Analysis of the Textile and Clothing Industry Global Value Chains - Summary

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IDB
Inter-American
Development Bank

Productive Integration

ANALYSIS OF THE TEXTILE AND CLOTHING INDUSTRY GLOBAL VALUE CHAINS

DECEMBER 2022

Integration & Trade Sector (INT)

Regional Integration Unit (RIU)

IDB

ABSTRACT

The textile and apparel industry is a highly globalized, multi-trillion-dollar sector. Today, production networks are dominated by low-cost Asian countries with very large labor-pools, which has made it increasingly difficult for other producers around the world to compete, including those in Latin America and the Caribbean (LAC). While the region has participated in the industry, there are currently no LAC countries amongst the leading ten exporters. The COVID-19 pandemic, together with rising geopolitical tensions between the US and China, however, has disrupted this well-established business model over the past two to three years. This creates the most significant opportunity of the past decade to reconfigure the geography of the supply chain; as a small, but long-term supplier, with proximity to the world's largest single market, Central America is well-positioned to benefit from these changes. Nonetheless, the region needs to upgrade various aspects of their GVC participation in order to become a serious contender in the reconfiguration of the industry. Key policies should focus on developing human capital through industry-specific training initiatives; intensifying investment attraction efforts; and aggressively investing in both hard and soft infrastructure to reduce barriers to trade and enhance lead time responsiveness.

JEL Codes: F13, F23, F63, L67, N66

Keywords: global value chains, textile and apparel, trade disruptions, CAFTA-DR, Central America, post-COVID, post-pandemic, regional integration, economic upgrading

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I.INTRODUCTION

The textile and apparel (T&A) industry is a highly globalized, multi-trillion-dollar sector. Labor intensive, the industry has consistently relocated around the planet over the past half century in the pursuit of low-cost workers supported by preferential trade access. Today, these apparel production networks are dominated by low-cost Asian countries with very large labor-pools supplying primarily to the European and United States (US) markets. The dominance of Asia in the industry has made it increasingly difficult for other producers around the world to compete, including those in Latin America and the Caribbean (LAC). Countries from LAC have participated in this globalized industry. However, there are currently no Latin countries amongst the leading ten exporters despite their proximity to the US.

After years of geographical shifting, the past decade has seen sourcing practices in the apparel and textiles industry consolidate. Supply has been concentrated in Asia, led by China, together with Bangladesh and Vietnam which collectively accounts for more than half of all exports. Brands and retailers – the lead firms in the industry – have increasingly focused on working with these locations and their suppliers which can provide consistent quality and lead times, as well as produce a wide variety of garments at a competitive price. This has favored regionalization and vertical integration of production in Asia. The region's success has been built on close proximity to a comprehensive supply of textiles and accessories, low-cost labor with broad capabilities, and highly efficient logistics operations. The COVID-19 pandemic, together with rising geopolitical tensions between the US and China, however, has disrupted this well-established business model over the past two to three years. This creates the most significant opportunity of the past decade to reconfigure the geography of the supply chain; as a small, but long-term supplier, with proximity to the world's largest single market, Latin America is well-positioned to benefit from these changes. However, successfully taking advantage of this opportunity requires proactive changes to the way the region has participated in the industry in the past.

As a region, Latin America and the Caribbean has underperformed in the textiles and apparel global value chain (GVC). It accounts for just a 4% global market share and only five countries export more

than US$1.5B of apparel products. Regional exports are dominated by Mexico and four Central American countries: Honduras, Guatemala, El Salvador, and Nicaragua. Mexico has seen its competitiveness in the industry erode steadily in the past two decades and no longer counts amongst the top ten global exporters. In its place, Honduras has taken the lead of regional exports. Together, the four small Central American countries account for over half of LAC's exports and account for the majority of growth in the region, and thus are the primary focus of this report. Their GVC role is concentrated in apparel production, with few countries engaged significantly in textiles. Apparel production, in turn, is dominated by manufacturing of basic products (t-shirts, sweaters) from cotton materials, almost exclusively destined to the US market. Few higher value services activities are undertaken. Generally, the four countries have made little progress upgrading into non-manufacturing activities, including design, branding, and sales. This GVC profile reflects the strong dependence of the region on exports under the Central American Free Trade Agreement – Dominican Republic (CAFTA-DR). This agreement requires yarn to be manufactured in CAFTA-DR countries for apparel products to qualify for duty-free access to the US market. This has favored primarily basic cotton products thanks to the supply of US cotton. Yet the region has been unable to capture a greater share of the rapidly growing, higher value synthetics market due to limited availability of competitive synthetic textiles amongst signatories. The agreement has allowed countries from the region to remain competitive in the global industry in the face of strong, low-cost Asian production. However, at the same time, it has locked these producers into the manufacture of a small set of low-value items. There has been virtually no product upgrading amongst exports since the agreement came into place in 2006.

The combination of pandemic with geopolitical disruptions, however, opens a window of opportunity for these countries to upgrade their participation in the GVC and capture a higher market share. Specifically, the disruptions to the supply from Asia as a result of both the US-China trade tensions and the COVID-19 pandemic have converged with other major trends in the industry, including the rise of fast fashion, growing interest in sustainable production, and the acceleration of e-commerce, to lead buyers to re-evaluate their sourcing strategies. Buyers are seeking production locations which minimize their risk and reduce overdependence on any one site; these must be

flexible to respond to rapidly changing market demand; close to market to reduce potential logistics disruptions; sustainable to cater to consumer interest; vertically integrated to guarantee quick access to inputs, and, efficient to cut lead time, all the while also providing high quality, broad production capabilities at low cost. This clearly raises the bar for participation in the GVC.

Given the importance of the industry to Central American economies – in Honduras, T&A accounts for approximately half of the country's exports – the region cannot afford to miss out on this opportunity. Nonetheless, meeting these new requirements is not simple. Central American countries need to upgrade various aspects of their GVC participation in order to become serious contenders in the reconfiguration of the industry: (1) Develop backward linkages into yarn and fabric production, particularly in synthetic fibers; (2) Focus on the production of sustainable textiles; (3) Switch from high volumes/low mix to a high mix/low volume model to facilitate product upgrading into higher value products; (4) Functionally upgrade into distribution with direct-to-consumer cross border e-commerce; and (5) Improve processes (process upgrade) to improve lead time and enhance sustainability across production.

Achieving this upgrading requires numerous policies and programs to be put in place to overcome a series of constraints that have contributed to the sector's general inertia across the region. Challenges include a limited labor pool with low levels of education, and comparatively high minimum wages with unpredictable renegotiations; significant cost and time barriers to intra-regional trade; steep electricity prices and unreliable supply; the exclusion of foreign textiles from duty-free market access; and a lack of leadership at the private sector, national and regional level to drive collaborative industrial policy for a regional production hub. Policies should focus on developing human capital through industry-specific training initiatives; intensifying investment attraction efforts; and aggressively investing in both hard and soft infrastructure to reduce barriers to trade and enhance lead time responsiveness. The private sector in each country must also take a proactive stance. This includes developing a strategy and action plans for each country; creating a regional working group with representatives from each country association to develop a collaborative regional upgrading strategy, aligning upgrading goals across the region, coordinating capabilities development, driving vertical integration of the regional value chain and streamlining

logistics operations. Finally, the group needs to launch a joint marketing campaign to ensure buyers perceptions align with the region's existing and potential capabilities.

II. The Global Textile and Apparel Industry

The global textile and apparel industry (T&A) has expanded rapidly since the 1970s, drawing most developed and developing countries into the value chain during the course of the next half century. Today, the sector is a multi-trillion dollar global industry and the 7th most traded industry in the world (Passport Euromonitor International, 2015 - 2020; UN Comtrade, 2021). Labor-intensive apparel production provides employment to tens of millions of workers in some of the least-developed countries in the world (Grand View Research, 2021; ILO, 2021; UNECE, 2018) and low-income countries account for the majority of the world clothing exports (ILO, 2021). Indeed, apparel production is considered a springboard for economic development, and often considered a "starter" industry for countries engaged in export-oriented industrialization due to its low fixed costs and emphasis on labor-intensive manufacturing (Gereffi & Memedovic, 2003).

The sector has been the quintessential example of a buyer-driven commodity chain marked by power asymmetries between the suppliers and global buyers of final apparel products (Gereffi & Memedovic, 2003). Global buyers determine what is to be produced, where, by whom, and at what price. These lead firms include retailers and brand owners and are typically headquartered in the leading markets—Europe, Japan, and the United States. In most cases, these firms outsource manufacturing to a global network of contract manufacturers in developing countries that offer the most competitive rates, while performing the most valuable activities in the apparel value chain—design, branding, and marketing of products in their home operations or close to major global markets. As this globalized business model has matured and gained complexity, it has become increasingly common for highly capable intermediaries to take on the responsibility of coordinating these large networks (Azmeh & Nadvi, 2014; Frederick & Daly, 2019; Shin, 2019), with buyers providing oversight down to the factory level through a range of global standards. Factory performance is measured regularly, and delivery, quality, and price are tracked over time.

Geographic global sourcing models have shifted significantly as the industry has evolved, both as a result of changes in multilateral and bilateral agreements as well as the economic development and entry and exit of supplier countries. In the early 2000s, the industry was still shaped by quotas put in place under the 1974 Multi Fibre Agreement to protect developed economy manufacturers from cheap imports from the developing world. Yet, the phasing out of these quotas by 2005, China's 2001 ascension to the World Trade Organization (WTO), and a number of preferential trade agreements saw rapid and significant changes to the geography of production. Indeed, trade agreements – including the Central American Free Trade Agreement-Dominican Republic (CAFTA-DR)[1] and the African Growth and Opportunity Act (AGOA)[2] - have been fundamental to enabling small countries such as Nicaragua and Lesotho to continue to compete in the global apparel industry. While these helped, they were insufficient in the face of rising competition from China and other producing locations with a large, low-cost workforce.

China immediately became the most relevant exporter in the industry following the end of quotas; it rapidly increased its global market share from 26% in 2005 to a peak of 41% in 2011, accounting for an estimated 76% of global employment in the sector (Fernandez-Stark, Frederick, & Gereffi, 2011; UN Comtrade, 2021). Since then, China's dominance has been based not only its low-cost labor, but also backward linkages into the textiles segment, and economies of scale combined with strong logistical services to reduce lead time. In addition, it developed strong full-package capabilities across multiple product categories and in all textiles groups. However, rising labor costs and a reorientation of the government policies towards the domestic market and higher value industries has reduced China's role in global apparel trade since 2011 (Frederick, 2016; Gereffi & Esra, 2010; Li, Frederick, & Gereffi, 2018; McKinsey & Company, 2013). By 2019, the country's global market share had fallen to 30% (UN Comtrade, 2021).

This created new opportunities for other producers to emerge in the industry. Southeast Asia and South Asia have benefited notably from China's waning participation. Bangladesh and Vietnam, which were already amongst the leading exporters in 2011, quickly absorbed China's market share

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[1] CAFTA provides the six Central American countries with tariff free access to the US market for qualifying apparel products.
[2] AGOA was first signed in 2000 and continues to be used today; it provides temporary relief to sub-Saharan African producers for access to the US market.

consolidating their positions as global industry leaders. These were followed by Cambodia and Myanmar, both of which grew rapidly during the past decade. Overall, these Asian countries benefited significantly from low labor costs, their proximity to China and regional input production, strong influx of FDI and supportive government policies (Lopez-Acevedo & Robertson, 2016). Other lower-cost locations, including Turkey and Pakistan steadily increased their share as well. While Mexico had been a leading exporter during the 2000s, by 2011 the country's competitiveness vis-a-vis Asian suppliers had eroded, and no Latin American countries have ranked amongst the top ten during the past decade.

The COVID-19 pandemic significantly disrupted this established organization of the value chain, exposing key shortcomings of the industry's sourcing patterns. Lockdowns upset global availability throughout the supply chain, from equipment to textiles, trim and accessories, as well as apparel itself. They also rapidly upset mature seasonal demand trends, with high demand for casual wear and an absolute drop-off for demand for formal business wear. As a result, there is emerging interest from buyers to analyze the redistribution of some production to locations with vertically integrated and flexible chains in an attempt to minimize risks. Finding other locations that can supply consistently, however, is challenging. Some analysts suggest that regionalization of supply could be the most effective strategy for brands. In the Western Hemisphere, this would consist of Central America servicing a greater share of the large US market.

A. The Textile & Apparel Global Value Chain

The textile & apparel global value chain (T&A GVC) is organized around five main segments: 1) design; 2) pre-production logistics; 3) production networks made up of garment factories, including their domestic and overseas subcontractors; 4) distribution channels established by trade intermediaries; and 5) marketing and sales networks at the retail level (see Figure 1). Pre-production logistics intersects with textiles fabrication - sourcing of raw material supply (natural and synthetic fibers), the provision of components, such as the yarns and fabrics manufactured by textile companies, and the supply of accessories (e.g. buttons and zippers) and trim. Textiles is by far the

most important input and accounts for the largest share of sourcing expenses, in some cases it can be as high as 70% (Lopez-Acevedo & Robertson, 2016).

As in many other sectors, the T&A GVC is both organizationally and geographically fragmented; the production of components and assembly into final products is carried out via inter and intra-firm networks on a global scale. In the high-end segments of the market, design, branding, and sales functions are carried out in-house. However, in consumer brands, several of these functions may be outsourced to Tier 1 firms (Frederick & Daly, 2019). Most of the activities in lower value apparel production segments of the chain are labor-intensive and require simple technologies. There has thus been a strong pattern to locate this production stage with contract manufacturers in low-cost developing countries.

Figure 1. *The Textiles and Apparel Global Value Chain*
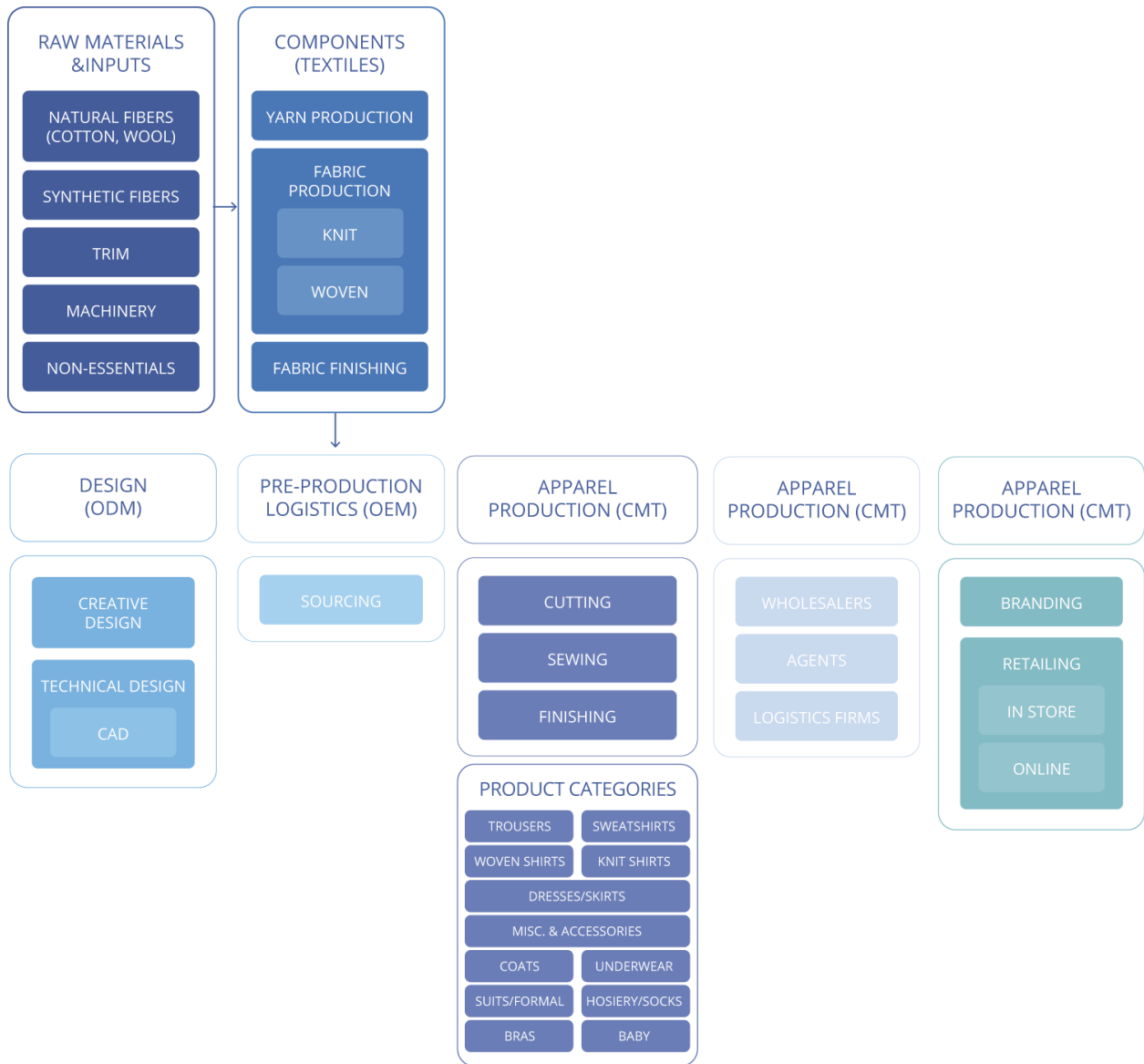
The continual entry of lower-cost locations into the industry accentuated the value division across these segments, motivating countries in the industry to seek new avenues to gain value or "upgrade". Upgrading within the chain, describes how different actors – both firms and countries –

can increase the value captured by their participation in the industry. This is possible due to the distribution of value throughout different stages of the chain. Typically, the highest value stages of the chain are design, and marketing and sales, while the lowest are in the production stages (Fernandez-Stark et al., 2011). As the global industry has matured, multiple upgrading pathways have been established for firms and countries seeking to gain greater value from their participation in the industry (Bair & Gereffi, 2003; Frederick, 2010; Frederick & Gereffi, 2011; Gereffi, 2005; Morris & Staritz, 2014; Rossi, 2013).

Functional upgrading is typically prioritized; this includes the acquisition of new functions (or abandoning of existing ones) to increase the overall skill content of activities, such as moving from basic assembly to full package supply production, covering all activities including sourcing, assembly and finishing, or moving into design or branding functions. Increasingly, backward linkage development into textiles whereby countries begin manufacturing textiles to be used in their apparel exports, has become a highly sought-after upgrading trajectory; this facilitates access to inputs, reducing lead time while increasing domestic value added. Nonetheless it should be noted other upgrading strategies, such as **product** (producing a higher value product)**, process** (improving efficiency), **and market upgrading** (selling to a higher value market) in a country can be very important for driving value addition in the industry.

Upgrading and remaining competitive in the industry, nonetheless, is challenging and dynamic. There are multiple factors that contribute to country competitiveness within these different stages of this chain, from trade policy and labor availability to connectivity and government investment policy. The relative importance of these factors has shifted over time as the industry's global production model has matured and the international trade policy framework has evolved. During the early stages of globalization, in the low value production stages of the chain, competitiveness depended primarily on a combination of trade policy and low labor costs. Today, these factors are closely linked to the capabilities buyers seek in their suppliers: cost; quality, lead time, flexibility and reliability, including access to inputs, full package services, wide range of production skills and social and environmental compliance (Lopez-Acevedo & Robertson, 2016).

- **Tariff free market access**: Trade policy has been and continues to be a significant factor to competitiveness of countries with relatively small labor pools. It is important for apparel exporters to have tariff free entry of exported apparel into key markets, but also the inflow of textiles inputs for production (Frederick, 2016; IDB, 2021; Lopez-Acevedo & Robertson, 2016).

- **Labor costs**: Along with textiles inputs, labor costs are the largest cost factor in apparel production. The industry has steadily relocated around the world to lower cost locations, first to Mexico, then to China, followed by Vietnam and Bangladesh (Lopez-Acevedo & Robertson, 2016), and today to even lower labor cost locations such as Cambodia and Ethiopia (Whitfield & Staritz, 2021a).

- **Labor skills**: While apparel production is a relatively low-skilled job which draws heavily on under-educated workers, the skills of this labor is essential for the production of quality garments (Fernandez-Stark et al., 2011). The broader the labor capabilities available to manufacture a diverse range of products, the more competitive the location as buyers can consolidate vendor operations, allowing them to reduce transaction costs (Lopez-Acevedo & Robertson, 2016).

- **Infrastructure and logistics**: Lead time and reliability are two key elements that global apparel buyers consider when selecting suppliers (Lopez-Acevedo & Robertson, 2016). The efficiency and reliability of transport and port infrastructure within a sourcing location have significant impact on the inflow of inputs, production process and the shipment of goods to market (Frederick & Daly, 2019; IDB, 2021).

- **Presence of domestic or regional textile sector and co-location of other inputs**: Quick access to affordable, quality textile inputs help manufacturers to meet demands for short-lead times and offer flexible supply chain management, and buyers to bring their products to market without facing tariffs and with limited potential for border delays (Frederick, 2016).

- **Government support**: Prioritization of the industry, presence of export processing zones (EPZ), investment incentives and training programs are amongst the key initiatives undertaken by national governments to support industry development. Apparel-oriented industrial policies have become a basic requirement for participation (Farole, 2011; Whitfield, Staritz, & Morris, 2020; Zhu & Pickles, 2014).

- In addition, **a large domestic market** can play a key role in supporting competitiveness in the development of branding capabilities, such as occurred in China (Frederick & Gereffi, 2011; Zhu & Pickles, 2014) and Turkey (Fernandez-Stark et al., 2011).

Within the textile production segments, competitiveness is driven by access to raw materials, economies of scale and affordable and reliable energy sources.

- **Access to raw materials:** Backward linkages into raw materials provides countries with an advantage, securing inputs and reducing trade costs.
- **Energy infrastructure and cost:** Energy costs can account for a significant portion of production costs (ITMF, 2019). This requires affordable and stable energy supplies for the installation of operations (Mihretu & Llobet, 2017).
- **Labor skills**: Capital intensity in textiles plants requires skilled operators and technicians to use and maintain specialized equipment from such as fiber extruders, carders, and ring spinners (Lopez-Acevedo & Robertson, 2016; Marketline, 2021).
- **Infrastructure and logistics**: The efficiency and reliability of energy, transport and port infrastructure within a sourcing location have significant impact on the outflow of textiles to apparel manufacturers.
- **Investment incentives & stability**: As a capital-intense segment of the value chain, textile factories require significant upfront investment and are difficult to divest. Firms seek investment locations where their operations will be secure for a long period (Marketline, 2021).

B. Global Trade in the Textile & Apparel GVC

Textiles and apparel together are the 7th most traded industry in the world (UN Comtrade, 2021). Global trade in the apparel alone has grown significantly, more than doubling in value between 2000 and 2019 to reach US$414B in 2019 (UN Comtrade, 2021). Global demand continues to be led by developed country markets. The EU-27, US, Japan, and the UK are the leading importers by value, collectively accounting for 75% of imports. Supply, on the other hand, is dominated by Asia. Asian suppliers account for 8 out of the 10 largest global exporters in 2019. Other regions, including Latin America and the Middle East and North Africa (MENA including Turkey) play more marginal roles as

regional suppliers. Sub-Saharan African (SSA) countries have seen some growth in exports to the US and EU, thanks in part to the African Growth Opportunities Act (AGOA) and GSP preferences to Europe (Morris, Staritz, & Barnes, 2011; Whitfield & Staritz, 2021b; Whitfield et al., 2020), but exports from SSA are well below those of other regions.

Table 1. *Top 10 Apparel Exporters by Year and Value, 2011 - 2019*

PARTNER	VALUE (US$, BILLIONS)					WORLD SHARE (%)					CAGR (%)	
	2011	2013	2015	2017	2019	2011	2013	2015	2017	2019	2011-19	2015-19
China	157	151	141	131	124	41%	40%	37%	34%	30%	-2.9%	-3.2%
EU-27	78	68	65	71	78	19%	18%	17%	18%	19%	1.3%	4.7%
Bangladesh	22	26	30	35	41	6%	7%	8%	9%	10%	7.9%	7.6%
Vietnam	14	19	24	27	34	4%	5%	6%	7%	8%	11.4%	9.0%
Turkey	16	17	16	18	19	4%	4%	4%	5%	5%	2.2%	4.5%
India	15	14	15	16	16	4%	4%	4%	4%	4%	1.0%	0.9%
Cambodia	6	7	9	11	13	1%	2%	2%	3%	3%	11.0%	8.8%
Indonesia	10	10	10	10	10	3%	3%	3%	3%	2%	0.3%	-0.5%
Pakistan	5	5	6	6	7	1%	1%	1%	2%	2%	5.9%	6.7%
Myanmar	—	—	—	—	6	—	—	—	—	1%	27.9%	38.2%
Sri Lanka	—	5	5	5	—	—	1%	1%	1%	—	2.5%	1.0%
Mexico	5	—	—	—	—	1%	—	—	—	—	-2.1%	-3.0%
Top 5	**224**	**227**	**227**	**226**	**234**	**59%**	**59%**	**60%**	**60%**	**58%**	**0.5%**	**0.8%**
Top 10	**253**	**258**	**261**	**263**	**275**	**67%**	**67%**	**68%**	**69%**	**67%**	**1.0%**	**1.3%**
World	**379**	**381**	**381**	**390**	**414**	**100%**	**100%**	**59%**	**60%**	**60%**	**1.1%**	**2.0%**

Source: UN Comtrade (2021). Note: -- indicates that the exporter was not a top ten exporter that year.

China is by far the largest exporter in the apparel GVC (Table 1), however, its market share has steadily declined over the past decade, having peaked in 2011 at 41% of global exports. By 2019, it accounted for just 30% of global exports. In addition, since 2017, numerous Chinese apparel exporters upgraded into direct-to-consumer cross-border e-commerce operations (Li, Frederick, & Gereffi, 2019; Matsakis, Tobin, & Chen, 2021),[3] in part driven by the US-China trade war and additional tariffs placed on Chinese apparel items (Euromonitor International, 2021). Bangladesh and Vietnam subsequently doubled their apparel exports both in absolute terms and in market share, followed by Cambodia and Myanmar, both of which grew rapidly, with CAGR for 2011-20109 of 8.8% and 38% respectively. Bangladesh is the lowest cost country globally in the product

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[3] These statistics are not captured adequately in customs trade.

categories it participates in – primarily basic commodity items produced in long runs made from cotton (Lopez-Acevedo & Robertson, 2016). The country is heavily dependent on the industry, with T&A accounting for 88% of exports in 2019 (UN Comtrade, 2021). Pakistan has also grown notably, supported by its leading position as a global cotton producer; although unlike its Southeast Asian peers, the country's capabilities remain focused on a small set of products (Frederick & Daly, 2019). Other important South Asian suppliers, India and Sri Lanka have remained constant, growing at close to global market rates. Asia has strengthened its backward linkages with increased textiles supply, while also increasing its market share abroad in final products.

The EU, along with neighboring Turkey, and MENA suppliers (e.g. Morocco, Tunisia) have grown steadily during the period outpacing global growth rates. Fast fashion retailers rely on these countries for a significant share of their production to serve the European market. Latin America and the Caribbean, on the other hand, has steadily slipped within global rankings, with Mexico disappearing from the list of the top exporters at the beginning of the decade. The Americas has seen a significant decline in backward linkages into textiles, and the majority of its final products stays in the region.

C. FUTURE TRENDS IN THE TEXTILES AND APPAREL GVC

While the industry has relied on an established organizational model with mature global sourcing patterns for the past decade, there are numerous trends that have been brought about or accelerated by the COVID-19 pandemic that could lead to significant reconfiguration of the industry. These include the continued shift of formal sourcing out of China – a trend set in motion ten years ago; the rise of e-commerce, including cross-border transactions; further consolidation amongst buyers, accelerated by COVID-19 bankruptcies; the need for flexible production; and increased focus on sustainability.

1. SHIFTING PRODUCTION OUT OF COUNTRIES OUTSIDE THE WESTERN HEMISPHERE: AN OPPORTUNITY FOR REGIONALIZATION

Since 2011, buyers have sought alternatives to concentrated production in China due to rising labor costs, resulting in a decline in China's market share in the leading global market. The drop in

US-destined Chinese supply was further accelerated by the US-China trade war under the Trump administration. This placed additional tariffs (up to 25%) on US-bound Chinese apparel (Fibre2Fashion, 2021b). Chinese apparel exports to the US declined by 29% in 2021 compared to 2019 levels. This has contributed to the redistribution of the supply chain, which has primarily benefitted other Asian producers, including Bangladesh, Vietnam, and Cambodia. These locations have profited from their proximity to regional production networks in Asia and have become formidable low-cost competitors with broad capabilities. Nonetheless, the vulnerability of these cheap, but long, supply chains from Asia to logistics disruptions were amplified during the pandemic, causing buyers to reassess their risk exposure in any one location (IDB, 2021; ILO, 2021). This has prompted industry observers to suggest that a further rebalancing of the supply chain is imminent, offering regionalization alternatives (IDB, 2021; ILO, 2021; ITC, 2020).

Thus far, however, evidence of major sourcing shifts is mixed. Italy's Benetton is one of the few companies to publicly declare it will begin to shift its sourcing out of Asia in favor of regional producers in Europe (Croatia) and MENA (Turkey, Tunisia, and Egypt) (Reuters, 2021b). Finding other locations that can supply consistently, however, is challenging. Lead firm, PVH, for example, moved some production out of Asia in 2017 to Ethiopia encouraged by supportive government policies, low-cost labor and AGOA access to the US market (Mihretu & Llobet, 2017). Yet security challenges amid unrest in the country disrupted the industry just four years later, with Ethiopia's AGOA access being suspended (Reuters, 2021a; VOA News, 2021). Ultimately, the company continues to source primarily from Asia (PVH, 2020). Whether the trend of shifting production out of China means shifting out of Asia as well will depend on the capacity potential of alternative centers (Judd & Jackson, 2021).

2. RISING PROFILE OF E-COMMERCE

E-commerce is projected to boom over the next ten years, to account for at least half - if not more - of global apparel sales. Online sales have been rising steadily, reaching an estimated 16% of total US sales in 2019 (IDB, 2021). This tendency accelerated during the pandemic, as stay-at-home orders kept retail stores closed and customers shied away from in-person contact (IDB, 2021). Major

retailers saw significant growth in their online sales. PVH saw a 40% increase in digital sales in 2020, to account for 25% of sales – the largest growth ever (PVH, 2020, p. 17); GAP's online sales increased by 56%, while in-store sales decreased 39% (GAP Inc., 2020); Inditex (Zara) saw a staggering 77% increase in its online sales (INDITEX, 2020). This trend is set to be global, led by China – which had strong e-commerce apparel sales pre-pandemic (CFRA, 2021b; Li et al., 2019). It is expected that other large emerging economies will also see significant expansion of online sales; Deloitte (2020) anticipate online apparel retail will account for 68% in India, 56% in Brazil and 50% in Indonesia by 2030. E-commerce has also become global in scope; with 2020 marking major consolidation of cross-border transactions. Chinese manufacturers in particular have made important gains. The shift of sourcing from China left local factories looking for new outlets, and online platforms from Amazon to AliExpress and Shein have provided them with direct access to Western consumers; by skipping intermediaries they were able to remain cost-effective. By June 2020, Shein's annual sales were up 250%, and accounted for 28% of all fast-fashion sales in the US – close to H&M and Zara's combined sales (Matsakis et al., 2021).

3. CONTINUED CONSOLIDATION AMONGST INDUSTRY BUYERS, ACCELERATED BY COVID BANKRUPTCIES

While not highly concentrated, the global apparel industry has been slowly consolidating over the past decade. Since 2011, the top ten brands have steadily gained market share from 8.8% in 2011 to 11.4% in 2020 (ILO, 2021). Nonetheless, the top 20% of firms concentrate the economic profits of the industry, with the bottom 80% negatively contributing to industry value (McKinsey & Company and BOF, 2021). The COVID-19 pandemic is likely to accelerate this trend by driving multiple brands and retailers into bankruptcy (Indvik, 2021). Profits fell by close to 100% in 2020 (McKinsey & Company and BOF, 2021) and apparel retailers accounted for the largest number of retail bankruptcies filed that year (CFRA, 2021b). Major lead firms in the industry facing bankruptcy across the major US and European markets include Arcadia Group (Miss Selfridge, Topshop), Ascena Retail Group (Ann Taylor, Loft), Brooks Brothers, J.Crew, J.C.Penney, Neiman Marcus Group, Lord and Taylor, True Religion, amongst others (CFRA, 2021b; IDB, 2021). Numerous of these brands were sold off to online stores, such as ASOS and Boohoo, or brand management companies (BBC, 2021a, 2021b). Authentic Brands Management was one group to take advantage of the large number of brands under pressure from

the crisis, acquiring Arrow, Aéropostale, Barneys New York, Brooks Brothers, Eddie Bauer, Forever 21, J.C. Penney, Izod, Lucky Brand, Nautica, Reebok and Van Heusen during the two year period (ABG, 2021). This consolidation could have implications for suppliers throughout the chain by reducing the number of buyers and increasing their leverage. Numerous manufacturers faced defaults or cancelation on orders during the pandemic resulting in their closing down capacity, charging lower prices, and in some cases even shutting down (ILO, 2020, 2021; ITC, 2020); smaller firms with weaker access to credit were particularly hard hit.

4. THE NEED FOR INCREASED SUPPLY CHAIN FLEXIBILITY

In the absence of reliable projections due to the pandemic and ongoing demand volatility, shorter lead times, flexible manufacturing, and lower stocks are becoming the norm (ITC, 2020; Just Style, 2020a). An illustration of this pivot is during coronavirus lockdown, when consumers shifted to comfortable and casual clothes they could wear at home. Retailers had to respond suddenly by adding more inventory in casual clothes and reducing inventory commitments on office and formal wear (Just Style, 2020a). This uncertainty in demand is pushing brands and retailers towards a more flexible, demand-driven sourcing model that is multimodal and uses strategic sourcing from different regions to ensure a faster and leaner value chain. This has disrupted the established sourcing patterns of cheaper products based on large workforces in a distant location (ITC, 2020; McKinsey & Company, 2019). The pandemic highlighted the inventory risks of a business model with long lead times or too highly dependent on one location; H&M for example, which typically sourced 70-80% of its production using long lead times, was saddled with US$4B of inventory which it could not move due to the crisis (Paton, 2018). The supply chain disruptions caused by Viet Nam's lockdowns similarly indicated the tremendous risks of overreliance on a single, albeit capable and cheap, location (ITC, 2020; McKinsey & Company, 2019). In the coming decades, production is likely to shift to suppliers that are capable of meeting faster development cycles (ITC, 2020). The market will favor the most efficient and mature suppliers (McKinsey & Company, 2019) with low stocks and the ability to respond faster to the changing consumer behavior (ITC, 2020). According to a survey carried out by Lu (2020), most buyers continue to diversify their sourcing destinations, with 42 % currently sourcing from more than 10 different countries or regions (Zhao & Kim, 2021). Analysts

suggest this is likely to benefit locations that are closer to their markets (McKinsey & Company, 2019).

5. SUSTAINABILITY: REDUCING THE IMPACT OF THE T&A INDUSTRY ON THE ENVIRONMENT

Recent years have seen a growing awareness of the negative impact of the T&A industry on the planet and its contributions to rising global emissions. It is estimated that in 2018, the global fashion industry produced 4% of global emissions, higher than that of France, Germany and the UK combined (McKinsey & Company, 2020). Moreover, some US$400B worth of clothing is prematurely disposed of every year (CFRA, 2021a), many of it ending up in landfills around the world (BBC, 2020; CALPIRG, 2021). It is estimated that just 1% of materials used in the industry are recycled (EMF & CFI, 2017). Fibers used in the production of apparel derive primarily from cotton which is highly intensive in water-use, while synthetics dependent on upstream petrochemicals. Also, it has been shown that about 20% of all water pollution is caused by the textile treatments such as dyeing (Nayak, Panwar, & Nguyen, 2020) and that around half a million tons of plastic microfibers shed during the washing of plastic-based textiles such as polyester, nylon, or acrylic end up in the ocean annually (EMF & CFI, 2017). Growing visibility of this problem, together with global climate change commitments following the 2015 Paris Agreement, has prompted leading brands to begin to take action to improve their metrics, from production to disposal. Leading brands signed up for the 2018 United Nations Fashion Charter on Climate Action, increased the use of recycled materials in production, launched recycling programs and have put pressure on their supply chains to improve the environmental impacts of their operations (UN, 2018; UNFCCC, 2018, 2021). The industry has thus begun to seek out ways to improve its sustainability with changes in three areas: a shift towards more sustainable fibers and fabrics; greening of the production process; and an increase in recycling of used clothes.

3. Latin America and the Caribbean in the Textiles & Apparel Global Value Chain

Latin America and the Caribbean accounts for a small part of global apparel exports with just a 4% market share. Regional exports are dominated by Mexico and four Central American countries (Honduras, Guatemala, El Salvador & Nicaragua). In recent years, Honduras has overtaken Mexico as the leading LAC exporter as the latter sees its participation in the industry decline. The region's role is concentrated in apparel production, with few countries engaged significantly in textiles production. Exports are dominated by basic products, including knit shirts along with sweaters and trousers. Overall, there has been little diversification out of these product categories so far. In addition, exports are dominated by cotton products, due to the rules of origin regulating Central American apparel exports to the US under the 2006 CAFTA-DR agreement. This section discusses the participation of Latin America and the Caribbean as a region in the T&A GVC, before analyzing the participation of the leading Central American countries in further detail.

A. OVERVIEW OF REGIONAL PARTICIPATION

As a region, Latin America and the Caribbean accounts for a small share of global apparel exports (Table 2). Growing more slowly than the global industry over the past decade, the region's share has steadily slipped from 4.5% to 4.3%. Regional exports are dominated by Mexico and Central America. Mexico, however, has seen the industry steadily contract, following years of rising labor costs, low labor productivity, and underinvestment in textiles (Frederick & Gereffi, 2011). Mexico's leadership in the region has been overtaken by Honduras, which has been growing at 3.8% (CAGR), three times the global rate (1.1%). While Honduras' participation remains very small compared to the larger global exporters (China, Bangladesh and Vietnam), it is the 14th largest global exporter despite is comparatively smaller population (US$4.3B in 2019). Like Honduras, Nicaragua has seen a notable rise in exports, despite the end of TPLs with the US. El Salvador and Guatemala's shares have remained constant, growing at the same pace as global exports. Other smaller players include Haiti,

Peru, the Dominican Republic, Colombia, and Brazil. Of these, only Haiti and the Dominican Republic have increased their exports in the past decade.

Table 2. *Latin America & Caribbean Apparel Exports, Value (US$, billion), Shares (%) and CAGR (%), 2011 - 2019*

Partner	Value (US$, billions)					LAC Share (%)					World Share (%)		CAGR (%)	
	2011	2013	2015	2017	2019	2011	2013	2015	2017	2019	2011	2019	2011 - 19	2015-19
World	**379**	**381**	**381**	**390**	**414**	—	—	—	—	—	—	—	**1.1%**	**2.1%**
LAC	16.9	16.9	17.0	16.9	17.8	**100%**	**100%**	**100%**	**100%**	**100%**	4.5%	4.3%	0.6%	1.3%
Honduras	3.2	3.2	3.3	3.5	4.3	19%	19%	20%	21%	24%	1%	1%	3.8%	6.2%
Mexico	4.6	4.5	4.3	4.3	3.8	27%	26%	26%	25%	21%	1%	1%	-2.1%	-3.0%
El Salvador	1.9	2.0	2.2	2.2	2.1	11%	12%	13%	13%	12%	0%	1%	1.5%	-0.4%
Nicaragua	1.4	1.5	1.6	1.6	2.0	9%	9%	9%	10%	11%	0%	0%	4.3%	6.1%
Guatemala	1.5	1.5	1.6	1.6	1.6	9%	9%	10%	9%	9%	0%	0%	1.1%	-0.4%
Haiti	0.8	0.9	1.0	1.0	1.1	5%	5%	6%	6%	6%	0%	0%	4.6%	1.7%
Peru	1.3	1.2	1.0	1.0	1.1	8%	7%	6%	6%	6%	0%	0%	-2.4%	1.9%
Dominican Republic	0.7	0.7	0.9	0.8	0.8	4%	4%	5%	5%	5%	0%	0%	1.7%	-1.7%
Colombia	0.7	0.7	0.5	0.5	0.5	4%	4%	3%	3%	3%	0%	0%	-3.7%	0.4%
Brazil	0.2	0.1	0.1	0.1	0.1	1%	1%	1%	1%	1%	0%	0%	-1.9%	4.7%

Source: UN Comtrade (2021).

Knit shirts and sweaters dominate exports, followed by trousers. Overall, there is little diversification out of these product categories so far. The main product categories exported from the leading countries have remained largely the same over the last 20 years; knit shirts, sweatshirts, trousers, and underwear/socks (Bamber & Frederick, 2018). These products are typically long run, low mix/high volume commodity items. This brings the region into direct competition with Asian producers, in particular Bangladesh, in low value products. Products have been dominated by cotton exports, although this has eroded slightly in favor of MMF, which has seen important increases in Honduras, El Salvador, Nicaragua and Guatemala and Haiti. This follows global trends which have seen cotton's share of the apparel market decline over the past decade. Nonetheless, absolute cotton output remained relatively steady in the region as total apparel production increased; this is supported by the rules of origin of the CAFTA-DR agreement which allows yarn-forward products to enter the US duty free and favors cotton products.

Latin America also plays only a small role in the global textiles production and trade with relatively weak backward linkages within the T&A GVC. The region accounts for just 3.4% of global upstream textiles exports. The largest regional apparel producers continue to import a large share of their textiles requirements, while only Brazil and Mexico export over US$1B in upstream textiles products. These two countries account for close to two-thirds of textiles exports from the region. Brazil is the only country in the region amongst top ten exporters of specific textiles products, owing to its role in cotton production. However, its exports are dominated by unprocessed cotton bales. Cotton textiles also account for a large share of Mexico's exports, although the country has seen an expansion of "impregnated, covered or laminated textiles" destined for industrial use such as the automotive sector in North America. No Latin American countries feature amongst leading exporters of MMFs.

B. CAFTA-DR: LEADING LAC APPAREL EXPORTS

The CAFTA-DR group of countries comprise the signatories of the 2006 trade agreement with the US, namely: Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, and Nicaragua. The textiles and apparel sector in these countries has directly benefited from this free trade agreement with the US; more than 80% of their sales are destined to the United States. Nicaragua also benefited from additional TPLs between 2007 and 2014 (Frederick, Bair, & Gereffi, 2015). Of the six countries, the **Northern Triangle group of El Salvador, Guatemala, and Honduras, together with Nicaragua** have been the most successful in maintaining their position within the GVC. Today, Costa Rica and the Dominican Republic play a minor role in the export industry, with their economies orienting towards higher value sectors due to higher labor costs (Bamber & Frederick, 2018). This section thus focuses on the four leading countries from this trade block and examines the evolution of their participation in the GVC to date. Table 3 details quantitative measures of GVC engagement in these countries.

Table 3. *Participation of Select CAFTA Countries in the T&A GVC, Key Indicators, 2019*

INDICATOR	HONDURAS	EL SALVADOR	GUATEMALA	NICARAGUA
GDP/Capita (2019, US$ current)	5,979	9,147	9,019	5,682
Total Exports (2019, US$B)	7.8	6.3	11.8	5.6
T&A Exports (2019, US$ B)	3.7	2.7	1.8	1.6
CAGR (2011-2019)	3.8%	1.5%	1.1%	4.3%
T&A Exports as share of total exports	47%	42%	15%	29%
Destinations	#1 US #2 El Salvador #3 Nicaragua	#1 US #2 Mexico #3 Canada	#1 US #2 Canada #3 Mexico	#1 US #2 Canada #3 Mexico
Products	#1 Sweaters #2 T-shirts	#1 T-shirts #2 sweaters #3 Others	#1 Sweaters #2 T-shirts #3 Trousers	#1 T-shirts #2 Trousers #3 Sweaters
Firm Origin (2012/5)	54% US 17% Korea	56% Domestic 38% US	57% Korea 36% Domestic	33% Korea 36% other 26% US
Labor Costs, Rank	US$297, #3	US$299, #2	US$372, #1	US$175, #4
Pandemic effects (Growth rates 2019 vs 2020)	-40%	-39%	-20%	-23%
Pandemic effects (Growth rates 2019 vs 2021)	-6%	-4%	13%	11%
Top 3 sources of textiles	#1 US #2 El Salvador #3 Guatemala	#1 US #2 China #3 Guatemala	#1 China #2 US #3 El Salvador	#1 US #2 China #3 Mexico
CAFTA qualifying share of US-bound exports (2019)	84%	92.9%	81.8%	NA 2019

Source: Authors based on AZFA (2020a, 2020b, 2020c, 2020d); EIL/RSM (2018); UN Comtrade (2021); USITC (2021); USFIA (2021), World Bank (2021).

Key characteristics of the participation of Honduras, El Salvador, Guatemala and Nicaragua are discussed below:

1. **The industry is of considerable importance to these countries; apparel exports are the most important export category for Honduras, El Salvador, and Nicaragua**. Table 4 details the role of textiles and apparel in the export baskets of these countries. Dependence on the industry is highest in Honduras, where it accounts for as much as 47% of exports, and lowest in Guatemala which has diversified into other industries. These products also dominate individual product exports, accounting for the leading exports in all three countries. Guatemala is less dependent on the industry, potentially due to higher labor costs in the country. Knit-shirts and sweatshirts account for approximately half of apparel exports from these countries.

2. **There has been minimal product upgrading, and the main product categories exported from the four countries have remained largely the same over the last 20 years; knit shirts, sweatshirts, trousers, and underwear/socks.** The top three subsectors have accounted for approximately 73% of exports since 2005 (Bamber & Frederick, 2018; UN Comtrade, 2021) (see Figure 2). These products, which are primarily basic, cotton knits, are products that were, and still are, produced by the few existing vertically integrated North American OBM apparel firms, including Hanes and Gildan. These are also the products that are cost competitive to produce in the region, due to a combination of the lead firm's long history producing them (leading to efficient production systems), market share, and historical protection policies for US textiles and cotton (Bamber & Frederick, 2018). Many of the manufacturers in the region have been in business for over 30 years and have gradually expanded their geographic and supply chain footprint over the years (from basic sewing, to include cutting, dyeing/washing, trim, finishing, fabric production, and yarn) (Bamber & Frederick, 2018). While these products have been supported by access to subsidized US cotton, the weak availability of competitive synthetic textiles qualifying for CAFTA market access has constrained the region's ability to upgrade into a range of other products (Field Research, 2021). Guatemala and El Salvador have been more successful than Honduras and Nicaragua in upgrading into more complex items, including synthetics based on the development of local textiles (Field Research, 2021), however, they remain marginal in terms of total export value.

Figure 2. *Select Central American Countries Apparel Exports by Year and Product Category (US$, billion), 2011 – 2019*
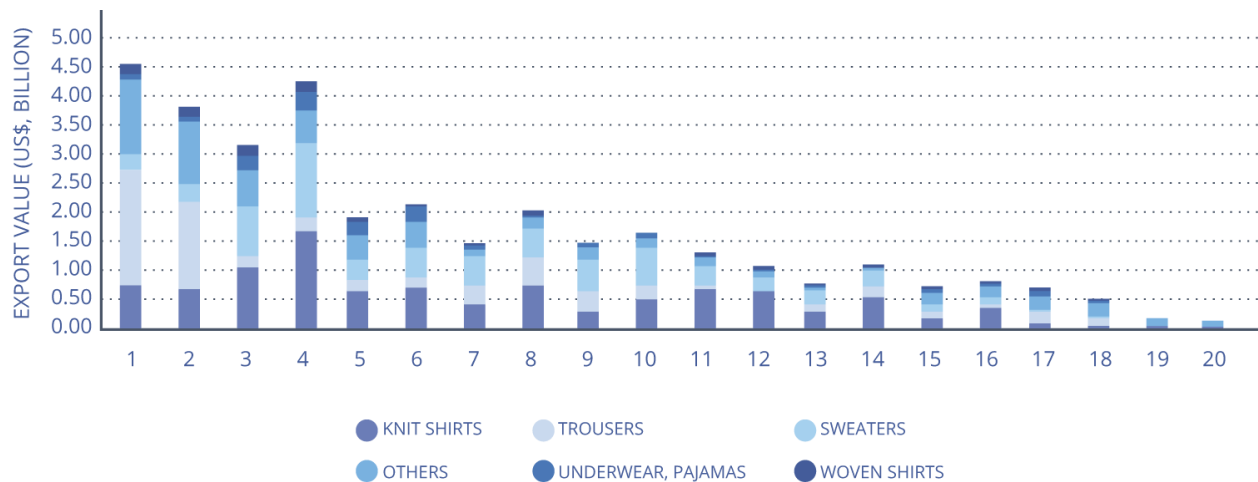
3. **The countries have undertaken limited functional upgrading into higher value services activities.** Generally, the four countries have made less progress upgrading into non-manufacturing activities, including design, branding, and sales. While there are differences in capabilities across the region, with some suppliers offering more skilled services operations,[4] overall, functions are limited to manufacturing. In part, this has been the result of the high participation of foreign firms in the region and the role of domestic firms as Tier 2 contract suppliers. In Guatemala, 90% of textile and apparel factories are Korean; in Nicaragua, most plants are US, Korean, and Taiwanese-owned; in Honduras and El Salvador, the majority of factories are owned by US firms (70% in the latter). The majority of factories operate as full-package providers in terms of coordinating production and sourcing textiles. Higher value activities such as design and sales, however, often take place at the buyers or Tier 1 manufacturers' headquarters in Asia or the US (Bamber & Frederick, 2018; Gereffi & Frederick, 2010).

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[4] For example, several Guatemalan factories offer design-based services and have developed more relational governance models with buyers. On the other hand, operators in Nicaragua carry out only basic cut-and-sew functions with no inputs into the process (Field Research, 2021).

4. **The region has begun to develop stronger backward linkages into the production of textiles.** The most significant development in the region has been upgrading through the development of backward linkages in fabric and yarn production. Raw material inputs account for some two-thirds of cost, and thus reducing these costs is key to remaining competitive (Lopez-Acevedo & Robertson, 2016). One way to do so is to co-locate textiles production with apparel production to reduce both logistics and transaction costs involved between the two segments of the supply chain. Textile mills in the region were initially built and operated by US and Korean foreign investors in the 2000s. Today, several of these are now owned and operated by regional investors. Fabric and yarn mills that are part of the supply chain of vertically-integrated OBM firms are captive to the brand (Fruit, Hanes, Gildan), while other mills in the region sell to multiple buyers (Bamber & Frederick, 2018). Much of this early investment was focused on cotton-based textiles, with cotton raw materials provided from the US under the yarn-forward agreement and knit fabric development and yarn production have expanded. However, in recent years, there has been greater impetus to develop synthetics-based textiles production in the region. For example, in 2019, Kattán Group and Tegra Global Corporation set up a 63,000 square meters modern and sustainable plant in Honduras to produce synthetics-based sports clothing for brands such as Nike and Under Armour (Baquedano, 2021). The yarn-forward requirements of the CAFTA-DR agreement made this a necessity for the region to move beyond the basic cotton product output as apparel produced from imported MMF from Asia does not classify for CAFTA entry into the US.

Figure 3 illustrates the development of these backward linkages by country.

Figure 3. *Select Central American Countries in the Textiles & Apparel GVC*

DESIGN	RAW MATERIALS	TRIM	YARN	FABRIC	FINAL PRODUCTS	BRANDING	
DESIGN	RAW MATERIALS	TRIM	YARN	FABRIC	FINAL PRODUCTS	BRANDING	**HONDURAS**
DESIGN	RAW MATERIALS	TRIM	YARN	FABRIC	FINAL PRODUCTS	BRANDING	**GUATEMALA**
DESIGN	RAW MATERIALS	TRIM	YARN	FABRIC	FINAL PRODUCTS	BRANDING	**EL SALVADOR**
DESIGN	RAW MATERIALS	TRIM	YARN	FABRIC	FINAL PRODUCTS	BRANDING	**NICARAGUA**

PARTICIPATION INTENSITY: LOW ———————— HIGH

Note: Participation Intensity refers to the number of firms undertaking these activities and the share of downstream production/exports served by upstream firms
Source: Bamber and Frederick (2018).

As a result, textile imports have fallen slightly across the region despite an increase in apparel exports as greater supply has become available. Overall, textile imports from the US, the region's major supplier thanks to the CAFTA-DR rules, declined 21.5% from US$3.76B to US$2.95B between 2011-2019 (UN Comtrade, 2021). The scale requirements for textiles production facilities have also seen an increase in regional trade of these textiles as no individual country can fully absorb output. Intra-regional textiles trade amongst the four Central American countries has increased by 87% over the past decade (UN Comtrade, 2021). However, overall integration of the textiles and apparel value chain across Central American producers continues to be weak and the region continues to import significant amounts of textiles from the US.

5. **Labor costs due to labor-intensity in apparel production presents a general challenge for Central American countries' competitiveness in the industry**. A region comprised of small countries with comparatively limited labor pools and higher minimum wages contribute to a more expensive workforce. With between 300-400,000 apparel workers, available labor is just a fraction (<10%) of that in suppliers such as Bangladesh which 5 million strong (ILO, 2020). Overall, salaries in Central American apparel industry are considerably higher than those in their competitor countries in Asia, with the exception of China. Figure 4 provides a comparison of minimum monthly wages in the industry. Guatemala has the highest wages in the region at US$372 (2018) per month. As labor costs have risen, the Guatemalan industry has seen

employment decline and exports growth plateau (elPeriodico, 2019; Field Research, 2021; UN Comtrade, 2021). Employment in Guatemala's T&A sector has contracted approximately 35% since 2006 from 82,000 to 53,000 (elPeriodico, 2019). In 2021, the monthly minimum wage for the maquila sector increased further to US$382 (Bolañas, Gándara, & Gamarro, 2021). While El Salvador and Honduras are slightly less expensive, labor costs are still double or more of those of Viet Nam, Cambodia, and Bangladesh. Only Nicaragua offers comparable labor costs.

Figure 4. *Minimum Monthly Wages in Apparel in Asia and Central America (US$), 2012 & 2018*
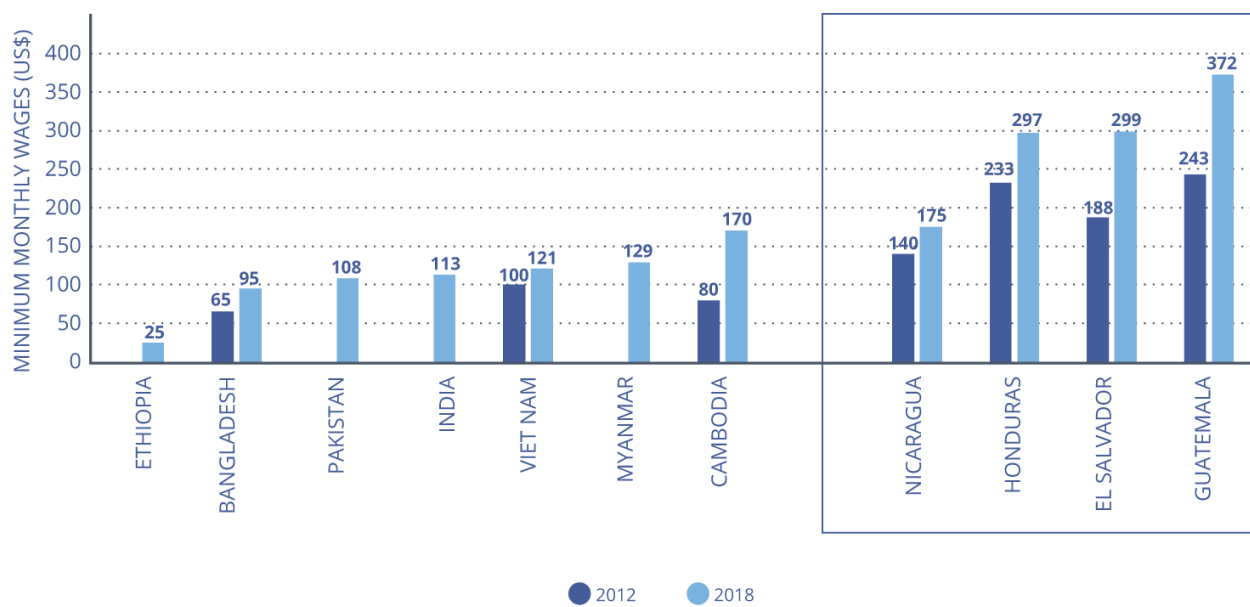
Source: Authors based on EIL/RSM (2018); ILO (2016; 2018, p. 1); WRC (2018).

D. The Impact of the COVID-19 pandemic on US Apparel Imports and its Implications for Central America

The 2020 outbreak of the COVID-19 pandemic had significant impact on the T&A GVC, as a result of major disruptions at all stages, from lockdowns preventing factories from operating, major shipping delays due to port closures and backlogs, to retail stores being forced to close their doors. Within the first six months of 2020, global apparel trade collapsed; in the US, EU and Japan, imports of apparel declined by 26%, 25% and 17% from January to June, respectively (ILO, 2020). In some cases, exports of some of the main global producing countries dropped by as much as 70%. The largest

decreases were observed in China, India, the Philippines, and Sri Lanka (ILO, 2020).[5] A May 2020 survey of suppliers found that about two thirds of apparel factories received cancellations from customers in the first two months of the pandemic. Also, around one in five respondents reported a complete loss of accounts receivable due to order cancellations (ILO, 2020). While demand recovered during the second half of the year, supply chain challenges initiated in the early stages of the pandemic were exacerbated by severe disruption to logistics operations and sporadic shutdowns of factories in supplier countries as they responded to COVID-19 waves/surges. It became increasingly clear that past consolidated sourcing practices were at high risk.

Central American suppliers were not impervious to these challenges. Analyzing US imports during the pandemic provides important insights into the resiliency of these apparel suppliers alongside global peers as the US is its prime market. Figure 5 illustrates the percentage change of US apparel imports by exporter. The data analyzed compares imports from the US's leading suppliers for the same months from 2019 to each of the two pandemic years, 2020 and 2021. Leading suppliers can be divided into three groups: (1) Resilient suppliers, (2) Bounce-Back suppliers, (3) Hard-Hit suppliers. (1) Resilient suppliers were those that were able to increase exports to the US in both years of the pandemic. This includes Turkey and Cambodia; both countries saw their apparel exports to the US increase significantly between 2019 and 2021 with respective increases of 36% and 25%. (2) Bounce-Back suppliers included those that were hard-hit in 2020 by the pandemic disruptions but that were able to adapt their systems and return with higher supply in 2021. Guatemala and Nicaragua were both able to recover by 2021. Pakistan is the most notable supplier in this category, with a 42% increase over 2019 exports. The country's exports to the US had seen a decline between 2011 and 2017, with 2019 exports placing it as the 14th supplier to the US. Its resiliency during the pandemic catapulted it to 9th place. Bangladesh and Vietnam were able to regain their footing by September 2021, although the latter has since experienced significant disruptions to its supply to the extent that buyers have resorted to air transportation to sufficiently meet holiday season demand (CNBC, 2021; Hutt, 2021; Maersk, 2021). The final group (3) Hard-Hit

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[5] China's declining exports, a significant share of which was previously destined to the US, were also due to the imposition of tariffs on Chinese apparel by the US government, which began in May 2019 and steadily increased to 25% over the following 18 months. With the exception of a small number of HS codes, these tariffs covered almost all apparel imports in categories HS2002 61+62.

suppliers struggled to export to the US through both years of the pandemic. Honduras and El Salvador both fell in this category. The pandemic accelerated the decline apparel supply from both Mexico, Indonesia, Thailand, and Sri Lanka to the US; these suppliers face the greatest risk of permanently losing market share in the world's second largest apparel market. The pandemic also eroded gains made by both India and Jordan over the past decade. China continued to lose market share, but more as a result of a continued downward trend since 2011 combined with 10-25% US tariffs in place between 2019-2021. Figure 5 details the response measured by exports to the US.

Figure 5. *Percentage Change of US Apparel Imports by Exporter: 2019 to 2020 & 2019 to 2021 (January – September; Top 20 Exporters)*
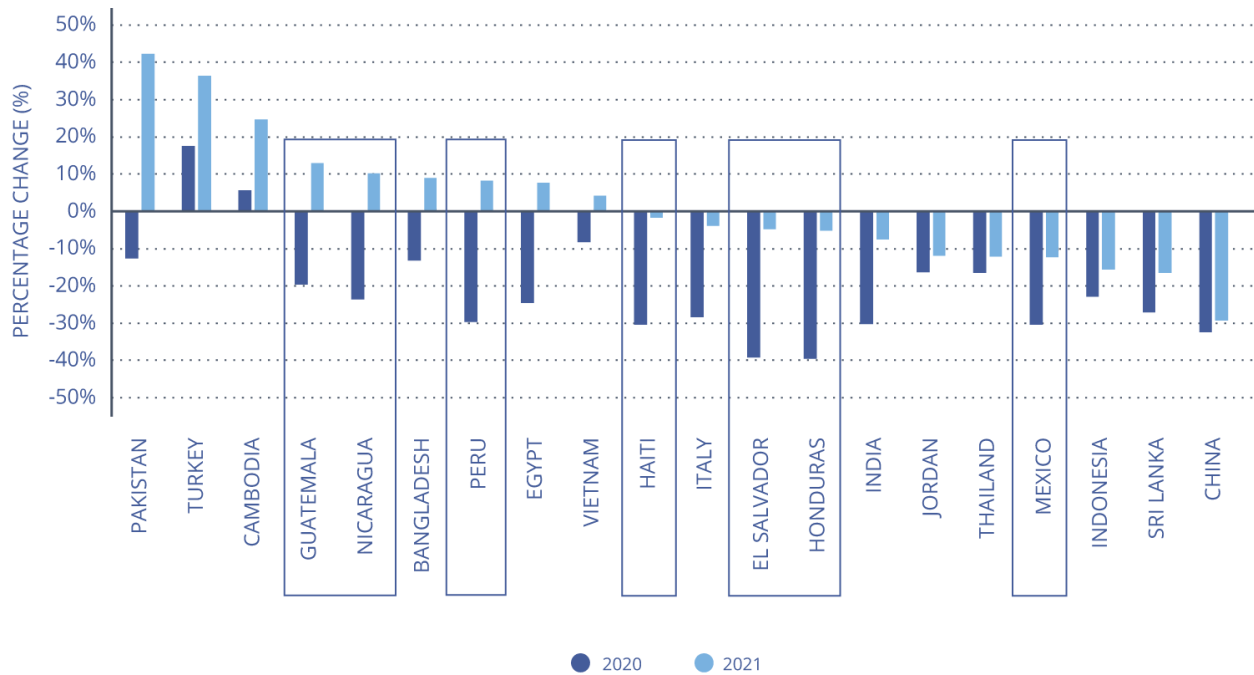
Source: USITC (2021).
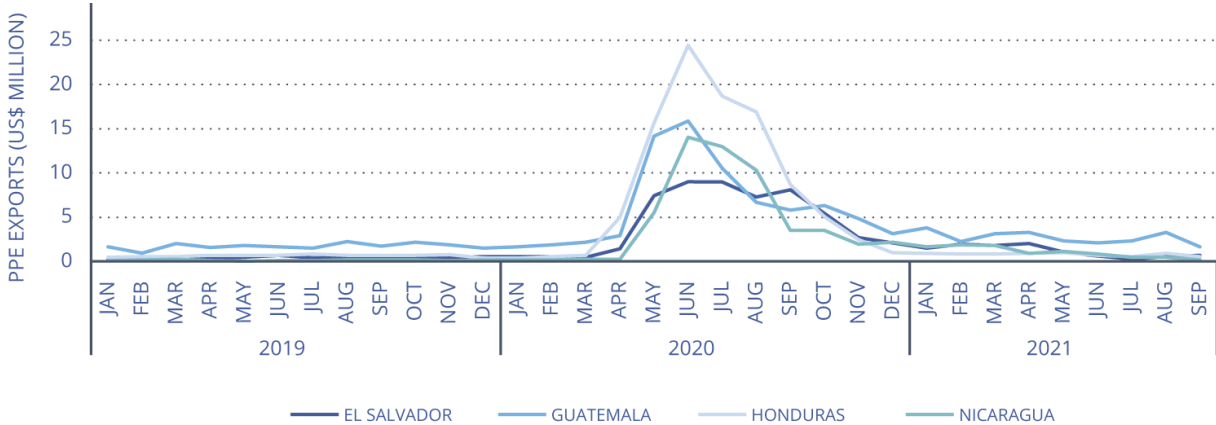
Central American Response

Results from Central America were mixed, due to differing approaches to the pandemic (see Figure 5). Honduras and El Salvador experienced the most significant declines in 2020, with exports shrinking by close to 40% compared to 2019. Honduras slipped from 7th to 8th supplier to the US, while El Salvador lost its position as a top ten supplier to Nicaragua. Both countries had their operations closed as a result of strict pandemic protocols during the Q2 2020 (Field Research, 2021). Guatemala and Nicaragua saw less severe contractions. Guatemala and Nicaragua were able to recover from their setbacks in 2020, with each country seeing more than 10% growth in exports in 2021 compared to 2019. Neither country required the factories to shut down at any point (Field Research, 2021). In Guatemala, clothing production was not classified as an essential service, but could remain open with "special permission" from the Ministry of Economy (Hoskins & Mayorga, 2020). These divergent approaches are clear from worker layoffs. Early on in the pandemic (May 2020) saw close to 75,000 apparel workers across El Salvador and Honduras laid off from their jobs, comparatively Nicaragua only saw 6,000 layoffs in the same period (Just Style, 2020b; Maquila Solidarity Network, 2020). While 2020 monthly exports in Guatemala and Nicaragua declined to about half their 2019 levels in April, May, and June, they fell to just a fraction in Honduras and El Salvador. By September 2021, all four countries had recovered to close to their 2019 levels. It is worth noting that 2019 had been a strong year for most of these suppliers, with factories operating at maximum capacity that year (Field Research, 2021).

Temporary Relief: The Rise of Demand for PPE

The pandemic led to a surge in demand for personal protective equipment (PPE) in the US. Central American countries generally do not actively participate in this global market (<1% of US imports), however, the significant rise in demand created a small window of opportunity for Central American factories to temporarily reorient their operations. Prior to the pandemic, using 2019 as the base year, these countries contributed very little PPE exports, accounting for just 0.44% (US$35M) of US imports. Guatemala had been the primary supplier, accounting for 59% (US$20M) of these exports in 2019, followed by Honduras (22%, US$7M) and El Salvador (15%. US$5M). PPE exports from Nicaragua were negligible. Pre-pandemic exports in PPE, nonetheless, were marginal compared to

textile & apparel exports to the US in all four countries, which reached approximately US$7.8B in 2019. However, with past apparel orders from major buyers cancelled or on hold, factories in all four countries shifted temporarily to manufacture facemasks and other PPE products both for the domestic market and export to the US. Between March and November 2020, during the peak of the pandemic, US demand for PPE in general, and facemasks, in particular, increased dramatically. The response of Central American countries to this spike in demand was notable, as factories shifted production lines to facemask production (Figure 6).

Figure 6. *Monthly PPE Exports from Select Central American Countries to US, 2019-2021*

Production of PPE products, however, provided an important buffer for factories, allowing them to maintain a share of their workers on staff and the factories operating, however, financially, this could not fully cover the losses experienced as a result of canceled orders. The tremendous rise in PPE exports from the region was also short lived, occurring from April to June 2020. After, exports started to decline, reaching 2019 levels by Q2-2021. The stabilization of US demand combined with the drop off in exports from Central America and their return close to their pre-pandemic market share (2019: 0.4%, 2021[p]: 0.56%) suggests that these products do not represent long term market prospects for the countries analyzed. This market share was considerably lower than their apparel market share at 10%, and US-bound PPE exports, even at their 2020 peak of US$284M, remained a small fraction (4.69%) of textile & apparel exports (US$5.7B, 2020). While Central American countries demonstrated their capabilities to produce PPE under pressure, they proved to be less competitive

than other producers around the world. At the same time, as the demand recovered for apparel products, factory operators preferred to return production lines to pre-pandemic products. The demand for apparel products accelerated significantly, reaching levels higher than 2019. Given the low margins and high competition associated with disposable facemask production which dominated PPE during this time, it was more profitable for these firms to return to apparel production for the US market.

Recovery: New Opportunities?

By the end of 2021, the outlook of Central America's apparel industry was strong, with exports surpassing 2019 levels. Industry associations from all four countries indicated that they were operating at maximum capacity by the end of 2021; the Guatemalan industry association highlighted that the country has the next 10 months of production capacity fully committed. While trade data is as of yet unavailable, for the final quarter of 2021, El Salvador, Guatemala, and Nicaragua reported monthly exports to the US over and above their 2019 levels (Field Research, 2021). The recovery has been driven by the convergence of three key elements.

First, **there has been increased interest from buyers in the US looking to cover production** they are unable to source from Asia. Asian factory shutdowns and a logistics crisis in shipping from Asia to the US (Farrer, 2021) meant that many buyers were resorting to expensive air freight and have become willing to pay more for production delivered ahead of time (Field Research, 2021). Industry associations from the US report that several companies that previously did not source from Central America are investigating the region's capabilities, production operations, and how these may intersect with their needs (Field Research, 2021). Buyers are tapping into existing supplier capacity, while a small number of Asian suppliers have identified opportunities to expand in the region, such as Grupo Hansae's announcement to expand in Nicaragua (Field Research, 2021).

Second, **MMF textiles investments in the region finally began to gain traction**. Access to locally produced MMF textiles, under the current trade regulation, is seen as a vital step for increasing the region's participation in the industry, supporting both expanded apparel exports and product upgrading into a wider range of apparel items, including athletic clothing such as high performance

t-shirts (Field Research, 2021). By December 2021, textile and apparel associations were reporting that every textile maker in the region was completely sold out (Field Research, 2021), indicating high demand for sourcing in the region. Guatemala and Honduras have seen large textiles investments announced since the outbreak of the pandemic. In Guatemala, recent investors are Korean and Spanish; the latter (Nextil Group) starts to operate in Q1 2023 and will focus on mass production[6] (Fibre2Fashion, 2021a; Gamarro, 2021). Similiarly, in 2022, textile investment in Honduras is expected to reach US$400M – US$600M, the majority from US companies (Field Research, 2021). Investment in Nicaragua was relatively less strong than in its regional peers, with announcements from a Chinese company. The presence of more textiles regionally increases the region's attraction as a sourcing location.[7]

Third, there is **high profile US support for regionalization of apparel production** into the region to help slow down illegal immigration to the US. The most important of these is the Partnership for Central America launched by the Biden Administration under Vice President Harris's office in 2021. The initiative is focused on spurring economic activity in the region to drive job creation and is a central component of the Biden Administration's plan to address the root causes of migration from Central America (Partnership for Central America, 2021). One of the major investments announced into Honduras – yarn company Parkdale Mills, arrives to Honduras under the Biden Administration's Call to Action (Just Style, 2021). The US private sector is also engaged in initiatives to boost regionalization. The **Think HUGE** Business and Investment Council connects the private sectors of the Central American Northern Triangle countries and the US to encourage a favorable environment for strategic regional investments. This regional alignment offers economies of scale, opportunities to enhance infrastructure, and competitive advantages, all of which creates opportunities to reduce illegal immigration to the US, increase the participation of regional qualified suppliers, and foster economic growth and employment in Central America (Think Huge, 2021). In addition, the Regional

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[6] Nextil Group will continue to produce value-added specialties in Spain and the US, while relocating mass production to Guatemala (Fibre2Fashion, 2021a; Gamarro, 2021).

[7] While there is strong consensus that the availability of textiles in the region is critical for it to leverage buyer interest for longer term growth, not all stakeholders believe that building local capabilities is the correct approach. For example, the American Apparel & Footwear Association (AAFA) has shared policy recommendations with US authorities, including the opportunity to modify rules of origin to ensure more availability of materials in Central America which in turn would spurs investment from US companies (Reuters, 2021c).

Trade Facilitation and Border Management Project (2018 – 2023, US$ 17.5 M) financed by USAID aims at optimizing border processes and improving border control systems and infrastructure amongst the Northern Triangle countries, El Salvador, Guatemala and Honduras. Reducing cost and time to trade goods regionally and intra-regionally would further boost the industry (USAID, 2021).

A. OPPORTUNITIES AND THREATS FOR CENTRAL AMERICAN COUNTRIES IN TEXTILES & APPAREL GVC

As the world's T&A GVC undergoes changes following the disruptions caused by the pandemic, Central America is well positioned to take advantage of several opportunities, from supporting buyers in risk diversification to improving flexibility for buyers and Tier 1 suppliers alike. However, several weaknesses undermine this potential; including important prevailing challenges such as high costs and inefficient logistics, institutional weaknesses, and limited access to duty-free non-cotton textiles. The most prominent advantages and constraints are detailed in Table 4.

Table 4. *SWOT Analysis*

STRENGTHS	WEAKNESSES
▪ Duty-free access to US market for yarn-forward products. ▪ Proximity to the US market, i.e. speed to market advantage, leading to lower transportation costs and emissions. ▪ Established Export Processing Zones and relevant benefits for foreign investors. ▪ Expanding textiles sector, particularly in knit fabric and yarn production. ▪ Notable renewable energy resource potential.	▪ High cost and time to trade goods (amongst the highest in the world). ▪ Elevated electricity prices and poor energy reliability. ▪ Limited labor pool with low levels of education. ▪ High minimum wages and unpredictable labor costs. ▪ Limited access to duty-free non-cotton textiles. ▪ Shortages in regional cohesiveness at the government level. ▪ Institutional weaknesses and limited sustained national industrial policies. ▪ Private investment and innovation efforts mostly reactive rather than proactive. ▪ Overdependent on the US market
OPPORTUNITIES	**THREATS**
▪ Supply chain risk diversification by buyers. ▪ Increasing search for flexibility from buyers and Tier 1 suppliers. ▪ Sustainable and ethical awareness on the rise. ▪ Textile investments for yarn-forward inputs. ▪ Rapid growth of e-commerce. ▪ Support from regionalization advocates in US policy circles.	▪ Duty-free e-commerce. ▪ Shortage of key inputs. ▪ Competition from scale suppliers in South and South-East Asia. ▪ Competition from suppliers from AGOA and Europe for rebalancing opportunities. ▪ Natural disasters. High risk and uncertainty due to the ongoing pandemic and logistics crisis.

Source: Authors.

B. STRATEGIES FOR CENTRAL AMERICAN COUNTRIES UPGRADING IN THE TEXTILES & APPAREL GVC

Central America has seen little change to its apparel production profile over the past 15 years since CAFTA was signed. The region's market share has remained stagnant, and it remains overly dependent on the US market. While it is likely that the advantages afforded the region as a result of proximity to the US and CAFTA-DR will continue to support this status quo, real growth in the sector requires proactive efforts and the development of an upgrading strategy. The convergence of COVID-19 pandemic and geopolitical factors have led buyers to reassess their mature sourcing

patterns and currently offers an important opportunity for the region to upgrade. Five potential upgrading strategies are detailed below.

YARN AND TEXTILES PRODUCTION

1. **Encourage development of backward linkages to deepen vertical integration.** One of the most important factors necessary to compete in the apparel sector is easy access to raw materials, fibers and fabrics. With supply chain logistics crises, locally sourced textiles make apparel producing countries increasingly attractive for buyers. In the case of Central America, the CAFTA-DR agreement heightens the incentives to produce textiles within the region (either by local or foreign firms) to ensure tariff-free access to the lucrative US market. While there is existing cotton textiles capability thanks to the US supply, given global tendencies towards apparel based on MMF fibers, the region needs to be able to competitively produce more of these inputs in addition to cotton ones. In order to future proof these MMF investments, they could focus on sustainable MMF, such as fibers produced from recycled plastic pellets and not only on those dependent on primary petroleum supplies.

2. **Focus on niche areas such as sustainable fibers in textile production and adjacent industries:** The UN Charter for Sustainable Fashion has committed the industry to reducing the use of synthetics that are based on primary fossil fuels, as well as less sustainable natural based fibers, including those with high water consumption. While pressure to shift towards more sustainable fibers is relatively new, with most initiatives emerging since the 2015 Paris Agreement, momentum is rapidly growing. As capital-intensive operations, textile factories typically are in operation for extended periods (+20 years). Central American countries should anticipate this future demand by ensuring that the textile investments being targeted are focused on producing sustainable fibers, including recycled fibers. It may also be worthwhile to analyze adjacent industries for potential alternative upgrading pathways such as automotive textiles industry. Competing in this niche requires a combination of qualify lower-cost labor, excellent supply chain logistics, market access and an ecosystem of suppliers and industry players.

APPAREL PRODUCTION

1. **Product Upgrading.** Central American producers should move towards the manufacture of higher value products, including those with a focus on high mix/low volume. The region needs to shift away from the current strategy of supplying large runs of basic products with low unit values (i.e. t-shirts). This approach places them in direct competition for highly cost sensitive products with very large-scale Asian producers with sophisticated and cheap logistics operations. A move towards high mix/low volume is essential to provide buyers with the flexibility they are seeking from regional suppliers as they seek to lower inventory stocks and move towards a more just in time supply.

2. **Functional upgrading into direct-to-consumer distribution.** Central American producers should take advantage of geographic proximity to the US market to upgrade into cross-border e-commerce direct to consumer production. The pandemic has rapidly accelerated the shift to online purchasing, and customers increasingly expect their products to arrive within a very short period of time. Central America can capitalize on its proximity to the US to capture a greater market share in these products. This competitive advantage is unique to the region. Products entering the US below the threshold of US$800/day are not subject to duties and extra-regional textiles can thus be used. Thus, in the short term, this can help suppliers in the region to upgrade into higher value products requiring MMF textiles until sufficient local production is established.

3. **Process Upgrading:**

3.1.   **Reduce lead time:** Lead time is the most important competitive advantage that proximity provides the region. However, currently, producers are operating with long lead times and there are numerous obstacles to smooth flowing exports – this erodes the advantage of proximity. It is essential to improving traceability within the supply chain to provide visibility where the product is flowing quickly and easily. In doing so, major bottlenecks can be identified and removed.

3.2.   **Focus on sustainable and ethical production operations:** There is growing pressure to reduce the environmental footprint of apparel production, while also ensuring ethical labor

conditions are met. While proximity to the US affords the region lower carbon emissions than exports from other parts of the world, a rapid shift towards sustainable production in Central America is required to significantly differentiate the region from Asian competitors. This includes a shift to renewable energy use, enhanced water efficiency and treatment, and the elimination of harmful chemicals. At the same time, social upgrading must remain a critical factor to continue sourcing for US and should be prioritized in the region.

C. POLICY RECOMMENDATIONS FOR CENTRAL AMERICAN COUNTRIES

Numerous policies and programs must be put in place for countries in the region to effectively take advantage of the opportunities afforded in the post-pandemic period. These are detailed below.

1. **Intensify Investment Attraction Efforts**

a. Strengthen investment promotion agencies significantly. Create an investment strategy for the textile and apparel with specific goals.

b. Create a single window or "one-stop-shop" for all investors seeking to establish operations in the country. This service should concentrate all operations relevant to the investments, including permits and clearances.

c. Target **Asian investors in MMF textiles** (yarn and fabrics) in addition to **Tier 1 apparel** suppliers which are seeking to improve their global footprints. These firms are global leaders with deep networks amongst buyers.

d. Target **"green" investors** seeking to focus on environment upgrading their production and/or also in sustainable fabrics that can be recycled or fibers with low environment impact.

e. Identify **key inputs** that are not yet adequately and competitively supplied in CAFTA-DR and target firms for investment to build out the supply chain regionally. Work with the private sector to identify these products and services.

f. Offer extensive after-care services to foreign investors to help them navigate complex local bureaucracy once their operations are established.

2. **Develop Human Capital for the Sector**

a. Establish set mechanisms for negotiation and implementation of minimum wages to ensure predictability for the sector (e.g. Nicaragua).

b. Establish in-house training programs for workers to ensure they can carry out the multiple production functions required for high mix/low volume orders. Implement systems to improve productivity.

c. Create training schools for technical workers and engineers for the textiles sector, qualified high-tech maintenance and repair workers, middle managers, and workers with digital skills.

d. Establish regional training programs focused on skills required to cater to emerging trends: e-commerce, logistics, sustainable production etc. In addition, skills development should focus on inventory and warehousing management, and forecasting and planning functions. These programs could be divided amongst the countries, with each country specializing in a different area.

e. Offer scholarships to train highly specialized workers abroad.

3. **Drive Investment in Infrastructure (hard and soft)**

a. Improve and develop infrastructure throughout the region, especially internal roads and those that link the EPZs in the 4 countries and relevant ports.

b. Build distribution hubs to streamline exports shipped by air to United States.

c. Strengthen green energy infrastructure for EPZs and establish mechanisms to ensure stability in the price of energy. This is critical for the textile sector that is highly energy use.

d. Modernize and digitalize customs procedures to improve the efficiency of operations and reduce lead time. Implement initiatives to minimize bureaucracy, particularly for intra-regional product flow. The latter is essential to support the regionalization of the T&A GVC in Central America.

e. Evaluate establishment of new EPZs in less developed parts of the country.

Recommendations for the Private Sector

1. Develop strategy and an action plan for industry associations in each country. This should include the identification of goals, key steps for achieving them and measurable outcomes.

2. Create a regional working group comprised of representatives from each of the country associations to align upgrading goals across the region, coordinate capabilities development and streamline logistics operations.

3. Establish a collaborative regional industry strategy through this private sector working group to leverage the diverse T&A capabilities across the four countries, driving increasing vertical integration of the regional value chain.

4. Market the region in the US as a strong, flexible, and sustainable regionalization production site. The regional working group should develop a joint marketing campaign to change perceptions amongst US buyers regarding the industry's capabilities.

5. Develop innovative pilot projects focused on enhancing capabilities and productivity across the industry, such as traceability, sustainable textiles, e-commerce, etc.

5.References

ABG. (2021). ABG News Room. Retrieved from https://www.abgnewsroom.com/

AZFA. (2020a). *Book Estadístico De Las Zonas Francas De El Salvador 2020*. Retrieved from
https://www.media.asociacionzonasfrancas.org/media/estadisticas-pais/El%20Salvador/2020
/Book_Est._-_El_Salvador.pdf

AZFA. (2020b). *Book Estadístico De Las Zonas Francas De Guatemala 2020*. Retrieved from
https://www.media.asociacionzonasfrancas.org/media/estadisticas-pais/Guatemala/2020/Bo
ok_Est._-_Guatemala.pdf

AZFA. (2020c). *Book Estadístico De Las Zonas Francas De Honduras 2020*. Retrieved from
https://www.media.asociacionzonasfrancas.org/media/estadisticas-pais/Honduras/2020/Boo
k_Est._-_Honduras.pdf

AZFA. (2020d). *Book Estadístico De Las Zonas Francas De Nicaragua 2020*. Retrieved from
https://www.media.asociacionzonasfrancas.org/media/estadisticas-pais/Nicaragua/2020/Boo
k_Est._-_Nicaragua.pdf

Azmeh, S., & Nadvi, K. (2014). Asian firms and the restructuring of global value chains. *International
Business Review, 23*(4), 708-717. doi:https://doi.org/10.1016/j.ibusrev.2014.03.007

Bair, J., & Gereffi, G. (2003). Upgrading, Uneven Development and Jobs in the North American
Apparel Industry. *Global Networks, 3*(2), 143-169.

Bamber, P., & Frederick, S. (2018). *Central America in Manufacturing Global Value Chains*. Retrieved
from Durham, N.C.:
https://gvcc.duke.edu/cggclisting/central-america-in-manufacturing-global-value-chains-gvcs/

Baquedano, K. (2021). Nueva planta industrial en San Pedro Sula operará al 100% en dos meses. *La
Prensa*. Retrieved from
https://www.laprensa.hn/sanpedro/nueva-planta-industrial-operara-al-100-en-dos-meses-sa
n-pedro-sula-honduras-nike-PXLP1477239

BBC. (2020). Why clothes are so hard to recycle. *Recycling.* Retrieved from
https://www.bbc.com/future/article/20200710-why-clothes-are-so-hard-to-recycle

BBC. (2021a). Boohoo buys Dorothy Perkins, Wallis and Burton but 2,450 jobs lost. Retrieved from
https://www.bbc.com/news/business-55977587

BBC. (2021b). Thousands of jobs at risk as Asos strikes Arcadia deal. *News, Business.* Retrieved from
https://www.bbc.com/news/business-55884596

CALPIRG. (2021). The Fashion Industry Waste Is Drastically Contributing To Climate Change.
Retrieved from
https://calpirg.org/blogs/blog/cap/fashion-industry-waste-drastically-contributing-climate-ch
ange

CFRA. (2021a). *Industry Survey: Textiles, Apparel & Luxury Goods*. Retrieved from

CFRA. (2021b). *Industry Surveys: Retail (Apparel)* Retrieved from

CNBC. (2021). Covid restrictions force some retailers to rethink Vietnam as a manufacturing hub. *Retail.* Retrieved from https://www.cnbc.com/2021/09/16/coronavirus-restrictions-retailers-reconsider-vietnam-manufacturing.html

Deloitte. (2020). *Apparel 2030 2025: What new business models will emerge?* Retrieved from https://www.deloittedigital.com/content/dam/deloittedigital/us/documents/blog/blog-20200610-apparel-trends.pdf

EIL/RSM. (2018). *Salarios de Maquila en Centro América 2018 e Iniciativas internacionales por un Salario Digno*. Retrieved from https://www.maquilasolidarity.org/sites/default/files/attachment/Salarios_maquila_centroam%C3%A9rica_EIL_RSM-Oct2018.pdf

EMF & CFI. (2017). *A new textiles economy: Redesigning fashion's future.* Retrieved from https://emf.thirdlight.com/link/kccf8o3ldtmd-y7i1fx/@/preview/1?o

Euromonitor International. (2021). *How the Chinese Fast Fashion Brand Shein is Conquering the US Market*. Retrieved from https://www.euromonitor.com/article/how-the-chinese-fast-fashion-brand-shein-is-conquering-the-us-market

Farole, T. (2011). *Special Economic Zones in Africa: Comparing Performance and Learning from Global Experience*. Retrieved from Washington, D.C.:

Farrer, M. (2021). Global supply chain crisis could last another two years, warn experts. *The Guardian*. Retrieved from https://www.theguardian.com/business/2021/dec/18/global-supply-chain-crisis-could-last-another-two-years-warn-experts

Fernandez-Stark, K., Frederick, S., & Gereffi, G. (2011). Workforce Development in the Apparel Value Chain. In G. Gereffi, K. Fernandez-Stark, & P. Psilos (Eds.), *Skills for Upgrading: Workforce Development and Global Value Chains in Developing Countries.* Durham: Center on Globalization Governance & Competitiveness and RTI International.

Fibre2Fashion. (2021a). European textile firm Nextil to open fabric plant in Guatemala in 2023 [Press release]. Retrieved from https://www.fibre2fashion.com/news/textile-news/european-textile-firm-nextil-to-open-fabric-plant-in-guatemala-in-2023-275222-newsdetails.htm

Fibre2Fashion. (2021b, February). US China Trade Tariff Impacts on Textiles & Apparel Industry. Retrieved from https://www.fibre2fashion.com/industry-article/8924/us-china-trade-tariff-impacts-on-textiles-apparel-industry

Field Research (2021). [Field Research. Personal communications with Karina Fernandez-Stark & Penny Bamber].

Frederick, S. (2010). *Development and Application of a Value Chain Research Approach to Understand and Evaluate Internal and External Factors and Relationships Affecting Economic Competitiveness in the Textile Value Chain.* (Doctor of Philosophy Phd Dissertation). North Carolina State University, Raleigh, NC. Retrieved from http://www.lib.ncsu.edu.www.lib.ncsu.edu:2048/theses/available/etd-03132010-084518/

Frederick, S. (2016). Benchmarking South Asia in the Global Apparel Industry. In G. Lopez-Acevedo & R. Robertson (Eds.), *Stitches to Riches? Apparel Employment, Trade, and Economic Development in South Asia* (pp. 39-76). Washington, DC: The World Bank.

Frederick, S., Bair, Jennifer, & Gereffi, G. (2015). Regional trade agreements and export competitiveness: the uncertain path of Nicaragua's apparel exports under CAFTA. *Cambridge Journal of Regions, Economy and Society*. doi:10.1093/cjres/rsv015

Frederick, S., & Daly, J. (2019). *Pakistan in the Apparel Global Value Chain*. Retrieved from Durham, N.C.:

Frederick, S., & Gereffi, G. (2011). Upgrading and restructuring in the global apparel value chain: why China and Asia are outperforming Mexico and Central America. *International Journal of Technological Learning, Innovation and Development, 4*(1-3), 67-95. doi:10.1504/IJTLID.2011.041900

Gamarro, U. (2021). Empresa textil coreana invertirá US$20 millones en Guatemala y generará 130 empleos. *Prensa Libre*. Retrieved from https://www.prensalibre.com/economia/empresa-textil-coreana-invertira-us20-millones-en-guatemala-y-generara-130-empleos/

GAP Inc. (2020). *2020 Annual Report*. Retrieved from https://s24.q4cdn.com/508879282/files/doc_financials/2020/ar/Gap-Inc.-10-K-FY2020_FINAL_print-version.pdf

Gereffi, G. (2005). *Export-Oriented Growth and Industrial Upgrading: Lessons from the Mexican Apparel Case*. Retrieved from

Gereffi, G., & Esra, G. (2010). Global Production Networks and Decent Work in India and China: Evidence from the Apparel, Automotive, and Information Technology Industries. In D. Nathan & A. Posthuma (Eds.), *Labor in Global Production Networks in India*: Oxford University Press.

Gereffi, G., & Frederick, S. (2010). The Global Apparel Value Chain, Trade and the Crisis: Challenges and Opportunities for Developing Countries. In O. Cattaneo, G. Gereffi, & C. Staritz (Eds.), *Global Value Chains in a Postcrisis World: A Development Perspective* (pp. 157-208). Washington, DC: The World Bank.

Gereffi, G., & Memedovic, O. (2003). *The Global Apparel Value Chain: What Prospects for Upgrading for Developing Countries*. Retrieved from Vienna, Austria: https://www.unido.org/sites/default/files/2009-12/Global_apparel_value_chain_0.pdf

Grand View Research. (2021). *Textile Market Size, Share & Trends Analysis Report By Raw Material (Wool, Chemical, Silk), By Product (Natural Fibers, Polyester), By Application (Household, Technical), By Region, And Segment Forecasts, 2021 - 2028*. Retrieved from https://www.grandviewresearch.com/industry-analysis/textile-market

Hoskins, T., & Mayorga, J. (2020). Covid outbreak exposes dire conditions at Guatemala factory making US brands. *The Guardian*. Retrieved from https://www.theguardian.com/global-development/2020/aug/06/covid-outbreak-exposes-dire-conditions-at-guatemala-factory-making-us-brands

Hutt, D. (2021). Vietnam's COVID woes trigger supply chain issues for EU firms. *DW*. Retrieved from https://www.dw.com/en/vietnams-covid-woes-trigger-supply-chain-issues-for-eu-firms/a-59409620

IDB. (2021). *Apparel Manufacturing: Lessons from the Pandemic*. Retrieved from Washington, D.C.: https://www.strtrade.com/getmedia/3a0dc8fc-d14d-4e78-a834-46c6949e490d/Apparel-Manufacturing-Lessons-from-the-Pandemic.pdf

ILO. (2016). *Employment and wages in Myanmar's nascent garment sector*. Retrieved from https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---travail/documents/publication/wcms_535188.pdf

ILO. (2018). *Cambodian Garment and Footwear Sector Bulletin*. Retrieved from https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms_631686.pdf

ILO. (2020). *The Supply Chain Ripple Effect: How COVID-19 is Affecting Garment Workers and Factories in Asia and the Pacific*. Retrieved from International Labour Organization - Better Work: https://www.ilo.org/asia/publications/issue-briefs/WCMS_758626/lang--en/index.htm

ILO. (2021). *The Post-COVID-19 Garment Industry in Asia*. Retrieved from Geneva: https://www.ilo.org/asia/publications/issue-briefs/WCMS_814510/lang--en/index.htm

INDITEX. (2020). *Annual Report 2020*. Retrieved from https://www.inditex.com/documents/10279/664163/2020+Inditex+Annual+Report.pdf/cb184fcc-d1d5-a691-1ee3-8e46871615abr

Indvik, L. (2021, March 27,). Virus impact on fashion and luxury to be 'worse than recession'. *Financial Times*.

ITC. (2020). *Impact of COVID-19 on the Global Market and Local Industry of Textile and Clothing*. Retrieved from Geneva: https://www.intracen.org/uploadedFiles/intracenorg/Content/Redesign/Projects/GTEX/ImpactofCovidonTCindustry_Egypt_eng.pdf

ITMF. (2019). *International Production Cost Comparison in the Textile Industry*. Retrieved from

Judd, J., & Jackson, J. L. (2021). *Repeat, Repair or Renegotiate? The Post-COVID Future of the Apparel Industry* Retrieved from

https://betterwork.org/wp-content/uploads/2021/07/DP-43-Repeat-Repair-or-Renegotiate-1.pdf

Just Style. (2020a). Manufacturers must future-proof as fashion gets faster. *Comment.* Retrieved from https://www.just-style.com/comment/manufacturers-must-future-proof-as-fashion-gets-faster

Just Style. (2020b). Unions seek support for 80,000 Central America garment workers. *Analysis.* Retrieved from https://www.just-style.com/features/unions-seek-support-for-80000-central-america-garment-workers/

Just Style. (2021). Parkdale Mills to build new yarn spinning facility in Honduras. Retrieved from https://www.just-style.com/news/parkdale-mills-to-build-new-yarn-spinning-facility-in-honduras/

Li, F., Frederick, S., & Gereffi, G. (2018). E-Commerce and Industrial Upgrading in the Chinese Apparel Value Chain. *Journal of Contemporary Asia*. doi:10.1080/00472336.2018.148122

Li, F., Frederick, S., & Gereffi, G. (2019). E-Commerce and Industrial Upgrading in the Chinese Apparel Value Chain. *Journal of Contemporary Asia, 49*(1), 24-53. doi:10.1080/00472336.2018.1481220

Lopez-Acevedo, G., & Robertson, R. (2016). *Stitches to Riches? Apparel Employment, Trade and Economic Development in South Asia*. Retrieved from Washington, D.C.: https://www.worldbank.org/en/region/sar/publication/stitches-to-riches-apparel-employment-trade-and-economic-development-in-south-asia

Maersk. (2021). Vietnam and current supply chain challenges [Press release]. Retrieved from https://www.maersk.com/news/articles/2021/10/08/vietnam-current-supply-chain-challenges

Maquila Solidarity Network. (2020). Central American Unions Call On Brands To Protect Workers' Rights During Pandemic. Retrieved from https://www.maquilasolidarity.org/en/central-american-unions-call-brands-protect-workers-rights-during-pandemic

Marketline. (2021). *Global - Textile Mills*. Retrieved from https://store.marketline.com/report/ohmf1553--global-textile-mills-2/

Matsakis, L., Tobin, M., & Chen, W. (2021). How Shein beat Amazon at its own game – and reinvented fast fashion. *The Guardian*. Retrieved from https://www.theguardian.com/fashion/2021/dec/21/how-shein-beat-amazon-at-its-own-game-and-reinvented-fast-fashion

McKinsey & Company. (2013). *The Global Sourcing Map – balancing cost, compliance, and capacity: McKinsey's Apparel CPO Survey 2013*. Retrieved from https://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/retail/articles/the_global_sourcing_map_balancing_cost_compliance_and_capacity.ashx

McKinsey & Company. (2019). *Fashion's new musthave: sustainable sourcing at scale. McKinsey Apparel CPO Survey 2019*. Retrieved from https://www.mckinsey.com/~/media/mckinsey/industries/retail/our%20insights/fashions%20new%20must%20have%20sustainable%20sourcing%20at%20scale/fashions-new-must-have-sustainable-sourcing-at-scale-vf.pdf

McKinsey & Company. (2020). *Fashion on climate*. Retrieved from https://www.mckinsey.com/industries/retail/our-insights/fashion-on-climate

McKinsey & Company and BOF. (2021). *The State of Fashion 2021*. Retrieved from https://www.mckinsey.com/~/media/mckinsey/industries/retail/our%20insights/state%20of%20fashion/2021/the-state-of-fashion-2021-vf.pdf

Mihretu, M., & Llobet, G. (2017). *Looking Beyond the Horizon: A Case Study of PVH's Commitment in Ethiopia's Hawassa Industrial Park*. Retrieved from Washington, D.C. : https://openknowledge.worldbank.org/handle/10986/28334

Morris, M., & Staritz, C. (2014). Industrialization Trajectories in Madagascar's Export Apparel Industry: Ownership, Embeddedness, Markets, and Upgrading. *World Development, 56*, 243-257. doi:https://doi.org/10.1016/j.worlddev.2013.10.030

Morris, M., Staritz, C., & Barnes, J. (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*(1-3), 96-119.

Nayak, R., Panwar, T., & Nguyen, L. V. T. (2020). Sustainability in fashion and textiles: A survey from developing country. In R. Nayak (Ed.), *Sustainable Technologies for Fashion and Textiles* (pp. 3 - 30): Woodhead Publishing.

Partnership for Central America. (2021). About the Partnership. *A public-private partnership for Central America.* Retrieved from https://www.centampartnership.org/

Passport Euromonitor International. (2015 - 2020). Market Sizes. Retrieved from https://www.euromonitor.com/.   https://www.euromonitor.com/

Paton, E. (2018). H&M, a Fashion Giant, Has a Problem: $4.3 Billion in Unsold Clothes. *The New York Times*. Retrieved from https://www.nytimes.com/2018/03/27/business/hm-clothes-stock-sales.html

PVH. (2020). *Annual Report 2020*. Retrieved from https://www.pvh.com/-/media/Files/pvh/investor-relations/PVH-Annual-Report-2020.pdf

Reuters. (2021a). Ethiopian textile industry at risk if U.S. suspends trade deal over Tigray war. *Africa.* Retrieved from https://www.reuters.com/world/africa/ethiopian-textile-industry-risk-if-us-suspends-trade-deal-over-tigray-war-2021-10-28/

Reuters. (2021b). How global supply chains are falling out of fashion. Retrieved from https://www.reuters.com/business/retail-consumer/how-global-supply-chains-are-falling-out-fashion-2021-09-30/

Reuters. (2021c). U.S. held talks with retailers for economic opportunities in Central America [Press release]. Retrieved from https://www.reuters.com/world/americas/us-held-talks-with-retailers-economic-opportunities-central-america-2021-12-01/

Rossi, A. (2013). Does Economic Upgrading Lead to Social Upgrading in Global Production Networks? Evidence from Morocco. *World Development, 46*(0), 223-233. doi:http://dx.doi.org/10.1016/j.worlddev.2013.02.002

Shin, S. I. (2019). Transforming into Fashion Firms or Multi-Country Suppliers? Accounting for Varied Firm Trajectories in the Deindustrialising Korean Apparel Industry. *The Journal of Development Studies, 55*(1), 1-18. doi:10.1080/00220388.2017.1404032

Think Huge. (2021). Solving Problems, Seizing Opportunities. *Opportunities.* Retrieved from https://think-huge.org/opportunities/

UN. (2018). Milestone Fashion Industry Charter for Climate Action Launched. Retrieved from https://www.un.org/sustainabledevelopment/blog/2018/12/milestone-fashion-industry-charter-for-climate-action-launched/

UN Comtrade. (2021). World Apparel and Textile Imports 2011 - 2019, HS02 (2-digits). Retrieved from http://comtrade.un.org. Retrieved 2021/11/04, from United Nations Statistics Division (UNSD) http://comtrade.un.org

UNECE. (2018). UN Alliance aims to put fashion on path to sustainability [Press release]. Retrieved from https://unece.org/forestry/press/un-alliance-aims-put-fashion-path-sustainability

UNFCCC. (2018). *Fashion Industry Charter for Climate Action* Retrieved from https://unfccc.int/sites/default/files/resource/Industry%20Charter%20%20Fashion%20and%20Climate%20Action%20-%2022102018.pdf

UNFCCC. (2021). Participants in the Fashion Industry Charter for Climate Action. Retrieved from https://unfccc.int/climate-action/sectoral-engagement/global-climate-action-in-fashion/fashion-industry-charter-for-climate-action/participants-in-the-fashion-industry-charter-for-climate-action#eq-1

USAID. (2021). *Usaid Regional Trade Facilitation And Border Management Project*. Retrieved from https://www.usaid.gov/sites/default/files/documents/1862/Fact_Sheet_-_USAID_Regional_Trade_Facilitation_and_Border_Management_Project.pdf

USFIA. (2021). *2021 Fashion Industry Benchmarking Study*. Retrieved from https://www.usfashionindustry.com/pdf_files/20210715-fashion-industry-benchmarking-survey.pdf

USITC. (2021). Imports for Consumption: Customs Value (Monthly, 2019 - 2021) HS2 61; HS2 62; HS2 630790; HS2 392620; HS2 6505; HS2 481850; HS2 481890. Retrieved from https://dataweb.usitc.gov/trade/search/e432a248-d8ec-4f83-ad5a-1adec1995cd1. Retrieved November 16, 2021 https://dataweb.usitc.gov/trade/search/e432a248-d8ec-4f83-ad5a-1adec1995cd1

Voa News. (2021). US Suspends Ethiopia's Duty-Free Access Over Tigray Violations. *AFRICA.* Retrieved from
https://www.voanews.com/a/us-suspends-ethiopia-s-duty-free-access-over-tigray-violations/6296829.html

Whitfield, L., & Staritz, C. (2021a). The Learning Trap in Late Industrialisation: Local Firms and Capability Building in Ethiopia's Apparel Export Industry. *The Journal of Development Studies, 57*(6), 980-1000.

Whitfield, L., & Staritz, C. (2021b). Local supplier firms in Madagascar's apparel export industry: Upgrading paths, transnational social relations and regional production networks. *Environment & Planning A, 53*(4), 763-784. doi:10.1177/0308518X20961105

Whitfield, L., Staritz, C., & Morris, M. (2020). Global Value Chains, Industrial Policy and Economic Upgrading in Ethiopia's Apparel Sector. *51, 4*, 1018-1043.

World Bank. (2021). World Bank Data: GDP per capita, PPP (current international $). Retrieved from https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD. from The World Bank https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD

WRC. (2018). *"Ethiopia is a North Star". Grim Conditions and Miserable Wages Guide Apparel Brands in their Race to the Bottom*. Retrieved from https://www.workersrights.org/wp-content/uploads/2019/03/Ethiopia_isa_North_Star_FINAL.pdf

Zhao, L., & Kim, K. (2021). Responding to the COVID-19 Pandemic: Practices and Strategies of the Global Clothing and Textile Value Chain. *Clothing and Textiles Research Journal, 39*(2), 157 - 172. Retrieved from https://doi.org/10.1177%2F0887302X21994207

Zhu, S., & Pickles, J. (2014). Bring In, Go Up, Go West, Go Out: Upgrading, Regionalisation and Delocalisation in China's Apparel Production Networks. *Journal of Contemporary Asia, 44*(1), 36-63.