The Cotton Agro-Processing Opportunity in Africa

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African Center for Economic Transformation
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GLOSSARY OF KEY TERMS USED IN THE REPORT

<table>
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<tr>
<th>Term</th>
<th>Means:</th>
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<tbody>
<tr>
<td>Apparel</td>
<td>Clothing (or garments) and made-ups (i.e. home furnishings such as bed linen and towels).</td>
</tr>
<tr>
<td>‘Bt’ or GM cotton</td>
<td>Genetically modified (GM) cotton was developed to reduce the heavy reliance on pesticides. The bacterium <em>Bacillus thuringiensis</em> (Bt) naturally produces a chemical harmful only to a small fraction of insects. The gene coding for Bt toxin has been inserted into cotton, causing cotton to produce this natural insecticide in its tissues.</td>
</tr>
<tr>
<td>Cottonseed</td>
<td>The seed of the cotton plant, yielding cottonseed oil and meal</td>
</tr>
<tr>
<td>Cottonseed meal</td>
<td>A meal high in protein obtained in the production of cottonseed oil that can be used for livestock feed</td>
</tr>
<tr>
<td>Cottonseed oil</td>
<td>Yellowish or dark red oil with a nutlike smell, extracted or expelled from cottonseed, used in cooking and in the manufacture of paints and soaps.</td>
</tr>
<tr>
<td>Cotton Fabric</td>
<td>A cloth made by weaving or knitting cotton yarn</td>
</tr>
<tr>
<td>Cotton Fibres</td>
<td>Soft silky fibers from cotton plants in their raw state. A cotton fibre is classified in four ways; by its length, micronaire, strength and uniformity.</td>
</tr>
<tr>
<td>Cotton Yarn</td>
<td>Yarn is a long continuous length of interlocked fibers, suitable for use in the production of fabric or sewing thread.</td>
</tr>
<tr>
<td>Ginning</td>
<td>This is the process of separating the cotton fibres from the seeds.</td>
</tr>
<tr>
<td>Greige</td>
<td>This can also be called grey goods or greige. It refers to the cotton fabric in its natural, greyish white colour before bleaching or dyeing.</td>
</tr>
<tr>
<td>Lint</td>
<td>The mass of soft fibers surrounding the cottonseed. It is obtained by the ginning process once the cottonseed, leaves and casing have been removed.</td>
</tr>
<tr>
<td>Linters</td>
<td>These are the short fibres which remain on the cottonseed after ginning.</td>
</tr>
<tr>
<td>Made Ups</td>
<td>Home furnishings such as bed linen, table cloths, and kitchen towels.</td>
</tr>
<tr>
<td>Organic cotton</td>
<td>This refers to organically grown cotton using crop rotation, beneficial insects, compost and other farming methods in place of chemical fertilisers and intensive farming techniques.</td>
</tr>
<tr>
<td>Ready Made Garments</td>
<td>Mass-produced finished textile products of the clothing industry.</td>
</tr>
<tr>
<td>Seed cotton</td>
<td>Unginned picked cotton</td>
</tr>
<tr>
<td>Spinning</td>
<td>The action or process of converting fibres into thread or yarn</td>
</tr>
<tr>
<td>Textiles</td>
<td>A type of cloth or woven fabric (not specifically cotton)</td>
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1. Executive Summary

Cotton is one of the world’s most traded commodities, and it is produced by several African countries. Cotton can be processed in different ways resulting in outputs with numerous uses, but by far the most common use is in the manufacture of apparel. The export of apparel products has been used by several countries, such as those in East Asia as a major pathway of economic growth and increased industrialisation. This report seeks to identify how African countries can increase the value they capture from this commodity, with a particular focus on how they can access higher value-added parts of the value chain.

Overview of the Value Chain and Africa’s Positioning

Cotton and its agro-processing opportunities can be divided into two separate strands; the apparel chain (yarn, fabrics and apparel) and the cotton by-products chain (oil, meal, hulls and linters). This report focuses predominantly on the apparel chain where the value capture opportunities are greater. The value capture opportunity in cotton by-products is more limited, and relates to more efficient ginning and promoting the increased use of cottonseed oil and meal in domestic markets.

- **Seed Cotton Production:** Seed cotton is the basic and unprocessed agricultural crop, which is then converted through a process called ‘ginning’ into lint and the cottonseed. 65 million tons of lint were produced globally in the 2008-09 growing season. China, India, the USA and Pakistan are the world’s leading producers (accounting for 73% of global lint production in 2010) with Africa only contributing 4%. China and India account for more than half of global consumption, while the US is largely a producer for the export market. At a global level, the volume of seed cotton production has significantly increased over the last five decades due to technological improvements and agronomic practices, including the introduction of genetically modified or ‘Bt’ cotton. Cotton is predominantly a smallholder crop in sub-Saharan Africa (SSA), with over two million poor rural households in Sub-Saharan Africa depending on it as their main source of cash income.

- **Yarn:** Spinners transform the cotton lint into fibres called yarn, which is the fundamental unit of production for creating fabrics. This market was worth $114bn in 2008-09 season. World production of cotton yarn is dominated by China and India. World consumption of cotton fibre (to produce yarn) is driven by GDP growth, population, prices of cotton and other fibres, and inflation. World cotton fibre use has increased from just over 10 million tons in 1970 to 22.4 million tons in 2010. Africa’s share of yarn production is just 0.8% of total global volumes.

- **Textiles or Fabrics:** Cotton yarn is converted into fabric or textiles (used interchangeably throughout this report) by weaving, knitting or braiding - different types of weaving methods produce different finishes on the final cotton fabric. Cotton fabrics, in their rough, unfinished stages, are known as *greige goods*. The total textiles market has more than doubled in the past two decades to US$ 211 billion, although cotton textiles is only a proportion of this total. The EU and China are the major textiles producing regions. In particular, China has a rapidly growing share in the world textile market as the apparel value-chain continues to disaggregate, with high-value-added activities such as design and branding remaining in...
established markets in Europe and North America, and capital intensive activities shift to Asia. In 1990, China accounted for 7% of the world textile exports. By 2009, its exports had surged such that it had a share of 28% of the world market. Africa as a region is a negligible player in the market at 0.3% share of the market by value.

- **Apparel or Garments:** The production of apparel or garments (used interchangeably in this report) is essentially the design, cutting, assembly and finishing of textiles to make clothing and made-ups (such as bed sheets, kitchen towels, and other home furnishings). Apparel production is typically a labour intensive process, but the ability to provide rapid delivery and respond quickly to frequent shifts in consumer preferences and changes in retail practices are the most important areas of comparative advantage. In 2009, the total world exports of clothing amounted to $315bn. The world market for clothing has seen China grab significant market share over the last decade (from 18% in 2000 to 34% in 2009), and rapid growth by Bangladesh, while the EU remains a key mature-market player in apparel production. This is partly a result of the natural consolidation of the industry, after the termination of the Multi-Fibre Agreement, which specified quotas for apparel and textile production for producing countries. The textile and apparel supply chain is also exhibiting increasing country specialisation. Higher income nations generally predominate in more capital-intensive segments, while lower income countries dominate labour-intensive segments.³ The most labour-intensive activity is apparel production, followed by textile production. As countries grow richer and wages rise, the comparative advantage in labour-intensive manufacturing is eroded, and the focus shifts to high value-added products or to other manufactured products with lower labour intensity.⁴ Against this backdrop, Africa as a low-labour-cost region has potential to move beyond its low share of only 0.7% of the market.

**CHALLENGES AND OPPORTUNITIES IN THE COTTON VALUE CHAIN FOR AFRICAN COUNTRIES**

Manufacturing apparel products has always been (and remains) a labour-intensive activity with small capital investment requirements. The production of export quality textiles on the other hand is a far more capital intensive process requiring electricity, water, and the management of sophisticated manufacturing processes. The elimination of the Multi Fibre Agreement (MFA) led to a shift in textile and apparel production toward China and other developing countries, and China and India are quickly consolidating their positions as the leading centres for an integrated cotton-to-garment industry.

There is space however for other smaller countries that have particular niches. European nations focus on higher quality designs, or technical textiles. Turkey and Egypt are able to serve the highly demanding supply-chain integration of major retailers and labels – especially in the growth of fast fashion necessitating frequent, small orders. In the case of Egypt, the reputation for the quality of their cotton leads to substantial price premium realisation for high-density yarn. However, a growing trend to outsource more value-added services in design, multi-subcontractor sourcing / supply chain management and prototyping is creating greater barriers to entry for new players that are not able to provide skills above-and-beyond basic manufacture.

For African countries to participate in higher value activities in the cotton value chain, creative approaches will be required to meet the above challenges:

- SSA too can follow in the paths of other developing nations and focus on steps in the value chain where it may be able to leverage the comparative advantage of low cost labour. Apparel manufacturing appears to be the most obvious starting point based on many African countries advantageous position with respect to low unit labour costs. Assembly of ‘made-ups’ (home furnishings such as bed linen and hand towels)
and simple garment manufacture is labour intensive and low skilled, and has relatively low intensity in capital and energy.

- Moving ‘serially’ into the next stage of production – spinning yarn, followed by textile manufacture – may not be the obvious choice, since this requires substantial (and ongoing) capital investment, sophisticated production line management excellence and highly efficient logistics. There is however potential for some African countries to increase the quality of lint, and build on their existing spinning capabilities to manufacture cotton yarn and fabric to support a domestic apparel industry.

- Countries can create a more robust foundation for the industry through growth in volumes and improvement in quality of cotton lint. This will leverage Africa’s comparative advantage in low-cost seed cotton production and improve price realisation. Growth in volumes and improvement in quality can be achieved through better agronomics, and/or the use of “Bt” cotton, and by deploying successful practices in reducing contamination.

- While not completely a ‘distraction’, niche markets such as organic cotton and ethnic textiles represent a smaller direct economic opportunity than the other value capture opportunities, and do not offer the same degree of positive spillovers to foster the creation of a more diversified industrial base.

**Implications and Next Steps for Policy-Makers**

For policy-makers, addressing the challenge of subsidies remains an important part of the cotton agenda, but there is substantial scope for further interventions to drive growth in the sector. Moving away from a ‘serial’ mindset of transitioning from cotton lint production to the next stage in the value chain – where African countries are generally poorly positioned – and towards areas where comparative advantages in unit labour costs can be leveraged such as in apparel manufacture is a critical precursor to defining the appropriate areas to target. In this area, successes in developing export processing zones in some countries such as Kenya can form the basis for learnings that can be more broadly applied, in conjunction with leveraging scope for preferential trade access under schemes for markets in the US and the EU.

This report begins with an overview of the cotton value chain and a high level analysis of the international cotton market before examining Africa’s share of the value chain and the dynamics of the global apparel industry. The current situation in SSA’s cotton sector and apparel industry is presented with brief case studies on the different types of capabilities found in the region. The report concludes with the potential value capture opportunities for SSA in the cotton sector, and what the policy implications of these opportunities are.
2. Overview of the Cotton Value Chain

THE VALUE CHAIN – FROM SEED COTTON TO FINAL PRODUCT

Although little understood by the broader public, cotton has a very diverse set of uses that encompass the generation of fibre that can be used for garment production, home textiles and industrial uses, as well as products that can be processed from the seed itself, which include edible cottonseed oil, animal feed and ‘linters’ that can be used for specialty paper and chemicals manufacture.

FIGURE 1: THE PRODUCTS THAT CAN BE MADE WITH SEED COTTON

Textile manufacture is the dominant source of economic value from seed cotton, with by-products from the cottonseed accounting for 15% of the total value of the crop in advanced markets such as the US with a well-developed market for their use.  

APPAREL VALUE CHAIN

The apparel value chain is complex, with several key steps, each of which is characterised by substantially different economics and drivers of competitive advantage:

- **Seed cotton production**: Cotton is a demanding crop in terms of agronomics. Key drivers of success in production include pest management; land, soil, and water management; varietal improvement, weed management; and mechanisation.
**Lint Production (Ginning):** This is the process to separate the fibre from the seed to create cotton lint and cottonseed. Typically the ratio of lint to seed cotton, termed the ginning out-turn, is approximately 33%, with the remaining 67% of mass as cottonseed. In West Africa, the ginning ratio for lint is substantially higher, at between 40%-42.5%. Ginning can affect the lint quality which is the key determinant of price. Success and efficiency in ginning requires operators to be able to maximise the natural fibre parameters, while improving the outturn per machine per time unit at the lowest possible cost. There are different ginning technologies (saw gins or roller gins) that can be used depending on the type of cotton being ginned. Each technology brings different benefits or costs in terms of the energy, capital and manpower required as well as the properties of the lint produced.

**Yarn Production (Spinning):** Spinners transform the cotton fibres into yarn. Fibre length, length uniformity, fineness, maturity and strength determine the spinning potential of cotton, and the guiding principles for spinners in purchasing cotton are quality, delivery and price in that order. The two main types of spinning are open ended spinning and ring spinning. Open end spinning is much faster and less labour intensive than ring spinning. However, ring spinning also brings its own advantages. It can be used with all fibres; it delivers a material with optimum characteristics, especially with regard to structure and strength; and it is a simpler process that can be operated with low-skilled labour. The spinning industry has seen a continuous flow of new developments in its process and production methods. Machine speeds have risen, and automated operations have improved production capabilities and increased product quality demands. Spinning is a high energy operation so key competitiveness factors include access to a low cost reliable energy supply and access to reliable supplies of quality cotton lint.

**Fabric and textile production:** Cotton yarn is converted into fabric by weaving, knitting or braiding - different types of weaving methods produce different finishes on the final cotton fabric. Cotton fabrics, in their rough, unfinished stages, are known as greige goods. Most undergo finishing processes to meet specific end-use requirements. Finishing processes are numerous and complex. They include preparatory treatments used before additional treatment, such as bleaching prior to dyeing; treatments, such as glazing, to enhance appearance; sizing, affecting touch; and treatments adding properties to enhance performance, such as preshrinking. Fabric will receive considerable added value by applying one or more finishing processes. Similar to spinning, fabric production is highly mechanised so key competitiveness factors include access to the most efficient machinery and a low cost reliable energy supply. The finishing process typically requires the use of several different chemical treatments and also uses large amounts of water for washing and dyeing.

**Apparel production:** Apparel production is essentially the design, cutting, assembly and finishing of textiles to make clothing and made-ups (such as bed sheets, kitchen towels, and other home furnishings). Apparel production is typically a labour intensive process, although some products – e.g. a made-to-measure suit - require highly skilled, experienced operators and versatile machinery. In order to compete effectively in the world market, producers must provide rapid delivery and respond quickly to frequent shifts in consumer preferences and changes in retail practices. So while comparative costs (such as labour) are important, production planning and delivery times are key determinants of comparative advantage.

**Branding, Marketing and Retail:** Global retailing is dominated by large organisations that are developing greater specialisation by product (the rise of specialised stores selling only one item, such as clothes or

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*Lint is the term for the fibers that are separated from the seeds. Cottonseeds can be converted into oils and other products, or saved for planting purposes.

b pronounced: gray goods
shoes) and price (the growth of high-volume, low-cost discount chains). These organisations will not often have production capability, but generate value through market insight, understanding (and shaping) consumer tastes, and managing efficient fulfilment of demand through retail excellence.

**Cotton by-products**

The by-product when extracting cotton lint from seed cotton is cottonseed which also has several additional uses. Cottonseed processing occurs in three steps: de-linting, hulling and oil extraction. Four primary products are derived from the process: oil, meal, hulls and linters.

Cottonseed oil, which competes with other vegetable oils, is typically used for human consumption and sometimes for soap manufacturing and other industrial uses such as plastics and pharmaceuticals. Before it can be used in food products, the oil needs to be refined and sometimes bleached, depending on the product for which it will be used. Both of these activities are carried out at the oil mill.¹⁰

Cotton meal, which competes with other meals, is typically used as animal feed, while hulls or husks (the outer part of the seed) are either used to generate energy for the processing facility or are blended with meal for animal feed; less often hulls and husks are used as fertiliser. Linters – which are low-quality lint left over from the ginning process—are used in various manufacturing products, including yarn, plastics, and filling material.

Though the composition of seed cotton by weight depends on numerous factors, typically one tonne of seed cotton yields between 35% and 40% lint, about 10% cottonseed oil, and about 30% cotton meal. The relative proportions partly depend on the ginning outturn ratio, which ranges between 30% and 40% of the weight of seed cotton, and the cottonseed oil extraction ratio, which ranges between 10% and 16% of the weight of cottonseed depending on the method of crushing.¹¹

While a large proportion of the edible oils are traded internationally, less than 10% of global cottonseed oil production is traded.¹² Further, cottonseed meal (a by-product of oil processing that is sold as livestock feed) is rarely traded internationally due to its low value/weight ratio. Demand for meal, therefore, depends heavily on the domestic livestock industry.

**DYNAMICS OF THE INTERNATIONAL APPAREL INDUSTRY**

Apparel-making is labour-intensive and usually relies on a low-cost workforce. The production of export quality textiles is a far more capital intensive process requiring the development of infrastructure, electricity, water, and the management of sophisticated manufacturing processes. Because apparel manufacturing is labour intensive, wage rates are clearly a major factor in sourcing decisions. This gives an immediate competitive advantage to producers in developing countries.

However, many African nations have among the world’s cheapest work forces, but are not major competitors in exporting apparel. While the hourly labour cost is certainly an important cost factor in the assembly of apparel, apparel manufacturing investments and sourcing decision-making, it is not the only factor. Firstly, labour costs tend to comprise only a small proportion of costs for most stages, as illustrated in Figure 2.
The data in Figure 3 illustrates that although production costs are important, they are not the only factor that give countries a competitive advantage in apparel exports. Production costs in China are significantly lower than Mexico or Peru, but the duty cost and shipping cost to the USA takes away a large share of their competitive advantage. To remain competitive the average profit per garment for a Chinese manufacturer has to remain significantly lower.

Nations with unfavourable trade agreements, inadequate infrastructure, distant location from major consumer markets, or political instability, will be at a considerable competitive disadvantage for many apparel products, even if they have low wage rates. There are also other factors affecting sourcing decisions. These include quality of the basic fabric, specialisation in production and design (e.g. Italian suits), and certain highly skilled sewing details (e.g. complex stitching patterns). These characteristics tend to arise from historic specialisation and are not easily replicated. The competitive advantages of the textiles and clothing sector in nations with more expensive labour rates such as the US or the EU are now found in a focus on quality and design, innovation and technology, and high value-added products.

The clothing industry can be differentiated by standardised and fashion-oriented goods. The production patterns and trade networks for these two types of products are very different. Standardisation leads to mass production within vertically integrated plants and to the increasing use of low-cost suppliers in value chains; whereas fashion-
oriented goods are made in shorter product cycles, by smaller firms, with a more extensive use of specialised networks for material or service inputs. During the past decade a number of key trends have emerged which have re-shaped the way the industry is organised:

- **Geographical shifts:** The shift of garment manufacturing from developed to low-cost countries has been pronounced over the past decade, with China leading the way. Trade restrictions have contributed to the international fragmentation of the apparel supply chain, whereby low-wage countries typically sew together imported textile components and re-export the finished product. (I don’t see how this is related to trade restrictions; I can see how it is related to labour cost.) China and India are quickly consolidating their positions as the leading centres for an integrated cotton-to-garment industry, with China having a comparative advantage in large scale low cost garments manufacture and India having comparative advantage in higher design, smaller orders.

- **Transnational corporations:** Large international retailers dominate the global textiles and garments industry, influencing the geographical locations of parts of the value chain and putting further downward pressure on prices because of their immense bargaining power. These US-, EU- and Japanese-based corporations need to source large volumes of products and in the post-quota environment have shifted towards sourcing in larger amounts from fewer countries.

- **Lean retailing:** Retailers want to concentrate on selling garments while transferring as much as possible of the rest of the supply chain activities onto its suppliers. Retailers are increasingly cutting out agents and doing business direct with manufacturers, who are expected to provide a much wider range of services. A growing trend to outsource more value-added services in design, multi-subcontractor sourcing / supply chain management and prototyping is creating greater barriers to entry for new players that are not able to provide skills above-and-beyond basic manufacture.

- **Speed-to-market:** Garment retailers have set new standards for fast turnover in styles and fashion trends, and products have ever-shorter life-spans. This puts considerable demands on the garment manufacturers who must be able to respond to a series of small, irregular orders. The garment manufacturer needs to have efficient supply arrangements with the textile producers, who in turn need to make sure that they can access the appropriate raw materials.

Design and supply-chain integration capability tend to be more important to clients than per unit cost, as the ability to manage low inventories and shift production plans is worth far more in saved mark-down than reductions in garment manufacture labour cost per unit (which can be as low as c6% of a shirts retail price). There is space for countries that have particular niches – Turkey and Egypt are able to serve the highly demanding supply-chain integration of major retailers and labels – especially in the growth of fast fashion necessitating frequent, small orders. In the case of Egypt, the reputation for the quality of their cotton leads to a substantial price premium.

**Key Players at Each Stage of the Cotton Apparel Value Chain**

As evidenced in figure 3, China dominates all stages of the cotton apparel value chain. The determinants of the Chinese competitiveness are mainly: low labour costs; high inflows of foreign investment and technological expertise; an ability to produce at short notice; good logistics, especially at ports; skilled labor; and its back-linked industries (such as cotton production). Further the abolition of the Multi-Fibre Agreement allowed China to fully enjoy the benefits of its high levels of competitiveness.
In recent years, China has started to focus on more sophisticated textiles and garments, and shifted the production of some basic products basic T-SHIRTS (such as?) to other countries in Southeast Asia such as Cambodia and Vietnam. New strategies have been developed, such as focusing on quality rather than quantity, developing Chinese brands, and moving facilities to other countries to avoid safeguards and restraints and to get even cheaper labour. For many companies sourcing in China, quality, reliability, speed of distribution, and sufficient infrastructure are some of the other factors other than cost that determine their choice.

India, the second largest seed cotton producer is a leading global player in yarn, cotton fabric and garment exports. India successfully upgraded its cotton value chain, focusing on the modernisation of the spinning, weaving and garment sectors. Further, India reduced its cotton lint exports and enhanced exports of higher value added products. Although, India is naturally endowed with suitable conditions for seed cotton production, key strategic policy measures have been introduced by its government to promote the cotton to clothing value chain. These include: progressive reduction of import duties on textile machinery, implementing a Technology Upgrading Fund and using a Public-Private Partnership framework to train a skilled workforce and develop Indian apparel brands.

The USA is the world’s third largest cotton producer, the world’s dominant cotton exporter - accounting for 41% of global trade in 2010/11 - and also has a large share of the global market for textile production. The USA uses capital investments and its higher skilled work force to focus on higher value added complex textiles such as wind resistant, stain resistant, water repellent, wrinkle free clothes, technical textiles for cars, hospitals and aircraft interiors, as well as for high quality garments with a high design content. The US cotton sector has benefited from large subsidies.

Pakistan is the world’s fourth largest seed cotton producer. The spinning sector is where the majority of Pakistan’s textile industry is concentrated. Its rapid expansion was hastened by access to cheap raw materials (cotton) and cheap labour. The sector's profitability was furthered by a protectionist fiscal policy and export subsidies. In line with increased spinning capacity, cotton production has increased tremendously.

In the EU the biggest producers in textile and apparel industry are Italy, France, UK, Germany and Spain. Spain contributes more to total clothing production, while northern countries such as the UK and Germany contribute relatively more to textile production. In response to increased production costs and the emergence of international competitors, companies have improved their competitiveness by substantially reducing or ceasing mass production and simple fashion products, and concentrating instead on a wider variety of products with a higher value-added. European producers have become world leaders in markets for technical/industrial textiles and garment segments which have great potential for employment generation as well as value addition.
and non-wovens (for example industrial filters, geo-textiles, hygiene products, or products for the automotive industry or the medical sector), as well as for high quality garments with a high design content.17

One of the most important success factors for Turkey is access to raw cotton. Turkey is the seventh largest cotton producer in the world and a world leader in organic cotton production. Furthermore, some of the Turkish cotton types rank among the top quality cottons of the world. The considerable growth in Turkish yarn and fabric production is due to large investments beginning in the mid-1990s. Another important factor behind the success of the Turkish textile and apparel industry is the relatively short delivery period to the EU market that is critical in international trade. In 1980, government strategies and policies focused on creating a globally competitive Turkish textile market through trade liberalization, the promotion of export-led development, dynamic economic structures, and inflation control.18 Currently, the Turkish textile and clothing industry focuses on value added products, new designs and fashion collections for the top end international apparel market thus reducing the production of basic cotton products.
3. The International Cotton Market

SEED COTTON AND LINT

Cotton is an annual crop, grown in more than 100 countries on about 2.5% of the world’s arable land.\(^{19}\) It is the world’s main traded agricultural raw material,\(^{20}\) with over 150 countries involved in exports or imports.\(^{21}\) World cotton production and consumption are trending higher, and the industry is being transformed by new technologies, particularly biotechnology.\(^{22}\) The world cotton industry has experienced dramatic changes over the last five decades. Seed cotton production increased from 41 million tonnes in 1974, to 72 million tonnes in 2010, and cotton lint production increased from 13.9 million to 25 million tonnes over the same period. Although global lint production slowed in the last five years due to the impact of the economic downturn on demand for apparel, production levels rebounded in 2010. With the total area under cotton stable, all the growth in world cotton production has come from improved yields. This can be seen particularly in the world production share of the four largest producing countries (i.e. China, the United States, India, and Pakistan) which rose from 48% in 1970/71\(^{23}\) to 73% in 2010/11. All four of the leading cotton lint producers, take advantage of the benefits of GM cotton - 95% of US cotton area planted is GM, compared with 79% in India, 68% in China, and 40% in Pakistan.\(^{24}\)

FIGURE 5: GLOBAL SEED COTTON AND LINT PRODUCTION

The overall growth in cotton lint production over the long-run has been driven largely by India and China. However, over the last five years China has seen some contraction in volumes, while the USA which has seen a recent reversal in its contraction in volumes and returned to growth in the 2010/11 season. This decline reflects a reversal in the trend for US farmers to substitute from cotton to other crops such as corn and soybean. Africa currently accounts for only 4% of global cotton lint production.
World cotton trade and production are highly affected by government policy intervention, notably in the US, China and the EU. Direct support to producers through price interventions is of particular concern as regards the efficiency of the global cotton market.

While the USA has consistently been the world's biggest subsidizer of cotton, last year for the first time Chinese subsidies overtook them. The EU produces less than 2% of the world’s cotton, but per pound of cotton provides the largest amount of subsidies. In 2009/10 the average assistance per pound produced in the EU was US$ 2.51 compared to US$ 0.14 in the USA, and US$ 0.13 in China. ICAC estimates that Chinese producers received about US$ 1.96bn in 2009/10. That means each of the hundred million cotton growers receives around US$ 20 per head compared with the millions received by individual US farmers.
As a result of these subsidies not only do farmers in the USA and EU fail to make market oriented decisions on production, poorer countries, especially those in Africa, cannot compete on fair terms. The European Common Agricultural Policy and the USA Farm Bill are the key policy interventions that influence the cotton market and have an overall distortionary impact on the global cotton economy. According to the ICAC, whilst the average cost of production is US$ 0.80/lb in the USA, the cost of production is US$ 0.35/lb in Benin. The US therefore subsidizes its exports to be competitive with the world’s poorest countries that hold a natural competitive advantage in cotton.

The main cotton producing economies also account for a large part of consumption. China currently consumes the largest amount of cotton (46% of the global total), with India being the second largest consumer representing 18% of global consumption. Cotton consumption is essentially determined by the location of textile industries, which are predominantly located in Asia (i.e. China, India, Pakistan and Turkey). The reasons for this are the comparatively low wage and energy costs found in these countries, as well as the effects of the abolition of the MFA.

The USA is the leading exporter of cotton lint (41% of global exports) and China the leading importer. The world cotton trade is not highly concentrated by the standards of industrial markets and the international cotton shipping industry is highly competitive. Some 500 firms are engaged, at least in part, in the cotton trade and the 20 largest cotton organisations (co-operatives that aggregate production and marketing across producers) handle about one-third of world production.

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**FIGURE 8: PATTERNS OF COTTON LINT PRODUCTION, CONSUMPTION AND TRADE**

<table>
<thead>
<tr>
<th>Production and Consumption</th>
<th>Trade</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>000 bales, 2010/11 season</strong></td>
<td><strong>000 bales, 2010/11 season</strong></td>
</tr>
<tr>
<td><strong>Production</strong></td>
<td><strong>Exports</strong></td>
</tr>
<tr>
<td>China 28%</td>
<td>United States 41%</td>
</tr>
<tr>
<td>Pakistan 9%</td>
<td>India 13%</td>
</tr>
<tr>
<td>Brazil 7%</td>
<td>Uzbekistan 9%</td>
</tr>
<tr>
<td>United States 16%</td>
<td>Turkey 9%</td>
</tr>
<tr>
<td>India 23%</td>
<td>Bangladesh 9%</td>
</tr>
<tr>
<td>Australia 4%</td>
<td>Vietnam 8%</td>
</tr>
<tr>
<td>Other 13%</td>
<td>Indonesia 9%</td>
</tr>
</tbody>
</table>

| **Consumption** | **Imports** |
| China 40% | China 39% |
| India 18% | Turkey 8% |
| United States 11% | Bangladesh 10% |
| Pakistan 9% | Thailand 9% |
| Australia 9% | Turkmenistan 9% |
| Other 13% | Other 5% |

Source: USDA, Dalberg analysis

---

On 1 January, 2005, the quota restraints of the MFA expired, ending four decades of restrictions on trade in textiles and garments among World Trade Organization (WTO) members. The main impact of the quota system had been to place limits on exports from a number of low-cost countries into the United States and Europe, whose domestic industries could not compete against the low-cost overseas products. The quotas placed significant restrictions on high-volume producing countries such as India and China.
Yarn Production

World production of cotton yarn is dominated by China and India. World consumption of cotton fibre (to produce yarn) is driven by GDP growth, population, prices of cotton and other fibres, and inflation. World cotton fibre use has increased from just over 10 million tons in 1970 to 22.4 million tons in 2010.

Figure 9: Global cotton yarn production by major producer ('000 metric tonnes, 2005 – 2009)*

India and China continued to experience positive growth in cotton yarn production while USA and Turkey saw their production volumes drop over the period. This reflects a global trend of yarn production moving to lower cost countries.

Cotton Fabric and Textile Production

Total cotton fabric exports in 2009 totalled US$ 20 billion, of which China had a 38% share. China is also the leading importer of cotton fabric – its share of global imports of US$ 15 billion was 18% in 2009. Cotton fibres account for about a third of world textile fibre use.

China has seen its share of global textile exports (including other non-cotton materials) increase from 11% in 2000 to 29% in 2009 and it is now the world’s largest producer of textiles. The EU (including intra-EU trade) was the largest import of textiles (including non-cotton materials) in 2009.

* Data not available for 2010
In 2009, the size of the world market for textiles was US$ 211 billion. (OF WHICH COTTON TEXTILES?) It has more than doubled in the past two decades to US$ 211 billion, although 2009 saw a decrease from 2008 levels when the market was valued at US$ 253 billion. The European Union captures nearly a third of total world textile exports, mainly through intra-EU trade. Its textile trade with the rest of the world accounts for less than 9% of the global total. China has a rapidly growing share in the world textile market. In 1990, China accounted for 7% of the world textile exports. By 2009, its exports had surged such that it had a share of 28% of the world market. China is the only nation of the top ten leading textile exporters to register positive growth in recent years (2007 – 2009), although its CAGR was only 2% compared to 12% between 1990 and 2009.

**APPAREL PRODUCTION**

The world textile and apparel industry has undergone several production migrations since the 1950s. The first was from North America and Western Europe to Japan in the 1950s and early 1960s, when western textile and clothing production was displaced by a sharp rise in imports from Japan. The second shift was from Japan to Hong Kong, Taiwan and the Republic of Korea, which dominated global textile and clothing exports in the 1970s and early 1980s. In the late 1980s and the 1990s there was a third migration, from Hong Kong, Taiwan and Korea to other developing economies. In the 1980s, production moved principally to mainland China, but also to several Southeast Asian countries (Indonesia, Thailand, Malaysia and the Philippines) and Sri Lanka. In the 1990s, new suppliers included South Asian (e.g. Bangladesh) and Latin American apparel exporters.
In 2009, the total world exports of clothing amounted to US$ 315 billion, which is significantly larger than the world market for textiles (US$ 211 billion). The world market for clothing has seen China grab significant market share over the last decade (from 18% in 2000 to 34% in 2009). As with the world market structure for textiles, the European Union had the largest share in 2000 of 28% (this was mostly intra-E.U. trade), but has since been surpassed by China. There has been remarkable growth in Bangladesh and China’s exports of clothing, with a long run (1990 – 2009) CAGR of 16% and 14% respectively. In the short term (2007 – 2009), Bangladesh, India and Vietnam are the only countries of the top ten leading exporters to register positive growth.

In the past, the global apparel industry has been characterised by a large number of exporting countries due to the MFA quota system, but the level of export concentration is sharply increasing. The textile and apparel supply chain is also marked by substantial country specialisation. Higher income nations generally predominate in more capital-intensive segments, while lower income countries dominate labour-intensive segments. The most labour-intensive activity is apparel production, followed by textile (yarn and fabric) production. The most capital-intensive segments, such as man-made fibre production and machinery manufacturing, are located upstream where barriers become progressively higher. As countries grow richer and wages rise, the comparative advantage in manufacturing is eroded, and the focus shifts to high value-added products or to other manufactured products with lower labour intensity.

Leading apparel suppliers like China, India and Turkey, concerned about a slowdown in global exports with the economic downturn, have also begun to focus more on sales to their domestic markets. This trend not only taps into the added purchasing power of those emerging economies, but it also allows them to accelerate the upgrading process associated with moving beyond assembly and full-package supply to original design manufacturing and original brand manufacturing.

**The Implications of Trade Policy on the Apparel Industry**

The MFA governed the world trade of textiles and garments from 1974 through 2004, imposing quotas on the amount developing countries could export to developed countries. The Arrangement however was not negative for all developing countries. For example the EU imposed no restrictions or duties on imports from the very poorest countries, such as Bangladesh, leading to a massive expansion of its industry. The Agreement on Textiles
and Clothing provided for the gradual dismantling of the quotas that existed under the MFA. This process was completed on 1 January 2005. However, tariffs remain in place on many textile products. For example, the US currently subjects woven cotton fabrics to tariff rate quotas.\textsuperscript{7}

The African Growth and Opportunity Act (AGOA) \textsuperscript{[initiated in...YEAR?] allows eligible African countries to export textile and apparel goods into the United States subject to zero import duty up until 2015. AGOA has resulted in the growth of an apparel industry in Africa. However, the dismantling of the MFA world quota regime for textile and apparel trade in January 2005 reversed some of the gains made in the African textile industry due to increased competition from developing nations outside of Africa, particularly China.

Eligible African countries also have preferential market access to the EU under either the Economic Partnership Agreement (EPAs) or the Everything but Arms (EBA) initiative. AGOA and the EBA are nonreciprocal Preferential Trade Agreements in which the US and the EU countries extend enhanced market access, at least temporarily, to developing countries in order to promote their integration into the world trade system and to contribute to their development.\textsuperscript{38} The EPAs are reciprocal meaning that not only does the EU provide duty-free access to its markets for African, Caribbean and Pacific (ACP) country exports, but ACP countries also provide duty-free access to their own markets for EU exports. Not all ACP countries have to open their markets to EU products, and Nigeria, for example, has chosen not to sign an EPA.

Among sectors eligible for trade preferences under these agreements, the textile sector is a key one for many developing countries. Rules of origin (RoO) are the criteria that determine whether apparel is entitled for duty-free access under these preferences. RoO are justified to prevent trade deflection, or re-exporting foreign apparel purchased at a lower price while pretending it is produced in the country.\textsuperscript{39} RoO for apparel under AGOA and EPAs currently only require for a “single transformation” process, meaning beneficiary countries can use third country fabric and still meet the criteria exporting apparel preferences. Beneficiary producers can therefore purchase fabric from cheaper sources, and focus on building apparel manufacturing.

\textbf{COTTON BY-PRODUCTS}

It is estimated that about five million tonnes of cottonseed oil is produced worldwide per year. This is similar to the production of groundnut, coconut and palm kernel oil, but well behind palm oil (38 million tonnes), soybean oil (37 million tonnes), rapeseed oil (18 million tonnes), and sunflower oil (11 million tonnes).\textsuperscript{40}

\textsuperscript{7} Tariff Rate Quotas (TRQs) permit a specified quantity of imported merchandise to be entered into the US at a reduced rate of duty during the quota period. Once the tariff-rate quota limit is reached, goods may still be entered but at a higher rate of duty (www.cbp.gov).
China and India are the leading producers of cottonseed oil and cottonseed meal and have driven the growth of Asia’s share of global production.

**PRICES**

Prices for seed cotton, like other commodity markets, experience substantial volatility driven by a combination of market fundamentals and technical trading strategies. Pricing of cotton is generally driven by the ratio of stocks to the level of consumption, which indicates the level of supply available on the world market. The cotton lint price has increased significantly from US$ 63 in 2008/09 to US$ 126 in 2010/11 as global supply dropped. The price increase can be explained by a mix of economic factors — from reduced cotton acreage and trade restrictions to shrinking cotton stocks and sooner-than-expected recovery in consumer demand for textile products after the economic downturn.\(^4\) However, global cotton prices are not only dependent on the supply and demand of cotton. They also depend on the level of subsidies available to producers and exporters in other nations. With a guaranteed price, production decisions are not entirely market driven. Subsidies lead to higher levels of production than demand and supply would naturally determine in a free market. The world price slumps when the supply of cotton is artificially increased in this way.
FIGURE 13: RELATIONSHIP BETWEEN THE COTTON PRICE AND THE STOCKS-TO-USE RATIO

Cotton Price versus the Stocks-to-Use Ratio
$/lb, Stocks as % lint use, 1974/75 – 2010/11 season

Source: USDA, Cotlook, Economist Intelligence Unit, FAOSTAT, Dalberg analysis

Notes: Economist Intelligence Unit provides average of the traded price of cotton over the calendar year. Cotlook A index is the spot index on the 1st of January each year, and therefore does not match the historical prices from the Economist. Based on the total global use of cotton lint (i.e. ‘consumption’) over average global lint stocks, as a measure of the tightness of global supply.

Reductions in production costs have also impacted world prices for cotton. These reductions have been associated primarily with technological improvements resulting in yield increases from 300 kilograms of lint per hectare in the early 1960s42 to about 793 kilograms of lint per hectare in 2007/08 (world average).43 This yield increase reflects the introduction of improved varieties and increased use of irrigation and chemical fertilisers. The spread of genetically modified seed technology in developing countries is expected to reduce the costs of production even further. Unlike the Cotlook A and B indices for cotton lint, there are no similar, readily available price indices for cotton yarn and cotton fabric.

World cottonseed oil prices averaged US$ 1,600/tonne during 2007/08 up from US$ 800/tonne during 2006/07. The price dropped in 2008/09 to US$ 820/tonne and increased slightly in the last year to US$ 888. These price increases are similar to those of other edible oils due to their substitutable nature.
OUTLOOK FOR THE COTTON MARKET

Although record-high cotton prices have been driving a shift in demand towards cotton/polyester blends, cotton prices will start to fall in 2011, and this will help to push up cotton consumption in the coming years.44

FIGURE 15: FIVE YEAR FORECAST ON WORLD COTTON PRODUCTION, CONSUMPTION AND PRICE (2011 – 2015)
It is forecast that world cotton production will also increase in 2011/12 and 2012/13. Higher cotton prices vis-à-vis competing crops (for example, soybean) resulted in increases in planted areas in the northern hemisphere, notably the US. In India, higher plantings of GM cottonseed have boosted output. Further, prices at record levels in 2010 led to substantially higher plantings in the southern hemisphere, notably Brazil and Australia.\(^{45}\)

Cotton prices are expected to fall by the end of 2011 and to continue to ease, although at a much slower rate, towards 2015, owing to higher cotton production in both 2011/12 and 2012/13 and the more long-term switch to man-made fibers.\(^{46}\)

Over the longer-term, cotton prices are expected to remain strong and are likely to at least remain stable if not rise in real terms, given continued expected demand for cotton-based garments as GDP rises, while prospects for cotton production growth are, as yet, somewhat limited by competition for agricultural land with other agro-commodities and rising pressure on key inputs such as water.
4. The African Market

Although cotton is one of the main exports in several African countries, Africa has a low share of global production of seed cotton and negligible participation in value added activities. While there is a substantial increase in the market size of subsequent steps in the value chain, Africa does not play a significant role and experiences high barriers to entry.

**FIGURE 16: VALUE CAPTURED AT EACH STAGE OF THE INTERNATIONAL VALUE CHAIN**

There are however a few successful African apparel exporters that have flourished. One of these is Mauritius, where the textile and clothing sector was the focal point of the country’s development strategy in the 1980s and 1990s. This resulted in a high number of East Asian investments in the industry. The disadvantages of Mauritius’s location in cost terms were offset by a concentration on high-unit-value products, such as “Scottish” knitwear (mainly jerseys and pullovers).  

**SEED COTTON PRODUCTION**

Seed cotton is produced in much of Africa, but only three countries – Burkina Faso, Nigeria and Egypt – can be considered scale producers. African seed cotton production levels have declined in the short term and long run growth is low compared to China or India. Further African yields are much lower than their competitors in Asia - average of 9,235 hg/ha\(^8\) in 2009 compared with China’s yields of 41,144 hg/ha.

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\(^8\) Average for 12 ACET focus countries
FIGURE 17: LEADING SEED COTTON PRODUCERS IN AFRICA IN 2009 (000 TONNES)

Source: FAOSTAT; Dalberg Analysis. Notes: ACET focus countries are in bold except for Rwanda and Mauritius which do not grow cotton.

Cotton in Africa is typically a smallholder export crop and almost all farms measure less than 6 hectares. Practically no cotton is irrigated and production is characterised by outdated techniques and equipment, as well as problems related to storage and transportation which increase exposure to phytosanitary risks. Burkina Faso is currently the only country to use GMO cotton, although other countries such as Tanzania are undertaking trials.

Cotton grown in Africa generally has favourable fibre characteristics, due in part to growing conditions and being handpicked although quality is often compromised by contamination – particularly from polypropylene that contaminates the cotton from the picking bags and bale wrap.

FIGURE 18: WORLD COTTON PRODUCTION BY MAJOR PRODUCING COUNTRY + AFRICA (MILLION TONNES, 1961-2009)

Source: FAOSTAT; Dalberg Analysis

Looking at long term trends in cotton production in the ACET countries, it is clear which countries are experiencing an overall decline and those whose production levels continue to rise.
FIGURE 19: RECENT TRENDS IN SEED COTTON PRODUCTION - FOCUS ON COUNTRIES IN AFRICA TRANSFORMATION REPORT

South Africa has experienced the largest decline in the long (1974 – 2009) and short run (2004 – 2009), a CAGR of -4.1% and -21.2% respectively. Uganda and Botswana have also seen the production of seed cotton fall. Although Senegal in the long run has seen a drop in production, trends in recent years show significant levels of growth. Zambia and Burkina Faso and Nigeria stand out as the countries where production levels have been steadily rising.

**GENETICALLY MODIFIED (“Bt”) COTTON**

Burkina Faso and South Africa are the first countries in Africa to embark upon commercial planting of genetically modified (GM) or Bt cotton, and other African countries look set to follow in their footsteps. The African countries that have the biosafety legislation and corresponding policy in place to obtain the intellectual property rights from the holders (mainly Monsanto) and to undertake confined field testing are: Benin, Cameroon, Mauritius, Tanzania, Kenya, Uganda, Namibia, Zimbabwe, Malawi and Zambia.\(^h\)

It is often assumed that Bt cotton alone will increase yields to the levels found in India, China and the USA. The difference between Africa and these other countries is that the key driver to switch to Bt cotton was excessive pesticide use and the development of pesticide resistance in target insect populations.\(^i\) Bt is not a yield-enhancing technology; it is a crop protection technology that protects from pests the yield that has been produced through correct crop management.


\(^{i}\) Hillocks (2009) GM Cotton for Africa
This is a basic principle, but is often overlooked in the debate on the appropriateness of Bt cotton for African smallholder farmers. The low yields obtained reflect the reality that crop management and agronomics among most cotton smallholders in Africa is far from best practice. A farmer who is getting a low yield from the current varieties due to poor crop management is unlikely to obtain a significantly higher yield from a Bt variety, but will have paid considerably more for the seed.

To calculate the scale of the opportunity – in terms of volume – that Bt cotton provides, requires a better understanding of the percentage of yield that smallholder farmers in Africa are losing to pests. To estimate the financial benefit requires an analysis of the cost savings made by removing insecticides compared to the increased cost of the seed. Overall, without additional investment in crop management, yields per hectare with Bt cotton will be nowhere near comparable with those in China or India for example.

For Africa to switch to Bt cotton, and for it to result in the desired yield increased would require many additional and complementary efforts. The following requirements are suggested for policy makers and practitioners to consider:

- A well implemented public information campaign so that the potential benefits of Bt cotton are understood and farmers appreciate that increased yields would depend on the implementation of best practices in cotton agronomics. Bt cotton should be promoted as a benefit to pest management rather than as a yield enhancer.

- Farmers should have access to credit for purchasing inputs and should be well supported with technical advice. The public sector extension service may lack the capacity to deliver this and therefore policy-makers should look to engage with the ginning companies.

**APPAREL INDUSTRY**
Textile and apparel industries in most SSA countries have contracted during the past five years, particularly in the largest textile-producing countries — South Africa and Mauritius. Following an increase in competition after the phase-out of quotas in the U.S. and EU markets at the end of 2004 it is difficult for Africa to be cost competitive in the production of yarn, fabric, and finished apparel compared with suppliers, such as China, India, and Bangladesh. Without duty-free preferences such as AGOA, most African textile and apparel exports to the United States would most likely not be cost competitive.

**FIGURE 21: SSA EXPORTS OF TEXTILES AND APPAREL (2004-2008) (US$ MILLIONS) COMPARED TO TOTAL EXPORTS**

<table>
<thead>
<tr>
<th>Year</th>
<th>Textiles (US$ millions)</th>
<th>Apparel (US$ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>2,862</td>
<td>3,557</td>
</tr>
<tr>
<td>2005</td>
<td>2,518</td>
<td>3,058</td>
</tr>
<tr>
<td>2006</td>
<td>2,709</td>
<td>3,058</td>
</tr>
<tr>
<td>2007</td>
<td>2,226</td>
<td>832</td>
</tr>
<tr>
<td>2008</td>
<td>2,471</td>
<td>865</td>
</tr>
</tbody>
</table>

Source: World Bank WITS Database (SITC Revision 3); Dalberg Analysis

SSA has a very small spinning industry (only 0.01% of global spinning capacity). Cotton yarn (including cotton/manmade-fibre blends) is produced for export to the United States and the EU, as well as for use in downstream production of apparel for export to these markets. In 2009 Nigeria was the largest exporter of cotton yarn (US$ 21 million), followed by Zimbabwe (US$ 7.6 million) and Tanzania (US$ 7 million). The total value of SSA cotton yarn exports in 2009 was US$ 50 million compared to US$ 1.3 billion from India.

About two thirds of SSA’s woven fabric exports in 2007 consisted of cotton fabric, including denim and greige fabric. Mauritius, South Africa and Madagascar accounted for the largest share of cotton fabric exports in 2009. Over the past 20 years, SSA imports of low-cost used clothing from developed countries have increased substantially which has been detrimental to local apparel industries.
Thirteen of the countries featured in the Africa Transformation Report produce cotton, and there is a wide variety in levels of production within the group. Similarly, there is also a wide variety in each country’s capabilities in yarn, fabric and apparel manufacture.

FIGURE 23: OVERVIEW OF CURRENT CAPABILITIES IN THE TEXTILE & APPAREL INDUSTRY FOR COUNTRIES IN THE AFRICA TRANSFORMATION REPORT

Source: FAOSTAT; WITS (SITC Rev3); ITMF; Dalberg Analysis.
COTTON BY-PRODUCTS

Cottonseed processing only began in earnest in West Africa in the late 1980s, and the leading producers of cottonseed oil and meal in Africa are Tanzania, Burkina Faso, and Egypt.

FIGURE 24: SEED COTTON, COTTONSEED OIL & COTTONSEED MEAL PRODUCTION BY AFRICAN COUNTRY ('000 TONNES, 2008)

![Graph showing cotton production, oil production, and meal production by African countries in 2008.]

Source: FAOSTAT, USDA; Dalberg Analysis

Notes: Cottonseed oil and meal production data only available for limited countries.

Small companies in Africa tend to use traditional expeller pressing technology rather than the more technologically advanced solvent-based approach to extract oil. These technologies currently extract about 60% of the oil content of the cottonseed they process, instead of the 95-96% made possible by the solvent-based technology. The literature suggests that introducing the more advanced technology is unlikely to increase profitability, because of: (i) the high cost of installing and operating the advanced machinery, (ii) not having enough cottonseed to utilise the machinery at full capacity, and (iii) the higher labour intensity of the older technology than the new—an important advantage in countries with relatively low wage rates. Further, consumers are not judged willing to pay the higher prices for the better oil that the advanced machinery would produce.

The analysis for the twelve ACET focus countries not only demonstrates that if yields could be increased there would be significant value to be captured through increased productivity, but also that if ginning and oil pressing was more efficient, the volume of cottonseed oil (and thereby meal) could also significantly increase.

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Source: FAOSTAT, USDA; Dalberg Analysis

Notes: Cottonseed oil and meal production data only available for limited countries.
FIGURE 25: OVERVIEW OF ACET COUNTRIES BY VALUE CAPTURE OPPORTUNITY IN COTTON CO-PRODUCTS

<table>
<thead>
<tr>
<th>Country</th>
<th>Cottonseed Oil Production (tonnes)</th>
<th>Potential Cottonseed Oil Production (tonnes)</th>
<th>Percentage change in volume (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burkina Faso</td>
<td>1,996</td>
<td>47,520</td>
<td>33</td>
</tr>
<tr>
<td>Nigeria</td>
<td>2,329</td>
<td>49,200</td>
<td>144</td>
</tr>
<tr>
<td>Tanzania</td>
<td>2,080</td>
<td>32,000</td>
<td>81</td>
</tr>
<tr>
<td>Mozambique</td>
<td>1,750</td>
<td>24,000</td>
<td>93</td>
</tr>
<tr>
<td>Zambia</td>
<td>517</td>
<td>14,000</td>
<td>66</td>
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<td>Cameroon</td>
<td>723</td>
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<td>490</td>
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<td>Ethiopia</td>
<td>403</td>
<td>7,000</td>
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<td>3,881</td>
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<td>Kenya</td>
<td>396</td>
<td>3,830</td>
<td>nav</td>
</tr>
<tr>
<td>Ghana</td>
<td>117</td>
<td>n/a</td>
<td>nav</td>
</tr>
<tr>
<td>South Africa</td>
<td>37</td>
<td>nav</td>
<td>n/a</td>
</tr>
<tr>
<td>Botswana</td>
<td>3</td>
<td>nav</td>
<td>n/a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>Value of increasing yield/ha (US$ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burkina Faso</td>
<td>1,996</td>
</tr>
<tr>
<td>Nigeria</td>
<td>2,329</td>
</tr>
<tr>
<td>Tanzania</td>
<td>2,080</td>
</tr>
<tr>
<td>Mozambique</td>
<td>1,750</td>
</tr>
<tr>
<td>Zambia</td>
<td>517</td>
</tr>
<tr>
<td>Cameroon</td>
<td>723</td>
</tr>
<tr>
<td>Uganda</td>
<td>490</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>403</td>
</tr>
<tr>
<td>Senegal</td>
<td>153</td>
</tr>
<tr>
<td>Kenya</td>
<td>396</td>
</tr>
<tr>
<td>Ghana</td>
<td>117</td>
</tr>
<tr>
<td>South Africa</td>
<td>37</td>
</tr>
<tr>
<td>Botswana</td>
<td>3</td>
</tr>
</tbody>
</table>

Notes: Value of increasing yield figure is based on the value that could be gained if yields were increased to the level in China. Potential Cottonseed Oil figures assume one tonne of seed cotton can yield 10% cotton oil. (Cottonseed meal is the by-product of processing cottonseed oil). Mauritius and Rwanda do not grow seed cotton, and South Africa already processes more cottonseed oil compared to the volume of seed cotton that it actually produces. Insufficient data for Ghana and Botswana on Cottonseed Oil Production in 2008.

Source: FAOSTAT; Dalberg Analysis

HISTORICAL COLLAPSE IN THE AFRICAN COTTON-TO-APPAREL INDUSTRY: DRIVERS AND IMPLICATIONS FOR AFRICAN COUNTRIES TODAY

The key drivers of the decline of the cotton, textile and apparel sectors can be summarised as follows:

- Low quality of cotton
- Lack of rural credit and therefore low use of purchased inputs
- Lack of a domestic textile industry
- High energy and infrastructure costs
- Lack of market and credit facilities
- Comparatively high labour costs
- Subsidies received by cotton farmers in other countries
- Unfair competition from second-hand clothes and un-taxed imports of new clothing.

These drivers have made it difficult for exporters of cotton lint to command high prices and for local apparel industries to compete with cheaper imports of similar products.

Kenya provides a useful example to illustrate the collapse of Africa’s cotton sector. Immediately after independence Kenya adopted an import substitution policy that ensured a backward integration of textile mills. Between that time and the end of 1990 the Government systematically introduced controls into the sector: it helped cooperative societies buy ginneries from the colonialists, controlled marketing margins, fixed producer prices and invested heavily in textile mills. The Government protected the local industry by imposing a 100% duty

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1 Kenya Export Zones Processing Authority (2005) ‘Kenya’s Apparel and Textiles Industry’
on imported goods, which ensured the rapid growth of the local textile industry. In the 1980s, the industry also received substantial assistance from the Government and donor agencies, making the textile industry the leading manufacturing activity in Kenya, both in terms of size and employment. However the sector started declining in the mid-1980s, and since the liberalization of the economy in 1990, the influx of textile goods into Kenya has become a major problem. A major driver of the collapse is both second-hand and new imported clothing. This has also heavily impacted on Nigeria’s textile sector. Imports are smuggled in through porous borders avoiding taxation and sold at a very low cost making it virtually impossible for the manufacturing sector to compete.

From 2000 Africa’s textile sectors began to grow again largely thanks to AGOA, but unfortunately this growth started to fade with the expiration of the MFA system of quotas on January 1, 2005. Numerous foreign-owned apparel factories that had profited from the MFA by operating in Africa closed, and were reopened in China, Bangladesh, Cambodia and Vietnam. By 2009, U.S. apparel imports from sub-Saharan Africa had fallen by nearly half (-48%), while at the same time apparel imports from Asia had risen steeply. By 2009, Bangladesh, Cambodia and Vietnam were exporting more than 11 times the volume of apparel as all of sub-Saharan Africa combined.

**FIGURE 26: US APPAREL IMPORTS (US$ MILLION)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Sub-Saharan Africa</th>
<th>Cambodia</th>
<th>Bangladesh</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>3,719</td>
<td>808</td>
<td>2,116</td>
<td>47</td>
</tr>
<tr>
<td>2004</td>
<td>7,746</td>
<td>1,429</td>
<td>1,998</td>
<td>5,058</td>
</tr>
<tr>
<td>2009</td>
<td>11,261</td>
<td>3,410</td>
<td>1,871</td>
<td>922</td>
</tr>
</tbody>
</table>

Source: US Department of Commerce, Office of Textiles and Apparel; Dalberg Analysis

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k Kenya Export Zones Processing Authority (2005) ‘Kenya’s Apparel and Textiles Industry’

m Kenya Export Zones Processing Authority (2005) ‘Kenya’s Apparel and Textiles Industry’

n ACTIF White Paper 2011

o ACTIF White Paper 2011
Although total U.S. apparel imports from Africa declined by a further -14% in 2010 (see Figure 27), virtually all of that loss is attributable to Madagascar, which was disqualified from AGOA eligibility in December 2009. When Madagascar is excluded from the data, U.S. apparel imports from Africa actually increased by 3.5% in 2010 measured by value – the first increase since the end of the MFA in 2005. Despite this modest increase, apparel imports from China, Bangladesh, Cambodia and Vietnam continue to rapidly grow. It is clear, that sub-Saharan Africa faces intense competition, but there are active steps that policy makers can consider and opportunities policy makers can exploit.

**FIGURE 27: GROWTH FROM 2009 TO 2010 IN US APPAREL IMPORTS (US$ MILLION)**

The rising cost of manufacturing in China, has slowed the rate of Chinese export growth and opened market opportunities for other exporters. Bangladesh, Cambodia and Vietnam are benefiting from this and so too can Africa. Further, rising cotton prices and tight cotton supplies, have made it more efficient to produce yarns, fabrics and apparel closer to the region where the cotton is grown. This is a comparative advantage from which Africa can also benefit. Leveraging these opportunities and learning from past experience and the sectors collapse, areas that require attention and a better understanding by policy makers include:

- Enable industry to benefit from preferential trade agreements. The enormous market prospects presented by AGOA and the EPAs have rekindled interest in the industry
- Successfully manage borders. Porous borders have led to the smuggling into the country of textile from Asia and second hand clothes from Europe and America
- Address the high costs of electricity supply or consider removing levies e.g. VAT from power bills in order to lower the costs

Source: US Department of Commerce, Office of Textiles and Apparel; Dalberg Analysis
Promote input credit schemes for cotton farmers. The key to getting the best returns for the farmer from cotton growing is the establishment of effective and sustainable mechanisms for the delivery of credit for input purchase, combined with easy access to the correct inputs, supported by technical services to ensure the farmer has the knowledge to make the best use of those inputs.

Accelerate efforts to introduce GM technology.
5. The Value Capture Opportunity

CHALLENGES AND BARRIERS FOR VALUE CAPTURE

The challenges SSA faces across the value chain are summarised in Figure 28 below. To increase market share Africa will need to make considerable efforts geared at narrowing existing gaps (such as productivity and quality management) and building on its comparative advantages. Africa’s comparative advantage lies in its easy access to cotton lint, low cost abundant labour, and opportunity to exploit preferential trade agreements - this suggests that cotton fabric and apparel production (rather than complex textiles) could be the focus.

FIGURE 28: CHALLENGES FACED BY SSA COUNTRIES ACROSS THE VALUE CHAIN

The SSA textile and apparel supply chain is dispersed and fragmented. This inhibits increased cooperation along the textile and apparel supply chain.

OPORTUNITIES FOR VALUE CAPTURE

While for many agro-processing areas, moving to more advanced stages of the value chain involves shifting to 1 or 2 more advanced and tightly integrated processing or manufacturing industries, this is not the case for cotton. While immediate processing of cotton to lint bears many similarities to other agro-processing sectors, further stages of yarn production, fabric or textiles production, garment production and finally garment or apparel design have radically different levels of input intensity, industry structure and factors for success. As a result, general opportunities can only be identified at a very high level, while a sharper assessment requires assessment of country-level factors in order to identify which cotton-to-apparel sub-sectors are most addressable.

Below, we provide an initial overview of the areas of value capture opportunity for Sub-Saharan African countries, before assessing the types of opportunities that exist for countries in the Africa Transformation Report, using selected case studies to outline some of the considerations at a high level.

GENERIC OPPORTUNITIES FOR VALUE CAPTURE FOR AFRICAN COUNTRIES

Based on Africa’s existing capabilities and areas of comparative advantage, this report suggests four main focus areas where countries can capture additional value. These are: increasing the volume of seed cotton production, improving seed cotton quality, taking advantage of high value niche markets, and nurturing (or strengthening) a domestic apparel industry.
**FIGURE 29: KEY OPPORTUNITIES TO CAPTURE VALUE FOR AFRICAN COUNTRIES**

<table>
<thead>
<tr>
<th>Scale of Opportunity</th>
<th>Feasibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Increasing the volume of production**
- Increase yields through better agronomics
- Move to GM cotton
- Improve farmer incentives for production

**Improve production quality**
- More stringent hand picked cotton quality control
- Adapt best practices – e.g. Senegal program to eliminate polypropylene contamination
- More efficient cottonseed oil processing

**Address high-value niches**
- Fair-trade cotton
- Organic cotton
- Origin cotton – e.g. Cotton-made-in-Africa
- African prints and woven fabrics (kanga, kente etc) for regional and Diaspora markets

**Nurture an apparel industry**
- Develop industry clusters (parks / export zones)
- Address infrastructure challenges
- Exploit AGOA and EBA Trade Agreements

**IDENTIFYING OPPORTUNITIES FOR VALUE CAPTURE FOR COUNTRIES IN THE AFRICA TRANSFORMATION REPORT**

The countries in the Africa Transformation Report present a heterogeneous range of capabilities and sources of comparative advantage along each stage of the cotton value chain. There are those nations that are not major cotton growers, but have relatively developed apparel export industries and those nations that are the leading seed cotton producers but export the vast majority of their cotton as raw lint. To better understand the dynamics, capabilities and challenges involved in moving up the cotton value chain, this report segments the ACET focus countries into three different groups (and South Africa) based on their relative strengths in apparel manufacturing, textile manufacturing and seed cotton production. It then presents an example on one country from each group – Kenya, Tanzania and Burkina Faso.
FIGURE 30: SEGMENTING OF COUNTRIES IN THE AFRICA TRANSFORMATION REPORT BY RELATIVE CAPABILITIES

*Ghana produces significantly less seed cotton than the other countries in the group. Rwanda does not fall in any of the categories.

NATIONS WITH APPAREL MANUFACTURING CAPABILITIES – THE EXAMPLE OF KENYA

Kenya only produced 38,000 MT of seed cotton in 2008 which is much lower than its neighbours (Tanzania produced 320,000 MT and Uganda produced 75,000 MT). However, despite its low levels of cotton lint production, Kenya is one of the leading apparel exporters in SSA.

FIGURE 31: OVERVIEW OF KENYA SEED COTTON PRODUCTION

The Kenyan textile industry has contracted since the 1990s but Kenya remained the second largest SSA apparel exporter in 2009. Apparel made in Kenya is primarily exported to the United States, with smaller amounts exported within the region and to Europe. Kenya’s apparel manufacturers are highly dependent on AGOA tariff preferences and the third country fabric provision. Much of the fabric needed by Kenyan manufacturers is not
produced in Kenya (e.g., denim), and the high costs of intra-SSA transportation often make fabric from Asia cheaper than fabric from other countries in SSA.

**FIGURE 32: KENYA TEXTILE AND APPAREL EXPORTS (US$ MILLIONS)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Textile Exports</th>
<th>Apparel Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>235</td>
<td>49</td>
</tr>
<tr>
<td>2006</td>
<td>293</td>
<td>54</td>
</tr>
<tr>
<td>2007</td>
<td>297</td>
<td>66</td>
</tr>
<tr>
<td>2008</td>
<td>303</td>
<td>48</td>
</tr>
<tr>
<td>2009</td>
<td>225</td>
<td>45</td>
</tr>
</tbody>
</table>

Source: WITS (SITC Rev 3); Dalberg Analysis *(THIS TABLE IS SURPRISING; HAS KENYA BEEN MORE SUCCESSFUL IN TEXTILES THAN APPAREL EXPORTS?)*

The Government of Kenya has encouraged apparel production by establishing export-processing zones (EPZ), which allow apparel manufacturers to import raw materials free of duty if the final products are exported. Firms in the EPZ also receive a five-year tax holiday and VAT rebates for exported goods.

Textile and apparel inputs that are currently being produced by Kenya’s small but vertically integrated industry include cotton yarn (including organic yarn) and certain synthetic yarn, knit cotton fabric, and woven fabric for blankets. These products are either exported directly or incorporated into products that are exported to the United States and the EU. Although Kenya has been successful in developing an export-oriented apparel industry, high-cost electricity and poor infrastructure hinder Kenya’s prospects for increased competitive production of textile and apparel inputs.

**Value-capture opportunity:**

Kenya is not a major cotton producer. It imports fabrics and textiles which it then assembles into garments for export. Despite its decline in the last decade, Kenya has one of the more developed apparel export industries in Africa. Other countries in SSA that could also be classed in this group alongside Kenya include Botswana, Mauritius, Madagascar and Lesotho to some extent. The value-capture opportunity for this group is to strengthen or rebuild the apparel industry. There is also potential to look at additional value capture opportunities in niche markets - producing organically produced garments and products – e.g. ‘Made in Africa’, ‘Buy Africa Build Africa’, and ethnic textiles (e.g. kikoi). Preferential access to the US and EU markets as well as an existing apparel skills and manufacturing base make the case for increasing apparel production more appealing.

**SEED COTTON PRODUCERS WITH POTENTIAL TO MOVE UP THE VALUE CHAIN – THE EXAMPLE OF TANZANIA**

Tanzania ranks within the top five African producers of seed cotton and it is the world’s fourth largest producer of organic cotton (after India, Turkey and Syria). About 95% of the crop is grown by cultivation using the hand-hoe, on small farms. Yields are low by international standards because all cotton is rain fed, with little application of advanced farm and crop management practices. The majority of cotton (approximately 70%) is exported in raw form as lint. The major destinations of Tanzanian cotton lint are India, Vietnam, Indonesia, Malaysia, Kenya, China and Thailand. In Tanzania, there is minimal processing into yarn, garments and textile materials.
Currently 32 ginners have installed oil mills at their business premises, capable of processing 16,121 MT of cottonseed oil; representing only 14% of installed capacity which stands at 115,150 MT annually.\(^{59}\) These oil mills also produce around 52,000 MT, in total, of cotton cake annually. Nationally, the demand for edible oil is presently estimated at around 170,000MT.\(^{60}\) Cottonseed oil contributes 2.7% of the national edible oil production, although it has the potential to meet upwards of 60% of the total domestic edible oil demand.\(^{61}\)

The Tanzanian textile sector consists of one independent spinning mill and several integrated firms. The industry spins mostly cotton yarns for both knit and woven fabric. A few fabric mills also blend cotton with polyester or other synthetic fibres; however, all synthetic fibres must be imported. Tanzanian textile mills sell these textiles regionally, or minimally process and print fabric to be sold locally as final products.

Much of Tanzania’s textile industry was developed in the 1970s as part of a state drive to industrialise the country. After privatisation, the textiles industry collapsed in the early 1990s, largely due to unfavourable tax policy

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**FIGURE 33: OVERVIEW OF TANZANIA SEED COTTON PRODUCTION**

Source: FAOSTAT; Dalberg analysis

**FIGURE 34: TANZANIA TEXTILE AND APPAREL EXPORTS (US$ MILLIONS)**

Source: WITS (SITC Rev 3); Dalberg Analysis
discriminating against domestic manufactures; as well as the saturation of the local market by second hand clothes imports.

Tanzania has so far not fully exploited the AGOA market in comparison with Kenya. Currently, most production is for regional and local markets, and significant investment in machinery and workforce training would be required to expand production of export-quality textile and apparel inputs for the United States, EU, and similar markets. The country faces several competitive disadvantages in the production of textile and apparel inputs, including a lack of reliable power, an undeveloped apparel industry, lack of a skilled labour force, and limited market knowledge.

Value capture opportunity:
Tanzania is a major cotton producer in Africa with some limited textile/apparel production capacity and an industry that is not realizing its full potential. Other countries in SSA that could also be classed in this group include Nigeria, Zambia, and Ethiopia to some extent. The value capture opportunities include: increasing seed cotton production levels, improving cotton lint quality and nurturing a domestic cotton fabric and apparel industry. Additional value capture opportunities in niche markets - such as producing organically produced / fair trade cotton - also exist. Like Kenya, these countries have preferential trade access to the US and EU (excluding Nigeria) markets, but more importantly, they have access to abundant supplies of cotton lint to feed a spinning, cotton fabric and apparel industry and allow them to be more competitive on costs. The challenges around technological capabilities, infrastructure, market knowledge, production planning and so forth would need to be addressed however in order for these cost advantages to bear fruit.

LEADING SEED COTTON PRODUCERS – THE EXAMPLE OF BURKINA FASO
Burkina Faso is the largest seed cotton producer in SSA. Despite Burkina Faso’s large cotton resources, the textile and apparel sector is relatively small. Most of the cotton lint produced is exported; only 1% is consumed domestically. Burkina Faso has reduced contamination significantly, leading to an increase in the final quality of cotton when it reaches market. All national lint production is classed by the major ginning company SOFITEX. Burkina Faso also began biotech cotton trials earlier this decade in partnership with Monsanto. By 2009 it had expanded to more than 100,000 hectares of commercial plantings by small-scale farmers.

FIGURE 35: OVERVIEW OF BURKINA FASO SEED COTTON PRODUCTION

Source: FAOSTAT; Dalberg analysis
Société Nouvelle Huilerie et Savonnerie Citec (SN-CITEC) is Burkina Faso’s only large cottonseed processing company, coexisting with multiple much smaller, less technologically advanced, companies. The company’s maximum annual capacity is 120,000 tons with a total labour force of almost 1,000 employees. As much as 95% of its energy requirements are met by the use of husks and it achieves more than a 16% oil extraction rate, equivalent to the rates achieved in the USA. SN-CITEC produces fully refined oil and in 2008 began fortifying it with Vitamin A under its own label. It has also installed a pilot plant for biofuel production with an annual capacity of 3,000 tons, and plans to expand this to 10,000 tons. About 12% of SNCITEC’s cotton oil is exported, primarily within the region.

FIGURE 36: BURKINA FASO TEXTILE AND APPAREL EXPORTS (US$ MILLIONS)

Burkina Faso has one industrial spinner, FILSAH, which became operational in 2000. FILSAH spins approximately 1% of Burkina’s lint, using open-end spinning technology to produce 100% cotton yarn. The factory does not work at full capacity. The only industrial-scale printing operation in Burkina Faso is FASOTEX. FASOTEX produces African prints and Real Wax, which is fabric printed identically on both sides. As of 2006, all finished fabric was sold domestically. The firm sources all of its 100% cotton cloth from SITEX, a Beninese firm. The rest of Burkina Faso’s textile and apparel industry comprises small artisanal weavers, subsidised by the government, that produce traditional-style apparel.

Because of Burkina Faso’s geographic location and inadequate road network, firms in Burkina Faso face high transportation costs. These costs, coupled with limited energy resources, undermine the competitiveness of the economy as a whole.

Value capture opportunity:
Burkina Faso is a major cotton producer with an insignificant textile/apparel export industry at present. Other countries in SSA that could also be classed in this group include Benin, Mali and Mozambique. The most attractive immediate value capture opportunities for these countries are to focus on increasing seed cotton production levels and improving cotton lint quality by aspiring for excellence in agronomics, ginning and oil extraction. Moving up the apparel value chain through the introduction of export processing zones and similar incentive structures would need to be investigated as necessary elements of a long-term strategy, given the infrastructure challenges that
Burkina Faso (and Mali) currently face. Coastal nations that fall into this group such as Mozambique or Benin are also placed to explore apparel manufacturing opportunities and consider a comprehensive cotton to clothing sectoral approach.
6. Bangladesh: a Case Study of the Key Success Factors for Value Capture in the Cotton Industry

**BACKGROUND: THE ADVANTAGE OF LOW COST LABOUR AND PREFERENTIAL TRADE AGREEMENTS**

Bangladesh provides an interesting example of a country that has used its relative competitive advantages (in particular low cost labour) to flourish in the higher value added stages of the cotton value chain. Domestic production of cotton in Bangladesh is very low only meeting 2% of demand. Bangladesh imports large amounts of cotton that it then processes into yarn and fabric for export. The Bangladesh textile industry, the largest manufacturing sub-sector of the industrial sector, provides employment to about 5.5 million people. There are 350 spinning mills, 400 weaving mills, 310 dyeing and finishing mills, 800 knitting and knit dyeing mills and 4,500 garment factories in Bangladesh. The garment industry is highly labour-intensive and approximately 90% of its workers are women.

**FIGURE 37: GROWTH IN BANGLADESH APPAREL AND TEXTILE EXPORTS (2000 – 2007)**

![Chart showing growth in Bangladesh apparel and textile exports](chart.png)

Source: WITS Database; Dalberg Analysis

Exports of apparel from Bangladesh are characterised by: focus on low value-added products; (2) heavy dependence on imported intermediate inputs; and (3) high regional concentration of exports to the EU. Most garment companies are located in export processing zones (EPZs) where tariffs and quotas are eliminated and bureaucratic requirements are lowered. Around three-fourths of all foreign direct investment in manufacturing is channelled through such zones. The main foreign investors in Bangladesh are Korea, Japan, the United States of America, the United Kingdom, China, Malaysia and India.

The government supports the industry through various facilities, such as: (i) duty and tax-free imports of basic raw materials (raw cotton); (ii) gradual rationalisation of tariffs and taxes on primary, intermediate and finished products; (iii) duty and tax-free imports of capital machinery and spares; (iv) cash incentives for suppliers of inputs to the export-oriented garment industry; and (v) duty exemption on some selected dyes, chemicals and sizing materials.

The MFA provided a platform for Bangladesh to gain access to the EU and US markets, and the government policy of liberalisation of the economy encouraged private sector investments. The end of the MFA did not impact Bangladesh as strongly as predicted thanks to its large, and low-cost labour force that positioned it to compete cost-competitively with other major countries such as China and India. The introduction of quotas restricting EU
and US imports from China in 2005 and 2006 respectively, as well as the EU’s Generalised System of Preferences (GSP) scheme, which provides garment manufacturers in Bangladesh with duty-free access to the EU market (subject to certain conditions relating to the origin of the materials used in the manufacture of the garment) also allowed Bangladesh to gain market share.

Local garment production focusing on the production of low value garments remains highly competitive. However, innovative capacity within domestic firms is very low. Most textile and ready-made garment companies simply assemble final products in accordance with buyer-determined specifications, since they do not possess design-related capacities. In order to meet the growing demand for textile products, Bangladesh needs to create new capacities as well as update existing ones, for which considerable investment will be required.

**Implications: Key Success Factors for Value Capture**

The Bangladesh experience demonstrates some key success factors required for countries to capture value in the more advanced stages in the cotton value chain. While low cost labour is a significant element of Bangladesh’s comparative advantage, it alone is insufficient to be competitive, certainly across the more advanced and capital intensive areas of the value chain. Preferential trade agreements and supportive government policies have played an important role in fostering the growth of the sector, while established local ownership and a transfer and development of local know-how has been critical in ensuring that Bangladesh’s industry persisted after the end of the MFA. Experiences from the other countries outlined above also points to the importance of proximity to major consumer markets, and increasing investment and innovation in response to global trends in developing an apparel industry.

More generally, the most critical factors required to successfully capture more value in the apparel value chain include:

- **Low cost labour**: as a key input into the production of cotton, and also in garment assembly, labour costs can be an important determinant of the overall cost effectiveness of a domestic cotton-to-apparel sector.
- **A strong and well-tailored package of incentives to encourage investment**: early movers into sectors in the cotton-to-apparel value chain need to overcome the lack of a broad-based cotton-to-apparel industry and supporting activities plus the increased perceived risk; incentives that provide clearly defined terms for tax exemptions, with a clear skew towards capital investments, can offset initial costs for early movers. Bangladesh’s package of targeted incentives aim to reduce the operating costs for players, rather than focusing on income tax exemptions that tend to characterize incentives in other agro-processing sectors; this has been successful in reducing the cost of new entrants in reaching minimum efficient scale.
- **Preferential trade agreements**: preferential access to major markets can be critical in offsetting some of the disadvantages for new entrants in establishing critical mass in the sector.
- **Cost-effective access to water and electricity**: as key inputs into various parts of the value chain, such as dyeing and textile manufacturing, the cost of water and electricity can be key factors in the economics of selected parts of the value chain. For prospective African entrants into the cotton-to-apparel value chain, the relative costs of water and electricity versus other competing markets is a key area for determining whether a strong case can be made for a fully integrated cotton-to-apparel strategy, or whether a better case can be made for focusing only on those areas where water and electricity are not critical success factors.
- **Good logistics**: the apparel industry places particularly acute focus on the excellence of logistics as a determinant for success. Clothing retailers in consumer markets aim to minimize risks associated with mark-down for excess stock by minimizing inventory, while players in ‘fast fashion’ compete on a high
rate of turnover of individual lines of products. For manufacturers, the risks and higher costs of these are transferred to them in the form of smaller production runs, just-in-time delivery requirements or very tight delivery windows. Fast, low cost and reliable logistics are therefore essential to be able to participate in the sector, especially in the most advanced stages in the value chain.

- **Access to finance**: some elements of the cotton-to-apparel value chain, such as textiles manufacturing, have high capital requirements, while many areas of the value chain have challenging working capital requirements. As a result, the ability to access low cost finance is an important determinant for the economic viability of a local manufacturing sector.

- **Local ownership**: more advanced stages of the value chain, such as apparel manufacturing and to a lesser extent textiles manufacturing, are notoriously footloose sectors, with the ability to manage sunk costs and move rapidly in response to changes in comparative costs. Given the importance of preferential trade agreements in the case for emerging market players in having a viable role in the cotton-to-apparel value chain, there is a high level of risk for developing a sector that can potentially move production quickly, as has been Africa’s experience in the sector before. The ability of Bangladesh to encourage local ownership and participation in the sector was especially important in ensuring that local producers had ‘higher stickiness’ and continued operations after the end of the MFA.

- **Effective knowledge transfer or development of local know-how**: in order to move away from commodity product manufacture, such as standard textile grades or apparel manufacture under contract with strict client specifications, and towards higher margin products, manufacturing excellence is not sufficient.

The importance of these factors varies across different elements of the value chain, as shown in Figure 38 below.

**FIGURE 38: RELATIVE IMPORTANCE OF SUCCESS FACTORS BY STAGE IN THE COTTON-TO-APPAREL VALUE CHAIN**

<table>
<thead>
<tr>
<th>Low cost labor</th>
<th>A strong and well-tailored package of incentives to encourage investment</th>
<th>Preferential trade agreements</th>
<th>Cost effective access to water and/or electricity</th>
<th>Good Logistics</th>
<th>Access to finance</th>
<th>Local ownership</th>
<th>Effective knowledge transfer or development of local know-how</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Low importance" /></td>
<td><img src="image" alt="Low importance" /></td>
<td><img src="image" alt="Low importance" /></td>
<td><img src="image" alt="Low importance" /></td>
<td><img src="image" alt="High importance" /></td>
<td><img src="image" alt="High importance" /></td>
<td><img src="image" alt="High importance" /></td>
<td><img src="image" alt="High importance" /></td>
</tr>
</tbody>
</table>

Source: Industry interviews; Dalberg analysis
7. Positioning of African Countries for Successful Value Capture

Most of the countries in the Africa Transformation Report enjoy some opportunities to capture more value in the cotton-to-apparel value chain, although the stage of production that is most attractive is likely to vary.

However, the feasibility of capturing greater value, especially through driving increases in activity in stages beyond cotton and lint production, is not entirely straightforward. Below we review Kenya’s potential for successful value capture, based on the success factors identified in the previous chapter.

**FIGURE 39: OVERVIEW OF KENYA’S POSITIONING AGAINST KEY SUCCESS FACTORS FOR GREATER VALUE CAPTURE IN THE COTTON-TO-APPAREL VALUE CHAIN**

<table>
<thead>
<tr>
<th>Success Factor</th>
<th>Positioning of Kenya</th>
<th>Comments &amp; Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low cost labour</td>
<td>Moderate (though growing)</td>
<td>Although African countries can initially be considered to have a straightforward advantage in terms of labour costs, key competitors in the yarn, textiles and apparel sectors can often be cheaper. The labour cost per hour in Bangladesh is US$ 0.21 compared to US$ 0.30 in Kenya.(^p) This is a dynamic area, and wage costs in other key competitors such as China and India are rising at rates likely to exceed Kenya over the medium term, suggesting that this will become a growing source of advantage for Kenya.</td>
</tr>
</tbody>
</table>
| A strong and well-tailored package of incentives to encourage investment | Moderate | Kenya’s Government has an Export Processing Zones (EPZ) program which offers attractive incentives to export-oriented investors and an EPZ Authority to provide one-stop shop service for facilitation and aftercare. EPZ tax benefits include:  
- 10 year corporate income tax holiday and a 25% tax rate for a further 10 years thereafter (except for EPZ commercial enterprises)  
- 10 year withholding tax holiday on dividends and other remittances to non-resident parties (except for EPZ commercial license enterprises)  
- Perpetual exemption from VAT and customs import duty on inputs – raw materials, machinery, office equipment, certain petroleum fuel for boilers and generators, building materials, other supplies  
- 100% investment deduction on new investment in EPZ buildings and machinery, applicable over 20 years.  
However, while the strength of the incentives provided effectively places Kenya’s EPZ program as one of the most successful in terms of the number of companies that have taken advantage of the program, this needs to be balanced against the challenges of ensuring that Kenya also captures its fair share of positive spillovers for the economy, in terms of local job creation, knowledge transfer and fiscal benefits. |
| Preferential trade agreements | Strong | Kenya is a leading African apparel exporter under AGOA. Kenya has suffered from the post-MFA effect on firms and employment. |

| Cost effective access to water and electricity | Challenging | Relatively high energy costs and difficulties in the reliability of supply create a need to scale manufacturers to invest in backup power generation, leading to substantially higher operating costs. As for most emerging markets, water costs vary substantially across the country and are highly dependent on location. |
| Good Logistics | Challenging | Kenya is ranked 99 out of 155 countries in the quality of its logistics in the World Bank Connecting to Compete 2010 report. Kenya is particularly challenged in its domestic infrastructure, with poor quality roads leading to weaknesses in terms of timeliness and reliability. Kenya’s sea and airport logistics, are relatively stronger, allowing players that can manage the challenge of domestic logistics to potentially reach international markets effectively |
| Access to finance | Challenging / Moderate | Players in the apparel sector state that access to finance continues to be an important constraint to growth of the sector. Kenyan players are therefore at a substantial disadvantage, given the need to make high initial levels of capital investment and manage high levels of working capital in order to meet needs of international clients |
| Local ownership | Moderate | Local ownership to some degree exists in much of Kenya’s cotton-to-apparel sector. |
| Effective knowledge transfer or development of local know-how | Moderate | In terms of production orientated towards export, Kenya’s sector faces similar challenges as Bangladesh in terms of moving from production under contract to developing the depth of capability in design and marketing to move into higher value-added areas. However, production orientated towards the domestic sector does offer producers an environment to develop local production capability. |

The relative sources of strength for Kenya against the key success factors outlined above, combined with their relative importance at different stages of the value chain (in Figure 38) suggest that Kenya’s most immediate opportunities exist in developing a greater presence in garment manufacture, especially given the potential to leverage a growing comparative advantage in low cost labour and preferential access to the US market through AGOA. This also provides a platform for development of earlier stages in the value chain, to serve a growing domestic apparel sector.
8. Considerations and Steps Required to Develop Policy

BOTTLENECKS AND KEY ENABLING INTERVENTIONS

The preceding chapters provide an overview of key trends in the cotton sector, where the most important opportunities are for African countries and the key success factors required to capture a greater share of the value available in the cotton value chain.

To develop a cotton strategy that is relevant at the country-level, policy-makers need to consider a range of areas in order to develop a country-specific plan to catalyse and drive transformative growth, including a clear identification of the country’s sources of comparative advantage, which parts of the cotton value chain are most relevant to focus on, current barriers and the key policy trade-offs that need to be made. Below we outline some of the key areas and considerations to be included in country-specific policy development.

A – IDENTIFY AND PRIORITIZE OPPORTUNITIES FOR VALUE CAPTURE

Although at a generic level opportunities have been identified for Sub-Saharan African countries in the cotton sector across most stages of the value chain, the prioritization of these opportunities will need to take into account several country-specific factors, including:

- **Base lining the current economics of the sector**: Policy-makers need to develop a robust understanding of the vertically integrated economics of the cotton sector. This should include the current level of efficiency of cotton production and ginning, and the scale of the market for cotton co-products. It should also include an assessment of the cost and resource implications of increasing production to identify the key bottlenecks across the cotton value chain. An equivalent analysis for the cotton processing and manufacturing sectors also needs to be undertaken, with a review of the current levels of operating capacity and efficiency of the sectors, followed by an assessment of the sensitivity of costs to drive increases in production.

- **Forecasting the key variables that have the most impact on the economic viability of the sector**: In this case, this should at least include expectations of cotton, lint and textiles prices, at the FOB or farm/factory-gate level, and by different grades, and the likely reactions of processors, traders and farmers to forecasted changes.

- **Sizing the opportunity**: based on the above economic models and forecasts, scenarios for the potential scale of the overall economic opportunity for scaling up production and processing need to be evaluated at each stage of the value chain.

- **Assessing opportunity costs for market participants in the sector**: The opportunity cost of cultivating and processing cotton, and the relative opportunity cost of supporting cotton production and processing versus other crops or other sectors, given limited financial and human resources.

- **Identifying areas of comparative advantage / disadvantage**: Analysis of the relative costs of cotton production and processing locally versus in competing markets, and an identification of the key sources of current uncompetitiveness and areas for potential comparative advantage.

- **Outlining what policies would be required to take advantage of opportunities, and paring this back to what is possible**: For example, in the case of driving garment assembly, policy-makers need to take a view on the willingness and ability of government to provide sufficient incentives to attract inward investment,
and the ability to potentially tolerate extended periods of limited fiscal returns from the sector in order to foster an entrenched set of long-term investments from major multinational players

- **Prioritise opportunities**: From the above, a ranking of opportunities for value capture based on an overall assessment of the net gains, feasibility and risks.

### B - IDENTIFY CURRENT POLICY BOTTLENECKS

Having identified priority areas for value capture, relevant policy bottlenecks need to be identified. At a generic level, some policy-related challenges include:

- **Market-distorting subsidies to the cotton sector in major markets**: Subsidies in the US, EU and China are one of the biggest challenges to Africa cotton producers. These need to be continually challenged at the global level, and a position on how to manage the country-level implications of these distortions, as well as how to most effectively challenge these subsidies needs to be included in country-level policy.

- **Lack of regulation of key inputs and cotton lint**: a lack of monitoring or regulation of seed quality is an important determinant of the relatively low yields of African cotton producers.

- **Poor business enabling environment**: a lack of business and enterprise support, including a lack of access to finance inhibit prospects for locally based and locally owned processors to emerge, especially given the comparative cost of capital for major vertically integrated multinationals.

### C – DEVELOP KEY ENABLING INTERVENTIONS

Based on the opportunities for value-capture and associated policy bottlenecks that have been identified, a policy agenda to support a cotton growth strategy can be developed. This policy-agenda must necessarily be specifically adapted to the needs and resources of each country, although some general themes may be shared. Beyond general measures that aim to improve the environment for agro-processing in general, such as working to improve the reliability and cost effectiveness of energy, improving road and port infrastructure and providing investment incentives for industry, there are a few measures that may potentially be directed at the cotton industry in multiple countries:

- **Permitting planting of Bt-Cotton**: Aside from improving agronomics to increase yields, African countries can follow in the path of Burkina Faso and consider the use of GM cotton. GM (or “Bt”) cotton is engineered for pest resistance. It leads to a reduction in crop damage with associated efficiencies in input costs, can increase the quality of cotton by avoiding spotting and discoloration associated with pests, and in countries with low yields due to low application of pesticides from credit-constrained farmers can lead to increases in yields.

- **Increasing cotton lint quality through active intervention in the market or use of incentives**: Contamination with foreign matter is the most serious problem facing African cotton, and is crucial in pricing. The elimination of contamination stands out as the first priority for quality improvement, as it can potentially increase lint prices by up to 15%. Bottlenecks to improving cotton lint quality include outdated ginning machinery and high levels of contamination due to inappropriate harvesting, storage and handling processes.

  African cotton has two comparative advantages in the world market: the intrinsic quality of its fiber and the fact that it is handpicked. Management of lint quality has become more important as spinners have
imposed more stringent demands for quality and for greater accuracy of measurement of fiber properties. As a result, quality management should be considered one of the most important areas of improvement for SSA cotton exporting countries.

A variety of approaches need to be reviewed to develop quality management at the country level, including establishing regulatory frameworks to ensure high quality cotton lint, implementing financial incentives for farmers (higher price for higher quality), and introducing international lint classification systems.

- **Ensure advantages through existing preferential trade agreements (e.g. AGOA, EBA) are fully leveraged:** Africa has a significant comparative advantage through the preferential trade access it is granted to the EU and the US. The opportunities these advantages bring need to be promoted and further exploited. Figure 35 illustrates how Tanzania has so far not fully exploited the AGOA agreement in comparison with Kenya, and vice versa with the EU market.


![Graph showing Apparel Exports to EU and US Markets]

Source: Tanzania Cotton Board

- **Use of Export Processing Zones:** An increase in the use of export processing zones could go some way to addressing the high cost of doing business and infrastructure challenges. The zones would need to remove some of the negative doing business factors found more generally in the economy (e.g. poor water and electricity supply) and provide a package of investor incentives (fiscal and financial) to attract export-oriented investments. The aim would be that alongside job creation, diversification and expansion of exports, and an increase in productive investments, there would also be technology transfer and the creation of backward linkages between the zones and the domestic economy.

- **Encourage knowledge transfer to facilitate entry into higher value added sectors:** In the medium to long term Africa should focus on developing its capabilities beyond the assembly of low value apparel and into higher value added segments of the value chain. Policies that facilitate learning/apprenticeships in the textile and apparel industries, alongside the encouragement of foreign investment and expertise are some ways of building domestic capabilities in this area.
- **Restrictions on imports of used clothing**: Policies that regulate the imports of used clothing would boost the domestic market for locally made cotton apparel. The current inflow of used clothing is estimated to be above 50% of apparel supply in some countries in Sub-Saharan Africa, and creates substantial challenges for prospective entrants into the African apparel manufacturing sector.

**D – ADDRESS POTENTIAL POLICY TRADE-OFFS AND QUESTIONS**

Policy-makers typically need to take into account the reality that any sector-specific strategy must compete with many other overlapping, and potentially conflicting, priorities. However, there are several additional policy trade-offs specific to the cotton sector that need to be addressed when determining an overall approach to defining a cotton strategy for any country, including:

- **Balancing the use of directly interventionist approaches versus laissez faire or market based approaches**: A highly interventionist approach to regulation and support of the cotton sector can reduce risk and volatility for players, especially cotton farmers, and can be an effective means for improving and maintaining quality. However, this needs to be offset against the challenges of creating opportunities for rigidities and rent seeking, and the cost of developing and maintaining an effective sector bureaucracy.

- **Focusing on development of local capacity versus leveraging international players**: For an export-orientated strategy it may be critical to engage the expertise of international players, especially in the global market for apparel, given their ability to leverage access to major markets. However, this must be weighed against the risk of relatively low knowledge transfer and reduced spillovers to the broader economy that are likely to occur if international players leverage their international talent and knowledge base.

- **Determining how to manage the risk of termination of preferential market access**: AGOA is only in place until 2015. In parallel, discussions are taking place on countries such as Bangladesh and Cambodia getting AGOA-like terms for access to the US market. Countries need to determine how to manage the risk of a sharp change in their relative competitiveness in accessing the US market if the agreement is not renewed or preferential access is granted to other highly competitive countries.
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