

Figure 23. Cote d'Ivoire and Ghana: Top 10 Textile Export Destinations in West Africa, 2016-2020



Source: Graph produced by Kristoffer Marslev based on CEPII-BACI. Trade values are estimated as FOB. Trade values have been deflated according to the USD deflator (https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS?locations=US).

Vlisco attempted to facilitate some of its Chinese greige fabric suppliers to invest in a textile mill in Nigeria, but this project collapsed due to political issues in Nigeria. Vlisco has long-term relations with its fabric suppliers in China that could be used to convince them to invest in textile mills in West Africa. Vlisco is trying to incentivize them by offering to buy the main buyer of their product and to be a junior investor offering some equity in a joint venture. However, Chinese investors also want incentives from the host country, including tax exemptions, lower electricity prices, and better water access and prices. It takes about 5 years to recoup investment and the margins in greige fabric production are very thin. In China, some textile firms do very large volumes of greige fabric, but most textile firms produce different types of fabric with different types of finishing.

Uniwax expects growth in wax print outside the continent. Even though wax print will be a niche in Europe and the US, it will still be a large market. It is in the process of getting AGOA certification to sell in the US market. Uniwax can meet the rules of origin for textiles in AGOA of 30% value added through its printing process, but it needs to source greige fabric from an AGOA country. Vlisco has launched a new ready-to-wear label that is sold online for the European market, to create a platform for African designs and clothing produced in Africa, but the lack of export quality fabrics and garment factories in Cote d'Ivoire in particular, and West Africa in general, is a constraint. To realize its growth ambitions, Vlisco needs foreign investors in spinning and weaving and for the development of mass-production garment factories. On its side, it is in the process of developing new fabric types to make wax print feel less rough to European and US consumers. It is also interested in developing an Ecolabel, as it sells high-value products.

4.2.4. Mass Garment Production Capabilities in Cote d'Ivoire

The garment industry is comprised largely of tailors and family businesses in the informal sector that produce tailored clothing, largely for the low-income segment of the domestic market. The remaining quarter of garment production includes small and very small businesses that produce clothes on demand for boutiques and stores in shopping malls for the middle to an upper-income segment of the domestic market. The Association of Fashion Designers of Cote d'Ivoire has 60 members, which have, on average, 10-20 sewing machines. Some of these firms have additional machines such as embroidery and finishing, but not all.[30] Demand in the domestic market for new ready-made clothing is higher than the local production capacity and thus the gap is met by imports.

However, these small-scale garment-producing firms will not be able to drive the emergence of mass garment production in the country. They do not have the business skills, technological capabilities, capital, or strategic vision required to move into large-scale production for the domestic market, much less to export. Growth of mass garment production will require attractive greenfield investment in medium to large apparel factories by domestic and foreign investors, and for domestic investors to work with foreign investors or hire foreign consultants, as there is no apparel export expertise in the country.

4.2.5. Government Policies Targeting the Textile and Apparel Sector

The main challenges to investments in spinning and weaving in Cote d'Ivoire are the generally high fixed investment costs required for these capital-intensive factories and the high cost of electricity in the country, as electricity constitutes a major production cost for these factories which run continuously. Electricity is currently around 10 cents per kWh, while the textile industry requires 7-8 cents per kWh. The other major challenges include the lack of technical expertise in textile production, especially with electronic equipment, and issues around access to land.

The government launched a textile and apparel strategy in 2019 and a national development plan in 2021 that included developing new industrial parks located around cotton production zones with fast links to the seaports. The idea behind the industrial parks is to address these challenges to textile investments. The strategy includes implementing a set of incentives regarding energy, labor and taxes with which it aims to attract foreign direct investment. For example, investors in the parks are to benefit from preferential electricity rates, an exemption from customs duties and VAT (for 5-15 years subject to the size of investment), and access to raw cotton.

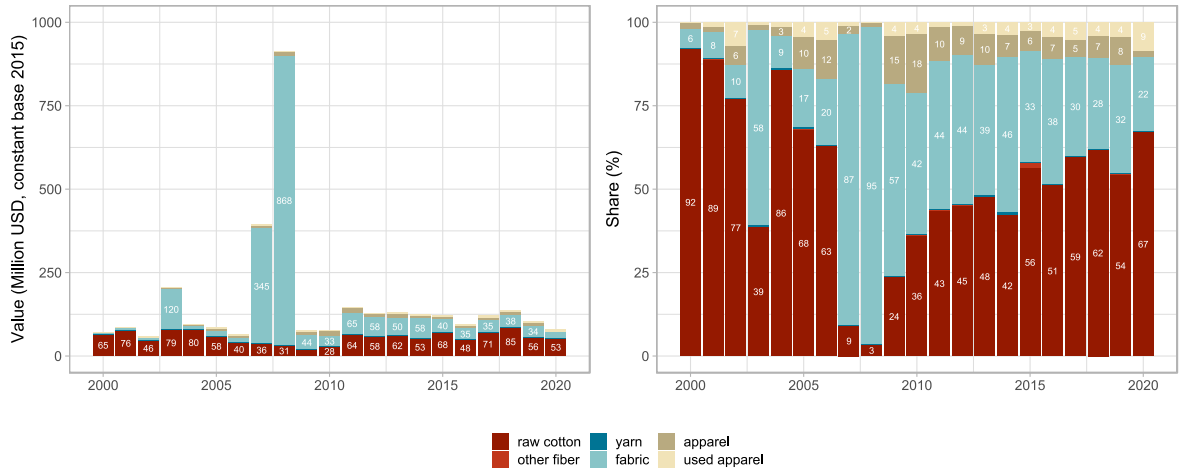
[30] This paragraph draws on an interview with the President of the Association of Fashion Designers in Cote d'Ivoire in Abidjan conducted in French on 29/06/2022, as well as data collected from the TBI Office in Abidjan on the garment industry structure.

The proposed industrial parks will be situated near Abidjan and Bouake. As of now, the parks are publicly funded, which poses challenges to their implementation given financial constraints and that changes in the ruling party or other political issues can easily change government priorities and undermine implementation of the industrial parks and incentives for textile and apparel investors to locate there. Another issue in Bouake is access to land, which is problematic close to the town and would require situating the park further away. There seems to be little movement so far on the industrial parks.

4.3. Togo

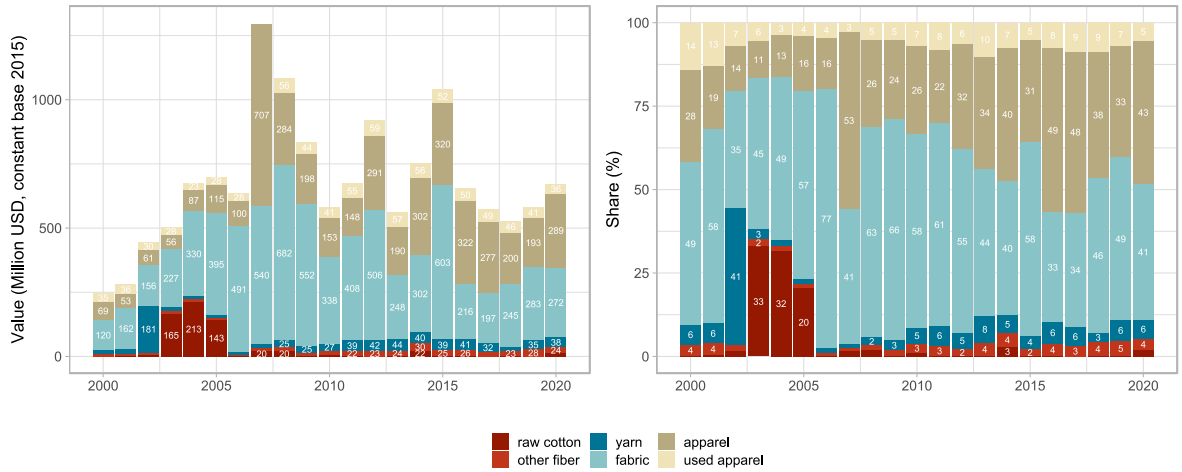
Togo also exports mainly raw cotton, but on a smaller scale than Cote d'Ivoire (Figure 24). The production of cotton seed is around 137,000 MT, with cotton fibre production around 56,000 MT. The country has 6 ginning factories. Togo had no textile and garment production, although it is being developed now, so exports of fabric, apparel and used apparel must be re-exports of imported goods. It has the second busiest container seaport in West Africa and serves as a key transit link to landlocked cotton-producing countries. Imports of new ready-made clothing have increased, which indicates both the emergence of China as a source of low-cost clothing and growing local demand, while the share of used clothing imports has remained largely the same (Figure 25).

Figure 24. Togo: Exports of Fibre, Yarn, Fabric, Apparel & Used Apparel, 2000-2020



Source: Graph produced by Kristoffer Marslev based on CEPII-BACI. Trade values are estimated as FOB. Trade values have been deflated according to the USD deflator (https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS?locations=US).

Figure 25. Togo: Imports of Fibre, Yarn, Fabric, Apparel & Used Apparel, 2000-2020



Source: Graph produced by Kristoffer Marslev based on CEPII-BACI. Trade values are estimated as FOB. Trade values have been deflated according to the USD deflator (https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS?locations=US).

4.3.1. Creating a Textile and Apparel Industry: government industrial policies31

The Togolese government wanted to support the creation of a textile and apparel export industry, but understood the challenges given that there was no such industry in the West African region. It also recognized the current window of opportunity created by disruptions in global logistics and apparel supply chains. Togo is in close proximity to Europe, resulting in just 15-20 days to transport goods to Europe and 40 days to the United States. Togo could capitalize on its domestic and regional cotton production but needed to create textile as well as apparel production within the country. To do this, the government invested in a public-private partnership agreement with Arise Integrated Industrial Platform (IIP), which is a joint venture between Olam group and Africa Finance Corporation, to develop a dedicated textile and apparel industrial park. The park is in Adetikope, which is 15 km from Lome city and 25 km from Lome seaport, located on highway and close to the proposed railway line. Construction began in August 2020.

The industrial park, Platforme industrielle d'Adetikope (PIA), is based on a model that is new to the African continent, differing in important ways from the industrial park model implemented in Ethiopia. The five main eco-industrial parks in Ethiopia were funded entirely by the government, and although they were built by Chinese construction companies, they are managed by an Ethiopian government agency.[32] Furthermore, the parks provided two

[31] This section is based on the PIA Togo Investors Handbook 'Transforming Textile Trade in Togo' and the PIA Masterplan by Arise IIP, as well as an interview with the Director General of PIA Togo in Togo on 05/07/2022, an online interview with the CEO of Arise IIP on 14/07/2022, and an online interview with the Advisor to the President in Charge of Investment Promotion on 15/07/2022.

[32] These five industrial parks in Ethiopia are located in Hawassa, Bole Lemi, Adama, Kombolcha and Mekelle. This paragraph draws on the author's research on Ethiopia, which has been published. See 'Leveraging participation in apparel global supply chains through green industrialization strategies', F. Jensen and L.

sizes of garment factory sheds that companies rent, built to international standards and compliance requirements, as well as room for investors to build textile mills. The government provided all utility and other government services in the park as well as wastewater treatment plants. PIA in Togo differs in several respects. It is a public-private partnership, in which Arise IIP plays a major role in the construction and operations of two vertically integrated factories as well as the management of the park. Thus, the government and foreign investors are playing a more active role in textile investments and production. Furthermore, PIA in general, and the two vertically integrated factories in particular, have gone even further than the Ethiopian eco-industrial park model to incorporate sustainability and circularity in the infrastructure and production systems, as described below.

The first phase of PIA includes two vertically integrated factories from spinning to knit fabric production and finishing to assembly that will produce cotton knit garments for export. These factories will initially be joint ventures between the government and Arise IIP, but entirely run by the latter. The government's strategy is to have 'model investors' in the park that can be used to attract further investment. It saw the need to co-invest in the capital-intensive textile segment, which provides a stimulus for foreign apparel firms to set up operations there.

The government also sees the industrial park as a way to facilitate access to land for investors in a country was the status and use of land are still an issue, as is the case in much of West Africa. The park will span 410 ha at maturity, providing space for investors to build textile mills and apparel factory sheds, serviced with utilities and logistics infrastructure. The park will have textile and apparel specific infrastructure and services run by Arise IIP, which include R&D and testing centres for textile chemical control measures; a design centre for various products; a training centre to provide skilled workers; a zero-liquid discharge effluent treatment plant to reduce the water footprint of textile units; engineering services support; and logistics support including container yard, container freight station, truck parking, storage and so on. In the first phase, 120 ha of land will be deployed to develop 15 units, and Arise IIP will help investors to build their units. Investors will receive a five-year exemption from corporate income tax, tax on revenues, and patent and property tax. For large investments, there is an exemption from customs duties through a tax credit based on the total amount of investment, the number of jobs created and the amount invested in staff. There will be standard sheds for apparel assembly, as in Ethiopia, but for textile investments, the park provides the land and power as buildings must be custom-made.

As a new actor on the scene in West Africa, the business model of Arise IIP is to design, finance, build and operate integrated and tailor-made industrial zones in West Africa. In addition to PIA in Togo, it has operations in Gabon focused on timber processing and in Benin focused on agro-processing, including two factories in cotton textile production producing made-up

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Whitfield, *Ecological Economics* 194, April 2022; 'Global value chains, industrial policy and economic upgrading in Ethiopia's apparel sector', L. Whitfield, C. Staritz and M. Morris, *Development and Change* 51(4): 1018-1043.

textiles as well as apparel. The motivation behind Arise IIP is to industrialize West Africa through processing the raw materials produced there and thus constitutes a move into manufacturing by Olam Group, which partnered with AFC and later created the Africa Transformation and Industrialization Fund to be its investment company in Arise IIP. Olam exports cotton to Bangladesh and China where it is made into garments; the goal is to process cotton into textile and garments in Togo and thus increase employment and revenue in the country.

Arise IIP has a textile team with long experience in the textile and apparel industry in India as well as other countries that provides customized industrial park plans for West African governments. Arise IIP studied the experience in Ethiopia and the reality on the ground in West African countries in terms of what is required to attract investors from Asia. Its approach is to invest in textile factories to build the industry in countries where there are no local entrepreneurs willing to put their money in the industry. Even a small integrated spinning, knitting and apparel factory costs 100-250 million USD. Arise IIP initially invests in factories but will divest if there are willing investors and then focus on promoting the park in terms of providing feasibility studies, building design and market access for new investors. It also aims to create the infrastructure required to make the industry profitable, including energy and skilled labor. It is working with the government to create a 390 MW solar park (rooftop and ground-mounted solar panels, including storage in batteries) in Togo to provide power to the grid and the park that uses the grid.

The two vertically integrated knit factories will produce only five types of simple knit garments in the first phase. Based on estimates of existing cotton fibre production in Togo, the factories will take 54 tonnes of cotton per day to spin and knit into 39 tonnes of finished cotton knit fabric which will produce 138,000 garment pieces per day. Based on this calculation, they designed the factories and the amount of equipment needed. The two factories will employ about 10,500 employees, using state-of-the-art machines in spinning, processing, knitting, automated flat knitting as well as automated laying and cutting and smart Juki sewing machines. The factories will be ready to start production in early to mid-2024.

Two garment sheds have been built and are being used for the garment training centre, which was training approximately 200 locals not only in sewing operations but also production management, as later they will become the middle managers in different operational areas in garment firms. Thus, Arise IIP is starting to create the skilled labor force required for garment production now, so that it is ready when foreign firms move into the park. This was an issue in Ethiopia, where the pace of attracting and training workers slowed down the pace at which foreign firms could scale up their production, reducing their profitability. Arise IIP will train 10,000 Togolese workers. In doing so, they have created a curriculum, approved by the government, that can later be used in technical schools.

Both Arise IIP and the Togolese government have focused on making the industrial park ‘green’. Both groups noted that global brands will not source from Togo just because it is cheaper than Asian supplier countries; new sourcing locations need to be low cost and meet

green requirements. Ethiopia also pursued this strategy, but Arise IIP has gone further in its plans for PIA. The design of the textile factories and the park incorporates a focus on sustainability, including clean energy and zero-liquid discharge effluent plants as well measures related to cotton production and production in the factory. The factories will have traceability of cotton from ginning to garment and aim to get that to the farmer level. They will have Oekotex certification for management of hazardous chemicals and dyes, waste management across the park, and be compliant to the HIGG index. Cotton waste from spinning will be composted or downcycled into other products. Solid waste from the effluent plant can be turned into bricks for the gas boiler. Fabric waste can be converted into fibres and reused, which requires accessing new technologies in cotton fibre recycling.

The cotton in Togo will be Cotton Made in Africa certified but Arise IIP is not pushing farmers to switch to organic cotton production because many farmers have stopped producing cotton seed in favour of soyabean production due to higher prices, and there is fear of putting too much pressure on Togolese farmers. However, Arise IIP is promoting organic cotton production in Benin; its textile experts think that demand for organic cotton is increasing and will become unavoidable in the future.

Arise IIP made these investments expecting that the African Growth and Opportunity Act and the Generalized System of Preferences will be extended, which reduce the duties on apparel and textile products entering the US and EU markets. The attraction of Togo is its proximity to Europe and the good port facilities, as well as commitment of the Togolese government to the public-private partnership in the industrial park. Arise IIP did a comparison of the production conditions in Togo, Benin, Ethiopia, Bangladesh, China, Turkey, India and Vietnam, and found that Togo and Benin have competitive wages and other production costs but lack the skilled workforce. For this reason Arise IIP started training a workforce in garment production before the park was ready for operators to move in. Some Indian garment firms have committed already to operating in the park on a small-scale using fabric from their headquarters in India to test the conditions: can the Togolese workforce reach the cost per minute in India. Arise IIP has the responsibility of attracting foreign investors in the park, in particular liaising with Indian and Chinese suppliers of large global apparel brands and retailers.

In consultations with Arise IIP, the Togolese government created textile and apparel legislation that includes a sector-specific minimum wage. The objective is to avoid the situation that occurred around Ethiopia's first apparel industrial park in Hawassa, in which there was no minimum wage and several foreign reports on the industry that received international press coverage were critical of the low starting wage paid in the garment factories there.

The Togolese government also envisions industrial policies to support increased cotton production by smallholder farmers and to support local investors to set up small-scale garment production facilities that can carry out sub-contract work for the foreign firms using fabric produced in the park. Regarding cotton farmers, the government has prepared more land for farming that will be made available to them with access to agricultural inputs at reduced costs. For local investors, the government envisions a program to provide credit for

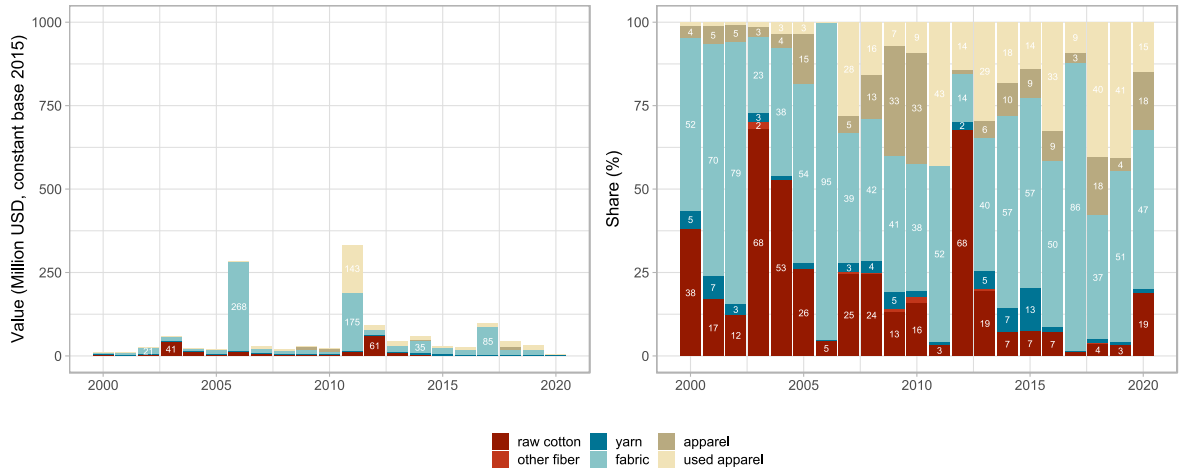
starting factories with at least 30 sewing machines and to connect them to foreign garment companies in the park.

4.4. Ghana

Ghana did not export a significant or consistent amount of any product in the value chain as of 2020 (Figure 26). There are some locally-owned apparel factories in the country, but they mostly produce for the domestic market. Donor programs attempted to help some of these factories produce for export, with limited success, some of which was undermined by the Covid-19 lockdowns that resulted in lost orders and buyers. There were some foreign investments in apparel exports in the late 2010s, which resulted in Ghana hosting DTRT, the largest apparel exporting firm in the region. Ghana's apparel exports will increase as DTRT expands its operations.

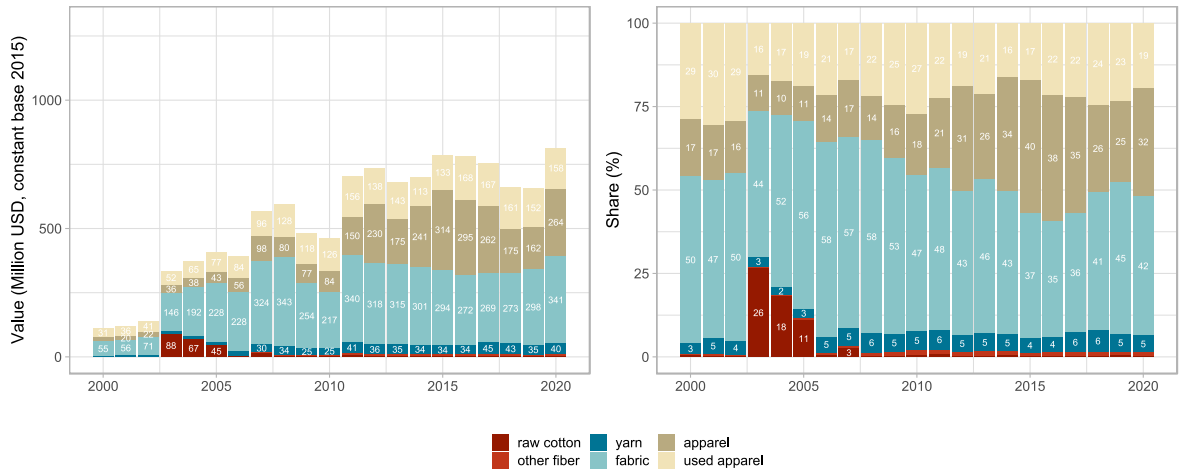
Like Cote d'Ivoire, Ghana has firms producing African wax print cloth that rely on importing greige fabric. Ghana imports a significant amount of fabric, which increased in the 2010s somewhat, and a significant amount of apparel especially since 2010 (Figure 27). Ghana is a major global destination for used clothes, some of which are re-exported within the region.

Figure 26. Ghana: Exports of Fibre, Yarn, Fabric, Apparel & Used Apparel, 2000-2020



Source: Graph produced by Kristoffer Marslev based on CEPII-BACI. Trade values are estimated as FOB. Trade values have been deflated according to the USD deflator (https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS?locations=US).

Figure 27. Ghana: Textile and Apparel Imports, 2000-2020



Source: Graph produced by Kristoffer Marslev based on CEPII-BACI. Trade values are estimated as FOB. Trade values have been deflated according to the USD deflator (https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS?locations=US).

4.4.1. Cotton Cultivation and Ginning Capabilities in Ghana

Cotton production in Ghana is very small. It exported only 864.61 MT of cotton fibre in 2019. The only cotton ginning company still active is a foreign-owned company, Wienco Cotton. The cotton sub-sector in Ghana does not have the same regulatory structure as in Cote d'Ivoire. While both countries prior to the 1990s had state-owned ginneries that supported farmers with inputs and bought their cotton seeds at guaranteed prices, their government policies diverged during the privatization period. The Ivorian government kept the exclusive buying zones for ginning companies and the stabilization fund, which set price floors for cotton seed. These policies were absent in Ghana, and probably as a result, most ginning companies did not provide sufficient support to smallholder cotton farmers. Over time, farmers stopped producing cotton and most of the ginneries shut down. The country imports around the same amount of cotton fibre that it exports. In 2019, that figure was 1,364.34 MT.[33] This cotton fibre comes primarily from Burkina Faso and is used by the Volta Star Textile factory to produce greige fabric, which is used to make wax print cloth (see section 3.4.2.).

4.4.2. Textile Production Capabilities in Ghana

There is effectively no spinning, weaving or knitting capabilities in the country. The state-owned firm Volta Star Textile is the only firm in the country with spinning and weaving, but the machines are largely obsolete. There are three wax printing companies in Ghana: GTP/Tex Style Holdings, Printex, and Akosombo Textile. Tex Style was formerly Ghana Textile Printing

[33] These statistics on the cotton trade in Ghana in 2019 comes from the UN Comtrade database, 2022.

Company , a joint venture between the government and Vlisco.[34] Both Akosombo Textile and Ghana Textile Printing Company had spinning and weaving sections, but shut them down as the machinery was the original from the firms' establishment, and now they only do design and wax printing.

Ghana Textile Printing Company (GTP) was established in 1966 by the first independent government as a joint venture with the Vlisco Group. Prior to its establishment, all the African prints on the Ghanaian market were imported from the Vlisco Group via its distributor in Ghana. The company's name was changed to Tex Styles Ghana Limited in 2004, and in 2010 Vlisco sold its shares to ACTIS, an emerging markets private equity investor.[35] Tex Styles produces the GTP wax print brand in Ghana and imports the higher value Vlisco brand. It is the only distributor of the Vlisco brand in Ghana and is one of three companies in the Vlisco Group, the others being Vlisco Holland and Uniwax in Cote d'Ivoire. Tex Styles/GTP meets only 27% of its fabric needs from Volta Star Textile and imports the remainder. Tex Styles invested in upgrading the technology in the production of wax prints only.

Akosombo Textile was established by the CHA group, a Hong Kong Chinese textile group, and was 100% private until 1979, when the government required all foreign-owned private firms to have a Ghanaian partner; at that time, two local investors acquired shares in the company. Akosombo Textile effectively stopped working, and the CHA group left, with the government taking over the factory. Akosombo Textile sources greige fabric from Asia. The building infrastructure is old, and only 2 of the 3 rotary printing machines operate. In 2017, the Ghanaian government put new management in the company, in charge of rehabilitating it. The government made investments in the printing section, including new digital laser engraving and digital film machines, a machine to wash off designs so that the rotary screens can be used again, and a biomass boiler that runs on agro-waste to generate steam for the printing section.

Printex is a locally-owned private firm. It was established in 1950 to manufacture towels. It went into spinning and weaving of suiting and shirting materials in the 1980s and then changed to prints in the late 1990s. It also no longer produces greige fabric itself.

Volta Star Textile was established in 1967 by the government as a weaving mill and added a spinning section in 1975. The weaving machines in the factory are the same machines from 1967, but were used when the government purchased them, so they are from 1955. The

[34] Data in this section comes primarily from the authors' interviews. However, historical information on the firms comes from J. Sutton and B. Kpentey (2012). *An Enterprise map of Ghana*. International Growth Centre. Interviews were conducted with the Acting Managing Director and the Production Manager of Volta Star Textiles Limited on 21/06/2022 at Juapong and included a tour of the factory and premises. Interviews were conducted with the Executive Director of Akosombo Textile on 20/06/2022 in Accra, and with the Production Manager of Akosombo Textile on 21/06/2022 at the factory in Akosombo and included a tour of the factory and its premises.

[35] Despite the name change, the products are still referred to as GTP on the market, and the company is still referred to as GTP today.

factory only operates a small proportion of the weaving machines because they are so unproductive: given the low productivity of the machines, it can only produce a small amount of fabric before the production costs (primarily the cost of energy) becomes greater than revenue received from selling the fabric.[36] The blowing, carding, and spinning machinery were partially updated in 1998 when GTP entered a joint venture with Volta Star Textile. GTP aimed to improve the quality of the yarn, but it made minimal investments. Some of the machines it brought in 1998 were used machines from the 1980s. As a result, some of the machinery in the spinning section are still outdated and inefficient.

GTP pulled out of the joint venture, and the government keeps the factory going on a small-scale. Volta Star Textiles produces only 6 million yards of greige fabric annually and sells all the first and second grade fabric to GTP/Tex Styles. It has an 8% reject rate (third grade fabric) which is sold on the local market. Since 2012, there is an agreement that GTP/Tex Styles sources and pays directly for the cotton and checks the cotton quality, which means that Volta Star Textile must sell all its greige fabric to GTP/Tex Styles.

4.4.3. Mass Garment Production Capabilities in Ghana

There has been new foreign investment in the apparel sector since 2015 through joint ventures between existing local factories Dignity and Maa Grace and foreigners with expertise in the sector: DTRT and Ethical Apparel Africa, respectively.[37] According to foreign investors, Ghana is an attractive location for apparel export production given its proximity Europe and the US. The second major factor is Ghana's AGOA status which provides preferential market access to the US, especially in synthetic products, where the tariff difference between AGOA countries and Asian countries is the highest.

The main disadvantages in Ghana are the absence of a supply chain and skilled labor. There is no textile production in the country, so fabric must be imported. Given that it takes 40 days to import fabric from China and 20 days to export to the US, apparel firms located in Ghana will need to have buyers that are okay with longer lead times. For example, DTRT needs 30 days for the assembly process, which gives it a lead time of 90 days. This lead time is typically only acceptable to buyers who source non-fashion products with longer shelf lives and give repeat orders of the same products so that supplier firms can hold the fabric in inventory. Fast fashion global buyers such as H&M and PVH demand a lead time of 60-70 days. Supplier firms with long experience in the sector could meet the shorter lead time through management of the throughput time on the factory floor, once they have trained labor in their factory for over

[36] The company's weaving machines run at 165 RPM. State of the art weaving machines run at 1000 RPM.

[37] This section draws on interviews with the two foreign-invested apparel factories and four local firms that were exporting. In all cases, interviews were carried out at the firm and included a tour of the factory. For the local firms, interviews were held with the owners and involved administering a survey questionnaire designed by the author to measure the firm's technological capabilities in apparel exports. For DTRT, the General Manager was interviewed at the factory in Accra on 22/06/2022, and one of the foreign owners was interviewed online on 24/06/2022. The Technical Director of Maa Grace was interviewed at the factory in Koforidua on 24/06/2022.

five years or more, but it would still be difficult. To meet the shorter lead times of fashion retailers and brands, export quality fabric for fashion clothes must be available in, or near, the supplier country. Furthermore, training labor within the factory is expensive, and initially foreign experts have to be brought in to manage factories, which also has high costs

There are small-scale apparel-producing firms owned by Ghanaians. The Association of Ghanaian Apparel Manufacturers has 45 members. These firms are located predominantly in the industrial district and Spintex areas in Accra, Tema industrial zone, and Kumasi. Since the mid-2010s, a few of them have tried exporting with financial and technical support from donor-funded programs, but with limited success.

Foreign investment in the apparel sector has been limited to two apparel firms, but nonetheless has had significant impacts on the industry in terms of bringing technical expertise into the country. With no major foreign direct investments in the sector until 2015, local firms did not have factories from which to learn, or opportunities to grow through sub-contracting for firms that would demand high production standards and impart the knowledge of how to achieve them. Thus, the investment by DTRT has had important spillover effects for local firms located in the same industrial area. Ghanaian managers trained by DTRT circulated to local firms, and DTRT engaged in training the managers of one firm that was located nearby and eagerly sought to learn from DTRT.

These kinds of spillovers from foreign direct investment are more effective in building the capabilities of local firms than when local firms hire individual foreign experts as managers or donors pay for the staff of local firms to be trained on equipment in a technical school setting. The best training is that which happens on the factory floor of a highly productive firm. Firms are organizations that rely on the tacit knowledge of individual employees and how those employees work together in routines constructed within the factory. This cannot be learned through training programs. It is also not the same as hiring a few foreign experts. In both cases, technical knowledge can be imparted from one individual to another, but the 'how' in how to organize and manage an efficient and profitable apparel export firm cannot be taught or understood. Only working in such an apparel export firm over time can provide that education.

In other apparel exporting countries, historically, joint ventures were an important way in which local investors learned the hard and soft technologies associated with apparel production for export.[38] However, learning from foreign direct investment requires that local investors are active: technology is not 'transferred' but rather 'leveraged' by locals through an active process that requires investing time and effort in learning. Unfortunately, in Ghana the local owners of Dignity and Maa Grace did not take advantage of this opportunity, but rather became silent partners with DTRT and Ethical Apparel Africa, respectively.

[38] This point comes from the author's readings of apparel industry studies across Asian countries, which is presented in the forthcoming paper: 'Leveraging foreign technology through special economic zones: the role of translocal social networks and global business strategies'.

4.4.3.1. *New Foreign Investment in Apparel and Textile Production*

DTRT was started in 2014 by two investors that had worked in the apparel factories in Madagascar and Tanzania owned by Winds Corporation, as production manager and general manager, and thus they had a lot of experience not only in the sector but also working in African countries.[39] They wanted to setup their own apparel export company in Africa to benefit from duty free access to the US market under AGOA, and decided to locate it in Ghana, which is close to Europe and the US, politically stable, English speaking and has good port logistics. They knew that Ghana did not have an apparel export sector but thought they could help create one. They invested in a joint venture with a local factory that was not working at full capacity, but the local partner did not become involved in managing the factory.

DTRT invested in improving the efficiency of the existing Dignity factory. It took five years, but factory productivity improved from 19% to 50-60% efficiency.[40] The factory changed from manual to automated sewing machines and acquired automated laying and cutting machines. DTRT received grants from USAID and a German aid agency, and a loan from the International Finance Corporation of the World Bank Group. DTRT could not raise finance through the domestic financial system, as local banks were reluctant to give loans to firms in the sector at competitive interest rates.

DTRT expanded production by opening a second factory in 2021 in Tema industrial park, financed through loans from the International Finance Corporation and Bank of Africa. The Accra and Tema apparel factories together produce 40,000 garment pieces a day, with 4100 employees. That size requires digital planning tools for better information management. DTRT employed 60 foreign experts to manage the factories, with half of them coming from Kenya.

The biggest buyer for the Winds factories was Sanmar, which has sportswear brands that it sells in the US and Canada. The owners of DTRT were able to convince Sanmar to source from their factory in Ghana. DTRT started with producing basic products for Sanmar but was able to move into intermediate products, which come with a higher unit price and allow DTRT to avoid being undercut on price in basic products by Asian factories that have a higher efficiency in basic products than it does. It is producing sportswear products, which are not fashion items: t-shirts, hooded sweatshirts and jackets, mainly polyester due to the preferential market access under AGOA. The firm can stock inventory in advance, so as not to run into

[39] Winds Corporation is owned by a Swedish entrepreneur that lives in Hong Kong and the US. It was started in 1985 and has its headquarters in Hong Kong with offices in China close to fabric mills. It established a factory in Mauritius, which was closed in 2012, and a factory in Madagascar established in 2006. Winds anticipated that Madagascar would lose its AGOA status due to political conflict in the country, which it did between 20010 and 2015, and the company established an additional factory in Tanzania. Interviews with the Director of manufacturing at the Winds factory in Madagascar (Mazava), 30/10/2017.

[40] In the apparel export industry, labor efficiency is measured against an international benchmarking standard, usually based on the standard allowed minute (SAM) for an individual operation. Apparel buyers use this when calculating unit prices. However, it is not an entirely objective measure but rather set by supplier countries (or firms) with the lowest SAM; in other words, the supplier firms with workers that can produce the fastest.

problems in shipping delays, but this requires having access to working capital that can be tied up in inventory stock—6 million USD in inventory. With its merchandising skills and office in Hong Kong, DTRT sources fabric from China and Taiwan and all other inputs from China (buttons, thread, labels, collars), and thus receives a FOB price. According to DTRT, Sanmar wants to move orders to Ghana from its suppliers in Cambodia, and a few other buyers are interested in sourcing from DTRT's factory in Tema.

The experience of DTRT shows that foreign direct investment is not always about finding the country with the lowest wage and that an internationally competitive firm can be created on a living wage. The base wage at DTRT is 40 USD per month, but the factory gives production incentives and attendance allowance, so the average take home pay is between 65-70 USD. There are additional weekly allowances, bringing take home pay to as high as 100 USD per month. The factory manager finds that the productive incentives are very effective. Although the wage is higher, labor efficiency is also high, comparable to Kenya, which has had an apparel export sector since the 1990s, and labor turnover and absenteeism are low.

The owners of DTRT have plans to build a textile mill producing polyester knit fabric. The mill will cost 16 million, and they are in discussions with the International Finance Corporation to provide a loan for half that amount. The mill would produce 1.5 tons of fabric a month, with which would meet 30-40% of the firm's fabric needs in its garment factories. They intend to produce polyester fabric using a technology they developed through working with textile firms in Asia: a solution based, water free process to color fabric. The textile mill will be located in Dawa industrial park, a park developed by a private firm that also owns Tema industrial park.

In the second phase of investment, the owners of DTRT plan to invest in spinning polyester yarn with recycled chips. As discussed in Section 3, the technology to recycle polyester fibres from used clothing is still under development. The owners of DTRT are in discussions with some global apparel buyers to invest in developing chemical recycling technology and bringing it to scale. They see an opportunity in Ghana to make a push for circularity. Buyers want it, but they will not lead it. DTRT is well positioned to push and coordinate the initiative, as it has been involved in something similar when it developed the dyeing technology through collaboration with firms in Asia. They think that apparel supplier firms can catalyze the sustainability shift by providing solutions that drive buyers to move more quickly on circularity; buyers invest in the fibre maker and recycling technology firms, and supplier firms invest in using that technology at a scale, which drives down costs.

DTRT also plans to invest in an apparel assembly factor in the PIA industrial park in Togo. The strategy is to diversify its product portfolio by moving into cotton products as well as to diversify production across two African countries to hedge risks.

The other foreign investment in Ghana is a joint venture between Ethical Apparel Africa and the owner of Maa Grace. Ethical Apparel Africa, based in the US, began trying to source apparel from Benin and Ghana in 2018. It stopped working in Benin due to shipping issues which led to problems with delivering on time to buyers in the US. Ethical Apparel Africa

struggled to source from locally owned factories in Ghana. Through the Association of Ghana Apparel Manufacturers, it met the owner of the apparel firm Maa Grace, who had a large factory built to international standards for the industry but which was hardly using its capacity due to lack of orders. They entered a partnership in 2019.[41] Initially Ethical Apparel Africa invested in machinery to support Maa Grace, but it became clear that the existing management team at Maa Grace could not manage an export apparel firm; the company had only ever produced for the domestic market, buying fabric locally and had no experience in import merchandising, compliance, production speed and quality control. Ethical Apparel Africa took a majority stake in the firm and started to manage it, securing export orders through its sourcing arm and sourcing fabric and accessories, mostly from China because buyers nominated suppliers in China, and hiring a team of foreigners to manage production on the factory floor. The local co-owner did not participate in managing the factory.

Maa Grace expanded from 50 to 500 employees and began to export, producing whatever the US buyers that it could secure wanted to order: nightwear and workwear, and more recently moved into more complex products. The factory produces about 3500 garment pieces per day. Its labor efficiency increased from 15% to 40%, which is good for its more complex products with a higher standard minute value and for which the average unit price is around 10 USD (compare to 2-3 USD for basic products). For basic products with a lower standard minute value, the factory would be competing with Bangladesh and need a higher labor productivity. The base wage at Maa Grace is about 50 USD per month, and average take home including bonuses is 87 USD, with meal allowances on top. The overall wage including bonuses and allowances in comparable to DTRT, but Maa Grace in located in Koforidua in the Eastern region, and not in the capital city Accra where the cost of living may be higher. The factory has state of the art machinery and digitalized data management systems. The factory has solar panelling and an environmentally sustainable air conditioning system that reduces the temperature in the factory.

4.4.3.2. Production and Export Capabilities of Local Apparel Firms

When Ghana first acquired AGOA status, several local firms tried to enter apparel exports, but none of them succeeded. Producing apparel for export requires meeting much higher standards regarding production speed, quality, consistency, and compliance than required for the domestic market. The gap between producing for the domestic and export markets is very large in terms of the technological and organizational capabilities as well as financing. Local firms need better equipment and production managers with experience producing for export as well as managers in import merchandising, sample making and pricing, pattern making, and quality control. Given that Ghana does not have an existing apparel export industry, all of this expertise has to be brought from abroad. Export buyers also have high standards for building infrastructure and layout, especially after the Rana Plaza incident in Bangladesh in 2013. There is a minimum investment in infrastructure, machinery and managers required to be able to

[41] This factory was built in 2003 with a grant from the government under the President's Special Initiatives.

produce for export at a minimum scale that can attract buyers and thus consistent orders. Consistent orders that can allow the factory to run at full capacity are necessary to increase labor productivity and produce a profit, especially when starting out in low value basic products. This minimum investment is more than 250,000 USD. Interest rates of loans from banks in Ghana are prohibitively high for manufacturing, around 25%. Local investors typically use their savings and money contributed by family members if they want to start a firm.

Recently, some local apparel firms have started exporting with financial and technical support from US and German aid agency programs. The German Agency for International Cooperation (GIZ) ran a three-year program that provided technical training for staff from local firms for three months. It bought state of the art machines for the new Ghana Apparel Training and Service Centre at Accra Technical Training College and paid Ethical Apparel Africa to organize the trainings using foreign experts and for Maa Grace to be a model factory from which local firms could learn. The training included how to use machines as well as training in line management, quality control, consumption calculation, laying methods and other production processes. USAID paid to bring buyers to Ghana and introduced them to local firms.

GIZ and USAID worked to connect US and European buyers with the most promising three local apparel firms that underwent the training, and Ethical Apparel Africa provides additional support by being the direct contact with buyers, sourcing the fabric, and making sure that the local firms met the buyers' quality standards. The three local firms, which were still building their capabilities, would not have been able to perform all these functions adequately, with the result that buyers would have left, as happened in Ethiopia with local firms. GIZ and USAID brought buyers that wanted small orders, because that is what these local firms could manage in their small-scale factories and with their low capabilities in export production. However, small orders that are inconsistent and require having several buyers with very different products lead to low efficiency in the garment assembly lines. These buyers want basic products, which match the low capabilities of the local firms, but basic products come with low unit values averaging 2-3 USD. As a result, the local firms have low efficiency and struggle to make a profit.

Local firms need to start at a certain scale and quickly build the capabilities required to produce at that scale. They will inevitably operate at a loss for the first few years while building capabilities. Firms also need to specialize in a few similar products to increase their efficiency and then market themselves as producers of that product. DTRT demonstrates how this model should be done, but it took it five years to get there and access to financing outside of Ghana. This is why access to long term financing at non-market rates is important for local firms when building an apparel export industry.

4.4.4. Government Policies Targeting the Textile and Apparel Sector

In the 2000s, the Ghana government aimed to support local firms to engage in apparel exports through the President's Special Initiatives on Textile and Garment. This program financed the construction of apparel factories within the Tema industrial park as well as in Koforidua and

Kumasi. However, it was not very successful, as indicated with the case of Maa Grace.[42] While the program subsidized the upfront investment costs for local investors by providing internationally compliant and standard apparel factories, that support was not sufficient for local investors to run competitive and profitable apparel exporting firms in Ghana. In this period, the government also sought to revive textile production in the country. Its strategy was to focus on rehabilitating the existing textile mills, especially Volta River Textile. However, it did not commit the capital and the technical knowledge required to do so and was unable to find a foreign investor willing to invest in Volta River Textile.

In the late 2010s, the government turned its attention to the textile and apparel sector again, with an aim to revive Akosombo Textile and to support apparel firms. Industrial policy initiatives followed the same approach that the government had pursued in the 2000s. The investments in Akosombo Textile have been important but marginal in terms of the overall challenges facing that textile mill. They focused on wax printing, with investments aimed at 'greening' the printing process. The One Factory One District (1F1D) program aimed to support manufacturing to spread geographically in the country. It was supposed to provided subsidized finance to local investors whose business proposal was approved as well as duty free access to imported inputs used to make apparel exports. In practice, the apparel exporting firms with the 1F1D status did not receive financing or the right to import duty free. Instead, they had to register for free zone company status with the Ghana Free Zones Board to import inputs duty free. However, the license costs 5000 USD and 2000 USD annually to renew it, which is a high cost for a small-scale apparel export firm.

Currently, the Ghana government is developing a new textile and apparel strategy with clear incentives for investors, but the details are not yet available.

4.4.5. The Second-hand Clothing Market in Ghana

Ghana is one of the major destinations in Africa for second-hand clothes imports. Research by The Or Foundation noted in 2019 that about 15 million used clothing items were unloaded in Ghana every week.[43] With a national population of just over 30 million people, not all of the imports can be used as clothing. The Foundation's research showed that 40% of imported second-hand clothes became waste, taking up one fifth of the capacity in the main landfill near Accra as well as being dumped in unplanned landfills, finding its way into the ocean, and being burned.

The volume of used clothing imports is not only an environmental disaster but also an economic one. The shear excess of used clothing in Ghanaian local open markets has reduced

[42] The author has assessed the impact of the President's Special Initiative on Textile and Garment in L. Whitfield, 2018. *Economies after Colonialism: Ghana and the Struggle for Power*. Cambridge: Cambridge University Press.

[43] Dead White Man's Clothes, L. Ricketts. https://www.fashionrevolution.org/dead-white-mans-clothes/. See also https://deadwhitemansclothes.org/.

their selling price, undermining the ability of these local market retailers to make a profit. These retailers do not know the quality of the clothes in the bale until after purchasing it. The Or Foundation's research shows that 6% of the clothes are trash that should not have been exported and 46% are heavily worn and require repair or remanufacturing. The Or Foundation, which is a not-for-profit organization based in Ghana and the US since 2011, is working with retailers in the Kantamanto open market in Accra, the largest in Ghana, to turn textile waste into other products that can be sold in Ghana.[44]

Recently, The Or Foundation has partnered with Shein, the Chinese e-commerce company recently valued at 100 billion USD, to launch Shein's Extended Producer Responsibility (EPR) Fund aimed at advancing strategies focused on clothing that has entered the global second-hand clothing trade and is often discarded as waste. Shein will dedicate 50 million USD over the next five years to this Fund. As discussed in section 3.2. on the sustainability shift in apparel global supply chains, the European Union released its textile strategy in March 2022, which includes requiring member countries to collect and sort textile waste, prohibiting the export of used clothing unless the importing country has the means to deal with it sustainably, and introducing measures on EPR. EPR is about retail companies taking responsibility for products even after they have been purchased, up to the end-of-life, acknowledging that managing waste has a cost.

The Or Foundation is the first grant recipient of Shein's EPR Fund, receiving 5 million USD for three years to finance its work in Ghana with second-hand clothing. Among other things, the grant will be used to incubate community businesses transforming textile waste into new products and to finance a fibre-to-fibre project that aims to turn secondhand clothing back into cotton fibres and then blend the recycled cotton fibres with some virgin cotton sourced regionally as inputs into textile manufacturing in Ghana. The Or Foundation is working with the Tony Blair Institute for Global Change and the global apparel brand PVH to develop the concept of "Mass Regeneration Zone", which aims to establish large-scale recycling plants in Ghana and in the region in which secondhand clothing is sorted in the European Union and the United Kingdom and then what needs to be recycled is sent to West Africa. The project also aims to work with a mechanical recycling firm to use existing technology to recycle blended fibres. On the Ghanaian side, the project involves Akosombo Textile and requires investment in textile machinery. The Or Foundation wants to support the building of a 'slow circular economy' in Ghana that balances quantity and quality, rather than reproducing the fast fashion model.

If the planned investments of The Or Foundation in the area of cotton fibre recycling and DTRT on polyester fibre recycling come to fruition, then Ghana would be well-placed to

[44] This paragraph is based on an interview with the two co-founders of The Or Foundation in Accra on 22/06/2022, and 'Shein Acknowledges Textile Waster with 50 million USD EPR Commitment, but Critics say it's Small Change', June 2022, http://sustainablebrands.com. See also https://theor.org/.

demonstrate to global buyers and to the rest of the continent that circular production can work, leading to further investments in the country and potentially other African countries.

5. CONCLUSION

Given the global trends outlined in this report that will reshape textile and apparel global supply chains over the next five to ten years, we need to reconceive the textile and apparel industry as sunrise and not a sunset industry. Textile technologies were previously what we would call long cycle technologies in that they did not experience much innovation. This is changing. New fibre and recycling technologies are in a phase of fast innovation, which will lead to short cycle technologies in that successive rounds of innovations will displace previous rounds, creating opportunities for African countries to enter when the technology is still young and build competitive advantages. Taking advantage of this window of opportunity requires that the African government look forward and not backward, that they think in terms of building new and not rebuilding the existing textile industries.

African textile and apparel domestic and regional value chains should be based on mastering the next generation of fibre production and recycling technologies. Such a strategy involves taking risks to invest in building the knowledge and skills required for this new technology, but not taking risks will mean that African countries miss the opportunity to move to the technological frontier. Such risks are warranted given that competitive advantage is created by government policies; it is not intrinsic or based on any initial resource endowment. However, this risk-taking strategy must be guided by technological forecasting: understanding what technologies are being developed, and how they are likely to change industries and/or lead to new industries.

African countries can go beyond becoming competitive in the new textile and apparel global supply chains but also use them to drive broader green industrialization processes. This broader strategy involves investments in renewable energy production, which will make textile production green but also benefit other industries. It involves mastering new technologies that have potential knowledge spillovers to existing and new industries, as well as the creation of national waste management systems that can be deployed across sectors and facilitate processes of industrial symbiosis. Industrial symbiosis is the process by which waste or by-products of an industry or industrial process become the raw materials for another, which contributes to the creation of a circular economy. The creation of circular economy-based production requires a 'systems approach' that cannot be put in place by individual firms or even a single industry, but rather requires that firms work together within and across industries. However, they are facilitated through geographic co-location, such as eco-industrial parks. Fibre production, textile manufacturers and apparel assembly firms need to be in close contact and work together to develop technology and production practices from fibre to garment. This approach will lead to higher technological capabilities in African countries and allow them to offer a package of capabilities to buyers that will lead to capturing more value in global supply chains and creating broader linkages in the domestic economy.

Such a strategy also involves building diversified regional textile bases as well as regional value chains, which can harness the efforts of more economies and larger market demand as well as create a stronger platform of capabilities with which to engage in global export markets. Supplying domestic as well as regional and global apparel export markets requires that fabric producers in African countries are internationally competitive. Being internationally competitive means being able to produce fabric of high quality and low cost as well as to be reliable and meet tight production schedules (or short lead times). If textile mills are not internationally competitive, this creates an incentive for apparel suppliers in those countries to import intermediate goods such as yarn and fabric. The way to replace Asian imports is to build of national and regional textile production capacity in Africa. But there is an extensive range of natural and man-made fibres used to produce fabrics, and an even more extensive range of possible finishings that can be applied to fabric as well as innovations in the technical qualities of fabric. One African country cannot build a textile base that can service an apparel export industry unless it is focused on just a few products. However, buyers are eager to source a range of products from one country. Large countries such as China and India have been able to do this, and Turkey has done it by specializing only in finishings for greige fabric. However, African countries could do this by creating regional textile bases in different parts of the continent. Neighbouring countries could create specialized textile sectors around specific product categories and then source from each other, increasing the overall variety of fabric available at minimal time and cost. Such an extensive and diversified regional textile base would also make it easier for locally-owned apparel assembly firms to emerge and provide the opportunity to move into products of higher value as well as move into design, which includes creativity with fabrics.

Regional value chains tap into the potential of intra-African trade, but they must also been connected to global markets. Exporting is and has always been an important driver of industrialization. US and European markets have higher standards, which compels local firms to invest in learning and building their capabilities. Global buyers demand larger volumes than orders in the domestic and even West African region, which leads to economies of scale and provides the volumes for productivity gains from learning. Lastly, exporting generates higher volumes of foreign exchange that is necessary to finance imports of the capital goods and technology needed to catalyse wider industrializations processes. ***Based on the analysis above of existing private and public investments as well as global trends, two specific types of regional value chains have great potential within West Africa.***

5.1. Regional Value Chain 1: Sustainable Fibre to Garment for Export

West Africa has great potential to create a regional value chain from sustainable fibres to finished apparel goods for export to the US and European markets. Sustainable fibres should include the whole spectrum: organic and regenerative cotton, recycled cotton, recycle polyester and fibres based on new technologies to replace cotton and fossil fuel-based synthetic fibres. Initially, Cote d'Ivoire could serve as the hub for organic and regenerative cotton yarn production, spinning cotton produced domestically and in the region. It requires

attracting investments in spinning production. Spinning could start with conventional cotton and move into organic and regenerative as research and development by ginneries in Cote d'Ivoire make advancements in production methods suitable for smallholder and small-scale cotton farming. Ghana could serve initially as the hub for recycled and man-made yarn production. Recycled fibre production would draw on second-hand clothing imports as well as pre-production waste and cotton waste in Ghana and the region. Existing apparel assembly and textile manufacturing firms in Ghana and Togo could drive the demand for cotton and recycled/man-made yarn from firms in Cote d'Ivoire and Ghana. The availability of this yarn would also encourage foreign and local investments in weaving and knitting in Cote d'Ivoire, which in turn would encourage investments in apparel firms in Cote d'Ivoire as well as other countries in the region. The process in Cote d'Ivoire could be repeated in Burkina Faso and Mali, which are better suited for organic cotton production, if political stability returns.

5.2. Regional Value Chain 2: Wax Print Cloth and Ready-Made Garments

The second type of regional value chain would tap into the regional market around African wax print cloth but also promote wax print cloth and ready-made garments in Western markets. Wax print fabric production initially would use conventional cotton yarn until the price of organic/regenerative cotton falls to a price point that makes it suitable for regional West African consumers. It requires investments in spinning and weaving mills, which could be facilitated by Vlisco and target Chinese companies that are interested in setting up production in West Africa, especially through joint ventures with local private investors. Local investors would bring part of the capital and gain from the technological capabilities and machinery brought by Chinese investors. The ready-made garment wax print industry could be created based on retail shops with designers as well as online stores that could serve the US and European markets, based on apparel assembly firms in the West African region that produce the orders. This chain could later draw on the sustainable fibres produced in the first value chain. With Vlisco and other African wax printing firms as the main buyers instead of global apparel brands and retailers, West African countries should be able to build apparel industries that support a living wage and do not lead to the overproduction of clothes on a fast fashion model. Rather, the business model would be based on tailored garments and flexible service.

5.3. Recommendations to Governments

Trade policy is an instrument for industrial policy but should not be the only focus. It is a rather blunt instrument for addressing a task that requires a range of more sophisticated industrial policy tools required to encourage both foreign and local investment and, in particular local firm learning and technology leverage. Furthermore, such investments and learning require linking into global supply chains. Trade protectionist measures that are not accompanied by compulsions and incentives for local firms to invest in staying at the technological frontier lead to stagnant industries that fall behind technologically and thus become uncompetitive internationally and then seek further protectionist measures, leading to a vicious circle. Export

markets compel local firms to invest in learning. Therefore, domestic industries should not be protected without compulsions to move to the technological frontier, and any protection should be for a temporary, clearly time-bound period.

Strategic Trade policies need to be accompanied by industrial policies that actively support the learning processes of local firms as well as incentivize existing foreign suppliers of global apparel buyers to establish textile mills in African countries, through wholly owned subsidiaries or joint ventures with local investors or existing local mills. The capital requirements of establishing vertically integrated textile mills from spinning to weaving or knitting are very high, at least 50-60 million USD, and there is limited knowledge in most African countries on how to operate the most modern textile equipment and produce export quality fabric. Thus, the first wave of new investments to create a textile base will have to be led by foreign investment. However, foreign investment must lead to technology transfer in the form of experienced and skilled textile technicians and managers as well as the business acumen side of organizing and managing a textile firm. National financial institutions that support textile investments by local managers and firms connected to the foreign mills is also required.

Part of the industrial policy tool kit to support local firm learning is attracting the 'right kind of foreign direct investment' and assisting local firms in leveraging technology from these foreign firms. Technology is rarely 'transferred' by foreign firms to local firms. Rather, local firms must invest time and build the capabilities required to 'leverage' foreign technology. Technology leverage takes place through various forms of investment and contractual relations between foreign and local firms. To tap into the resources of foreign firms, local firms and governments must devise strategies and practices that align the interests of foreign firms with those of local firms.

This means thinking strategically about FDI attraction: which foreign firms have the knowledge and business interest in partnering with local firms. All foreign firms will want to have initial incentives in order to make large investments in an 'untested' country, such as temporary tax breaks, reduced electricity prices, subsidized building infrastructure, and/or ease of working with government institutions by having a specially dedicated government agency and single point of contact. But governments need to be more selective in which foreign firms that allow investing in return for these public investments and subsidies. Governments need to understand the business models and corporate interests of different foreign firms and select foreign firms where their model and corporate interest have some alignment in terms of willingness to work with local firms.

After identifying the right foreign firms, governments should support local investors to enter joint ventures, technology transfer agreements, or other types of partnerships that create channels for the diffusion of knowledge from foreign to local firms. Mastery of these contractual arrangements is the central to technology leverage and just as central to the

success of local firms as their grasp of the technologies themselves.[45] Textile production is better suited for joint ventures, given the capital intensity. In apparel assembly production, local firms can start as tier two suppliers that take sub-contract orders from foreign firms as a way to learn the capabilities that they need. Foreign firms also train locals as senior and middle managers, who will then move between firms, eventually bringing their tacit knowledge to local firms. For fibre and recycling technologies, governments need to attract foreign firms with this knowledge and find local investors willing to invest in research and development that initially is focused on commercializing new innovations. Such local investors are likely to come from the diaspora that has been working in these areas or similar areas abroad and attract them back to their home country using generous incentives.

Firms upstream and downstream in the same industry benefit from working close to each other, and firms in the same industry segment learn most effectively from each other when they are located close together. For these reasons, industrial clusters or parks are very important. Governments can invest or co-invest in the industrial park infrastructure and services required by textile and apparel firms. There are different ways to do this, and governments can learn from different models and pick the one best suited to their resources. However, managing industrial parks also takes capabilities. Government agencies also must learn and build the capabilities to support the textile and apparel industry and thus would benefit from co-investing and joint venture arrangements in terms of industrial parks.

Lastly, governments need to make public investment in creating the industry-specific knowledge and skills for textile and apparel but subsidizing or fully funding training centres and working with foreign firms to develop up to date curriculum in textile and apparel engineering in national universities and technical colleges. To create a foundation for moving into new fibre and recycling technologies, governments need to put more public investment into basic chemistry education and research in universities and partner with foreign and local firms to create the R&D labs required to support commercializing innovations in alternative fibres and chemical recycling methods.

Industrial policy is essentially about public agencies creating an institutional framework within which local firms can leverage the resources they need to become competitive in an industry.

5.4. Potential impact of AfCFTA

AfCFTA negotiations on the rules of origin for the textile and apparel sector are on-going, and the AfCFA Council of Ministers responsible for trade is still working on reaching a consensus. Part of the challenge in reaching a consensus comes from the divergent rules of origin regimes across member states and their sub-regional free trade areas. While there are six variations

[45] This point is clearly demonstrated in the industry and firms case studies in the book *Tiger Technology: The creation of a semiconductor industry in East Asia* by J. Mathews and D-S. Cho. 2000. Cambridge: Cambridge University Press.

in the rules of origin currently being discussed, there are two main positions on which rules origin should be adopted. The first position is a single stage transformation rule, which requires only one change in tariff heading in order for a product to qualify as originating within a member country. The second position is for a more stringent rule that requires double transformation, or two changes in tariff heading: two manufacturing or processing operations be undertaken. With the cumulation principle, this means that two operations need to be undertaken within AfCFTA member countries. For example, to export textiles preferentially within AfCFTA, raw material needs to be turned into fibres and then spun into yarn, or imported fibres need to be spun into yarn and then woven or knitted into fabric within AfCFTA member countries. To export clothing preferentially within AfCFTA, the textile with which the clothing is made needs to be produced within an AfCFTA member country.

Given the limited existing capabilities in spinning, weaving and knitting for garment production in African countries, the double transformation rule of origin would not (on its own) lead to greater intra-African trade in textile and apparel. While more research on the existing textile capabilities in each member country is needed, the evidence assembled in this report shows that the textile production capabilities in the major apparel producing and exporting countries in Sub-Saharan Africa are not significant enough to support trade under a double transformation rule. Therefore, major investments in spinning, knitting, weaving, dyeing, and finishing are required before countries could take advantage of the preferential market access for textile and apparel in the AfCFTA with a double transformation rule. Given that all African countries and sub-regional free trade areas except for SADC have single transformation rules of origin, it would reduce intra-African trade flows.

The main argument of existing producers of textiles is that double transformation will reduce or prevent transshipment that could undermine existing textile production. Another argument is that double transformation rules of origin would encourage value addition within the African continental free trade area. While these arguments are partially correct, they are incomplete. When thinking about the future of African apparel and textile industries, we should be asking how to make textile firms in Africa competitive so as not to worry about trans-shipments, and what factors drive local and foreign investments in apparel and textile and the extent to which rules of origin are key among those factors.

The quantitative and qualitative evidence on the impact of the double transformation rule under SADC indicates that the rule on its own does not stimulate local or foreign investments in textile production. Trade rules are not strong enough incentives. Trade policies that create protection in domestic markets for firms that are not engaged in demanding export markets undermine incentives to invest in upgrading machinery and technological capabilities and thus lead to stagnating domestic industries. Industrial policies are necessary to drive investments in textile production.

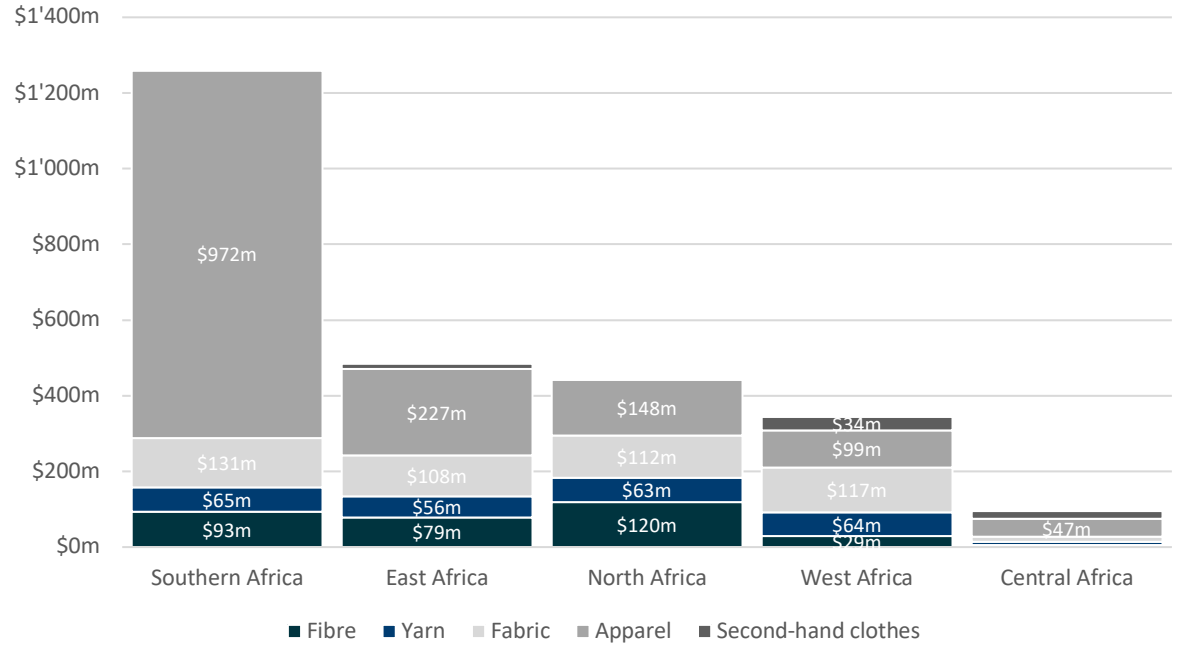
The experience of the Central America Free Trade Agreement with its ‘yarn forward’ rule of origin provides further evidence that the main drivers of textile investment by foreign supplier

firms are the sourcing strategies of buyers and thus buyer commitments to source fabric and apparel, which provide the business case for large textile investments.

APPENDIX A. TRADE DATA ON INTRA-AFRICAN TEXTILE AND APPAREL TRADE FLOWS: MAIN IMPORTERS AND EXPORTERS

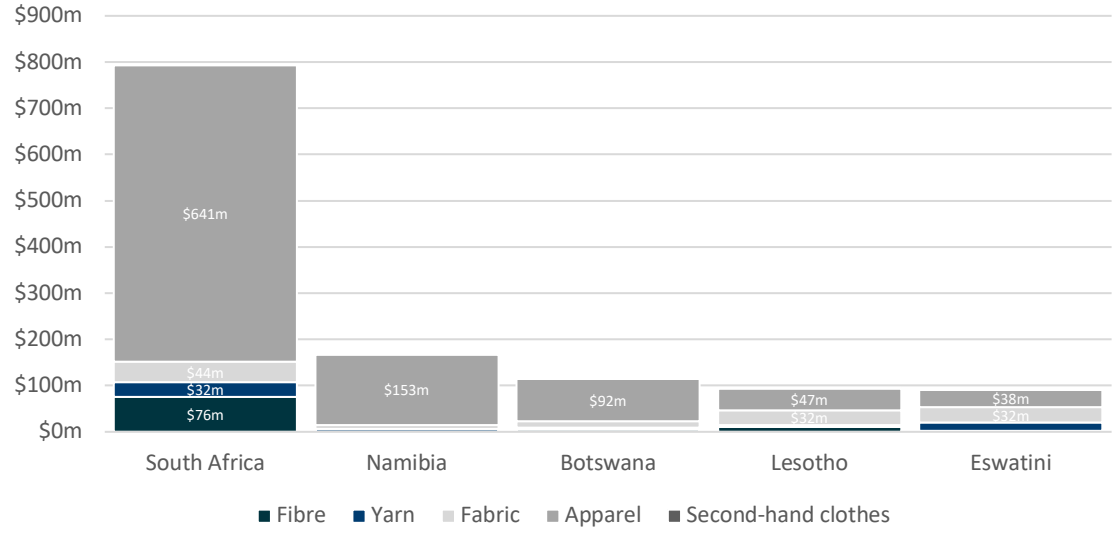
All figures were produced by Jamie MacLeod based on CEPII-BACI reconciled trade flows.

Figure A.1. Size of import markets for intra-African textile and apparel, by region and value-chain segment, average 2017-2019



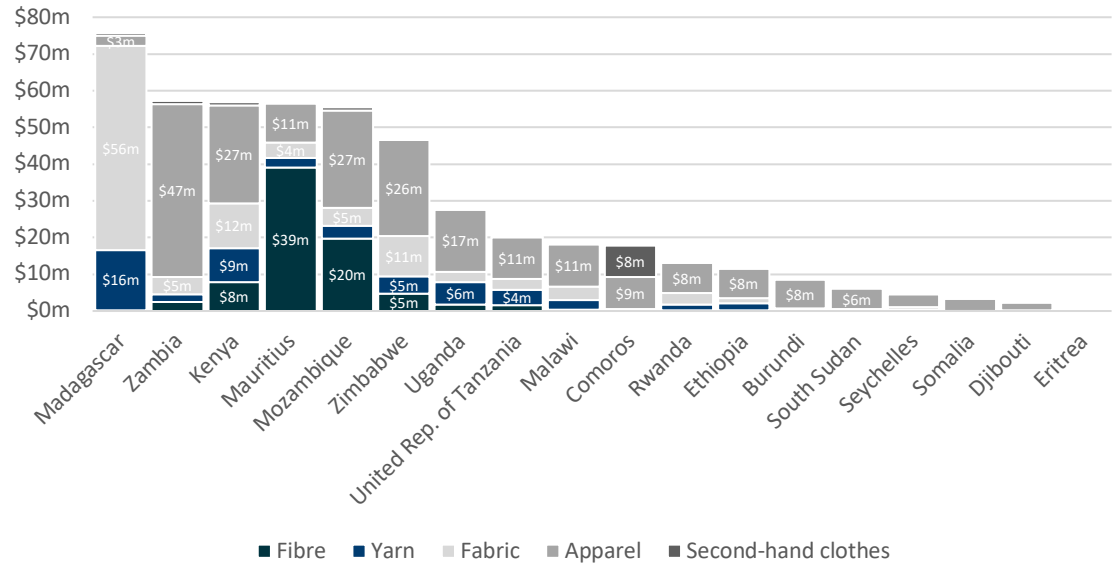
Source: based on CEPII-BACI reconciled trade flows. *Notes*: Apparel products here include made-up textiles.

Figure 1. Size of Southern African import markets for intra-African textile and apparel, by country and value-chain segment, average 2017-2019



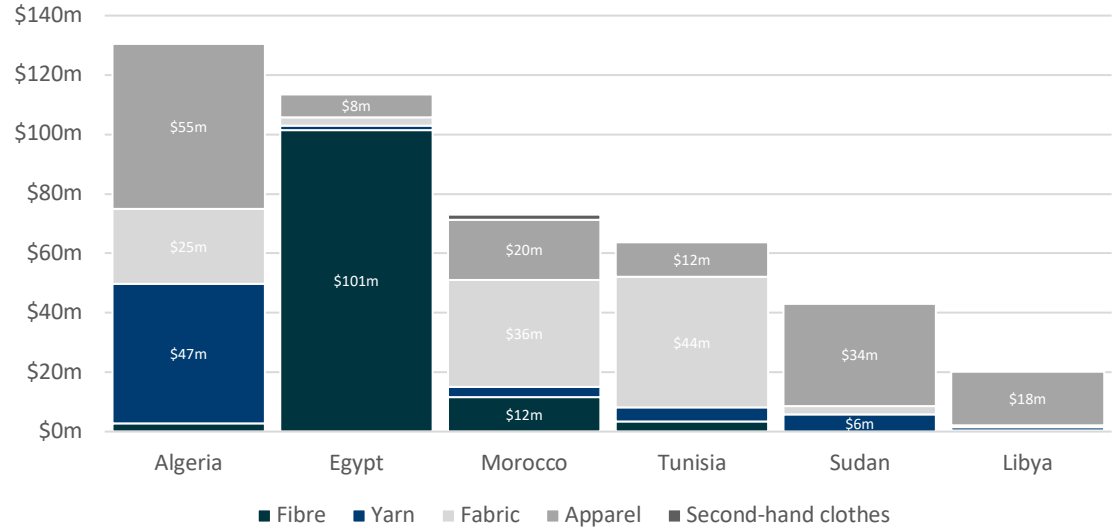
Source: based on CEPII-BACI reconciled trade flows. *Notes*: Apparel products here include made-up textiles.

Figure A.3. Size of East African import markets for intra-African textile and apparel, by country and value-chain segment, average 2017-2019



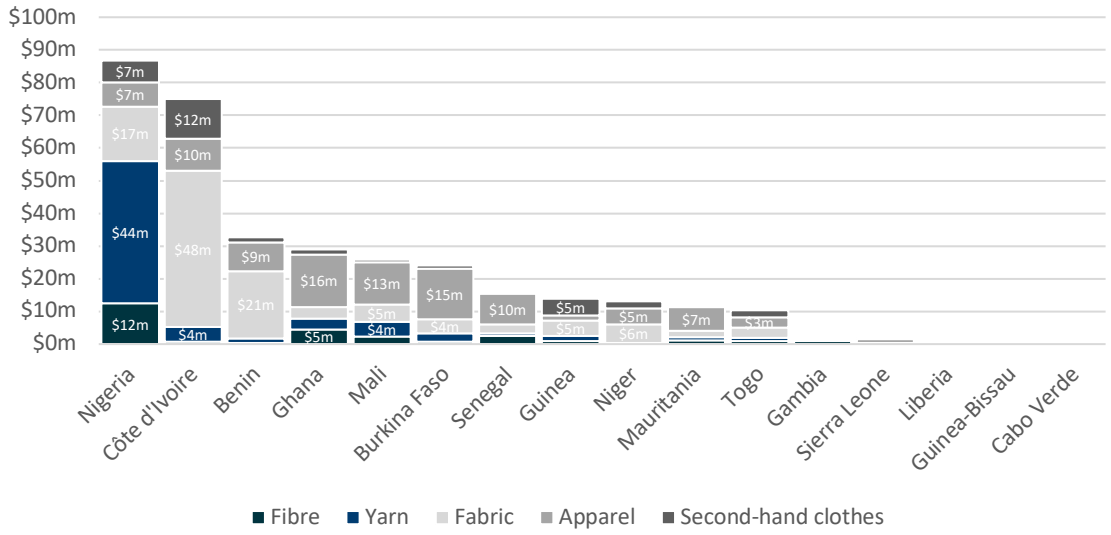
Source: based on CEPII-BACI reconciled trade flows. *Notes*: Apparel products here include made-up textiles.

Figure A.4. Size of North African import markets for intra-African textile and apparel, by country and value-chain segment, average 2017-2019



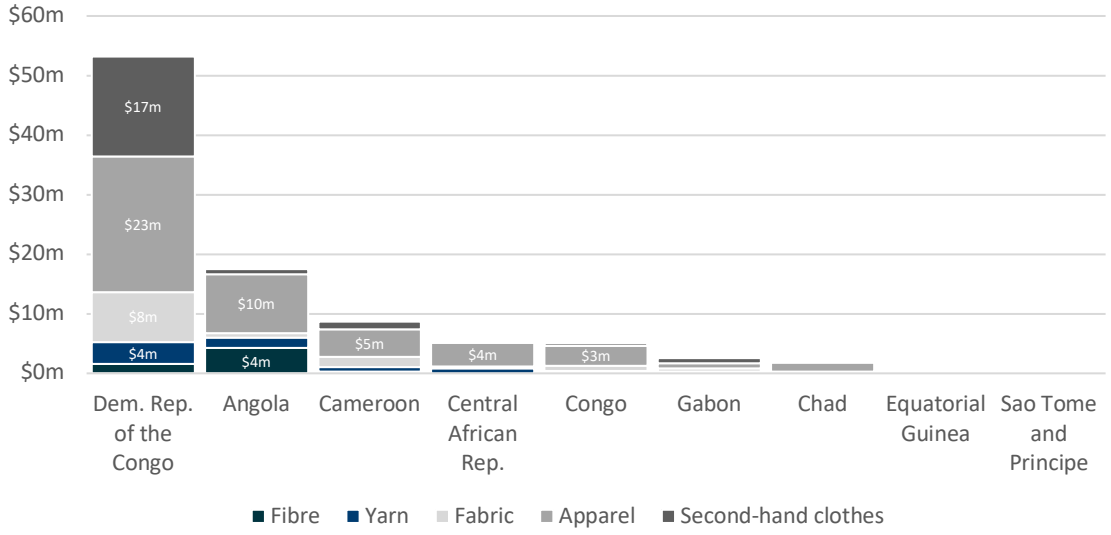
Source: based on CEPII-BACI reconciled trade flows. *Notes*: Apparel products here include made-up textiles.

Figure A.5. Size of West African import markets for intra-African textile and apparel, by country and value-chain segment, average 2017-2019



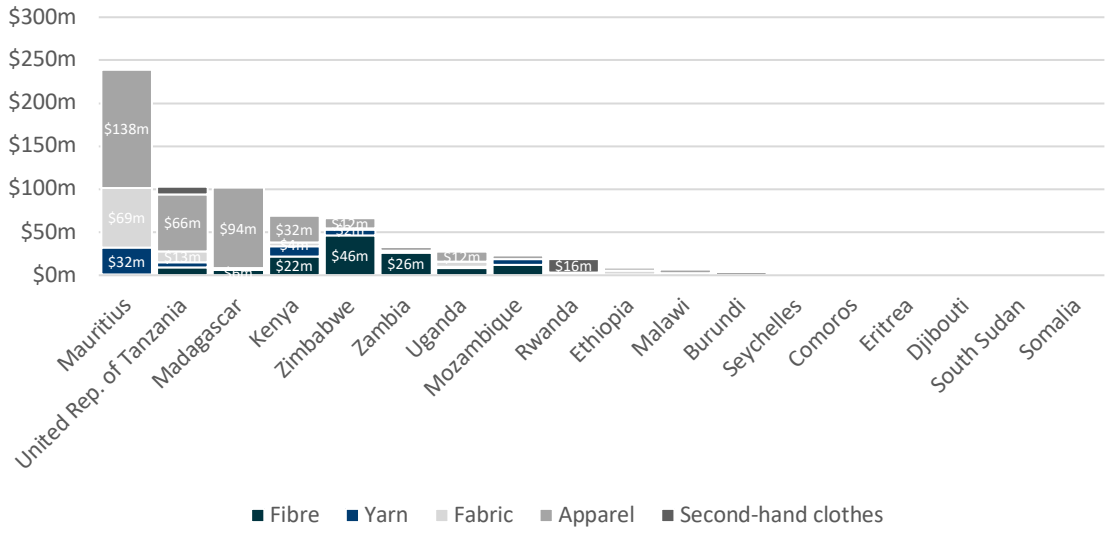
Source: based on CEPII-BACI reconciled trade flows. *Notes*: Apparel products here include made-up textiles.

Figure A.6. Size of Central African import markets for intra-African textile and apparel, by country and value-chain segment, average 2017-2019



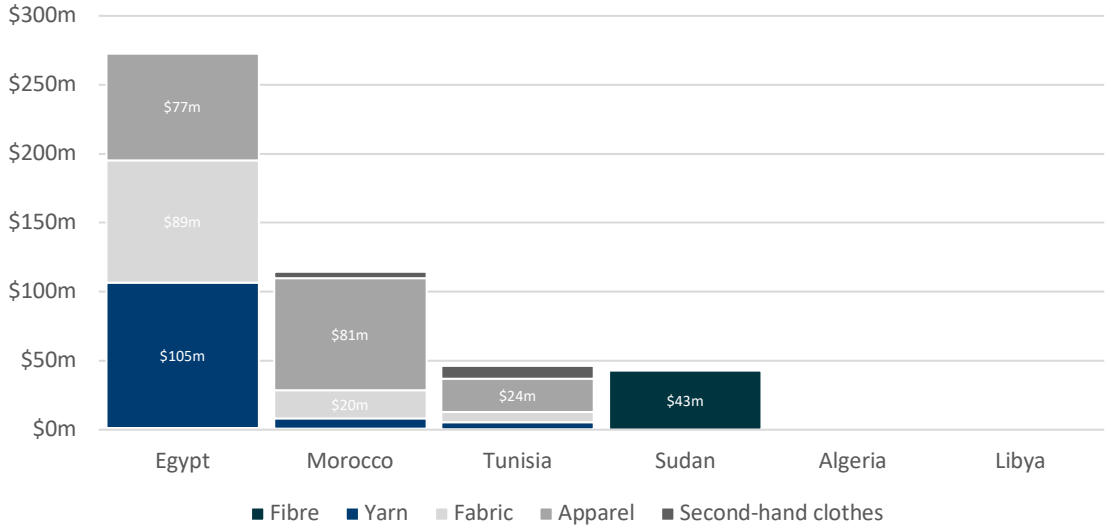
Source: based on CEPII-BACI reconciled trade flows. *Notes*: Apparel products here include made-up textiles.

Figure A.7. East African exporters of intra-African textiles and apparel, by country and value-chain segment, average 2017-2019



Source: based on CEPII-BACI reconciled trade flows. *Notes*: Apparel products here include made-up textiles.

Figure A.8. North African exporters of intra-African textiles and apparel, by country and value-chain segment, average 2017-2019



Source: based on CEPII-BACI reconciled trade flows. *Notes*: Apparel products here include made-up textiles.