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The Apparel Global Value Chain

ECONOMIC UPGRADING AND WORKFORCE DEVELOPMENT

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"**Skills for Upgrading: Workforce Development and Global Value Chains in Developing Countries"**

This research project examines workforce development strategies in developing countries in the context of the shifting upgrading dynamics of global value chains. Funded by RTI International and carried out by Duke CGGC, this research addresses policymakers, donors and development practitioners to improve our understanding of how workforce development strategies can enhance the upgrading efforts and competitiveness of developing countries in global industries.

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None of the opinions or comments expressed in this study are endorsed by the companies mentioned or individuals interviewed. Errors of fact or interpretation remain exclusively with the authors.

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Acronyms

AGOA	African Growth and Opportunity Act
ALAFA	Apparel Lesotho Alliance to Fight AIDS
ATC	Agreement on Textiles and Clothing
BGMEA	Bangladesh Garment Manufacturers and Exporters Association
BIFT	Bangladesh Institute of Fashion and Technology
BKEMA	Bangladesh Knitwear Manufacturers and Exporters Association
CAFTA-DR	Dominican Republic-Central America Free Trade Agreement
CMT	Cut, Make, and Trim
CSR	Corporate Social Responsibility
DFID	Department for International Development
DOT	Department of Textiles – Bangladesh
DTCT	Department of Textile & Clothing Technology – Sri Lanka
DUKE CGGC	Duke University, Center on Globalization, Governance and Competitiveness
EPZ	Export-Processing Zones
EU	European Union
FDI	Foreign Direct Investment
FOB	Free on Board
GATT	General Agreement on Tariffs and Trade
GSP	Generalized System of Preferences
GTZ	German Technical Cooperation
IFC	International Finance Corporation
INATEC	Instituto Nacional Tecnológico
ITKIB	Istanbul Association of Textile and Apparel Exporters
ILO	International Labor Organization
ISO	International Organization for Standardization
JAAF	Joint Apparel Associations Forum
M&S	Marks and Spencer
MFA	Multi Fibre Arrangement
NGO	Nongovernmental Organization
OBM	Original Brand Manufacturing
ODM	Original Design Manufacturing
OEM	Original Equipment Manufacturing
OECD	Organization for Economic Cooperation and Development
PPP	Public-Private Partnership
R&D	Research and Development
PROGRESS	Promotion of Social, Environmental, & Production Standards – Bangladesh
TPL	Tariff Preference Levels
TVET	Technical and Vocational Education and Training
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNDP	United Nations Development Program
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
WTO	World Trade Organization

Executive Summary

This report uses the global value chain perspective to examine workforce development initiatives in a number of developing countries that are participants in the global apparel industry. Apparel production is considered an important catalyst for national development, and often it is the typical starter industry for countries engaged in export-oriented industrialization due to its low fixed costs and emphasis on labor-intensive manufacturing. The expansion of this sector has played a critical role in the economic development of many low-income countries, which today account for three-quarters of the world clothing exports. Formal employment in the sector totals over 25 million in low- to mid-income economies (ILO, 2005).

While global expansion of the apparel industry historically has been driven by trade policy, by 2005, the Agreement on Textiles and Clothing (ATC) by the World Trade Organization had phased out many of the quotas that had previously regulated the industry. This caused a tremendous flux in the global geography of apparel production and trade, and a restructuring of firm strategies seeking to realign their production and sourcing networks to accommodate new economic and political realities (Gereffi & Frederick, 2010). This change has brought other key factors for country competitiveness to the forefront, including labor costs, productivity, and competencies. Low-cost countries—such as China, India, and Bangladesh—are emerging as leaders in the lower-value assembly segments of the value chain, while smaller countries are being forced to upgrade into higher-value segments, such as branding and design that rely on high-quality human capital to maintain their competitiveness. As a result, workforce skills will become increasingly important elements for developing economies to maintain and upgrade their positions in the global apparel value chain.

This report examines the role that different workforce development initiatives have played in the evolution of the apparel industry in five developing countries: (1) Bangladesh, (2) Lesotho, (3) Nicaragua, (4) Sri Lanka, and (5) Turkey. These nations represent different stages of industry development. Lesotho and Nicaragua are in the lowest stage of the value chain, offering only assembly operations. Bangladesh is one step more advanced because it adds purchasing and distribution capabilities. Sri Lanka has been able to add design capabilities, while Turkey is also selling their own brand products.

Our analysis reveals the following findings with respect to workforce development and upgrading in this sector:

Economic Upgrading

The main stages of upgrading in the apparel value chain are

1. Assembly/Cut, Make, and Trim (CMT): Apparel manufacturers cut and sew woven or knitted fabric or knit apparel directly from yarn.

2. Original Equipment Manufacturing (OEM)/Full Package/Free on Board (FOB): The apparel manufacturer is responsible for all production activities, including the CMT activities, as well as finishing. The firm must have upstream logistics capabilities, including procuring (sourcing and financing) the necessary raw materials, piece goods, and trim needed for production.

3. Original Design Manufacturing (ODM)/Full Package with Design: This is a business model that focuses on adding design capabilities to the production of garments.

4. Original Brand Manufacturing (OBM): This is a business model that focuses on branding and the sale of own-brand products.

- Developing countries enter into the lowest segments of the value chain due to various advantages, including favorable trade agreements, low-cost labor, and proximity to end markets. Four of the five countries studied entered the industry principally because of favorable trade agreements. Bangladesh and Sri Lanka benefited significantly from preferential trade agreements with Europe and the United States, which facilitated their early entry and growth, while, more recently, Lesotho and Nicaragua benefited from the African Growth and Opportunity Act (AGOA), as well as the Dominican Republic-Central America Free Trade Agreement (CAFTA-DR) and Trade Preference Level (TPL) agreement, respectively.

- To upgrade into higher segments of the value chain, other factors become more relevant. These include the presence of a domestic or regional textile industry; the presence of large textile and apparel manufacturers in the country; and, in the cases of upgrading into design and branding, a strong commitment to industry growth by both the public and private sectors to develop the necessary talent and establish a national brand.

Workforce Development

- The majority of workers are concentrated in the production-related segments of the value chain (CMT or OEM), and, historically, they have mainly been young, female workers with limited education. Only 3%–4% of total factory workers are not involved in assembly line positions, such as production planners, engineers, mechanical technicians, and operations support (Nathan Associates Inc., 2006). However, while the required formal skill level is relatively low in the CMT segment of the value

chain, this rises rapidly as countries upgrade into higher value stages, and workers with more advanced skills are needed to support new functions, such as logistics, finance, design, and marketing.

- Despite its potential for increasing productivity and upgrading, workforce development initiatives alone play a secondary role in improving competitiveness. The case studies discussed later in this report provide several key lessons for workforce development in the sector, such as follows:

    - First, in the early stages of the value chain, all of the countries studied maintain a heavy emphasis in on-the-job training carried out by supervisors to address the skills gaps in the apparel labor force, rather than the use of formal training. This preferred method of training is less costly, but it also stems from the limited number of vocational and training institutions (public or private) dedicated to the apparel industry and the mismatch between skills provided by these institutions and private sector needs.
    - Second, there is frequently a shortage of skilled labor, in general, and qualified supervisors and management, in particular, to support industry upgrading in developing countries. Expatriates generally meet this skills gap or, where possible, when existing skills are not present in the local labor market, certain upstream or downstream activities are performed abroad in firm headquarters.
    - Third, new initiatives are emerging from more mature suppliers to professionalize the apparel labor force, including managerial training to deal with growing pressures for lean manufacturing and compliance with corporate codes of conduct and the creation of national certifications for product and process upgrading in Turkey and Sri Lanka. Initiatives such as these are important precursors to establishing comprehensive workforce standards for upgrading.

Institutions

- In those segments of the value chain focused on manufacturing, the private sector has played the leading role in workforce development, and most firms offer internal training of entry-level employees. There have been a number of efforts by both the public sector and donor agencies to engage technical and vocational training schools in the industry, often with only limited degrees of success.
- In the two countries (Turkey and Sri Lanka) where the industry has upgraded to higher stages of the apparel value chain, we observe superior degrees of stakeholder coordination, along with some public-private partnerships (PPPs) to support workforce development. These alliances include private

firms, industry associations, educational institutions, and the private sector to improve the quality of those skills.

- Successful workforce development for ODM and OBM stages in the value chain has leveraged know-how in the developed world by engaging foreign universities in successful apparel countries to help design curriculum for local programs and hiring foreign consultants to help develop in-house talent. Fostering collaboration with successful training institutions in the developed world can speed firm-level learning for upgrading, rather than relying solely on learning through experience.
- The International Labor Organization (ILO) has partnered with International Finance Corporation (IFC), a branch of the World Bank, to establish the Better Work program to raise labor standards in global supply chains. While currently, the Better Work program has been implemented in Cambodia, Haiti, Jordan, Lesotho, Vietnam, and most recently Nicaragua, to date the ILO-IFC partnership has focused primarily on encouraging social dialogue and improving working conditions. Thus far, however, it has been unable to link participation by developing countries in the Better Work program to more favorable contracts or other long-term benefits with global buyers in the apparel value chain.

New Global-Local Interactions

- The rationalization of global supply chains in apparel, which has been accelerated by the phase out of the Multi Fibre Arrangement (MFA) quota system after 2005, is leading to concentrations in the market share of the leading apparel exporting countries and an emphasis on fewer, larger, more capable and strategically located suppliers (Gereffi & Frederick, 2010). In 2008, for example, the top two apparel exporters, China and the European Union (EU), accounted for 64.3% of global apparel exports, and the top five developing countries (China, Bangladesh, India, Turkey, and Vietnam) had 45.5% of the apparel total. In 2000, China and the EU-27 represented 46.6% and the top five developing economies (China, Hong Kong, India, Mexico, and India) 33.9% of apparel exports. This consolidation increases the importance of linking workforce development initiatives to economic upgrading in the apparel value chain, since those countries that cannot meet the demanding requirements of OEM, ODM, and OBM production risk being marginalized in the chain.
- The rapidly increasing labor costs in China, the dominant producer and exporter in the global apparel value chain, as well as a slump in demand by the advanced industrial economies, is leading to a regionalization in apparel value chains, with large emerging economies like China, India, and South Africa becoming significant new markets for nearby developing country producers (Frederick & Gereffi, 2011; Morris et al., 2011). This provides new opportunities for low-income economies like Lesotho and Bangladesh to compete against dominant exporters like China and India, but they can

only do so if they can meet the more stringent upgrading and workforce requirements of post-MFA supply chains.

- Lead firms have taken a more active role in facilitating training in two key areas: (1) quality control and (2) improving working conditions. For example, in Turkey global brands—such as Liz Claiborne, Hugo Boss, and Marks and Spencer (M&S)—train, certify, and audit Turkish suppliers on quality control, information systems, and working conditions (Tokatli, 2007).
- The impact of lead firms pushing country upgrading through demand for additional services is affected by the length and capabilities inherent in the supply chain. Our research suggests that global lead firms influence functional upgrading in countries where large integrated suppliers are based and where the domestic pressures for economic upgrading are strong, but they do not promote upgrading in countries where the factories engage only in assembly (CMT) activities.

I. Introduction

This report uses the global value chain perspective to examine the role of workforce development initiatives in a number of developing countries participating in the global apparel industry. One of the first industries to adopt a global dimension and to incorporate developing countries, global apparel has expanded rapidly since the 1970s, drawing most developed and developing countries into the value chain. Today, it is a trillion dollar global industry and provides employment to tens of millions of workers in some of the least-developed countries in the world (Datamonitor, 2009). Indeed, apparel production is considered a springboard for economic development, and often is the typical starter industry for countries engaged in export-oriented industrialization due to its low fixed costs and emphasis on labor-intensive manufacturing (Gereffi & Memedovic, 2003). Low-income countries now account for three-quarters of the world clothing exports (ILO, 2005).

While global expansion of the apparel industry historically has been driven by trade policy, by 2005, the Agreement on Textiles and Clothing (ATC) by the World Trade Organization, had phased out many of the quotas that previously regulated the industry. This caused a tremendous flux in the global geography of apparel production and trade and a restructuring of firm strategies seeking to realign their production and sourcing networks to accommodate new economic and political realities (Gereffi & Frederick, 2010). This change brought other key factors in country competitiveness to the forefront, including labor costs, productivity, and managerial and institutional competencies. Low-cost countries such as Bangladesh, China, and India are emerging as leaders in the lower value assembly segments of the value chain, while other countries, such as Sri Lanka and Turkey, are upgrading into higher-value segments, such as branding and design, which rely on higher-quality human capital to maintain their competitiveness. As a result, workforce skills will become increasingly important elements for developing countries to maintain and upgrade their positions in the global apparel value chain.

There is a significant gap in the literature regarding the role workforce development has played in the global apparel industry and the potential it has for future development. Nonetheless, a number of strategic investments in workforce development by the public and private sectors that have facilitated upgrading can be identified. This report uses case studies of selected developing countries to illustrate how national and subnational workforce development institutions and actors can respond to globalization, work effectively with global lead firms to understand new skills requirements that globalization places on their workforces, and establish a workable division of responsibilities in effective PPPs.

This report is structured as follows. First, we outline the global evolution of the industry and then introduce the global apparel value chain. Second, we identify the entry points and upgrading trajectories for developing countries in this industry. These early sections show how the global industry operates and provide a context to evaluate how workforce development components may contribute to the industry's

success. Third, we present case studies of five developing countries—(1) Bangladesh, (2) Lesotho, (3) Nicaragua, (4) Sri Lanka, and (5) Turkey—that participate in the industry and then analyze the workforce development strategies they have pursued. Finally, we summarize our main conclusions in terms of economic upgrading, workforce development, the role of institutions, and the impact of global-local interactions.

II. Global Organization of the Industry

The apparel industry is 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. In most cases, these lead firms outsource manufacturing to a global network of contract manufacturers in developing countries that offer the most competitive rates. Lead firms include retailers and brand owners and are typically headquartered in the leading markets—Europe, Japan, and the United States. These firms tend to perform the most valuable activities in the apparel value chain—design, branding, and marketing of products— and in most cases, they outsource the manufacturing process to a global network of suppliers.

Like all global industries, the apparel value chain relies on international standards to coordinate the activities of suppliers. By the turn of the century, most lead firms had implemented private standards and codes of conduct based on cost, quality, timeliness, and corporate responsibility in terms of labor and environmental standards (Bartley, 2005; Gereffi et al., 2001). Factory performance is measured regularly, and delivery, quality, and price are tracked over time. It is common for firms to be certified by multiple buyer brands, such as Walmart, Ralph Lauren, Target, and The Gap. ***Table 1*** provides examples of these lead firms.

Table 1. Lead Firm and Brand Types with Regional Examples

Lead Firm Type	Type of Brand	Description	Examples	
			United States	EU-27
Retailers: Mass Merchants	**Private Label**: The retailer owns or licenses the final product brand, but in almost all cases, the retailer does not own manufacturing.	Department/discount stores that carry private label, exclusive, or licensed brands that are only available in the retailers' stores in addition to other brands.	Walmart, Target, Sears, Macy's, JC Penney, Kohl's, and Dillard's	Asda (Walmart), Tesco, C&A, and M&S
Retailers: Specialty Apparel		Retailer develops proprietary label brands that commonly include the stores' name.	The Gap, The Limited Brands, American Eagle, and Abercrombie & Fitch,	H&M, Benetton, Mango, New Look, and NEXT
Brand Marketer	**National Brand:** The manufacturer is also the brand owner and goods are distributed through multiple retail outlets.	Firm owns the brand name but not manufacturing, "manufacturers without factories." Products are sold at a variety of retail outlets.	Nike, Levi Strauss, Polo, and Liz Claiborne	Ben Sherman, Hugo Boss, Diesel, and Gucci
Brand Manufacturer		Firm owns brand name and manufacturing; typically coordinate supply of intermediate inputs (CMT) to their production networks often in countries with reciprocal trade agreements	VF, Hanesbrands, Fruit of the Loom, and Gildan	Inditex (Zara)

Source: Gereffi & Frederick, 2010.

Since these lead firms in the apparel industry adopted global sourcing models in the 1970s, manufacturing has become the domain of developing countries. However, the geographic pattern of this shift has been significantly influenced by a complex array of quotas and preferential trade agreements. The quota system began with the Long-Term Arrangement Regarding International Trade in Cotton Textiles and Substitutes under the auspices of the General Agreement on Tariffs and Trade (GATT) in 1962 and was extended to include other materials under the Multi Fibre Arrangement (MFA) implemented in 1974 (ILO, 2005). The MFA was put in place to protect developed economies from cheap imports from the developing world, and it governed world trade in textiles and apparel for the next 30 years. Several developing countries—and least developed countries, in particular, benefitted from this trade framework, which provided them with quotas for duty-free imports into leading markets and protected the growth of their nascent apparel industries from low-cost competitors such as China. This agreement was phased out between 1995 and 2005, as textile trade was brought under the purview of the World Trade Organization's Agreement on Textiles and Clothing (ATC).

Several additional unilateral trade agreements and preference schemes with specific apparel and textile clauses came into effect during this phase-out period to ease its impact on least developed countries. These trade agreements have been fundamental to allow small countries such as Nicaragua and Lesotho to continue to compete in the global apparel industry. These agreements include the CAFTA-DR Tariff Preference Levels (TPL) agreement between the United States and Nicaragua;[1] the African Growth

[1] This TPL agreement was established in 2004 and will phase out in 2014.

and Opportunity Act (AGOA) in which the United States provides temporary relief to sub-Saharan African producers;[2] and the EU's Generalized System of Preferences (GSP) scheme "Everything but Arms," which provides for duty free imports from certain least developed countries to the EU,[3] amongst others. These agreements are set to phase out at different intervals before 2015 unless renewed. Their temporary nature provides short-term advantages for the beneficiaries but also highlights the uncertainty of the future of the apparel industry in these countries, which lack other competitive advantages.

This plethora of apparel trade agreements has created disparate growth patterns across developing countries. Bangladesh, Cambodia, China, India, and Vietnam, have experienced steady growth, as have Egypt, Nicaragua, and Pakistan. China, in particular, benefitted from the end of quotas and increased its global market share from 26% in 2005 to 33% in 2008 (WTO, 2010); it now accounts for 76% of total global employment in the sector (see ***Appendix A*** for a table on the global distribution of employment among the major developing country exporters.)

Other countries have increased exports to one or more of the three major markets—(1) EU, (2) Japan, and (3) the United States, while experiencing declines in others. For example, Indonesia increased its market share in the United States and Japan, but saw a decrease in the EU-15; conversely, Sri Lanka has increased market share in the EU-15 and lost in the United States. Lesotho has seen a small increase in market share in the EU-15 (since 2005) and a decreasing market share in the United States (since 2004).[4] Several countries including Canada, EU-12, Hong Kong, Malaysia, Mexico, Morocco, South Korea, Taiwan, Thailand, and Tunisia have seen a continued drop off in their market share since the early 1990s.

Table 2 provides an overview of the changing market positions of leading apparel export countries between 1995 and 2008.

[2] This agreement was set to expire in 2007, but it was extended to 2012 by the U.S. Congress.
[3] This agreement follows a 10-year cycle following of which the terms must be reviewed. The current cycle will end in 2015.
[4] Lesotho represents less than 1% of the world apparel import value in United States and less 0.00% to EU-15.

Table 2. Top Apparel Export Countries by Year, 1995-2008. (Values in $US Billions)

Country/ Region	1995		2000		2005		2007		2008	
	Value	%	Value	%	Value	%	Value	%	Value	%
China	24.0	15.2	36.1	18.2	74.2	26.8	115.2	33.3	120.0	33.2
EU-27 (c)	48.5	30.6	56.2	28.4	85.5	30.8	105.1	30.4	112.4	31.1
Turkey	6.1	3.9	6.5	3.3	11.8	4.3	13.9	4.0	13.6	3.8
Bangladesh (b)	--		5.1	2.6	6.9	2.5	8.9	2.6	10.9	3.0
India	4.1	2.6	6.0	3.0	8.6	3.1	9.8	2.8	10.9	3.0
Vietnam (b)	--		--		4.7	1.7	7.4	2.1	9.0	2.5
Indonesia	3.4	2.1	4.7	2.4	5.0	1.8	5.9	1.7	6.3	1.7
Mexico (a)	2.7	1.7	8.6	4.4	7.3	2.6	5.1	1.5	4.9	1.4
United States	6.7	4.2	8.6	4.4	5.0	1.8	4.3	1.2	4.4	1.2
Thailand	5.0	3.2	3.8	1.9	4.1	1.5	4.1	1.2	4.2	1.2
Pakistan	--		--		3.6	1.3	3.8	1.1	3.9	1.1
Tunisia	2.3	1.5	--		3.1	1.1	3.6	1.0	3.8	1.0
Cambodia (b)	--		--		--		3.5	1.0	3.6	1.0
Malaysia	2.3	1.4	--		--		--	--	3.6	1.0
Sri Lanka (b)	--		2.8	1.4	2.9	1.0	--	--	3.5	1.0
Hong Kong (d)	9.5	6.0	9.9	5.0	7.2	2.6	5.0	1.4	--	--
Morocco	--		--		2.8	1.0	3.5	1.0	--	--
Korea, Republic of	5.0	3.1	5.0	2.5	--		--	--	--	--
Taipei, Chinese	3.2	2.0	3.0	1.5	--		--	--	--	--
Dominican Republic	--		2.6	1.3	--		--	--	--	--
Philippines	2.4	1.5	2.5	1.3	--		--	--	--	--
Poland	2.3	1.5	--		--		--	--	--	--
World	**158.4**		**197.7**		**277.1**		**345.8**		**361.9**	
	Top 15 Total and % Share of World Exports									
	127.5	**80.5**	**161.5**	**81.7**	**232.6**	**83.9**	**299.1**	**86.5**	**315.0**	**87.0**

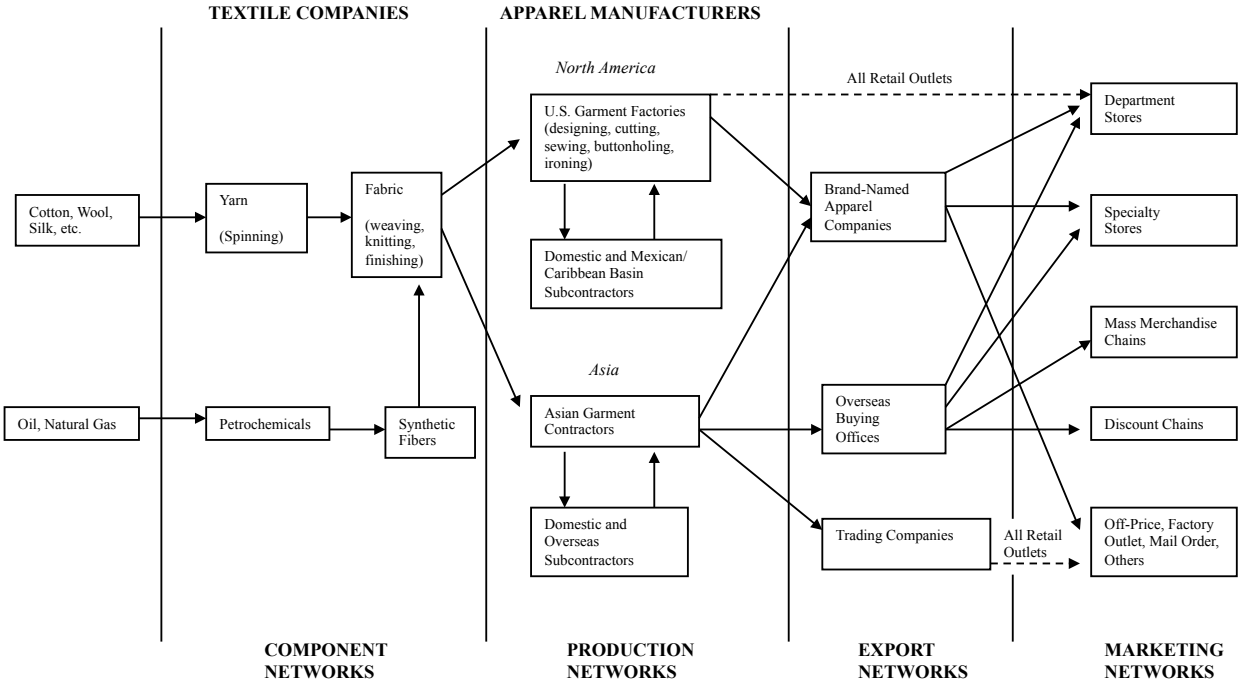
Notes: Apparel exports represented by SITC 84.
(a) Includes significant shipments through processing zones. (b) Some years include estimates. (c) EU values include intra-EU trade; values only represent EU-15 in 1995. (d) Domestic exports only. (--) Indicates country not in the top 15 in given year

Source: WTO, 2010.

III. The Apparel Global Value Chain

The apparel value chain is organized around five main segments: (1) raw material supply, including: natural and synthetic fibers; (2) provision of components, such as the yarns and fabrics manufactured by textile companies; (3) production networks made up of garment factories, including their domestic and overseas subcontractors; (4) export channels established by trade intermediaries; and (5) marketing networks at the retail level (see ***Figure 1***). Over time, there have been continual shifts in the location of both the most significant apparel exporting countries and regions, as well as their main end markets (Gereffi & Frederick, 2010; Gereffi & Memedovic, 2003, p. 5).

Figure 1. The Apparel Global Value Chain



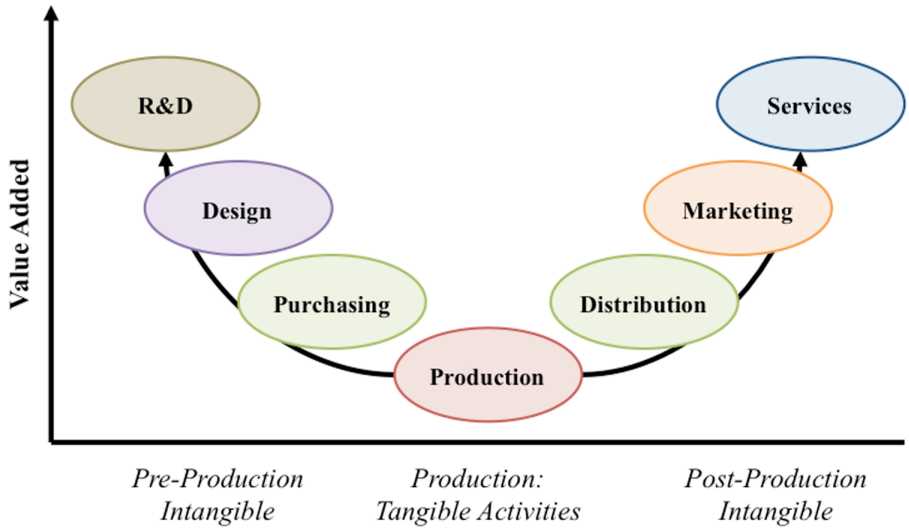
Source: Gereffi & Memedovic, 2003.

Apparel has been the classic "buyer-driven" global value chain. Unlike producer-driven chains, where profits come from scale, volume and technological advances, in the buyer-driven global apparel value chain, profits come from combinations of high-value research, design, sales, marketing, and financial services that allow the retailers, designers and marketers to act as strategic brokers in linking overseas factories and traders with product niches in their main consumer markets (Gereffi &

Memedovic, 2003). The companies that develop and sell brand-name products have considerable control over how, when, and where manufacturing will take place, and how much profit accrues at each stage, essentially controlling how basic value-adding activities are distributed along the value chain.

To understand how this division of work occurs and how initiatives to develop the workforce may affect the role developing countries play in the global value chain, six distinct value-adding activities can be identified: (1) research and new product development (R&D), (2) design, (3) production, (4) logistics (purchasing and distribution), (5) marketing and branding, and (6) services (see ***Figure 2***). What is striking about this schema is that the most important value-adding stages are intangible services that occur before and after the apparel production process, which requires us to expand considerably our ideas about where the greatest gains from workforce development are likely to occur.

Figure 2. Curve of Value-Added Stages in the Apparel Global Value Chain



Source: Frederick, 2010.

- **R&D:** This value-adding function includes companies that engage in R&D, as well as activities related to improving the physical product or process and market and consumer research.
- **Design:** This stage includes people and companies that offer aesthetic design services for products and components throughout the value chain. Design and style activities are used to attract attention, improve product performance, cut production costs, and give the product a strong competitive advantage in the target market.

- **Purchasing/Sourcing (Inbound):** This stage refers to the inbound processes involved in purchasing and transporting textile products. It includes physically transporting products, as well as managing or providing technology and equipment for supply chain coordination. Logistics can involve domestic or overseas coordination.
- **Production/Assembly/Cut, Make, Trim (CMT):** Apparel manufacturers cut and sew woven or knitted fabric or knit apparel directly from yarn. The cut-and-sew classification includes a diverse range of establishments making full lines of ready-to-wear and custom apparel. Apparel manufacturers can be contractors, performing cutting or sewing operations on materials owned by others, or jobbers and tailors who manufacture custom garments for individual clients. Firms can purchase textiles from another establishment or make the textile components in-house.
- **Distribution (Outbound):** After apparel is manufactured, it is distributed and sold via a network of wholesalers, agents, logistics firms, and other companies responsible for value-adding activities outside of production.
- **Marketing and Sales:** This function includes all activities and companies associated with pricing, selling, and distributing a product, including activities such as branding or advertising. These companies frequently do not make any physical alternations to the product. Apparel is marketed and sold to consumers (via retail channels), institutions, or to the government.
- **Services:** This includes any type of activity a firm or industry provides to its suppliers, buyers, or employees, typically as a way to distinguish itself from competitors in the market (e.g., offering consulting about international apparel businesses or fashion trends).

IV. Economic Upgrading in the Apparel Global Value Chain

Opportunities for upgrading are shaped by the buyer-driven governance structure of the apparel industry. Humphrey and Schmitz (2002) identify four types of industrial upgrading: (1) *functional* (moving to higher-value functions); (2) *product* (producing higher-value products); (3) *process* (incorporation of more sophisticated technologies into production); and (4) *intersectoral* (leveraging expertise gained in one industrial sector to enter a new sector.) The four main stages of functional upgrading in the apparel value chain are described below:

1. Entry into the chain via Assembly/CMT: This is the most basic stage of the apparel industry, in which garment sewing plants are provided with imported inputs for assembly. The apparel manufacturer is responsible for cutting, sewing, supplying trim, and/or shipping the ready-made garment. The buyer purchases the fabric and supplies it to the manufacturer, along with detailed

manufacturing specifications. The contract manufacturer has a variety of customers and does business on an order-by-order basis. Work is frequently carried out in Export-Processing Zones (EPZs), special economic zones, or in geographic locations that offer tariff reductions for export production to the buyer's country.

2. OEM/Full Package/FOB: The apparel manufacturer takes responsibility for all production activities, including the CMT activities, as well as finishing and distribution. The firm must have upstream logistics capabilities, including procuring and financing the necessary raw materials, piece goods, and trim needed for production. In some cases, the buyer specifies a set of textile firms from which the garment manufacturer must purchase materials, and in other cases, the firm is responsible for establishing its own network of suppliers. The firm is also often responsible for downstream logistics, including packaging for delivery to the retail outlet and shipping the final product to the buyer at an agreed selling price (also referred to as FOB).[5] The buyer typically provides the FOB contractor with the product specifications and designs, but the buyer is not involved with the details of the manufacturing process, such as pattern making. Full package firms can range from single production operations to global suppliers, which have multiple production centers and work on multiple product ranges.

Full package firms have two sourcing possibilities: (1) imported textiles;[6] and (2) domestic sourcing of textiles from the local industry. This latter option can create important backward linkages to the textile industry and many countries begin textile production by manufacturing textiles to be used in their apparel exports.

3. ODM/Full Package with Design: This is a business model that includes design in addition to manufacturing. A garment supplier that does full package with design carries out all steps involved in the production of a finished garment, including design, fabric purchasing, cutting, sewing, trimming, packaging, and distribution. Typically, the supplier will organize and coordinate the design of the product; approval of samples; selection, purchasing and production of materials; completion of production; and, in some cases, delivery of the finished product to the final customer. Full package with design arrangements is common for private-label retail brands.

[5] Free on Board (FOB) is a common term used in industry to describe this type of contract manufacturer. However it is technically an international trade term of sale in which, for the quoted price, goods are delivered on-board a ship or to another carrier at no cost to the buyer.
[6] The top five exporters of textiles in 2008 were: the EU (US$250,198 millions), China, United States, Korea, and India (US$10,267millions) (WTO, 2010).

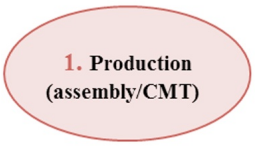
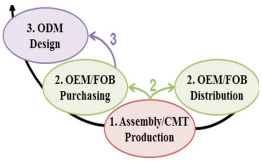
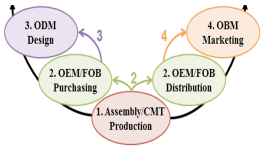
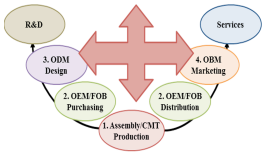
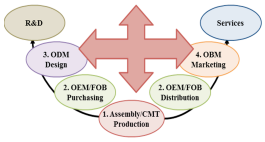
4. OBM: This is a business model that incorporates branding of products, in addition to or in lieu of design and manufacturing; upgrading involves a move into the sale of own brand products. Many firms in developing countries enter OBM with brand development for products sold on their domestic or neighboring country markets.

It should also be noted that product and process upgrading in a country can be very important for driving growth in the industry.

- **Product Upgrading**: The production of more complex products, which requires increasing the capabilities of the firm, that is, firm "learning." As countries gain experience in the industry, they can move from low-cost commodities to higher value-added fashion goods that warrant higher returns as labor rates increase (e.g., basic to complex products).
- **Process Upgrading**: This reduces cost and improves flexibility by improving production methods; it requires capital investment and better worker skills to operate new machinery or/and information and logistics technology.

Table 3 provides detailed illustrations of these upgrading trajectories in the apparel value chain, with examples from the developing countries we are focusing on in this report.

Table 3. Upgrading Trajectories in the Apparel Global Value Chain

	Diagram	Description
Assembly/ CMT (Entry in the value chain)		• Assembly (CMT): The focus of the supplier is on production alone; suppliers assemble inputs, following buyers' specifications. • Inputs—such as textiles, accessories, and packaging—may be imported due to limited availability and quality concerns over local inputs. • Product focus may be relatively narrow.
Full Package/OEM (Functional Upgrading)		• Firm takes on a broader range of tangible, manufacturing-related functions, such as sourcing inputs and inbound logistics, as well as production. • The supplier may also take on outbound distribution activities.
Product Design (ODM) (Functional Upgrading)		• Supplier carries out part of the pre-production processes, such as **design** or product development. • Design may be in collaboration with the buyer, or the buyer may attach its brand to a product designed by the supplier. • In many cases, ODM firms work with designers from the lead firms to develop new products.
Product Brand (OBM) (Functional Upgrading)		• Supplier acquires post-production capabilities and is able to fully develop products under its own **brand** names. Two options: (1) Supplier maintains a relationship with the buyer and develops brand collaboratively. (2) Supplier establishes its own distribution channels by establishing a new market channel that is typically more profitable and allows the firm to expand skills. These are often local or regional markets.
Product Upgrading		• Increase unit value by producing more complex products, which requires increasing the capabilities of the firm. • Countries must move from low-cost commodities to higher value-added fashion goods that warrant higher returns as labor rates increase.
Process Upgrading		• Machinery: Improving *productivity* through new capital investments. • Information and Logistics Technology: Improving the way the firm carries out these activities. Benefits both the firm and the chain because it reduces the total time, cost and increases the flexibility of the supply chain process.

Source: Duke CGGC.

V. Workforce Development in the Apparel Global Value Chain

Apparel production is a labor-intensive activity and more than 25 million workers from developing countries are officially employed in the sector (ILO, 2005).[7] The majority of workers are concentrated in the production-related segments of the value chain, and they are principally young, female workers with limited education.[8] Only 3%–4 % of total factory workers are not involved in assembly line positions, such as production planners, engineers, mechanical technicians and operations support (Nathan Associates Inc., 2006). However, while the required formal skill level is low in the CMT segment of the value chain, this rises rapidly as countries upgrade into higher value stages and workers with more advanced skills are needed to support new functions, such as logistics, finance, design and marketing. ***Table 4*** provides an overview of the most important job profiles in each segment of the value chain.

[7] See Appendix A for a breakdown of employment by country. There is limited recent data available on a country basis, and estimates often do not account for informal labor.

[8] Around 80% of the labor force are woman and predominantly young. Many of these women entered the industry without qualifications, they usually work for long hours, are paid very low wages and have limited job security (Dicken, 2007; ILO, 2005). The share of female employment varies in different regions in the world. It is very high in Asia, with more than 89% in Cambodia, 80% in Bangladesh and 82% in Sri Lanka. In Africa, female employment is also high; for example, in Mauritius the female share is 73%. In other countries, such as India and Turkey, the share is lower.

Table 4. Job Profiles in the Apparel Global Value Chain

Position	Job Description	Formal Education Requirements	Training/ Experience	Skill Level
CMT/Assembly /Production				
Hand Sewers	Sew, join, reinforce, or finish—usually with needle and thread—a variety of manufactured items. Includes weavers and stitchers.	No formal education required	Required experience	
Sewing Machine Operators	Operate sewing machines to join, reinforce, decorate, or perform related sewing operations in the manufacture of garment or nongarment products.	No formal education required; literacy and numeracy skills	Experience: Need of speed and accuracy skills	
Garment Pressers	Clothing pressers use steam irons and vacuum presses to shape garments and remove creases.	No formal education required	Experience: Need of speed and accuracy skills	
Cutting Machine Operators	In automated facilities, cutters electronically send the layout to a computer-controlled cutting machine.	Technical education	Technical training	
Line Leaders	Supervisory roles; ensure work flows expeditiously along the line.	High school diploma/ technical education	Management skills	
Production Flow Supervisors	Supervisory roles; oversee the pace of the work and ensure stoppages are minimized, monitor production levels, train new workers, and manage constant problem solving.	Technical education/ Bachelor's degree	Management skills	
OEM/ Full Package				
Quality Control	Maintain final quality prior to distribution of product, monitored by buyers	High school diploma/ technical education	Knowledsge of quality systems	
Sourcing, Purchasing, and Supply Chain Management	Capabilities related to OEM production: Workers must have financial skills related to purchasing inputs and coordinating production schedules.	Technical education/ Bachelor's degree in finance/management	Industry experience	
ODM				
Fabric and Apparel Patternmakers	Create the blueprint or pattern pieces for a particular apparel design. This often involves grading, or adjusting the pieces for different sized garments	Technical education in apparel	Experience	
Tailors, Dressmakers, Custom Sewers	Design, make, alter, repair, or fit garments.	Technical education in apparel	Experience	
Designers	Workers must have training in the "aesthetics" of product development, some market and consumer knowledge, and technical skills required to translate ideas into samples.	Technical education/ Bachelor's degree in clothing design	Experience	
Senior Designers	Creative talent within the industry that can develop new design lines for production.	Bachelors/Master's degree in clothing design	Experience	
OBM				
General Business Skills	Responsible for financial management supply chain optimization, quality control and/or strategy, and new business development.	Bachelor's/Master's degree in business/engineering	Experience	
Branding and Marketing Capabilities	Responsible for market research, marketing/advertising, networking, and positioning brands in the market.	Bachelor's/Master's degree in business	Marketing specialization and experience	

Source: Duke CGGC.

Skill Level	Low	Low-Medium	Medium	Medium – High	High
	No formal education; experience	Literacy and numeracy skills; experience	Technical education/certification	Technical education /undergraduate degree	University degree and higher

In the first stage of the value chain, assembly or CMT workers mainly need to know how to operate sewing machines and cutting and pressing equipment. The actual skills required to operate these machines can be very extensive, especially since the piece rates paid to workers place a premium on speed and quality (i.e., few errors). However, formal educational requirements are very low. Firms usually only require minimal knowledge of reading, writing, and mathematics, and an aptitude for learning (Kelegama & Epaarachchi, 2001). Full-package suppliers engaged in integrated production activities require more highly trained workers with a knowledge of the textile industry to fill sourcing functions, while financial and logistics specialists are required for upstream and downstream activities. ODM and OBM activities require more advanced skills, sometimes related to marketing and consumer research. To facilitate the shift from assembly to full-package production, it is advantageous for firms to be able to train their workers and staff in-house. This upgrading depends to a significant degree on the firm's experience with global buyers, including international standards for price, quality, style, and delivery.

In today's post-MFA environment, apparel firms in developing countries need to seek out new sources of competitive advantage to support their growth (Pickles, 2010). Long-term viability of the "race to the bottom" sourcing strategy in the current global context is questionable and indeed industry experts note that firms are now looking for alternative sources of competitiveness (Carlotti et al., 2011). Nongovernmental organization (NGO) pressure on global brands has led to increased pressure on suppliers to improve working conditions and health and safety. Global buyers established a number of codes of conduct that producers must meet to retain their supply status (Bartley, 2005; Elliott & Freeman, 2003). These include a host of private standards of individual global buyers, as well as multilateral public standards, such as the ILO's Better Work program, and mixed efforts, such as the Ethical Trade Initiative.

An alternative to this strategy of driving down costs is to increase productivity not merely through automation but with an emphasis on high-performance work arrangements associated with lean manufacturing and modular production. Evidence from studies in the apparel industry in the United States found that improving opportunities for skill acquisition can indeed improve the productivity of the workers, lowering the relative importance of labor costs (Appelbaum et al., 2001; Bailey et al., 2001; Berg & et al., 1996). One study showed very positive results: Firms incorporating high-performance practices—including work arrangements that give workers the opportunity to participate in substantive decisions, the skills to make this participation meaningful, and incentives to encourage skills acquisition and workplace participation—reduced the time taken for cut pieces of material to be assembled into

finished garments by 94% (Appelbaum et al., 2001).[9] These results underscore the importance of investing in training and new production methods for the apparel workforce.

As the industry continues to evolve globally in the post-quota system, diverse models of workforce development across different stages of the value chain are likely to emerge, shaped both by the nature of the participating firms and particular training and institutional frameworks of the host nation. Country cases in the remainder of this report explore the variety of private, public, and multisector workforce development strategies that have been undertaken in five developing countries to support these market-entry or upgrading efforts of firms and countries in the apparel value chain.

VI. Developing Country Case Studies

In this section, we analyze the apparel industry of five developing countries, representing both low and middle income economies. As shown in ***Table 5***, Turkey is the most developed country analyzed and the most advanced in the apparel value chain; it exported US$13.6 billion of apparel items in 2008. Sri Lanka has upgraded its operations to full package plus design, and Bangladesh has been able to upgrade from assembly to the full-package/OEM stage of the apparel value chain. In 2008, Bangladesh exported US$10.9 billion in apparel, while Sri Lanka exported US$3.5 billion in the same year. In the cases of Lesotho and Nicaragua, both countries are still in the assembly segment of the chain. Bangladesh and Lesotho rely heavily on the apparel industry, which represents around 70% of their total national exports. For the majority of these countries, apparel is a main source of employment. The figures presented in ***Table 5*** shows only formal employment; however, it is known that this sector also employs a large number of informal workers.

[9] Improving the skills of the workforce appears to have been closely related to the production model employed in U.S. apparel factories. In an attempt to improve competitiveness of the industry in the United States in the 1990s, many factories adopted the modular production process, which relied on employees being trained in multiple tasks, as well as fostering soft skills in communication and teamwork (Berg & et al., 1996).

Table 5. Selected Economic and Industry Country Indicators, 2008

	Turkey	Sri Lanka	Bangladesh	Lesotho	Nicaragua
Gross Domestic Product (GDP) (current US$) (bn)	$730	$41	$80	$2	$6
GDP per capita (at PPP; $US)	$14,068	$4,571	$1337	$1,566	$2,682
Apparel Exports (bn)	$13.6	$3.5	$10.9		$1.0
Apparel exports % of total exports (2008)	10.3%	40.9%	71.1%	69.2%	36.8%
Apparel exports % of total exports (2000)	23.5%	51.8%	79.3%	73.1%	
Apparel exports % of total exports (1990)	25.7%	32.2%	38.5%	NA	
Total Labor Force (m)	26	8	77	1	2
Formal Labor force in apparel	500,000	270,000	2,800,000	45,310	51,300[a]
Female workers share of total apparel employment	67%	Over 80%	80%	85%	63%[a]
Apparel Factories	35,000 - 44,000	200	4,743	42	75[a]
Main Apparel Export Destinations	EU	EU & US	EU & US	US	US: 89%
Entry Year	1980s	1980s	1980s	1990s	Mid-1990s
Value Chain Entry Point	OEM	CMT	CMT	CMT	CMT
Highest Value Activity	OBM	ODM	OEM	CMT	CMT
Domestic Textile Production	Yes	Limited	Knitted Only	No	No

Notes: [a]: 2010; [b]2009.

Sources: Bennet, 2008, BGMEA, 2008, Evgeniev & Gereffi, 2008, Export Promotion Center of Turkey, 2010, ILO, 2010, MIGA, 2007*WDI,* Morris et al., 2010, UNAL 2010, WDI, 2010, WTO, 2010.

The case studies are structured as follows: First, each case presents an overview of the current state of the industry, highlighting the principal features of the workforce and related development initiatives in the country. This is followed by an examination of key stages of industry development and the identification of the most important workforce development strategies implemented to foster upgrading during each stage. Particular attention is paid to identifying the composition of the firms in the industry and the institutions involved in workforce development to identify best practices.

A. Turkey[10]

Turkey is the fifth largest global apparel supplier and the second largest supplier to the EU, which accounts for 80% of the country's exports (Istanbul Chamber of Commerce, 2008). Unlike most emerging economies that entered the industry by providing CMT assembly operations, Turkey leapfrogged by entering the industry in the 1980s as a full-package supplier to global brands facilitated by a strong domestic textile industry.[11] The sector has continued to upgrade, moving from full-package operations to design (ODM) and more recently developing its own brands (OBM). In 2008, Turkish textile and apparel manufacturers exported to over 170 countries, reaching a record high of US$23 billion, 17.5% of Turkey's total exports and 11% of total employment in 2010 (Demirsar, 2010; Turkey's Undersecretariat for Foreign Trade, 2010). The main export items are t-shirts, sweatshirts, underwear, sleeping wear, socks, men's shirts, and pants (Tan, 2001).

Industrial Organization

The sector is dominated by full-package providers (60%), who are linked to global buyers and who subcontract assembly operations to local firms and lower cost locations such as Egypt and Morocco (Demirsar, 2010; McKinsey, 2003). There are growing numbers of pioneer ODM and OBM firms that upgraded from full-package suppliers after acquiring skills from working with branded manufacturers including Hugo Boss (Evgeniev & Gereffi, 2008). The majority of the apparel companies are domestically owned with a low percentage of foreign firms. Foreign direct investment (FDI) in the sector is small (Seidman, 2004). All lead buyers that operate on the global market are present in Turkey (Evgeniev & Gereffi, 2008).

Workforce Development

Turkey has the fifth largest labor force and the youngest population in Europe.[12] The labor force has a global reputation for being hardworking, productive, and dependable (Evgeniev & Gereffi, 2008; Koçak, 2006; McKinsey, 2003; Smid & Taskesen, 2002). There are approximately 3 million workers engaged in textile and apparel production, and 2 million of them are women (Smid & Taskesen, 2002; ÜNAL, 2010). Informal labor is estimated to account for 50%–70% of this workforce.

Numerous workforce initiatives have been launched to upgrade the skill levels of the workers, including improving vocational and technical training and skills certification (Giris, 2010). The Turkish

[10] The Turkey country case was developed by Ghada Ahmed.
[11] Turkey ranked seventh in the world production of cotton with about 675,000 tons in 2007/2008 and is projected to grow by 30% in 2010 (Demirsar, 2010).
[12] Turkey's labor force is approximately 24.7 million (22.2 million employed and 2.5 million unemployed), with large numbers of unskilled and semi-skilled labor (Dimireva, 2009).

government declared 2007 to be the year of vocational training, and technical and vocational education and training (TVET) has become a national priority. Initiatives by the private sector have focused on improving working conditions, providing training in occupational safety and health, and ensuring quality assurance to meet international standards and maintain supplier certifications. Some global brands, such as Liz Claiborne; Hugo Boss; and Marks and Spencer (M&S), train, certify and audit Turkish suppliers on quality control, information systems, and working conditions (Tokatli, 2007). Higher value added training, such as design, is conducted at local and European institutions and by using consultants.

Stage 1. OEM/ Full Package: 1980s –2000s.

Turkey has carried out full-package operations since its entry into the global apparel industry. The apparel firms are vertically integrated and source almost 70% of raw materials locally. Turkey began exporting apparel in the 1980s, and it became the fifth-largest exporter in the world, after China, Hong Kong, Italy, and Germany. Turkey offered an attractive combination of free trade zones, skilled low-cost workers, and proximity to Europe that enticed European companies to set up operations and establish full-package networks within its borders in the 1980s (Seidman, 2004) (Neidik & Gereffi, 2006). By the 1990s, Turkey had established deep networks with European buyers, especially German firms—including Karstadt, Hertie, and Kaufhof; mail-order companies, such as Otto, Neckermann, Baur, and Bader; and other specialty chains, including H&M, C&A, Peek und Cloppenburg, and Mexx. In the early 2000s, some retailers and branded manufacturers, such as Levi-Strauss and The Gap, also established regional purchasing offices and branches in Turkey (Neidik & Gereffi, 2006).

The apparel sector developed a variety of products and processes, flexible and fast production, swift decision making, and other advantages that gave them a strategic edge within the fast-changing European retail market (Koçak, 2006). Full-package manufacturers started incorporating international standards in the 1990s. By 2000, just under half of the 74 listed Fortune 500 textile and apparel companies in Turkey had acquired International Organization for Standardization (ISO) certifications. Turkey also complies with international environmental standards regulated by the EU, does not use harmful dyes, and meets social audit requirements (Tan, 2001). In January 2004, Turquality (Turk and Quality) was introduced through the joint efforts of the Under Secretariat of Foreign Trade, the Turkish Exporter's Association, and the Istanbul Association of Textile and Apparel Exporters (ITKIB). The Turquality brand is a mix of marketing, quality upgrading, and strategic positioning implemented in the Turkish and global markets. Fifteen apparel firms have qualified for the Turquality certificate (Koçak, 2006).

Workforce Development. Apparel workers acquired the technical skills for full-package supply through training, skill transfer, and a developed knowledge of textile production. Workers completed at least eight years of mandatory basic education, followed by training in technical high schools focused on industry-specific tasks—such as pattern and fabric operations, sewing, ironing, packing, labeling, subcontracting, and production scheduling—at local vocational schools following high school. Apprenticeships also played a key role, with many employees being hired at 15 years old.[13]

Technology and information transfer was facilitated by returning émigrés who had worked in the industry abroad. Two examples are noteworthy. In 1992, the Dutch government closed companies operating in the Turkish apparel enclave in Amsterdam, and over half of these companies relocated to Turkey moving into the country´s Free Trade Zones (Seidman, 2004). Second, Turkish entrepreneurs working in Germany acquired skills abroad and then established German-Turkish firms in both countries facilitate upgrading (Seidman, 2004).

Due to the presence of the textile industry, there were workers with education, training and knowledge in textiles necessary for full-package manufacturing firms to emerge. Several universities such as Ege University offer Bachelor degrees programs associated with the textile industry. The Department of Textile Engineering at Ege has an integrated training mill, with seven different programs using industrial-size production machines (Ege University, 2010). The machines are used for training students as well as R&D. The department also has a separate Textile Research and Application Centre, which is mainly involved in industrial research projects, consulting, courses, and training activities. Ege University's Department of Textile Engineering is one of the founders of the Turkish Scientific and Technical Research Council-Textile Research Centre (TÜBİTAK-TAM), which provides applied research and training in textile and apparel.

These factors allowed firms to rapidly meet the buyers' required volumes on time and to fulfill their quality standards (Tokatli & Kizilgiin, 2004). Work process became standardized and workers began to specialize in specific skills such as overlocking. The majority of the workers that supply global brands must participate in training in order to meet certification requirements. The Joint Initiative on Corporate Accountability and Workers Rights was launched in 2003 between global buyers and local public institutions to monitor the adoption of these requirements and develop training programs. In 2009, the Professional Qualifications Authority (Mesleki Yeterliki Kurumu Resmi) was established to work with

[13] The Apprenticeship and Occupational Training Law requires companies to provide apprentices with 8 to 10 hours of education and training per week, to limit their working hours to 35 hours per week, and to offer them a minimum of 20 days of paid leave per year. The government covers the employers' social security costs for the apprentice. Regulation of this provision appears to be weak; some manufacturers have large portions of their workforce under "apprenticeship" status, even though the law limits their hiring to 10% of the workforce, and fails to provide the required hours of training (Erma, 2010).

the private sector, NGOs, and other government institutions to establish professional standards, job profiles, qualifications, testing centers, and certifications.

Stage 2. ODM Design: 2000s to Present

Turkish firms moved into the design segment of the value chain as part of a broader strategy to establish the country as a fashion center, leveraging the country's OEM production model with short lead times (under four weeks). Industry associations and government organizations began working in collaboration to promote Istanbul as one of the world's top five fashion centers by 2023. In 2010, various industry groups collaborated to organize the third "Istanbul Fashion Week" to strengthen Turkey's competitiveness in fashion and design. Deep relationships with retailers such as M&S seeking additional services from their local suppliers also facilitated upgrading into design services. By 2007, firms such as Denizli were designing about 10% of M&S garments manufactured in Turkey (Tokatli et al., 2008). In addition, some firms such as Yavuz Tekstil developed their own designs. Firms that added design as part of their offering as full package manufacturers are seeking out regional opportunities in the Middle East and Africa, where Turkish ODMs offer a competitive advantage with unique designs that harmonize heritage and modern fashion.

Workforce Development. Upgrading into ODM requires access to highly skilled and trained human capital. In 1996, there were very few fashion designers in Turkey. However, this number grew considerably during the next 10 years (Tokatli & Kizilgiin, 2004). Today, there are hundreds of designers in the country. These designers are highly skilled and they are usually trained in European design and fashion schools. Numerous firms, such as Bilsar, the Turkish shirt maker for labels—such as Brooksfield, Arrow, and Rodier—also hired internationally recognized designers and consultants to research market trends and help clients to develop new designs (Tokatli & Kizilgiin, 2004).

While this segment of the value chain initially relied on international talent, over the past two decades, Turkish design has begun to emerge in its own right. Local designers have developed their own portfolios and worked directly for ODMs or as consultants. Organizations such as the IKTIB worked with the private sector and government institutions to establish fashion design vocational training schools that offer seminars and short courses on a variety of topics, in addition to organizing business trips. Istanbul Fashion Academy was established in collaboration with the EU and IKTIB as part of the Fashion and Textile Cluster in 2005. The Academy trains students on the use of the latest technology, fashion, design, fashion product development, as well as fashion photography, media, management, and marketing.

Stage 3. Own Branding (OBM): 2000s to Present. Turkish firms have also realized that in order to build a strong global presence as ODMs that could rival their Italian competitors, they need to upgrade into OBM, the next segment of the value chain. This was supported by the Turkish Government, which put incentives in place for firms to upgrade into branding and increase their competitiveness in global markets.[14] Leading local firms such as Sarar and Mithat already develop and produce their own brands, which they export to global markets and sell domestically. Others are focused on becoming global retailers, such as Bilsar that has retail stores in Milan and Paris. In 1998, Sarar withdrew from its 13-year partnership with Hugo Boss to establish its own global brands for men's suits. These suits are manufactured in Turkey and sold both locally and abroad (Tokatli, 2007). Mithat, previously a full-package supplier with a large number of European and American buyers, today designs and retails three brands of its own that are sold in Poland, Russia, and Turkey.[15] Erak clothing, a full-package supplier to international brands such Calvin Klein; Guess; and Esprit since 1984 (Tokatli & Kizilgiin, 2004), was an early mover and created its own brand, Mavi Jeans, in 1991. Since then, the firm has gradually transformed itself into an original brand-name manufacturer and retailer (Tokatli & Kizilgiin, 2004). Mavi Jeans has global sales of almost $80 million a year. The jeans are sold in over 4,600 specialty stores and department stores in 28 different countries (Tokatli & Kizilgiin, 2004).

Workforce Development. In addition to experience gained from working closely with global brands in the early stages of the industry's development, Turkey's apparel sector has relied on highly skilled employees to guide its upgrading into this segment of the value chain, particularly to staff their marketing departments. This is supported by a large number of university business schools and vocational schools that offer industry-relevant courses, such as marketing and brand management. External consultants also play a central role in providing training for staff. Today, almost all textile and apparel business organizations offer training seminars and courses on the development and retailing of brands from the high school level upwards (Tokatli & Kizilgiin, 2004). Organizations such as IKTIB offer short courses and training seminars on marketing, sales, brand management and value added production, as well as recruitment and selection strategies. KOSGEB, a quasi-governmental organization affiliated with Ministry of Industry and Trade of Turkish Republic, also provides marketing support to small and medium sized apparel enterprises and offers training and consulting services to build their capacity in the sector.

Table 6 provides an overview of these key workforce development initiatives pursued in Turkey to foster upgrading.

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[14] These incentives include reimbursements of up to 60% of the cost for a maximum of three years for personnel expenses (including training and recruiting highly qualified personnel), machinery, equipment and software, consultancy, and R&D related materials (Dimireva, 2009).
[15] Although Mithat has successfully upgraded into OBM activities, the company has also maintained its full package services for its global buyers (Tokatli & Kızılgün, 2009).

Table 6. Turkey: GVC Upgrading and Workforce Development Initiatives

Stage 1 OEM (Full Package) 1980s–2000s	Stage 2 Design 2000s–Present	Stage 3 Branding 2000s–Present
Private Sector Workforce Initiatives		
• Global brands, such as Levi Strauss, assist subcontractors with management, and occupational safety training programs.		
• Turkish manufacturers provide formal internal training on quality control, logistics, management, marketing, and sales.		
	• ODM and OBM firms train designers in Europe and hire consultants to train on design and branding.	
Public Sector Workforce Initiatives		
• Public universities, vocational schools and high schools offer specialized courses and certifications in engineering, information systems, design, marketing, sales, tailoring, and others.		
Multisector Workforce Initiatives		
• Professional Qualifications Authority (Mesleki Yeterliki Kurumu Resmi) is established to work with the private sector, NGOs and other government institutions to establish professional standards, job profiles, qualifications, testing centers, and certifications. • Istanbul Textile and Apparel Exporters' Association (IKTIB) collaborates with the government and private schools to offer certificate programs in financial management, foreign trade, sales and logistics management; academic programs in fashion design and technology (master's and certificates), fashion prep, and foundation art and design; and continuing education programs in fashion design, management, photography and styling, drawing, accessorizing and other workshops. IKTIB has also started 6 industry specific schools such as Istanbul Fashion Academy, Technical and Vocational High School Girl Hunters IHKIB and Zeytinburnu İDMİB Technical and Vocational High School for Girls (IKTIB, 2010). • Horizons 2010: Turkish Clothing Manufacturers Association (TGSD) is working with the private sector and public institutions to improve the global positioning of Turkish apparel sector that includes on the job and in-house training and recruitment and selection of personnel (TGSD, 2010). • Turkish Textile Employers' Association (TUTSIS) collaborates with schools and started a vocational school to train young workers on skills such as computers, entrepreneurship and marketing (TUTSIS, 2010) • JO-IN Project (2003-2007) public private partnership training on management systems and industrial relations to improve labor standards, codes and working conditions among suppliers. NIKE is involved in the JO-IN Project (Joint Initiative on Corporate Accountability and Workers Rights) in Turkey, which involves six major multistakeholders initiatives to test common codes and monitoring programs. Seven multinational brands joined the initiative for the purpose of conducting the trial project in Turkey: NIKE, The Gap, Adidas, Hess Natur, Marks and Spencer, Patagonia, and Puma.		

Source: Duke CGGC.

B. Sri Lanka[16]

Sri Lanka is an ODM niche product supplier, with 90% of its apparel exports going to the EU-15 (48%) and United States (41%). The sector focuses on four complex products: (1) intimate apparel, (2) activewear, (3) swimwear, and (4) children's clothing. Quota systems, liberal trade, and investment policies, government support, and dedicated local entrepreneurs played central roles in the development of Sri Lanka's apparel sector. The apparel industry emerged after 1977, when the country liberalized its economy, and it has grown strongly over the last three decades to become Sri Lanka's largest industrial sector, accounting for over 50% of total exports by the turn of the century. In the 2000s, growth was

[16] The Sri Lanka case was developed by Stacey Frederick.

fueled by the EU granting Sri Lanka reduced and later duty-free access to the EU market under the GSP, and later the GSP-plus schemes. Today, the larger Sri Lankan apparel manufacturers have opened factories overseas in Africa and Jordan, among other locations, as well as developing backward linkages to textile industries in India and Bangladesh. This has positioned Sri Lanka as a regional sourcing hub that organizes production throughout the region (Kelegama & Wijayasiri, 2004).

Industrial Organization

Foreign direct investment initially played an important role in the establishment of the apparel industry in Sri Lanka. However, these early investments by East Asian apparel firms encouraged local entrepreneurs to invest in the sector and to exploit the markets guaranteed by quotas in the early and mid-1980s (Kelegama, 2009). By the early 1990s, local firms began to dominate the apparel industry in Sri Lanka, and by 2000, around 80%–85% of the factories were owned by locals (Kelegama & Wijayasiri, 2004).[17] The sector has consolidated over the past 10 years, with many smaller factories exiting the sector. Those that remain have contractual relationships with larger factories (Samaraweera, 2008). The main reason for this shift to leverage economies of scale is the comparatively higher cost of production in Sri Lanka once quota restrictions were lifted, as well as security risks related to the political turmoil there (Samaraweera, 2009).

Workforce Development

The labor force in Sri Lanka is better educated and more skilled than in most other Asian countries. This can be explained by a good general education system and the presence of specific education and training facilities for the apparel and textile sectors at different levels, including university degrees in technical capabilities and design. Foreign investment initially brought crucial technology, know-how, and skills to Sri Lanka, during which time 90% of training was conducted in house by internal training departments (Kelegama & Epaarachchi, 2001). Today, Sri Lankan workers often hold supervisory or management positions in other countries in the region. This availability of a more highly skilled labor allows firms to offer more services to buyers. However, the negative image of apparel manufacturing for the female-dominated workforce (over 80%) has proven problematic for labor availability in Sri Lanka amongst both skilled and unskilled workers.

[17] A survey by the Ministry of Industries (2004) provides the following distribution of ownership: Sri Lankan ownership, 74%; foreign ownership, 13 %; and joint ownership, 10% (Tilakaratne & Murayama, 2006).

Stage 1. Start-up Production–CMT: 1980s–1990s

During the 1980s and 1990s, the liberal trade and investment regime enticed East Asian apparel exporters seeking to bypass quotas to invest in Sri Lanka's CMT production facilities. European investors also established operations in the country (Kelegama & Wijayasiri, 2004). As a result, Sri Lanka had an early-mover advantage and built up relationships with transnational apparel producers and global buyers before other South Asian countries did. In the late 1980s, local firms started to grow, including MAS Holdings and Brandix. Today, these firms are the two largest apparel manufacturers in Sri Lanka, together employing almost 70,000 employees, with 45 production facilities in Sri Lanka and India, and selling to major global buyers including Victoria's Secret, M&S, and Nike. By the end of the 1990s, these firms began to switch from basic outerwear products such as t-shirts, sweaters and polo shirts to produce more sophisticated products, upgrading into niche market segments in intimates and active wear. Product upgrading efforts have spread more broadly since the early 2000s, but important differences remain between large manufacturers and medium and small firms.

Workforce Development. In the early stages of the apparel industry in Sri Lanka, workforce development was not a priority. Training was primarily carried out on the job, and managers and supervisors were focused on minimizing training costs rather than improving productivity (Kelegama & Epaarachchi, 2001). Most initiatives at this stage were led by the public sector. In 1976, with the support of United Nations Educational, Scientific and Cultural Organization (UNESCO), the Department of Textile & Clothing Technology was created at the University of Moratuwa, in collaboration with Leeds and Manchester Universities (UK). The government also established two training centers in 1983: (1) the Sri Lankan Clothing Industry Training Institute, and the (2) Textile Training & Service Center under the Ministry of Industrial Development. Extension courses were added in 1991 in production planning, quality control, pattern production and merchandising, and Bachelor of Science (B.S.) and Master of Arts (M.A.) degrees were added to the department's offerings in 1993.

Stage 2. From CMT to Original Design Manufacturing (ODM): 2000s to Present.

This period was characterized by both functional upgrading into apparel design, as well as product upgrading in the production of more complex and sophisticated products. This upgrading was facilitated by two key factors. First, the strong linkages established with four global buyers in early stages of industry development: (1) The Gap, (2) M&S, (3) Victoria's Secret, and (4) Nike. They accounted for around half of Sri Lanka's apparel exports by the turn of the century, and collectively they facilitated asset-specific investments by providing stronger guarantees for future orders. Local Sri Lankan firms set up in-house design teams to work on product design and development; they established offices in key

markets, such as New York and London, so that their designers could work closely with teams of brand-owners to help streamline the production process and reduce lead times (Wijayasiri & Dissanayake, 2008).

Second, in 2002 the government collaborated with the private sector to establish the Joint Apparel Associations Forum (JAAF) to identify industry weaknesses and develop a comprehensive five-year plan (2002-2007) to drive growth in the sector (Kelegama, 2009). A central objective of the 5-year strategy was to transform the industry in two ways: (1) from a contract manufacturer to a provider of fully integrated services, including input sourcing, product development, and design; and (2) to increase market penetration to the premium market segments by shifting from basic items to superior branded products. As a "total service provider" the industry would not only cut-and-sew apparel, but would cover more parts of the value chain. By upgrading into more sophisticated products, the sector could remain competitive in the face of the rise of low cost centers such as Vietnam.

Between 2000 and 2008, firms were able to shift production from 80% in volume, low-value products to 50% of their products in higher value items for specialty and department stores. While low-value production is still present, largely to the EU market because of GSP-plus scheme in effect from 2005 through August of 2010, a significant portion of the apparel sector in Sri Lanka today provides full manufacturing services, offering input sourcing and an understanding of product development and design. Some large manufacturers have even established their own brands in regional markets, but this is still limited.

Workforce Development. While workforce development was not prioritized during the early stages of the industry's development, human resources were viewed as particularly important in the post-MFA environment (Kelegama, 2009). JAAF's human resource development subcommittee focused on raising productivity by creating a competent and skilled human resource pool, rather than investing only in technological improvements. The government allocated part of the budget in its 5-year plan to increasing productivity in apparel by focusing on strengthening marketing capabilities, creating design capabilities, improving productivity within firms, developing technical competence, and encouraging a cohesive focus for apparel and textile education. In 2007, with the assistance of companies in the sector, JAAF launched a comprehensive training manual designed to help education providers align their courses with the needs of the clothing industry. The manual, *Competence and Beyond,* outlines the skills, standards and knowledge required for 139 jobs relating to the clothing supply chain, from spinning to customer care. JAAF believes the manual is the first documentation worldwide to map out all the key job roles in the apparel and textile industries (Tait, 2007).

Since 2003, MAS and Brandix have also been instrumental in establishing workforce development initiatives. Both firms have set up institute training facilities in Sri Lanka to train future workers, with a particular focus on female empowerment. Other lead firms, such as Nike, have invested in product development facilities in Sri Lanka, providing an avenue for workers to learn advanced skill-sets on the job.

Many of the initiatives launched by both the public and private sectors involved foreign educational institutions. These included JAAF's partnership with the Chartered Institute of Marketing from the United Kingdom to strengthen marketing competencies of the industry and strengthen links between local manufacturers and foreign buyers. JAAF also established an alliance with North Carolina State University's College of Textiles to strengthen the capacities of local training institutions to provide world-class programs. The government also launched a new four-year B.S. degree program in Fashion Design and Product Development through the Department of Textile & Clothing Technology in collaboration with the London College of Fashion.

Table 7 provides an overview of the industry evolution and the corresponding workforce development initiatives that took place in Sri Lanka during the past three decades.

Table 7. Sri Lanka: GVC Upgrading and Workforce Development Initiatives

Stage 1: Cut-Make and Trim (CMT) 1980s – 1990s	Stage 2: Original Design Manufacturer (ODM) 2000s to Present
Private Sector Workforce Initiatives	
• 1980s: Brandix and MAS Holdings open in Sri Lanka by local entrepreneurs. They keep their training internal. These are the two largest apparel companies within the country.	• 2002: JAAF-Chartered Institute of Marketing (CIM-UK): Graduate Diploma in Apparel Marketing developed to strengthen marketing competencies of the industry and strengthen links between local manufacturers and foreign buyers. • 2003: MAS Holdings: Women Go Beyond: Program to empower women, both at work and at home, by providing skills and training while recognizing and rewarding special achievements. Has given MAS' corporate social responsibility (CSR) activities global recognition. • 2005: Brandix College of Clothing Technology: Training programs up to degree level in apparel; first of its kind in Sri Lanka. College is in collaboration with the Royal Melbourne Institute of Technology (RMIT) in Australia. Students in the 3-year degree program earn a Bachelor of Applied Science in Textile Technology. • 2008: MAS Institute of Management & Technology: Goal to provide affordable world class training facilities for youth and corporate organizations. Offer soft skills development and textile and apparel programs. • 2008: Initial lead firm investment in manufacturing and technical development facilities: Nike and M&S.
Public Sector Workforce Initiatives	
• 1976: Department of Textile & Clothing Technology established at the University of Moratuwa; in collaboration with Leeds and Manchester Universities (UK); support from UNESCO. • 1991: DCTC added T&C extension courses (production planning, quality control, pattern production and merchandising. • 1993: DCTC added B.S. Textile & Apparel Technology (4-year); M.A. Textile or apparel studies or textile and apparel management.	• 2002: new 4-year B.S. degree program in Fashion Design and Product Development through the Department of Textile & Clothing Technology in collaboration with the London College of Fashion. • 2009: Sri Lanka Textile & Apparel Institute formed: merger of the Clothing Industry Training Institute and the Textile Training & Service Center; mission is to facilitate sustainable development of Sri Lankan textile & apparel industry by producing competent workforce with specialized skills. • Government-run Vocational Training Authority offers 6-, 3-, and 1-month training courses.
Multisector Workforce Initiatives	
• 1984: Sri Lankan Clothing Industry Training Institute and the Textile Training & Service Center established under the Ministry of Industrial Development; technical assistance by United Nations Development Programme (UNDP) and United Nations Industrial Development Organization (UNIDO) and later the Japanese International Cooperation Agency.	• 2004: JAAF-Government: Productivity Improvement Program to provide leaner, more effective organizations, which would result in higher productivity, lower costs, better quality and on-time delivery. • 2004: JAAF-North Carolina State University's College of Textiles: Agreement to strengthen the technical capacity of the industry by delivering an affiliated diploma in collaboration with the Clothing Industry Training Institute and the Textile Training & Service Center. The alliance is to assist the institutes in raising their training programs to world-class standards. The focus areas of the six month to one year programs include technical competence, supply chain development, management and industrial engineering. • Grassroots' Skill Training Program: supported by the U.S. Agency for International Development (USAID) to create four model training centers within the 31 vocational training centers providing training for the textile and clothing sectors. Objectives include upgrading infrastructure, equipment and resource people, providing education in multiple disciplines, providing guaranteed employment upon completion of the program, industry accreditation, and empowering rural youth with valuable skills and knowledge.

Source: Duke CGGC.

C. Bangladesh[18]

In 2008, Bangladesh was the fourth largest global exporter of apparel. The majority of Bangladesh apparel exports are to the EU-15 and United States. In 2008, these two markets accounted for nearly 85% of apparel exports, at 58% and 27%, respectively.[19] The apparel industry in Bangladesh started in the late 1970s and became a leading sector within a short period of time. In 2008, apparel exports accounted for 75.8% of the country's total exports (Haider, 2007). In the 1980s, the apparel industry of Bangladesh was concentrated mainly in manufacturing and exporting woven garments. In the early 1990s, the knit section of the industry emerged, and surpassed woven exports by the mid-2000s.[20] In both categories, Bangladesh is in the process of moving from CMT to OEM arrangements to provide sourcing and logistics capabilities for full-package operations. Knitwear is now Bangladesh's largest export sector, contributing 41.8% of total national export earnings for the 2008–2009 financial year. The MFA-quota system, the availability of cheap labor and the presence of a domestic textile industry are amongst the key reasons behind the success of the industry (Haider, 2007; Knowles et al., 2008).

Industrial Organization

Foreign investment played a central role in establishing the apparel industry in Bangladesh; however, the industry is now dominated by locally owned firms. Lead buyers include U.S., European and Japanese firms, such as JC Penney, The Gap, Levi Strauss, H&M, Marks and Spencer, and Uniqlo. There are three different types of garment manufacturers in Bangladesh: (1) integrated manufacturing, where factories import the cotton and do the rest of the production process (spinning, weaving/knitting, cutting and sewing) on their own; (2) factories importing yarn and then completing the rest of the manufacture; and (3) factories importing fabric and sewing the garment in CMT factories. Most of the knit factories belong to the first two categories and woven factories belong to the third category (World Bank, 2005b). This is the result of regulations of the EPZs, which until 2005 required that FDI be associated with backward-linkage industries (spinning and/or weaving/knitting, dyeing and finishing).

Bangladesh Apparel Workforce

In 2008, the apparel industry employed 2.8 million workers in 4,743 garment factories. About 85% of garment workers are rural migrants, many are from poor and landless families, and the garment industry has given them their first opportunity to earn wages (Knowles et al., 2008). Female employees are preferred in apparel factories and 80% of garments workers are women. These employees tend to be

[18] The Bangladesh case was developed by Stacey Frederick.
[19] UNCOMTRADE; apparel represented by HS1992 (61+62).
[20] Knitwear exports surpassed woven exports in volume by 2004, and in value by 2008.

young, unmarried, impoverished, non-unionized, and more tolerant of poor working conditions, long hours, and low pay (Knowles et al., 2008). Employment in this industry has made women visible in national employment statistics and has brought about social change. A factory job is one of the few socially acceptable ways for uneducated or low-educated women to earn a living.[21]

Bangladesh has a lack of skilled workers in the apparel sector at both the machine operator and mid-management levels, including technical professions. At the operator level, the skills gap is an estimated 25% (Elmer, 2010).[22] By 2015, the entire textile and apparel complex is estimated to need 70,654 textile technologists, which represents a gap of 65,010 from the current number of degree holders in the industry. Workforce initiatives to close this gap have been implemented by buyers, local firms, educational sector and the government.

Stage 1. CMT: Mid-1980s–1990s

Bangladesh's first garment exports occurred around 1976 (Haider, 2007), followed by a boom in the industry in the early 1980s. During this time, the Bangladesh Export Processing Zone Authority was established (1980), and the two most significant EPZs were created in Chittagong (1983) and 10 years later in Dhaka (1993). In the early 1990s, Bangladesh also established a knitwear sector. At this time, the large majority of firms were CMT factories. By 2000, two-thirds of apparel firms in Bangladesh were involved in CMT production (World Bank, 2005a). Bangladesh's garment export industry flourished under the MFA framework. There were less restrictive import quotas for Bangladesh under the MFA, compared to those for traditional garment exporters, such as China, Hong Kong, Korea, and Japan, and this helped Bangladesh's export industry to grow. The tariff and quota-free access to the EU market under the GSP scheme since the early 1980s were additional advantages (Ahmed, 2009). The GSP scheme allows EU importers to claim full tariff drawback on imports from Bangladesh, provided that manufacturers adhere to the rules of origin requirements.[23]

Workforce Development. When Bangladesh's garment industry first started to expand in the mid-1980s, no systematic and organized in-house training for operators was available. Firms hired young female workers from rural areas with little or no formal education or training. They were first hired as "helpers" for a period of 3–6 months until they picked up the skills necessary to become machine

[21] In rural Bangladesh, women live in a traditional environment, which does not permit them to go to cities alone (even outside the village in some cases). Rural women thus largely remain outside the purview of the visible cash economy, with job opportunities often limited to the domestic and informal economies. It is a relatively new development that a large number of women are going to work in the city- based apparel factories, inevitably changing their status and economic significance (Ahmed, 2009).
[22] Estimates range from 20%–30%, and the Bangladesh Garment Manufacturers and Exporters Association's (BGMEA) official estimate is 25%. Bangladesh has 2 million operators out of a total apparel workforce of 3.5 million people.
[23] On average, the tariff rate of garment products into the EU is 12.5%, but this is zero for Bangladesh under the GSP.

operators. Floor supervisors were selected in-house from the most experienced and senior-level machine operators and were promoted without receiving any additional training (Elmer, 2010).

Formal workforce development programs were first introduced toward the end of the 1980s at the initiative of donor agencies and the two main private industry associations: (1) the Bangladesh Garment Manufacturers and Exporters Association (BGMEA), and (2) the Bangladesh Knitwear Manufacturers and Exporters Association (BKEMA). Foreign-owned firms in the EPZ began to provide more systematic and organized in-house training, followed by local firms around 1990, often through a combination of pressure and technical assistance provided by buyers. Foreign buyers went on to establish small-scale training academies and technical assistance projects financed through their CSR budgets, and with their preferred suppliers (Elmer, 2010). In 1995, the public sector also started to offer skill formation programs offering technical education and vocation training to supply the garment industry with qualified workers at both the operator and mid-management levels (Elmer, 2010). These workers were subsequently trained on-the-job by their supervisors. Mid-management level positions were filled with foreign workers from countries such as Sri Lanka or India.

Stage 2. Shifting from CMT to OEM–Present

Today, firms are moving from CMT to full-package production. Bangladesh's shift into the OEM stage has been through the development of a domestic textile industry for knitted textiles as apparel firms can source textiles locally to incorporate into final apparel exports. This was largely driven by the two-stage rule of origin requirement to export apparel duty-free to the EU under the "Everything but Arms" agreement for least developed countries.[24] Textile production began with knitted fabric, moved to yarn, and finally started to emerge for woven fabrics.

In 2008, the BGMEA developed a strategy to increase clothing exports from Bangladesh (2008–2013) by encouraging domestic manufacturers to increase labor productivity, diversify product lines and export markets, and invest in R&D and human resources. The plan also involved lobbying the government to improve domestic infrastructure—including gas, electricity, and roads—and to implement policies to encourage domestic and foreign investment in the textile and clothing industry.

Workforce Development. Initiatives launched in this stage of the industry's growth have focused on increasing productivity of the workforce and preparing employees for further upgrading into higher value segments. These initiatives saw an increase in demand for training and development

[24] The two-stage Rule of Origin required raw materials to undergo two transformation processes in Bangladesh to qualify for duty free imports: yarn to fabrics, and fabrics to clothing.

programs for the sector at both the technical and university levels, driven by firms under pressure from global buyers to increase their productivity following the end of the quota regime in 2005 (Elmer, 2010).

New external training organizations emerged to meet this demand, most notably the Institute of Fashion and Technology (BIFT) established in 1999 by the BGMEA. BIFT's courses focused on market-oriented skills needed by mid-management professionals and fashion designers for the garment industry. Graduates are absorbed almost entirely by the garment industry. BGMEA initially hired a team of foreign lecturers with donor support from IFC, but BIFT has since become a self-financed institution with revenues collected from student fees.[25] BIFT offers four-year B.S., Master of Business Administration, B.S. Honors, diploma, and certificate programs, awarding around 240 diplomas, 700 certificates, and 370 Honors and Master degrees per year. BIFT maintains collaborations with the London College of Fashion (UK), Nottingham Trent University (UK) and Niederrhein University (Germany) and will shortly be accredited as a university (GTZ, 2008). The Pearl Fashion Institute is another, smaller private sector garment training provider. Pearl offers diploma and certificate programs (GTZ, 2008).

Within the last 10 years, a few private universities, such as Ahsanullah University of Science and Technology, Prime Asia University, South-East University, City University, and Green University of Bangladesh, have established textile departments offering a B.S. in Textile Engineering. The Bangladesh Department of Textiles (DOT) runs four 4-year degree colleges, six undergraduate level textile institutes offering diplomas in textile engineering, and 40 vocational institutes, offering a 10-class equivalent vocational education in the area of textile technology and garments. Other government entities have created textile engineering departments at Dhaka University and the Mawlana Bhasani University.

In 2005, the government saw that strengthening skills in the textile sector would be key for driving continued growth into full package supply, and it began to address skill shortages by setting up more technical and vocational institutes. It upgraded the Bangladesh College of Textile Engineering and Technology to a textile university, opened textile facilities in all technical universities, and offered textiles as a subject in the curriculum of all technical schools, colleges, and technical institutes. Furthermore, the government converted TIDC into a national institute to serve the needs of the national textile and garment industry as the National Institute of Textile Training Research and Design project. The Bureau of Manpower, Employment and Training under the Ministry of Labor and Ministry of Overseas and Welfare today directs 38 Technical Training Centers in Bangladesh, of which 27 offer apparel-related classes. Overall student enrollment capacity more than doubled, increasing available labor at numerous levels with vocational training. Additional initiatives included donor-funded projects aimed at strengthening the

[25] BIFT also received support from the EU, Denmark, U.K. Department for International Development (DFID), Netherlands, Canada, and the Asian Development Bank (Elmer, 2010).

public TVET system for the garment skills development (see ***Table 8*** for specific details of each of these initiatives).

The most comprehensive technical assistance program catering to the garment industry is the Promotion of Social, Environmental, & Production Standards (PROGRESS) project. PROGRESS is jointly sponsored by the Bangladesh and German governments, and implemented by German Technical Cooperation (GTZ). Since 2007, GTZ has sponsored a range of skill-development activities at both the operator and mid-management levels. It aims to enhance the competitiveness of the sector and establish decent working and living conditions in the garment sector.[26] Both BGMEA and BKMEA have initiated operator training centers in poorer regions of Bangladesh in the north. These programs aim at providing socially marginalized groups with free training and guaranteed job placement in the garment industry around Dhaka. Some of those training centers have been operated jointly with government, with funding provided by donors or the associations themselves. Several of those operator training centers are public-private partnerships, but not all of them have been successful (Elmer, 2010). Private sector support of public programs has been limited because it has been viewed as competition.[27]

Table 8 provides an overview of upgrading and accompanying workforce development initiatives during the growth of the Bangladesh apparel sector.

[26] PROGRESS works in three main areas: social compliance; productivity improvement; and environmental compliance with a focus on eco-efficiency.

[27] According to BGMEA, BGMEA and BMET signed an agreement to utilize the resources of all TTCs; BGMEA works with 27 of the 38 TTCs with programs in the garment industry.

Table 8. Bangladesh: GVC Upgrading and Workforce Development Initiatives

Stage 1: CMT 1980s–1990s	Stage 2: Shift to OEM 2000s
Private Sector Workforce Initiatives	
• Operators: Young female workers from rural areas with little or no formal education were first hired as "helpers" for a period of 3–6 months until they picked up the skills necessary to become machine operators. • No systematic and organized in-firm training for operators provided. • Floor supervisors: Recruited in-house from the most senior and experienced machine operators without receiving any additional training.	• 2007: BGMEA: BIFT Sweater Manufacturing Training Center (BSMTC) created and offers a one-month sweater operator training program. • 2007: Public-Private: BGMEA-BIFT and Department of Youth Development (DYD): One-month sweater knitting machine operator course. Upon graduation, students guaranteed employment in factories owned by BGMEA members. Land and building provided by DYD and BIFT covers the machines, trainers, accommodation, and food. Centers operate year round and train approximately 240 students every month. As of 2010, 3,500 people trained and placed. • **Lead Firm Programs**: H&M (Sweden) has trained around 1,000 workers in supplier firms. This training model is often cited in Bangladesh as a good example of buyer financed garment skill training. Inditex (Spain), the parent company of Zara, trains union representatives at supplier firms to strengthen the capacity of worker unions in order to improve their collective bargaining power.
Public Sector Workforce Initiatives	
• 1978: Dhaka University's College of Textile Technology launched the first four year degree program. A limited number of engineers typically went to work in the textile industry over the garment sector. • 1995: Expansion of the TVET system led to the introduction of garment related skills training programs at the Technical Schools & Colleges (TSCs) under the Ministry of Education and the Technical Training Centers (TTCs) under BMET.	• 2006–2010: DOT: Establish 10 Textile Vocational Institutes • 2006–2010: DOT: Upgrade Jorargonj Textile Institute and Pabna Textile Institute to Textile Engineering Colleges. • 2006–2012: DOT: Establish Bangladesh Institute of Textile Technology (BITT) • 2005–2009: MOTJ: Strengthen NITTRAD & TSMU Capabilities to Develop Textile Sector • 2005-2013: DOT: Implement Diploma in Textile Engineering in six Textile Institutes
Multisector Workforce Initiatives	
• When the garment export industry in Bangladesh started to develop and grow in the mid-1980s, workforce development programs did not exist. Out-of-firm skills formation programs first developed in the period from 1985–1995 at the initiative of donor agencies and industry associations such as the BGMEA.	• 2007: PROGRESS Initiatives: Pilot Project with the Dhaka Ahsania Mission (DAM): GTZ and DAM with 30 factories: Two-month training modules for sewing and knitting machine operators with goal of training 2,000 disadvantaged youth over three years. PROGRESS Promote Female Operators to Line Supervisors: GTZ partnering with 30 factories. Project goal of training up 100 female operators to the supervisors' qualification standards set by the industry. The first group of 21 trainees graduated in June 2009. • 2007: BGMEA; funding from the DFID Char Livelihoods Program (CLP); use of BMET TTC facilities: One-month woven machine operator course at four TTCs. BMET provided facilities and accommodations for students and trainers. BMGEA trained BMET trainers at BIFT and provided an employment guarantee to students. Curriculum was developed jointly by BMET and BGMEA and 1,000 people were trained and employed before the program was discontinued when CLP funding ceased. Many operators reportedly returned to their home villages. • 2008: BKMEA Training Center: Payrabond, Rangpur BKMEA in partnership with Government with funding from GTZ and CLP: Free training provided in sewing, knitting, and quality for students at least 18 years old that have completed grade 8 with a focus on vulnerable females (widowed, divorced, or abandoned). In two years, 2,300 students have completed the training. Government provides infrastructure and other expenses (food, accommodation) and trainers covered by BKMEA. Trainees guaranteed employment by BKMEA members. Cost per year for the training institute is US$85,000, and the cost per student is around US$200. • TVET Garment Courses: Funding from DFID to UCEP-Bangladesh (local NGO): UCEP provides TVET through eight technical schools. Garment related courses include (i) Tailoring and Industrial Sewing Operation (one-year course; 80 per group) (ii) Industrial Wool Knitting Operation (six-month course; 60 per group), and (iii) Garment Finishing & Quality Control (one-year; 40 per group). • Skills Development Project: Funding from ADB (US$66.7 million); training provided by private entities and NGOs: Strengthen the TVET system by making it more responsive, flexible, and demand-driven. Will provide short-term training to 25,000 trainees in four sectors with a focus on the poor and those not completed grade 8. Ready Made Garments is one of the sectors.
• Donor agencies mainly support training initiatives through the private sector, notably BGMEA and BKEMA. The most important donors supporting apparel skills formation programs have been the IFC, EU, and GTZ and some from UNIDO and the ILO.	

Source: Duke CGGC.

D. Lesotho[28]

The Lesotho apparel industry exported slightly over US$350 million in 2008, accounting for approximately 60% of the country's total exports (Shakya, 2010). Apparel manufacturing activities are concentrated mostly in the assembly/CMT segment in the chain. Export growth of over 500% between 1996 and 2008 was driven initially by favorable trade agreements (Staritz, 2010). Most exports are directed to OECD markets (Lall, 2003), although South Africa has become an increasingly important market following the phase out of the MFA system (Morris et al., 2011).[29] Key global buyers, such as Levi Strauss and The Gap, have been among the most important drivers of responsible competitiveness in the industry (Hamann et al., 2008). The Gap alone is responsible for about one-third of Lesotho's total garment exports (Hamann et al., 2008). Production is largely concentrated in jeans,[30] slacks, knit shirts, and blouses, using both cotton and synthetic fibers. Lesotho faces a number of challenges to the sector's growth including water shortages, lack of industrial space, prevalence of HIV/AIDS, and low labor skills. The sector's stakeholders have recognized the need to develop labor skills, which is expected to have measurable results on productivity and the reliability of the supply chain in the long term (BEDCO, 2009; ComMark Trust, 2009; Shakya, 2010).

Industrial Organization

The sector is highly dependent on FDI, which accounts for about 95% of the investment in apparel. Taiwanese and South African apparel firms first shifted production from South Africa to Lesotho in the 1980s. There were 42 large apparel firms operating in Lesotho in the mid-2000s. They are foreign-owned and almost exclusively East Asian: 31 from Taiwan, two from Hong Kong, one from Singapore, and eight from South Africa (MIGA, 2007). So far, only two local apparel entrepreneurs have emerged in Lesotho. The majority of firms (71%) manufacture knitted garments, while 19% of the firms deal with denim jeans/woven garments. Lesotho has one vertically integrated denim manufacturing mill – the Formosa Mill, which produces its own yarn and more than 7,000 tons of denim fabric annually (Bennet, 2006).

Local Taiwanese operations in Lesotho are limited to manufacturing, while input sourcing, product development and design, merchandising and marketing, logistics, and the relationship with buyers are located at the headquarters in Taiwan. Local linkages are low, which is in line with the quota hopping and footloose strategy of these firms. The Asian firms in Lesotho do not have a regional strategy,

[28] The Lesotho case was developed by Ghada Ahmed.
[29] Between 2006 and 2009, clothing exports from Lesotho to South Africa increased 14-fold to reach US$28 million (Morris et al., 2011).
[30] In 2006, Lesotho produced about 26 million pairs of denim jeans a year that were supplied by eight factories, collectively employing almost 15,000 workers. Almost 98% of all Lesotho-made jeans are sold in the United States; smaller volumes are sold into the EU, Canadian, and SACU (Southern African Customs Union) markets (Bennet, 2006).

they focus on long production runs for U.S. customers, and they do not invest in local capacity building. On the other hand, the South African investors are in Lesotho to use low-cost labor close for their end market (South Africa), which they supply almost exclusively. These firms specialize in short, more complex production runs, with high fashion content. Although statistics are not yet available, the MFA phase out saw the beginning of a shift of Taiwanese firms out of the industry and a strengthening of South African ownership (Morris et al., 2011).[31]

Workforce Development

Lesotho has a large pool of low-wage, literate, but not technically, trained labor. The textile and apparel industry is Lesotho's largest formal sector employer, and jobs in apparel reached a peak in 2004 at 54,087 workers. Employment declined by about 26% with the phase out of MFA in 2005, but it has increased again in recent years (Bennet, 2008; Morris et al., 2011; Shakya, 2010). Over 80% of total employment is in foreign firms: 85% are female workers, many of whom are the head of households (Bennet, 2008; Staritz, 2010). Lesotho's worker productivity is low, ranging from 30% to 70% of that in East Asia (Lall, 2003), although apparel manufacturers that have begun to initiate internal productivity improvement training programs have noted substantial improvements in their competitiveness (The MFA Forum, 2006).

Meeting skill requirements of the industry is complicated by the prevalence of HIV/AIDS. Lesotho has the third-highest HIV rate in the world, with 23.2% of those aged 15–49 living with HIV and about 43% of the workers are estimated to be HIV positive (ALAFA, 2007; ILO, 2006 - 2009). In 2006, the private sector initiated the Apparel Lesotho Alliance to Fight AIDS (ALAFA) to provide prevention and treatment for about 43,000 mostly female workers in the textile and apparel industry (ALAFA, 2007). Impacts of the initiative on productivity, absenteeism and loss of trained workers are beginning to be felt, prompting further public private partnership prevention programs.

Stage 1. CMT: 1990s–Present

Lesotho entered the apparel value chain by attracting FDI, mostly from Taiwan in the CMT segment.[32] Foreign investors initially came to Lesotho because of political circumstances[33] (including sanctions on South African trade) and trade agreements, and not in response to lower production costs or other competitive advantages. By 1990, most of the Taiwanese firms present today were operating in

[31] Unlike the Taiwanese firms, which set up operations to take advantage of quotas and trade agreements, the South African investors that supply South African retailers were driven by lower operating cost (especially labor), duty-free market access to South Africa and tax incentives through SACU.
[32] Most South African firms operating in Lesotho prior to 1990 either closed down or sold out to Taiwanese firms.
[33] Lesotho had kept diplomatic relations with Taiwan, which facilitated this transition. Other Taiwanese firms then followed in the 1990s and set up apparel manufacturing.

Lesotho, having moved their production from South Africa. Their presence attracted other East Asian firms to relocate CMT operations to take advantage of the Lomé Convention, which gave the country preferential access to the European market,[34] and the 2000 U.S. African Growth and Opportunity Act (AGOA) (Masin et al., 2010). The East Asian manufacturers took advantage of Lesotho as a "lesser developed country" that could sell apparel in the United States duty- and quota- free under AGOA. In the first phase of AGOA (2000–2004), they were permitted to freely procure inputs from anywhere in the world (Staritz, 2010).[35] Lesotho moved ahead of other AGOA beneficiaries, because it had first-mover advantage from an existing base of apparel exporters that reflected its historic links with South Africa and Taiwan, the MFA quota regime, and its close ties with Asian full package suppliers (Lall, 2003; Shakya, 2010).

The Government of Lesotho developed industrial zones and serviced manufacturing space for rent to foreign investors to increase competitiveness and reduce bureaucratic processes. Currently, there are six industrial zones in Lesotho housing about 60 factories (Shakya, 2010). By 2002, the sector's exports totaled over US$320 million and employment surpassed 50,000, which was the first time employment in manufacturing outnumbered government employment (Masin et al., 2010). Despite these gains, the phase out of MFA and other trade privileges resulted in a decline in apparel exports. Between 2004 and 2008, Lesotho's total exports declined by about 25% (Staritz, 2010). Nonetheless, Lesotho's clothing exports continue to account for the majority of its total exports (Staritz, 2010).

While Lesotho's apparel exporters benefitted from a strong connection with the leading full-package global apparel suppliers headquartered in Hong Kong, Lesotho's apparel manufacturing has not upgraded. The sector has been locked into low value added assembly processes as a result of the global — strategy of Taiwanese firms. These firms have highly organized supply networks that act as intermediaries between buyers from the EU, Japan, the United States, and local apparel manufacturers (Lall, 2003). Supply linkages have been mostly outside of Lesotho, with local sourcing at a low 5%–15%,[36] which limited spillover impacts (Lall, 2003; Morris et al., 2011).

The potential for Lesotho to upgrade into higher value-added activities is more likely to occur through relationships with South African firms. These firms have a deeper presence in Lesotho, and are more interested in investing in upgrading. However, while South African companies started relocating

[34] Initially access conditions to the EU were that garments needed to be sewn in Lesotho (Salm et al., 2002). During the late 1980s the regulations changed and required that two manufacturing processes must take place in Lesotho before clothing qualifies for duty-free access (Salm et al., 2002). In the late 1980s. Lesotho successfully applied for an exemption, which was granted for a period of four years and was then renewed for four more years (Salm et al., 2002).

[35] This privilege was not open to more developed beneficiaries like South Africa or Mauritius (Staritz, 2010).

[36] There are only few firms in textile production and most textiles are sourced from China (MIGA, 2007). In 2005, the Taiwanese Nien-Hsing Textile, the world's largest producer of denim, opened Lesotho's only vertically integrated denim manufacturing mill–the Formosa Mill–which produces its own yarn and more than 7,000 tons of denim fabric annually (Bennet, 2006). Large brands and retailerssuch as The Gap, Levi Strauss, Calvin Klein, J.C. Penny, Jones Apparel, Timberland, and Walmart—source denim from Lesotho. The textile sector remains in its infancy and is almost entirely low technology with minimal skills transfer taking place (Masin et al., 2010).

production to Lesotho to service South African retailers after 2004 in order to lower production costs (especially labor) and take advantage of regional trade agreements. There are relatively few South African firms currently operating in the country.

Workforce Development. Lesotho's export-oriented manufacturing FDI has created demand for skills, such as operators for industrial sewing, cutting and pressing machines (Masin et al., 2010). All factories have some training for these basic skills (Salm et al., 2002). Companies that offer additional in-house technical training programs and developed better human resources practices reported positive results in productivity and labor relations (Masin et al., 2010). Training programs are mostly informal, conducted by floor supervisors, and focus on basic production and standardized assembly activities.

The approach to workforce development differs according to firm ownership. In Taiwanese factories, most workers are taught to perform one task or operate one machine, as opposed to cross-training on multiple tasks. More complex skills such as machine maintenance, layout, and pattern making are not taught. Taiwanese firms make little effort to transfer more advanced skills, even within the assembly operations (Masin et al., 2010), and, to date, there has been no systematic effort to train local workers on more complex tasks. Skill transfer has been low, especially since shortage in skilled shop-floor, technical, and managerial labor are filled with expatriates mostly from China (Lall, 2003).

While expatriate managers usually have shop floor knowledge, they have little management experience and are unable to communicate with the Basthoto workers (Lall, 2003). Differences in language, culture, and work practices[37]—and a footloose attitude of some the Taiwanese firms—are barriers to investing in training (Lall, 2003). In the management offices, the common language is Chinese, and imported labor is not trained in adapting to the Lesotho culture. There is quite a negative attitude toward locals in this type of firm; problems are attributed to "lazy workers" and "their unproductive culture" (Morris et al., 2011). Only one company has developed an in-house formal training program for supervisor-level positions that includes topics such as organization, planning, industrial relations, and health and safety.

South African operations typically follow a different business model. These operations are focused on short production runs that require multitasking, different production set up, and higher worker productivity. These firms thus see skill-based constraints as a significant barrier to growth (Morris et al., 2011). South Africans fill most management positions in the South African firms located in Lesotho. Firms identified the lack of readily available skills at all levels of personnel—from basic machinists, to technical, managerial and professional staff—as a central challenge to continued growth and upgrading.

[37] For example, the Lesotho Labor Code forbids piece-rate (as opposed to time-based) payments of workers, as does the organized labor movement. Piece rates are widely used in the export-oriented apparel industry in most developing countries including China.

South African firms also noted deficiencies in the support sector (embroidery, printing, etc.), lack of access to finance, transport, logistics and customs-related costs, and lead times related to the unavailability of local and regional yarns and fabrics among their critical challenges (Morris et al., 2011).

External training and development for the industry is limited. Several vocational training institutions provide generic management and general studies, [38] but they do not offer industry-specific courses that meet the needs of employers requiring firms to develop internal training programs (Shakya, 2010). Industry-specific programs were mostly funded by donors or multiagency initiatives. The Lesotho Garment Centre, funded by DFID, was the only training center in the country, and it was closed down in 2002 (Lall, 2003). DFID supported a second initiative between 2004 and 2009, ComMark Lesotho Textiles and Apparel Project, which provided both funding and technical assistance to improve productivity and efficiency; industrial relations; human resources; health and safety; and supervisory and management skills. In 2008, the World Bank funded the establishment of two skills centers that offer programs in industrial relations, supervisory skills, basic and advanced machinist training, mechanic training, productivity interventions, and quality assurance (LTEA, 2010). The ILO Better Work program works with the Lesotho Industry Employers Association, Lesotho Textile Exporters Association and five major international buyers: The Gap, Jones New York, Levi Strauss & Co., Primark, and Walmart. The goal is to strengthen the competitiveness of the industry by providing training to improve workers' productivity while remaining committed to protecting workers' rights (ILO & IFC, 2010a).

Table 9 provides an overview of the evolution of the industry in Lesotho and the workforce development initiatives that have been implemented in the sector.

[38] Educational Institutions in Lesotho include: Lesotho Polytechnic, the Institute of Development Management polytechnic, the Commercial Training Institute (CTI), the Basotho Enterprise Development Corporation (BEDCO), and St Luke's Mission (Lall, 2003; Shakya, 2010). CTI offers courses that lead to the award of a Certificate in Tailoring and Dressmaking (Shakya, 2010). Students who train at these institutes are often employed in the local craft industry and their own enterprises (Shakya, 2010).

Table 9. Lesotho: GVC Upgrading and Workforce Development Initiatives

Stage 1 1990s to Present C-M-T Production
Private Sector Workforce Initiatives
• Some apparel manufacturers began to initiate internal productivity improvement training programs. • Only one company developed a formal in-house training program for supervisor level positions (Lall, 2003). • Private sector companies such as Walmart and The Gap are leading ALAFA to combat HIV AIDS among workers.
Multi Sector Workforce Initiatives
• In 2008, the World Bank invested in two skills development centers that will include human resources management, industrial relations, supervisory skills, basic and advanced machinist training, mechanic training, productivity interventions, and quality assurance (LTEA, 2010). • ComMark Lesotho Textiles and Apparel Project (2004–2009) was supported by DFID and provided technical assistance to the Lesotho National Development Corporation (LNDC), established a training fund to improve factory productivity and human resource management and provided capacity building to Lesotho Textile Exporters Association (LTEA). The training fund assisted garment and textile manufacturers get up to 50% co-financing for training undertaken to improve their productivity and efficiency; industrial relations; human resources; health and safety; and supervisory and management skills. The program worked with employer associations; trade unions, relevant Government of Lesotho Ministries and agencies; utility companies; potential investors in Lesotho; and existing and potential buyers and retailers.(ComMark, 2010) • ALAFA is a broad PPP that includes DFID, USAID, Irish Aid, The Gap, Edun, Walmart, Nordstrom, Levi Strauss, ComMark, and others. The program provides education and prevention services, voluntary testing and counseling (VCT), and health management and treatment for HIV-positive workers. By the middle of 2010, ALAF reached 94% of the sector's workers with preventive services, and 83% of the workforce with care and treatment services.(ALAFA, 2007) • ILO Better Work Program works with Lesotho Industry Employers Association, Lesotho Textile Exporters Association and five major international buyers: The Gap, Jones New York, Levi Strauss & Co., Primark and Walmart to strengthen the competitiveness of the industry while remaining committed to protecting workers' rights (ILO & IFC, 2010a). • St. Luke's Mission in Maputsoe offers a three-year course including pattern construction, machine knitting, small business studies, leadership, management and industrial garment production (Shakya, 2010).

Source: Duke CGGC.

E. Nicaragua[39]

The Nicaraguan apparel industry exported US$$1 billion in 2008, accounting for 36.8% of the country's GDP (WTO, 2010). Nicaragua mainly participates in the CMT stage of the apparel value chain to leverage the country's competitive wage advantage (Portocarrero Lacayo, 2010), employing more than 51,300 people in 2010 (ILO & IFC, 2010a).[40] Production is concentrated in firms located within the Nicaraguan Free Zone System, accounting for 99.4% of the country's apparel production (Portocarrero Lacayo, 2010) and 72.6% of all employment generated by the system.[41] In 2009, 89% of Nicaraguan apparel exports were destined for the United States. The country is still considered a small regional supplier, but since 2004 it has steadily gained U.S. market share in certain segments, such as woven pants and cotton shirts (Gereffi & Bair, 2010). Apparel manufacturers in Nicaragua focus on trousers, mainly

[39] The Nicaragua case was developed by Penny Bamber. Information for this case study is primarily drawn from a series of interviews with leading apparel firms in the Nicaragua textile and apparel industry between September and December 2010 carried out by CGGC researchers Gary Gereffi, Jennifer Bair and Ingrid Muñoz.

[40] The industry reached a peak in employment in 2007, with 88,700 employees. However, pressures from the economic crisis forced layoffs and closures during 2008 and 2009.

[41] Apparel production outside of the free zone system draws on a large number of small- and medium-sized firms, which rely on high numbers of employees due to their limited use of technology.

denim jeans and twill pants, as well as t-shirts. The sector has not undergone significant upgrading and mainly offers CMT services.

Industrial Organization

The industry consists of a large proportion of foreign-owned firms, with very few locally owned companies. Among the foreign firms, Korean and U.S. ownership dominate, with the remainder coming from El Salvador, Honduras, Mexico, and Taiwan. The first wave of companies to set up in the country was principally from Korea and Taiwan, while the second wave that occurred in the 2000s was of U.S. origin. A significant proportion of these firms are part of larger global or regional networks; particularly in Central America, this structure allows global firms to provide full-package services for their clients by leveraging the interactions of multiple country operations. The three largest knit-based firms in the free trade zone sector collectively employ 16,300 workers (Gereffi & Bair, 2010). In 2010, these three firms represented almost one-third (29%) of total apparel employment in the country's free trade zones; clients include Walmart, Target, and Ralph Lauren. Woven apparel firms are more regionally focused, with operations in neighboring countries such as Guatemala, Honduras, and Mexico, and leading buyers include Levi Strauss, Cintas and Kohl's.

Workforce Development

One of Nicaragua's key competitive advantages in the apparel industry is its strong industrial relations system, providing the country with important advantages for buyers focused on ethical sourcing and a good basis for workforce development (Gereffi & Bair, 2010).[42] However, there is no deep-rooted culture in workforce development in Nicaragua and human capital is a major weakness in the country (Portocarrero Lacayo, 2010). Illiteracy is high; 30% of the adult population has no formal schooling (FIAS, 2005), and enrollment in secondary education reached just 68% in 2009 (UNESCO Institute for Statistics, 2010).

The apparel industry draws predominantly on a young labor force with basic education. Employers have no minimum educational requirements for the majority of their production staff, and only test applicants for basic reading, writing, and arithmetic skills. The average age of employees in apparel factories ranges between 20 and 28 years old. While in 2010, women represented slightly more than half of the apparel labor force (63%), employment is highly gender specific for different positions within the factories. Sewing machine operators and quality control are positions predominantly held by women, while laundry technicians, packers, mechanics and cutters are typically male-dominated jobs (Gereffi &

[42] This has been a marked shift from earlier stages in the Nicaraguan apparel industry during which labor relations were notably poor.

Frederick, 2010). Formal training in the apparel sector has one of the lowest levels across all productive sectors in Nicaragua, with just 17% of companies providing some type of formal training: 14% of the training was in-house, while just 3% engaged external trainers (FIAS, 2005). Large foreign firms of U.S. origin tend to be more willing to provide training than smaller local firms.

The ILO Better Work Program selected Nicaragua as the first Latin American country in which to implement its program aimed at improving labor conditions as well as the competitiveness of the sector by facilitating compliance with global buyer standards. Implementation of the program will begin in 2011 (ILO & IFC, 2010b). Several organizations including Nicaraguan Textile and Clothing Industry Association and the Nicaraguan Chamber of Private Free Trade Zones also have projects focused on improving labor conditions through social awareness.

Stage 1. Entering the Apparel Value Chain (CMT): Mid-1990s.

Entry into the global apparel value chain in Nicaragua dates from the mid-1990s, when the country began to stabilize politically and reinstated its free trade zones. Many Asian firms were attracted to the country due to its cheap labor force, combined with its proximity to the United States and the availability of MFA quotas prior to their phase out in 2005 (Portocarrero Lacayo, 2010). Growth was relatively slow until the implementation of the CAFTA-DR agreement in 2006 (Gereffi & Bair, 2010).These trade agreements guaranteed preferential access to the U.S. market for a certain quantity of apparel sewn in Nicaragua from materials that do not meet CAFTA's rules of origin, giving the country an important competitive advantage over its regional neighbors. Since then, Nicaragua has gained substantial ground in specific segments such as woven cotton trousers, as the result of being the only CAFTA country to receive TPLs that temporarily exempt the country from complying with the CAFTA requirement that imported textiles must originate in the United States.

No established textile industry exists within Nicaragua,[43] although the country has benefited from preferential trade agreements that allow it to source fabric from inexpensive suppliers in Asia.[44] In 2009, 83% of Nicaragua's exports to the United States entered the country duty-free under a variety of special trade regimes. Over a third of exports (35%) entered under the regional rules of origin established by CAFTA, while 47% of exports were imported under the TPLs granted to Nicaragua for non-originating exports (Gereffi & Bair, 2010).Overall, CAFTA has restored the position of Central America and the Caribbean among the leading U.S. suppliers of apparel and this led to growth in shipments from Nicaragua (Gereffi & Bair, 2010). In 1995, U.S. apparel imports from Nicaragua were only 2% of the total imports from CAFTA-DR, while in 2009, this share increased to 15%.

[43] In January 2010, there were only three textile firms in the country, one of which, Cone Denim temporarily closed due to the crisis in 2009.
[44] In 2008, 78% of knitted and 61% of woven fabrics were supplied from Asia (UNComtrade, 2010).

Despite this increase, Nicaragua has had limited success in moving up the apparel value chain. Within the past five years, the volume of exports grew by 8.6%, yet the value of exports only increased by 4.5% (ProNicaragua, 2010). This period was characterized by an increase in the production of t-shirts and knitwear, which are low value added activities. Prior to the economic crisis, the country had seen increases in the value of its exports in higher value woven trousers, but due to the economic slowdown in the United States, 2009 exports fell back to their 2006 levels.

Workforce Development. Workforce development initiatives have focused on maintaining an adequate pool of labor for these early stages of the value chain, with the training emphasis on assembly functions. Initial training on entry into the firm for new employees may last from two weeks to three months.[45] Training needs are first assessed through an ability test, which includes manual dexterity and basic reading, writing and arithmetic. For those who pass this test, there is training on general company policies with respect to industrial labor laws, the rights and obligations of workers, ISO certifications and global buyer standards, and the company's operating system (e.g., modular or line production systems). With the exception of mechanics, all technical training is conducted in-house. While this initial training was required to develop talent for the industry, many firms note that it is now easy to find job applicants with sufficient sewing experience, which minimizes the need to provide further training.

On the assembly line, productivity is incentivized with bonuses or higher pay grades until the employee is transferred onto the "piece rate."[46] During this training period, trainers provide daily and weekly monitoring. Training departments are focused on improving all productivity levels of the staff to reach 100% efficiency. In a number of plants, productivity rates are calculated using the General Sewing Data program.[47] Skilled sewers may eventually be promoted to the limited pool of staff with training in more than one job function or to line supervisor. These positions are more highly compensated.

The government's vocational training institution, el Instituto Nacional Tecnológico (INATEC), is supported by a "training tax" or compulsory contribution of 2% of salaries for all companies in the country, offers training programs for the apparel industry, but most companies prefer to train technical staff internally (FIAS, 2005). There is reportedly a disconnect between the kind of skills that are in demand, particularly of a technical nature, and the courses that are offered (Gereffi & Bair, 2010). Shortcomings with this institution may derive from its broader mandate of servicing all industries, rather than just apparel, as well as the absence of coordination measures between the training institution and the private sector. Firms thus principally use INATEC courses for general skills such as management,

[45] "New employees" includes all employees with no previous experience in the apparel industry.
[46] Piece-rate refers to a common labor practice in the industry by which workers are paid according to the number of pieces that they work on.
[47] GSD is a manufacturing methods database and analysis process that establishes International Standard Time for complete products (styles), or individual product components (features) and provides the ability to establish and quantify each step or operation in the manufacturing process in the apparel industry.

leadership, conflict resolution or language courses. Mechanics stand out as an exception to this training rule, and many companies take advantage of INATEC's programs to ramp up the skills of these workers. Training programs for mechanics last approximately one to two weeks. In some factories, mechanics also take on apprentices. Engineers working in the plants undergo more intensive training for up to one month.

The apparel sector has relied on experienced foreign management from within the region, particularly in Guatemala and Honduras, or from the home countries of the Asian and U.S. multinationals to establish and manage the Nicaraguan plants. This continues to be a prevalent practice in the industry, with just a few firms hiring Nicaraguan professionals to take on senior management positions. In addition, the few firms that offer full-package services from within Nicaragua, including in-country sourcing or purchasing of textiles, use foreign staff in Nicaragua to carry out this work. Where quality control is conducted within the factories in Nicaragua, the position draws on professional personnel who are guided and trained by external monitors from global buyers.

Although employers in the sector offer a wide range of benefits, including permanent labor status for all workers, access to subsidized foodstuffs, meals and transport to and from work, the industry continues to face a very high level of attrition, with turnover rates at some firms of over 100 % annually. One outcome of these high levels of turnover is that firms are able to recruit experienced personnel more easily. This has led to a general decline in employee training in the sector, with many firms providing just one week of training.

Table 10 provides an overview of the evolution of the industry and workforce development initiatives employed to drive its growth.

Table 10. Nicaragua: GVC Upgrading and Workforce Development Initiatives

Stage 1 Mid1990s–Present CMT Production
Private Sector Workforce Initiatives
• Formal training in the apparel sector is low. Only 17% of companies in this segment provided formal training to their employees, and of those, 14% conducted the training using in-house trainers (FIAS, 2005). • Companies include induction training for new employees, introducing employees not only to company policies but also to the rights and obligations of the workers and detailed outlines of the standards required to meet the company's varying certifications by global buyers and/or ISO. • Engineers and mechanics also receive additional training in house. The high costs of the machinery in the sector places great importance on the role of the team required to maintain and repair them. • Most companies run training programs internally. In-house training for sewing operators consists of a brief training period on machines before being moved on the line. Ongoing on the job training continues for up to three months, with training teams focused on ramping up the employee to 100% productivity. • All labor in the Free Trade Zone apparel operations is hired as permanent staff, benefiting retention of knowledge within the company. However, the indemnization regulations within the country allow workers who resign voluntarily to demand indemnization payments, leading to attrition rates of over 100% in some firms. • Quality control personnel are briefed and guided by external monitors from global buyers.
Public Sector Workforce Initiatives
• INATEC, the government vocational training institution, is engaged for training of mechanics and engineers, as well as for general skill training, such as leadership development, conflict management, and language skills. • The education system in Nicaragua is weak (FIAS, 2005). However, the industry only requests employees be able to read, write, and do basic arithmetic, and, at the most, requires 6 years of education.
Multisector Workforce Initiatives
• ILO Better Work Program selected Nicaragua as the first Latin American country to implement its program aimed at improving labor conditions as well as the competitiveness of the sector by facilitating compliance with global buyer standards. Implementation of the program will begin in 2011 (ILO & IFC, 2010b). • A tripartite roundtable comprised of the different union organizations in the free trade zones, the Nicaraguan Textile and Clothing Industry Association, the Nicaraguan Chamber of Private Free Trade Zones, and the State institutions related to free trade zones was established along with a CSR Committee providing important instruments for raising the social awareness of the companies and strengthening further workforce projects within the Free Trade Zone Regimen in the future.

Source: Duke CGGC.

VII. Analysis and Discussion of the Country Cases

The global value chain perspective provides a useful framework to understand how countries upgrade along the value chain, the kinds of institutional involvement needed to facilitate upgrading, and the most relevant complementary workforce development practices. We summarize below our main findings for the global apparel industry.

A. Economic Upgrading

The most important conditions for successful entry are favorable trade agreements, abundant cheap labor, and proximity to end markets. Entry into the apparel value chain is often facilitated by foreign direct investment in establishing assembly operations, although 4 of the 5 five countries studied entered the industry principally because of favorable trade agreements. Bangladesh and Sri Lanka

benefited significantly from preferential trade agreements with the EU and the United States, which facilitated their early entry and growth, while more recently Lesotho and Nicaragua benefited from the African Growth and Opportunity Act (AGOA) and CAFTA-DR TPL agreements, respectively.

However, to upgrade into more advanced stages of the chain, other factors become relevant. These include the following:

- Upgrading from assembly (CMT) to full-package (OEM) apparel production is significantly facilitated by the presence of a domestic or regional textile industry. For instance, Bangladesh has been able to upgrade from assembly to full-package supply in large part because of its new textile industry. In Turkey, the domestic textile industry was already strong when the apparel industry was established, allowing the country to leapfrog into full-package supply. Sri Lanka leveraged regional textile opportunities and developed backward linkages with the textile industries in India and later Bangladesh to facilitate its upgrading.
- The national origin of lead firms and their business models affect a country's upgrading trajectory. The lead firms in Lesotho and Nicaragua are foreign-owned and part of large global supply networks, mostly headquartered in Asia. These firms have followed business models in which the relatively high-value upstream and downstream activities are carried out in their Asian headquarters, with minimal linkages or technology spillovers to local suppliers. As a result, neither country has undergone significant upgrading. In Bangladesh, Sri Lanka, and Turkey, locally owned firms play prominent roles in the industry, with direct linkages to global clients that have invested in upgrading operations locally.
- Upgrading into design and branding (ODM and OBM) requires a strong commitment to industry growth by both the public and private sectors**.** Turkey is the only country in our sample to have major inroads in ODM and OBM, and it has done so with collaboration between strong industry associations and government organizations to strengthen Turkey's competitiveness in fashion and design. In addition, the full-package capabilities of Turkey's large integrated firms facilitate close relationships with global retailers, who are willing to facilitate Turkey's upgrading into design and brand services. In Sri Lanka, the government collaborated with the private sector to establish a 5-year plan to upgrade the industry, with an emphasis on leverage their close ties with global buyers to develop design and brand capabilities. Sri Lankan firms have set up offices in key cities to work with their buyers' product development and design teams.

B. Workforce Development

Despite its potential for increasing productivity and upgrading, workforce development initiatives alone play a secondary role in improving competitiveness. The case studies provide several key lessons for workforce development in the sector. First, in the assembly stages of the value chain, all of the countries studied maintain a continued heavy emphasis on on-the-job training carried out by supervisors to address the skills gaps in the apparel labor force, rather than the use of formal training. This preferred method of training is less costly but also stems from the generally limited number of vocational and training institutions (public or private) dedicated to the apparel industry and the mismatch between skills provided by these institutions and the private sector needs.

Second, there is often a shortage of skilled labor, in general, and qualified supervisors and management, in particular, to support industry upgrading in developing countries. Expatriates generally meet this skills gap or where possible.[48] When existing skills are not present in the local labor market, certain upstream or downstream activities are performed abroad in firm headquarters. Engaging expatriates may solve immediate technical problems. However, in many cases, as shown in Nicaragua and Lesotho, language barriers and cultural incompatibilities limit knowledge transfer. Specific management and supervisor development programs for local employees, such as the Bangladesh PROGRESS program to Promote Female Operators to Line Supervisors, would ease this challenge, while improving the efficiency and impact of on the job training by supervisors.

Third, despite the shortcomings noted above, important new initiatives are emerging from more mature suppliers to professionalize all levels of the apparel labor force, including managerial training to deal with growing pressures for lean manufacturing and compliance with corporate codes of conduct. In particular, JAAF's *Competence and Beyond* Manual in Sri Lanka should be highlighted. This manual was developed in collaboration with the firms in the private sector to fully understand the requirements of each and every job profile in the industry. The manual details the competencies new workers must have and will be used to help educational facilities to align their curriculum with the needs of the industry. The Turkish Professional Qualifications Authority, established in 2009 to work with the private sector, NGOs and other government institutions to establish professional standards, job profiles, qualifications, and certifications (Mesleki Yeterliki Kurumu Resmi, 2010), is another good example. These initiatives are important precursors to establishing comprehensive workforce development plans for upgrading.

Table 11 shows the different upgrading paths and related workforce development initiatives that can be identified in the cases.

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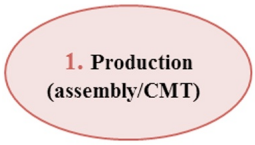
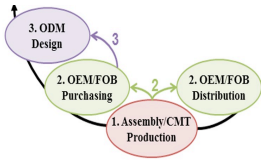
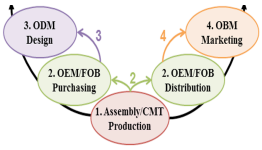
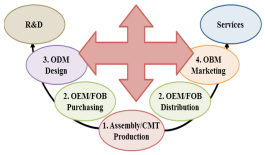
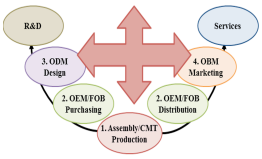
[48] Sri Lanka is the exception to this rule in terms of supervisors, and many firms in India and Bangladesh employ Sri Lankan supervisors. This is likely due to Sri Lanka's well established basic education system.

Table 11. Workforce Development and Upgrading in the Apparel Global Value Chain

	Diagram	Workforce Development Implications	
Assembly (Entry in the value chain)		Reliance on in-house training provided by supervisors to ramp up new machine operators. Technical staff, such as mechanics and engineers, may benefit from additional external training programs.	
		Skills Preparation On-the-job training in operation of machines, cutting and pressing equipment.	**Institutions** Private sector/ Industry associations Donor agencies
OEM/ Full Package (Functional Upgrading)		Firms learn buyer preferences, build relationships with textile suppliers and retail outlets. Recruit experienced employees from the textile industry. New staff hired for financial and logistics functions.	
		Skills Preparation On the job training in textiles, sourcing, supply chain coordination, and logistics and cost optimization. Secondary and tertiary education	**Institutions** Private sector Educational institution
Product Design (ODM) (Functional Upgrading)		In-house designers worked in tandem with designers from the buyers to gain a deeper understanding of preferences. Design functions require innovative skills related to new product development and knowledge of global standards, process and information technology upgrading.	
		Skills Preparation Technical training in design. Tertiary education	**Institutions** Private sector/ industry association Educational institutions Government
Product Brand (OBM) (Functional Upgrading)		The supplier develops know-how related to brand promotion from lead buyers. Firms hire employees with skills related to marketing and consumer research. Developed country consultants can provide important training for the firm.	
		Skills Preparation Soft skills and managerial skills training Tertiary education	**Institutions** Private sector (in-house and external trainers) Educational institutions (universities)
Product Upgrading		Suppliers begin to produce increasingly complex apparel products. These products require numerous details and are typically more complex to produce and require specific inputs.	
		Skills Preparation On the job training Tertiary education	**Institutions** Private sector Educational institutions (technical schools, universities)
Process Upgrading		Improves efficiency and is usually part of a low-cost strategy. Performance improvements from process upgrading: lowers operating costs in the long-run; enhances quality and delivery performance; shortens time to market.	
		Skills Preparation On-the-job training Training for use of new equipment	**Institutions** Private sector (suppliers and lead firms) Government incentives for investment in training Equipment providers

Source: Duke CGGC.

C. Institutions

In those segments of the value chain focused on production, the private sector has played the leading role in workforce development and most firms offer internal training of entry level employees. While there have been a number of attempts by both the public sector and donor agencies to engage TVET training schools in the industry, such as in Bangladesh which doubled its available trained workforce for the industry through the expansion of TVET institution after the end of quotas in 2005, there are few examples of significant success. Indeed, in several cases, such as the 2007 DFID-funded program in Bangladesh and DFID's training institution in Lesotho, programs were closed after a short period and graduates of the training program did not necessarily enter the sector's workforce. Private training institutions established by industry associations or by private firms appear to have had greater success in this stage of the value chain. For example, in Sri Lanka, both Brandix and MAS spun off their training divisions into separate training institutions in 2005 and 2007, respectively. By 2010, Brandix College of Clothing Technology (BCCT) offered approximately 100 different programs, from the most basic levels though high fashion design.

In the two countries where the industry has upgraded to higher stages of the apparel value chain (Turkey and Sri Lanka), we observe superior degrees of stakeholder coordination, along with some public-private partnerships to support workforce development. These alliances are usually established to cover skill shortages in the country and to improve the quality of those skills. For instance, in Sri Lanka, JAAF, a collaboration between the private sector and the government, engaged with several different educational institutions to improve the curriculum at the state Sri Lankan Clothing Industry Training Institute and the Textile Training & Service Center. In Turkey, the Istanbul Fashion Academy was established in collaboration with the EU and the Istanbul industry association, IKTIB, as part of the Fashion and Textile Cluster in 2005. The academy trains students on the use of the latest technology, fashion, design, fashion product development, as well as fashion photography, media, management, and marketing.

Successful workforce development for the ODM and OBM stages in the value chain has leveraged know-how in the developed world by engaging foreign universities in successful apparel countries to help design curriculum for local programs, as well as hiring foreign consultants to help develop talent in-house. Bangladesh, Sri Lanka, and Turkey have all established relationships with universities in developed countries. The London College of Fashion has relationships with institutions in all three countries, while others include institutes and universities in both textiles and fashion in France, Germany, Italy, and the United States. Fostering collaboration with successful training institutions in the developed world can speed firm level learning for upgrading, rather than the more timely process of learning through experience.

International organizations have also been active in efforts to link economic and social upgrading in the apparel sector. The ILO has partnered with the World Bank (through its IFC branch) to establish the Better Work program to raise labor standards in global supply chains. In Nicaragua and Lesotho, the Better Work program has focused primarily on improving working conditions through better social dialogue, but thus far it has not been able to link participation by developing countries in Better Work to more favorable contracts or other long-term benefits with global buyers in the apparel value chain.

D. New Global-Local Interactions

Broad trends are transforming the relationship between economic upgrading and workforce development in the global apparel industry. Following the phase out of the MFA quota system after 2005, there has been a striking concentration in the market share of the leading apparel exporting countries and an emphasis on fewer, larger, more capable and strategically located suppliers (Gereffi & Frederick, 2010). In 2008, for example, the top two apparel exporters, China and the EU, accounted for 64.3% of global apparel exports, and the top five developing countries (China plus Bangladesh, India. Turkey, and Vietnam) had 45.5% of the apparel total, whereas in 2000, China and the EU-27 represented 46.6% and the top five developing economies (China, Hong Kong, India, Mexico, and Turkey) 33.9% of apparel exports. This consolidation increases the importance of linking workforce development initiatives to economic upgrading in the apparel value chain, since those countries that cannot meet the more demanding requirements of OEM, ODM, and OBM production risk being marginalized in the chain.

The rapidly increasing labor costs in China, the dominant producer and exporter in the global apparel value chain, as well as a slump in demand by the advanced industrial economies, appears to be leading to a regionalization in apparel value chains, with large emerging economies like China, India, and South Africa becoming significant new markets for nearby developing country producers (Carlotti et al., 2011; Frederick & Gereffi, 2011; Morris et al., 2011). This provides new opportunities for low-income economies like Lesotho and Bangladesh to compete against dominant exporters like China and India, but they can only do so if they can meet the more stringent upgrading and workforce requirements of post-MFA supply chains, which in cases like Sri Lanka and Turkey, has evolved from active public-private collaboration around a long-term upgrading vision.

In recent years, global buyers and their suppliers have expanded their interactions beyond simple contractual relationships, with a focus on facilitating training in two key areas: (1) quality control, and (2) improving working conditions. In Turkey, global brands such as Liz Claiborne, Hugo Boss, and Marks and Spencer (M&S), train, certify, and audit Turkish suppliers on quality control, information systems, and working conditions (Tokatli, 2007). Turkish firms adopted ISO standards, as well as comply with international social and environmental standards regulated by the European Union (Tan, 2001). In

Bangladesh, the parent company of Zara (the Spanish multinational, Inditex) even provided training to union representatives in Bangladesh to strengthen their collective bargaining skills. In the area of the improved working conditions, attention has centered on the implementation of voluntary corporate codes of conduct that highlight compliance with national legislation and international norms in terms of working hours, overtime pay, child labor, freedom of association, and other aspects of work. While the most prominent global brands tend to have moved the farthest in publicizing these codes of conduct, their effectiveness in linking economic and social upgrading remains limited (Mayer & Gereffi, 2010).

The impact of lead firms on country upgrading through skill improvement and social compliance is affected by the length and capabilities inherent in the supply chain. Our research suggests that global lead firms influence functional upgrading in countries where large integrated suppliers are based and where the domestic pressures for economic upgrading are strong, but they do not promote upgrading in those countries where the factories engage only in assembly (CMT) activities. In Sri Lanka and Turkey, where there were direct linkages between the buyers and suppliers, pressure from global buyers for further services in design and niche product manufacturing led Sri-Lankan and Turkish apparel firms to hire designers and specialists and develop training programs specifically to provide employees with the new skills required. Pressure from global buyers also led local firms to establish training programs to increase productivity in Bangladesh, where linkages between buyers and their suppliers are strong. However, in Nicaragua and Lesotho pressure from global buyers on their suppliers to provide full-package services did not translate to increased skill acquisition in these countries because they currently are limited to assembly production.

VIII. Conclusion

The apparel sector is one of the most globalized industries of our time. It employs millions of workers around the world, especially in low-income countries. Developing countries have been able to enter in the value chain due to several important characteristics, such as access to cheap labor, favorable trade agreements and proximity to end markets. While the lead firms that govern this value chain continue to impose rigorous standards on their suppliers, workforce development initiatives receive limited attention.

Workers in the production stage are often trained by supervisors who do not have the capabilities to perform this task correctly; vocational training institutions offer courses that are not well aligned with the needs of the private sector; and many companies find it more efficient to engage expatriates rather than develop local talent. Nonetheless, influence from global buyers to improve working conditions, and initiatives that are emerging in more mature suppliers to professionalize the apparel workforce, indicate that the apparel sectors in developing countries are moving closer to establishing more effective and meaningful workforce development practices.

IX. Appendix A: Global Employment and Labor Costs in the Apparel Sector

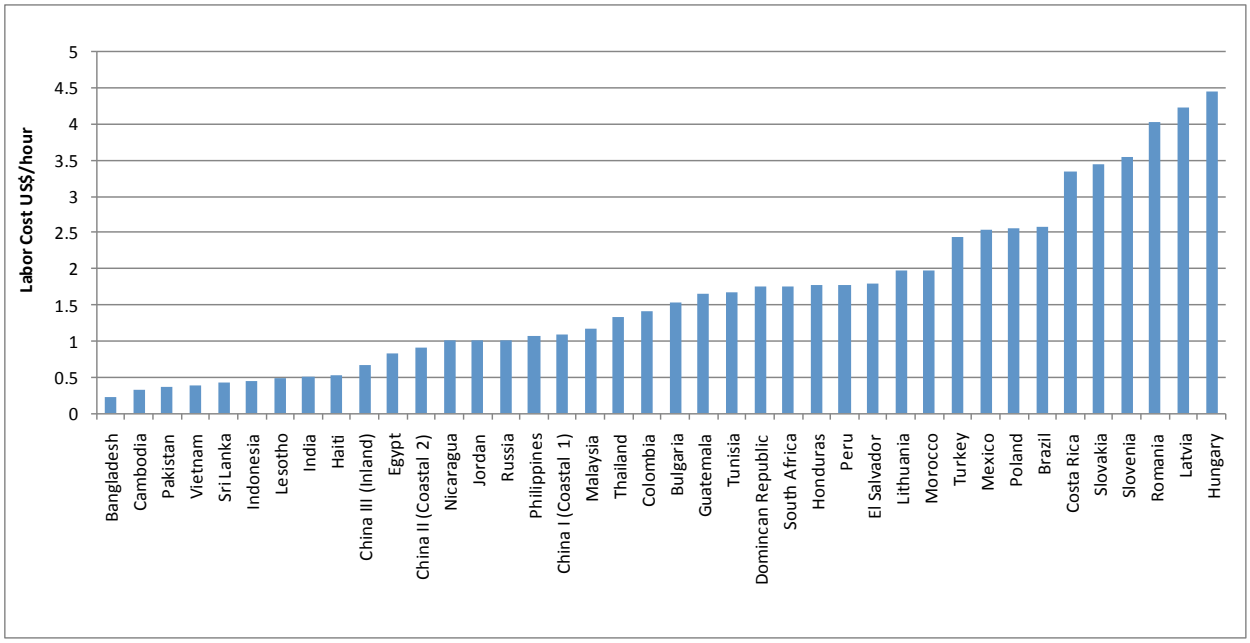
Table A-1. Apparel Employment in Selected Countries

	Employment	Share of Total Manufacturing Employment (%)	Year
Lesotho	40,364	N/A	2005
Mauritius	76,963	66	2001
Nicaragua	80,500	28	2006
Madagascar	87,000	45	2001
Guatemala	104,464	23	2005
Morocco	176,894	18	2002
Cambodia	250,000	38	2005
Sri Lanka	270,000	20	2008
Romania	403,400	25	2002
Mexico	460,000	12	2005
Turkey	500,000	14	2009
India	463,319	6	2001
Pakistan	2,300,000	43	2001
Bangladesh	2,800,000	na	2008
China	19,000,000	19	2004

Notes: Data from China, Pakistan and Madagascar are for clothing and textile.

Sources: Bennet, 2008, BGMEA, 2008, ILO, 2005.

Figure A-1. Apparel Manufacturing Labor Costs, 2008



Source: Jassin- O'Rourke Group, LLC.

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