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Cotton-to-Garment Value Chain Analysis: Executive Summary

The cotton-to-textile/garment sector in Kenya is far from realizing its true potential. In summary, the most important reasons for the current situation are:

- The ubiquitous inefficiencies in the agrochemicals market play a large part in cotton farming costs. Also there are currently no mechanisms in place in Kenya to guarantee the quality of a crucial ingredient in cotton farming: cotton seeds. At the same time no policies are in place to reverse a decline in labor productivity and quality.
- Just like in the cotton sector, the liberalization of 1991 broke up the old production and marketing structure but left a vacuum that damages the interests of cotton producers and ginners. There are no coherent, institutional linkages between the two sectors even though the success of both sectors is very interdependent (ginneries' key input is seed cotton and the key customer of cotton producers are ginneries).
- Uncompetitive electricity prices and expensive chemicals represent significant variable costs and hurt all players in the value chain: the ginners, with high energy consumption because of the outdated machinery, the textile and garments' sector dyeing stage of production, etc.
- Thus, inefficiencies filter up the value chain until the cotton-based inputs become too expensive for the next input use, such as textile and garments producers using inputs from ginneries, and the high value added supply chain brakes. As a result, textile mills producing yarns and fabric for exports don't use domestic lint cotton at all, while the one producing for domestic markets use only around 20% of domestic cotton.
- The government inability to control the imports of used cotton garments and fabrics is hurting the domestic cotton-to-garment industry significantly. Moreover, the sector is increasingly perceived as a high-risk one by the financial sector, which is increasing the costs of borrowing money up to the point of making it unaffordable for small to medium size firms that need modern equipment to improve their mills' productivity.
- Undeclared fabric imports are another major problem in the industry. It is creating a dominance of imported, second hand garments market. This market is not only detrimental to the domestic supply chain, but is also creating a dependency of a large number of people, whose welfare is dependent on the growth of this market. This is a major risk for the sector, as is the garment exporters' lack of a diversification strategy for their exports, which are almost entirely oriented towards the United States and highly dependent on imported materials.

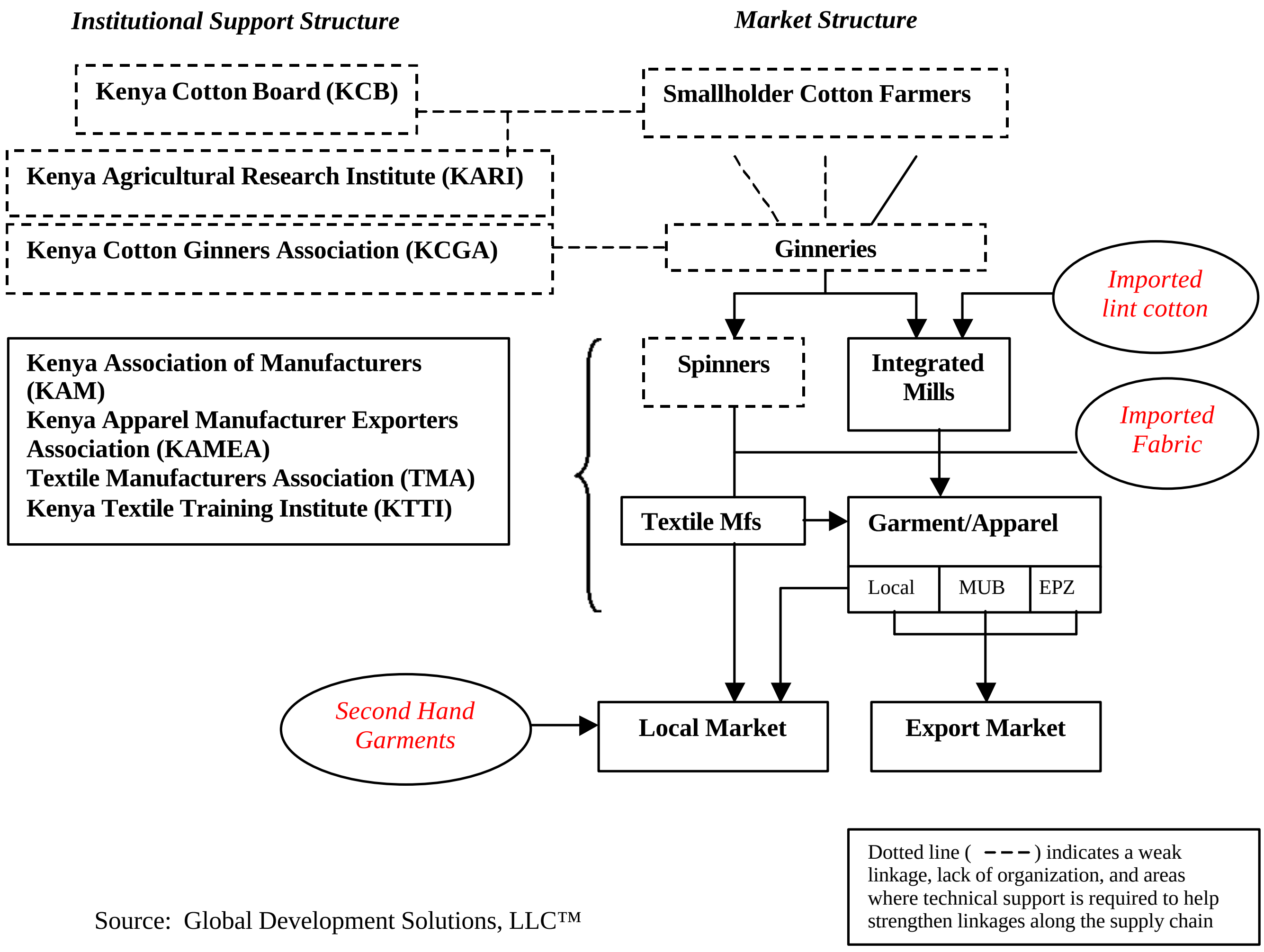
As our analysis reveals in more details, it is along these policy and market distortions that remedies should be sought for the sector, both from the government and the market players themselves. In this sense, an apex organization that would address all these issues and start tackling the problems in the supply chain is overdue.

1.0 Cotton-to-Textile / Garment Market and Institutional Support Structure in Kenya

Since market liberalization in 1991, the cotton-to-textile / garment market structure has lacked the kind of market and institutional dynamics required to remain competitive with global players like China, or even with regional competitors such as South Africa and Lesotho. While Kenya's garment sector has successfully rebounded since 1994 after the United States banned several products alleging that Kenya was transshipping goods from Asia, the cotton-to-textile / garment sector is far from realizing its true potential.

The cotton-to-garments supply chain can be divided into four major sectors and a number of subsectors. The principal sectors are smallholder cotton farmers, ginners, textile and spinners, and garment and apparel manufacturers. The four sectors are supported in varying degrees by a number of institutions, some of which are highly disorganized and lack both market and political leverage to adequately represent and support their constituents (Diagram 1).

Diagram 1: Cotton-to-Garment Market and Institutional Support Structure



Source: Global Development Solutions, LLC™

Smallholder Cotton Farmers: Currently there are an estimated 140,000 smallholder cotton farmers spread out across western, Nyanza, Rift Valley, Central, Eastern and Coastal areas, with the highest yield per hectare achieved in the Rift Valley. Farmer groups are not well organized and since market liberalization, the roles and responsibilities of the Kenya Cotton Board (KCB) has been unclear, thus leaving an institutional vacuum in the cotton sector. This is particularly problematic as there is no apex organization to bridge the gap between cotton farmers and ginners to help coordinate production, improve on-farm practices to increase and support cotton marketing.

In addition to the lack of organization among cotton farmers, lack of institutional representation, and the weak linkage mechanism in place between cotton farmers and ginners, smallholder cotton farmers face a problem with low yield, partly given the poor quality of seeds available in the market. Here, the Kenya Agricultural Research Institute (KARI) should be playing a major role in introducing new seed varieties, as well as to take an active role in seed bulking to make clean and high quality seeds available to the cotton sector. Plagued with a range of institutional challenges, KARI has been weak in responding to the needs of the cotton sector.

Ginners: Currently there are an estimated 24 ginneries operating in Kenya. The disorganized privatization process has left the sector in a state of disarray where in some cases ginneries were sold off for only a fraction of their assessed value. Within the cotton-to-textiles/garments supply chain, the ginning sector is considered the weakest link. The sector is not well organized nor represented, and there is a gross lack of investment in equipment rehabilitation resulting in a low ginning outturn (GOT).[1] The Kenya Cotton Ginners Association (KCGA) has only recently become more active in organizing the ginning community and representing their interest within both the public and private sectors. However, additional institution capacity building is required to help strengthen the sector, as well as to serve as a representative body to coordinate production, quality control, human resources development, and technical support both within the sector and with the cotton farming sector.

Textile Manufacturers: The textile sector can be divided into at least two subsectors, namely spinners and integrated mills. Spinners principally produce yarn which is supplied to both textile manufacturers and the garment/apparel sectors. Currently, spinners do not have a separate institution representing their interest, but generally fall under the domain of the Textile Manufacturers Association (TMA) under the Kenya Association of Manufacturers (KAM). It is not clearly evident that a separate institutional structure is required, particularly as close coordination between spinners, textile manufacturers and garment/apparel manufacturers is essential.

In addition to the spinners, there are integrated mills that produce yarn, woven, knitted, and finished fabrics which are either sold directly to local markets or to garment/apparel manufacturers for further processing. Integrated mills represent a bulk of the activities in the textile sector, and are represented by the TMA. However, TMA is generally overshadowed by KAM which represents the interests of the garment/apparel sector.

Garment/Apparel: It is estimated that there are 170 large scale and 74,576 small and micro garment/apparel manufacturers operating in Kenya today. Of these 37 are export oriented and generate a bulk of the revenue for the country. The large scale manufacturers are well represented by KAM, particularly as it is a strategic sector for the Kenyan economy. With this said, however, there continues to be a lack of coordination between KAM and other institutions down the supply chain,

[1] Additional explanation of GOT is provided in the ginning section.

particularly with regards to strengthening linkages between the various sectors, and taking the lead in identifying means of channeling investment and working capital, and technical assistance to reduce the entire industry's dependence on imported input material, and to help redefine the cost structure for the entire cotton-to-textile/garment supply chain.

The lack of coordination and leadership by the garment sector is reflected in the fact that there is very little evidence to suggest that Kenya will be in a position to comply with new conditions set out under AGOA requiring exporters to the U.S. to source fabric locally or from other AGOA-accredited countries. This is particularly true in the context of expanding opportunities to source fabric from local suppliers.

2.0 Cotton Sector

2.1 Background

The cotton sector in Kenya is characterized by a large number of small holder farmers (140,000) with a low average yield rate[2] (572 kg/ha of seed cotton) and poor cotton fiber quality[3]. Approximately 384,500 hectares of irrigated and rain-fed land is available for cotton production, of which only 10.4% or 40,000 hectares are currently under cultivation. Given the variety of cotton currently grown in Kenya (HART 89M, and KSA 81M), the production potential of available cotton land is approximately 368,000 bales. However, due to a number of policy and market based distortions, realized production is a mere 8.2% of the potential or 30,000 bales of lint cotton.

The production of cotton in Kenya peaked in 1984 with production reaching as high as 70,000 bale of lint cotton per year. This trend, however, collapsed during the 1990s. Until 1991 Kenyan cotton production closely tracked real gross producer prices. Although cotton prices have improved since 1991, when the market was liberalized, cotton production in Kenya continues to remain flat. Several factors can be attributed to the collapse of the cotton sector and the current lack of responsiveness of cotton farmers to improvements in international cotton prices.

1. The lack of adequate planning associated with the liberalization of the Cotton Board of Kenya (CBK), which resulted in:
    a. Elimination of price guarantees which used to be announced at the beginning of each season;
    b. Regulatory vacuum resulting from the lack of clarity regarding the role of the CBK;
    c. Prevalence of poor quality agricultural inputs, particularly contaminated seeds;
    d. Collapse of input credit mechanisms;
    e. Collusion between cotton buyers; and
    f. Inadequate control of lint quality.
2. Collapse of cooperatives that owned most of the ginneries, left cotton farmers without markets for their harvest
3. High cotton farming costs, particularly as they relate to agrochemicals inputs.
4. Growing import of second-hand clothing, and more importantly, sales of illegally imported fabrics, both of which have dampened demand for local cotton and textiles.

A profile of Kenya's cotton sector is presented below (Table 1).

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[2] **Cotton Yield Benchmark**

Country	**Yield (kg/ha)**	**Country**	**Yield (kg/ha)**
Kyrgyzstan	2,450	United States	745
Israel	1,700	World Average	589
Australia	1,600	**Kenya**	**572**
China	1,270	Pakistan	500
Cambodia	1,200	India	315
Mexico	1,000	Africa Average	300 – 379

Source: Global Development Solutions, LLC™

[3] Staple length of Kenyan cotton is less than 25mm, while that from Uganda is about 28mm. Premium cotton has staple length of over 32mm.

Table 1: Kenya's Cotton Sector Profile

1.0 Land available for cotton production	
1.1 Rain-fed production	350,000 ha
1.2 Irrigated production	34,500 ha
1.3 Actual land currently under production	40,000 ha
1.4 Capacity utilization	10.4%
2.0 Production level	
2.1 Rain-fed production (potential)	260,000 bales (lint)
2.2 Irrigated production (potential)	108,000 bales (lint)
2.3 Actual production (2002)	30,000 bales (lint)
2.4 Realized production potential	8.2%
3.0 Farmers in cotton production	**140,000 small holder farmers**
4.0 Cotton variety	**HART 89M; KSA 81[illegible]**
5.0 Farm size (average)	**≤ 1 ha**
6.0 Yield rate (average)	
6.1 Seed cotton	572 kg/ha
6.2 Lint cotton	191 kg/ha
6.3 Seed-to-lint Conversion ratio	2.99:1
6.4 Yield potential	2,500 kg/ha
6.5 Realized yield	22.8%
7.0 Production cost (average)	**$0.26/kg (seed cotton)**
8.0 Market price (average)	**$0.31/kg (seed cotton)**
9.0 Cotton import	**8,709 bales (lint)**
10.0 Cotton export	**3,266 bales (lint)**
11.0 Contribution to GDP	**≤ 2%**

Source: Global Development Solutions, LLC™

2.2 Cotton Value Chain

According to interviews, for a cotton farm with a per yield rate of 572 kg/ha, the average production cost per hectare of seed cotton is estimated to be approximately $145.88. This translates to a production cost of $0.26/kg for seed cotton (Table 2). While the per hectare yield rate is low compared to the rest of the world, production costs associated with Kenyan seed cotton measured in kilograms is relatively competitive. With this said, however, staple length and quality of Kenyan cotton continues to remain low, thus leading to higher waste and poorer quality yarn[4].

Table 2: Cotton Farming Cost and Yield Comparison

	yield/ha	**cost/ha**	**cost/kg**
Kyrgyzstan	2.45	$ 393.63	$ 0.16
Kenya	0.572	$ 184.00	$ 0.32
Cambodia	1.2	$ 415.00	$ 0.35
China	1.27	$ 752.00	$ 0.59

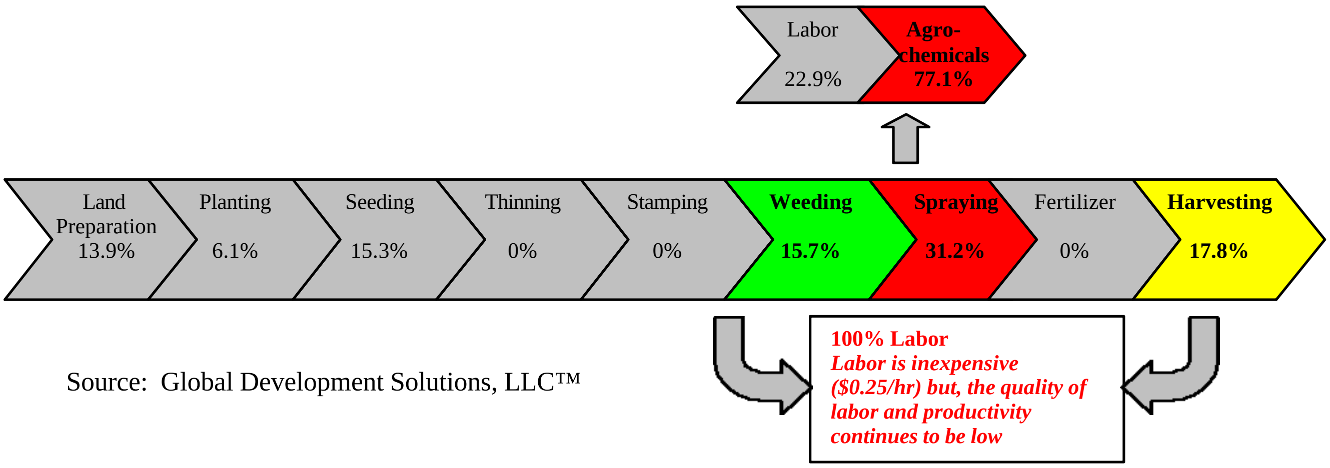
Source: Global Development Solutions, LLC™

[4] Staple length of Kenyan cotton is less than 25 mm where Ugandan cotton is as high as 25.7 – 28.52 mm.

The value chain for cotton production can be divided into nine key value adding activities (Diagram 2):

- Land preparation;
- Planting;
- Seeding;
- Thinning;
- Stamping;
- Weeding (3 times/season);
- Chemical spraying (5 times/season);
- Fertilizing (2 times/season); and
- Harvesting.

Diagram 2: Cotton Value Chain for Kenya



Source: Global Development Solutions, LLC™

Generally, thinning, stamping and fertilizing are an important aspect of crop maintenance. But as evident from the value chain analysis, an average Kenyan farmer does not or cannot devote resources to these three activities. Two prevailing reasons given for not directing the necessary resources towards these activities are high cost of fertilizers,[5] and intercropping where field thinning is compromised. These factors are partly to blame for the low per hectare yield rate (only 22.8% of the total per hectare yield potential for the variety of cotton currently cultivated in Kenya).[6]

The value chain for Kenyan cotton suggests that agrochemicals and labor (closely followed by seeding) dominate the overall cost associated with the cotton value chain (Table 3).

[5] Some farmers indicate that a bag of CAN/DAP costs them Ksh 1,500/bag in the open market when the landed cost of the same fertilizer ex-Mombasa was Ksh 680.

[6] The current variety grown in Kenya has a per hectare production yield rate potential of 2,500 kg/ha, but the average yield rate currently realized by Kenyan farmers is only 572 kg/ha.

Table 3: Cotton Value Chain: Kenya

$/Kg

			Seed Cotton Production			$ 0.26	/kg			
Value	Land Preparation	Planting	Seed	Thinning	Stamping	Weeding	Spraying	Fertilizer	Harvest	TOTAL
Unit Cost	$ 0.04	$ 0.02	$ 0.04	$ -	$ -	$ 0.04	$ 0.08	$ -	$ 0.05	$ 0.26
% of Total	13.9%	6.1%	15.3%	0.0%	0.0%	15.7%	31.2%	0.0%	17.8%	100%

Source: Global Development Solutions, LLC™

High Cost of Sprays

Kenyan cotton is generally susceptible to Cotton Bollworm, and in western and coastal Kenya, nearly 50 percent of the yield is destroyed by parasitic weeds. To prevent yield losses and crop failure, a robust cotton harvest requires a spray regime of 12 sprayings per season. With this said, however, the best small holder farmer can barely afford to pay for 5 sprays per year. Consequently, per hectare yield rate and fiber quality is often compromised. Even with a compromised spraying regime, over 31% of costs associated with cotton farming is dictated by spraying costs. With a proper 6 – 8 sprays per season, cost of sprays can reach over 45% of the overall cost of farming.

A breakdown of the cost of spraying reveals that over 77% of costs associated with spraying is derived from agrochemicals. Both farmers and agrochemical suppliers have different perspectives regarding the cause of high costs associated with agrochemical inputs. Interviews however suggest that there are at least three market and policy based factors that inhibit farmers access to competitive and affordable high quality sprays.

2.3 Policy Based Distortions

At least two policy based distortions were identified as factors inhibiting competitive access to agrochemicals by cotton farmers: a tax regime that discourages local formulation; and restrictive registration processes for importing agrochemicals.

Discouraging Local Formulation and Repackaging of Agrochemicals: According to local agrochemical companies, given the high cost of agrochemicals, farmers are demanding small packets of sprays rather than repacked bulk chemicals. This shift is reflected in a decline in import of bulk chemicals (more than 5 litre containers), and an increasing trend towards importing smaller packets (100 gram pouches). Agrochemical imports, principally fungicides, herbicides and acaridicides enjoy duty free status, but insecticides, which make up over 50% of pesticide imports, are assessed a 5% duty.

At the same time local agrochemical companies are discouraged from expanding into local formulation, particularly for agrochemicals that have a low active ingredient (technical material) to solvent ratios. Specifically, current law places duty and VAT on concentrates, technical material and packaging material required for local formulation and repackaging.

While local agrochemical companies argue that allowing duty free imports of solvents and packaging material used directly for formulating agrochemicals can dramatically reduce the cost of accessing sprays by farmers, the current law favors importation of packaged agrochemicals, even in small packets.

Restrictive Registration Requirement of Importing New Agrochemicals: Importation of agrochemicals is regulated by the Pest Control Products Board (PCPB). Two forms of registration are available through the PCPB: temporary registration and full registration. The temporary registration is available for one year, but a full registration is prohibitively complex in that a 3 year trial is required, even for well known molecules safely in use in both developing and industrialized countries.

The irony of this situation is that under Kenyan law, human medicine is only required to go through a 6 month trial period, while agrochemicals must endure a 3 year trial. The long registration process has resulted in an absence of cheaper generics in the market. Most generic producers are unwilling to invest 3 years on a trial to develop a full dossier for a molecule that is already widely used and available around the world.

In addition, the current registration process has yielded an unexpected result in the market where a review of the list of approved molecules reveals that for every technical material imported into Kenya, there is only one agent. For example, import of Cypermetrin, an insecticide/miticide used on cotton, is registered under a single company, and no other agent or similar technical material has been approved for importation. In most open markets, it would be common to find multiple agents importing and distributing similar technical material, but in Kenya, such is not the case. Chemical companies continue to argue that the market is too small for multiple suppliers/agents to operate in Kenya for a single technical material. However, the absence of consumer options has resulted in monopolistic pricing behaviour in the agrochemicals industry.

As EUROGAP comes into force in 2005, it is anticipated that restricted agrochemicals will have to be replaced by approved pesticides and fungicides. In this context, maintaining the current one-molecule-one-agent marketing structure has the potential of choking the future of the agricultural sector in Kenya.

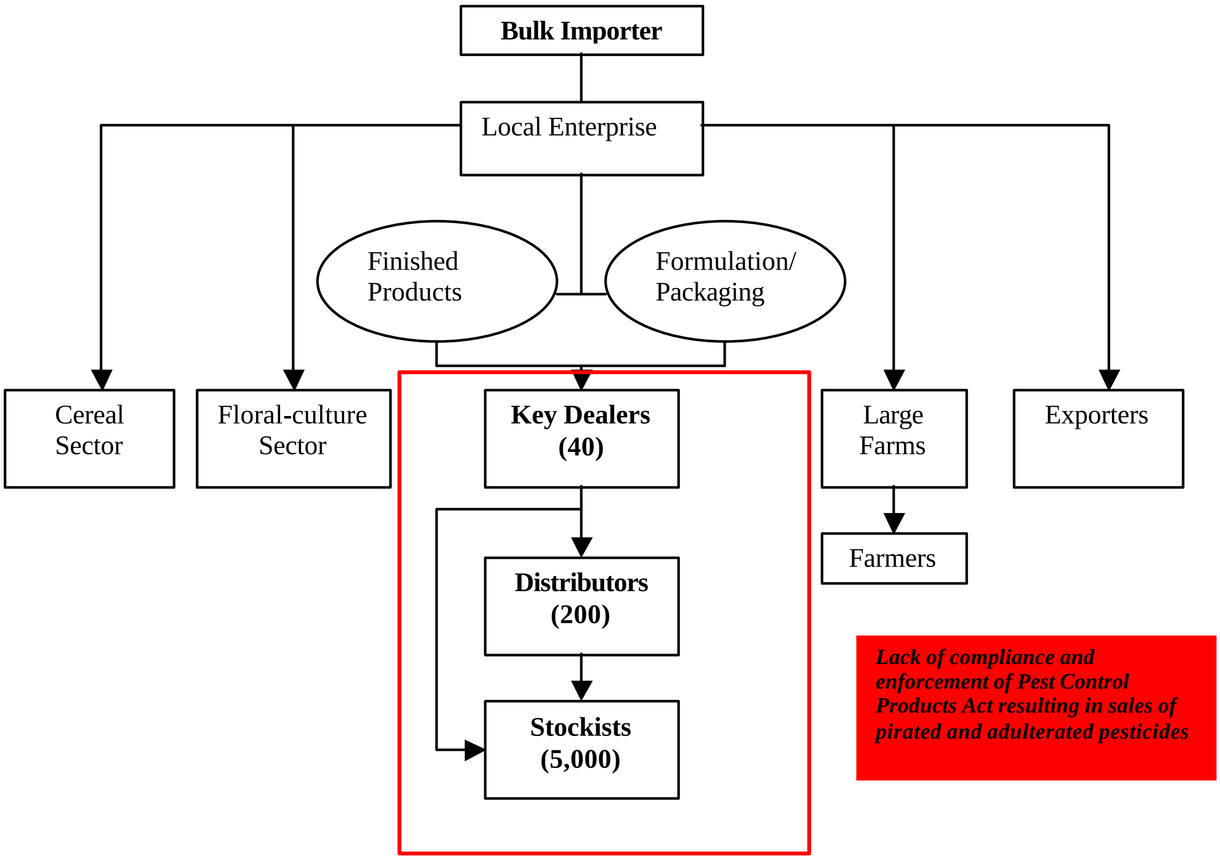
2.4 Market Based Distortions

At least one market-based distortion was identified that limits farmers from enjoying access to high quality agrochemicals.

Pirated and Adulterated Pesticides:
Distribution and sale of pirated and adulterated pesticides continues to be a problem, not only for the cotton industry, but for all of the agricultural sector. The Agrochemicals Association of Kenya (AAK) and PCPB are working to contain the sales of low quality pesticides in the market. Currently, 90% of all agrochemical companies operating in Kenya are members to the AAK, which certify its members as accredited distributors. As a public service, the AAK regularly publishes the names of accredited distributors. While this is a positive step forward, currently the PCPB has only 7 inspectors who are trained to inspect and audit over 40 key dealers, 200 distributors and 5,000 stockists in Kenya (Diagram 3).

Generally, problems associated with the sales of pirated and adulterated products tend to take place during the distribution and sale between the 200 distributors and the 5,000 stockists. Weak labeling standards, lack of capacity to effectively enforce the Pest Control Products Act, and general lack of awareness among farmers on product quality continues to harbor the sales of poor quality agrochemicals in Kenya.

Diagram 3: Distribution Channel for Agrochemicals in Kenya



Source: Global Development Solutions, LLC™

High Transport Costs: A major complaint by the agrochemical industry regarding the operating environment in Kenya is the high cost of inland transport. It is estimated that that approximately 10% of the sales price is comprised of transporting pesticides from the port, generally Mombasa, to a warehouse in Nairobi. In addition, once pesticides arrive at a warehouse, transport costs associated with local distribution through the various distribution channels adds yet another 10%. As a consequence, agrochemical companies complain that they have no control over at least 20% of the pesticide price as inland transport price is so high.

Reasons given for the high cost of transportation is the high cost of fuel, poor road conditions as a result of fraudulent or poor quality road construction, high cost of imported spare parts, and the disequilibrium in the flow of containers from Mombasa-to-Nairobi as a result of import volume outpacing exports.

Issues revolving around freight forwarding and transport costs will be covered in a separate section of this report as there are a range of cross-cutting issues that impact all sectors of the economy.

Decline in Labor Quality and Productivity: With liberalization, all forms of institutional support to farmers, including extension services was virtually eliminated. Similarly, institutional and market linkages between cotton farmers and ginneries that once existed under the Cotton Board of Kenya, and was an effective channel for transferring know-how to farmers have since been abandoned. Consequently, poor farming practices and weak post harvest handling are common characteristics among cotton farmers in Kenya.

While poor labor quality and productivity is common knowledge among the cotton/textile industry, little work has been done to trace the decline in labor productivity at the farmer level. As a part of this exercise, some measurement of labor productivity was conducted for the textiles sector, but time did not permit to making an assessment of farm level labor productivity.

Poor Quality of Seeds: Standards in the cotton industry are outlined in the Cotton Act Cap 335. However, since the liberalization of the cotton industry, the system of certifying cotton seeds has collapsed whereby storage period and germination levels are no longer guaranteed. Currently, farmers purchase untreated seeds from ginneries where farmers are often sold second grade quality (BR-2) seeds at an average cost of approximately Ksh30/5 kg bag.[7] In most instances, seeds sold by ginneries have either been stored over 5 months or have moisture content above 10%, both of which contribute to the poor per hectare yield rates currently experienced by farmers.

In addition, since there are no systems in place to monitor the sale of seeds, varieties from different regions and ecological zones are sometime mixed in a single bag. Where institutes such as the Kenya Agricultural Research Institute (KARI) should be leading the effort to develop new varieties, as well as to be actively engaged in seed bulking, the lack of resources and capability has left the industry handicapped and under-regulated.

2.5 Supplementary Income from Sales of Cotton Seeds

One ton of seed cotton yields approximately 330 kg of lint cotton, 640 kg of seeds, and the remaining 30 kg is waste. As mentioned earlier, poor yield per hectare has much to do with continued reuse of seeds from the previous harvest. Until such time when seed variety research and professional seed bulking is strengthened, farmers will continue to reuse seeds from the previous harvest. This has at least two market implications which required consideration. First, per hectare yield will continue to remain well below actual potential. Equally important is that farmers are forgoing supplemental income generating activities through sales of seeds for the production of seed oil and seed cake/meal. This is an important factor as nearly 64% of output from seed cotton production is seeds. Currently, farmers are offered Ksh 6/kg for cotton seed. Give the average cotton farm that yields 572 kg/ha of seed cotton, net profit from the sale of lint is approximate $28.04, while proceeds from the sale of cotton seeds is $29.68. Consequently, the sale of cotton seed has the potential of doubling farmer income.

While the potential to double farmer income exists, very little evidence exists to suggest that adequate seed pressing facilities and equipment are available in Kenya as most seed pressing facilities are a part of a ginnery, most of which are outdated and in need of rehabilitation. In this context, further review to explore potential market opportunities of strengthening seed pressing facilities and related markets for cotton seed by-products is prudent to help improve income generating potential for cotton farmers.

[7] Ginneries generally sell the higher quality BR-1 and AR-1 seeds to oil refineries to produce seed oil and feed.

Summary of Constraints Faced by the Cotton Sector in Kenya

Policy Based Distortions	Market Based Distortions
Improper liberalization of the cotton industry has resulted in the absence of an apex organization to facility market linkages between cotton farmers and ginneries	Sales of poor quality cotton seeds is going unregulated thus contributing to a dramatic decline in per hectare yield rate and poor fiber quality
Tax regime that favors importation of packaged agrochemicals rather than local reformulation and repacking	Collapse of the input credit system has resulted in farmers reducing the use of prescribed agrochemicals, which has contributed to the decline in per hectare yield rate and poor fiber quality
Restrictive registration process regarding importation of agrochemicals have discouraged competitively priced generics from entering the market, and have also resulted in monopolistic pricing behaviour among select companies in the agrochemicals industry	Sales of poor quality lint cotton is going unregulated thus contributing to a market shift toward reliance on imported cotton and illegal finished fabrics
Lack of enforcement capability has resulted in distribution and sales of pirated and adulterated pesticides	Absence of transparent and market oriented linkages between cotton production and ginning sectors which results in collusion between cotton buyers and reluctance on the part of cotton farmers to improve production and farming practices
Absence of regulatory framework and enforcement resulting from the weakened position and lack of capacity and direction of the CBK	Slow revitalization of the ginning sector is creating a bottleneck in the development of the cotton sector and competitiveness of the textile and garment sectors
	Decline in labor quality resulting from the absence of training and extension services, and the lack of out grower programs to channel technical support activities
	Lack of market infrastructure to support seed oil processing and sales of products

Source: Global Development Solutions, LLC™

3.0 Ginning Sector

3.1 Background

Liberalization of the cotton industry in 1991 brought a fundamental shift in the primary marketing and processing of cotton. For the first time cotton growers were able to bargain directly with buyers. While this was seen as an advantage for farmers, the stiff competition for seed cotton and the unregulated market led to undifferentiated sales of AR and BR grade cotton in the market. By 1993, the depreciation of the Kenya shilling push cotton prices to an all time high of Ksh 35/kg.

By 1995, however, the Kenya shilling had appreciated nearly 100%. The strong schilling made imported cotton from Tanzania and Uganda extremely attractive, where Tanzania lint cotton could be landed in Kisumu for Ksh 56/kg, while the breakeven cost for Kenyan lint cotton hovered at around Ksh 70/kg. Within a matter of one year, cotton farmers were receiving prices as low as Ksh 15/kg.

Since market liberalization there has been an institutional vacuum to facilitate the primary marketing and processing of cotton. In short, the cotton farming and ginning sectors have been void of an effective market linkage mechanism to help coordinate the production and sale of seed cotton. Taking into account that links between cotton farmers and ginners are perhaps the most critical linkage in the entire cotton-to-garment supply chain, the long absence of an apex organization to bridge the interest of these two sectors has proven to be a crippling factor for the development of the textiles and garment industry.

Recent estimates suggests that there are approximately 24 ginners with an installed capacity of 132,375 tons per annum distributed across 327 gins in varying states of disrepair. Ginneries in Kenya rely principally on roller technology, a technology available since 1935, but appropriate for the type of fiber characteristics most commonly found in Kenyan seed cotton.

In ginning, ginning outturn (GOT) or the ratio of lint to seed cotton produced by the ginning process, is a critical factor that defines the competitiveness of the ginning sector. The potential GOT for the two cotton varieties grown in Kenya, namely HART 89M and KAS 81M, is between 40 – 42 percent. In reality, however, the average GOT achieved by most ginneries in Kenya is approximately 33%. The under performance of Kenyan seed cotton can be attributed in part to poor staple length of seed cotton, and the dilapidated state of ginning equipment, some that lack drying and moisture-restoration devices.

The matrix below provides a profile of Kenya's ginning sector (Table 4).

Table 4: Kenya's Ginning Sector Profile

1.0 Number of ginneries[8]	24
1.1 Cotton Board of Kenya	1
1.2 Cooperatives	6
1.3 Private investors	17
2.0 Ginning capacity	
2.1 Number of gins	327
2.2 Total ginning capacity	132,375 tons
3.0 Technology in use	Roller technology
4.0 Average capacity utilization	24%
5.0 Ginning outturn (GOT)	
5.1 Potential	43%
5.2 Actual	33%
6.0 Cotton purchasing method	
6.1 Direct purchase from farmers	77%
6.2 Intermediary/brokers	23%
7.0 Cotton purchasing schedule	Ad hoc
8.0 Average price for seed cotton paid by ginneries	Ksh 15 – 23/kg
9.0 Out grower schemes	Limited, principally to provide credit for purchase of pesticides

Source: Global Development Solutions, LLC™

[8] Only 11 ginneries are currently operational

3.2 Ginning Value Chain

As noted earlier the GOT for Kenyan cotton is approximately 33%.[9] This means that 1 kilogram of seed cotton produces 33 grams of lint cotton. The remaining 63 – 64% is cotton seeds, and 3% is waste. In this context, to produce 1 kg of lint cotton requires approximately 3.03kg of seed cotton.

Based on a delivered price of seed cotton of Ksh 22.5/kg offered to cotton farmers, the average cost of producing 1 kg of lint cotton is approximately Ksh 79.31 ($1.07). Specifically, the current estimated cost of ginning 1 kg of lint cotton is Ksh 11.133 ($0.15).[10] Currently, textile mills purchase lint cotton at a price of about Ksh 90/kg plus 16% VAT for a total of Ksh 104.4/kg ($1.41). Given the delivered cost of seed cotton is Ksh 22.5/kg, a sales price of Ksh 90/kg represents a 13.5% profit margin for ginneries (Diagram 4).

[9] GOT in Tanzania range between 35% - 42% and in Uganda, approximately 34%.

[10] Comparing Ginning Costs

	Ginning (kg lint)	
Kenya	$	0.15
Kyrgyzstan	$	0.13

Source: Global Development Solutions, LLC™

In addition to procuring seed cotton, the ginning process can generally be divided into five stages of value adding activities:

1. Drying/cleaning;
2. Ginning;
3. Cleaning/packing;
4. Transportation; and
5. Administrative costs

The highest value component of the ginning value chain, of course, is the cost of seed cotton, which constitutes 86% of the total value. This is followed by cleaning/packing (3.9%) and drying and cleaning (3.1%). The value of raw material inputs, namely seed cotton, dwarfs the other factors associated with ginning. Consequently, containing the cost of producing seed cotton would have the largest single impact on the delivered price of lint cotton. Given the fragmented market structure, the ability of ginneries to work with their seed cotton suppliers to help reduce the cost of producing seed cotton is expected to play a critical role in improving the competitiveness of the entire cotton-to-garment supply chain (Table 5).

Table 5: Cotton Ginning Costs (Ksh/Kg Lint Cotton)

	Cotton Ginning Costs			79.31	/kg (Ksh)		
	Seed Cotton	Drying/Cleaning	Ginning	Cleaning/Packing	Transport	Admin	TOTAL
Unit Cost	68.18	2.45	2.28	3.11	1.00	2.30	79.31
% of Total	86.0%	3.1%	2.9%	3.9%	1.3%	2.9%	100%

Source: Global Development Solutions, LLC™

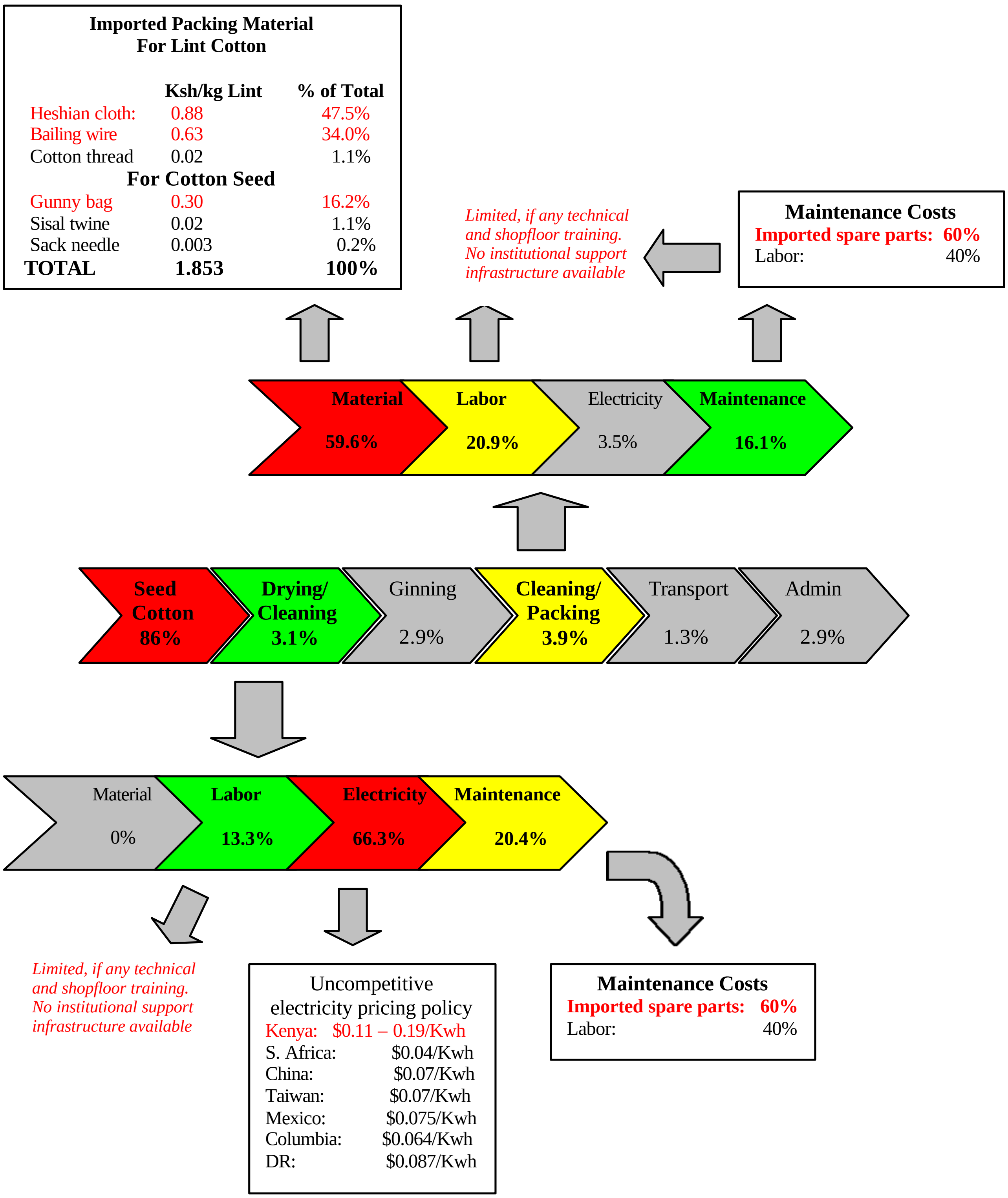
As a value chain analysis for seed cotton was already presented in the previous section, the ginning value chain will focus on analyzing value adding activities associated with cleaning/packing, and drying and cleaning. In both instances, value adding activities are divided into four principal areas: material input, labor, electricity and maintenance.

3.2.1 Seed Cotton: Need for a Formal Marketing Structure

The Kenya Cotton Board (KCB) was once the focal point that brought cotton farmers together with ginners. But since market liberalization in 1991, the role of the KCB has remained ambiguous. In the absence of the KCB, 77% of all cotton is sold directly to ginneries by farmers. The remaining 23% is sold through intermediary/brokers.

Since there are no secondary markets for seed cotton, ginneries provide the only market outlet for cotton farmers. In this context, ginneries dictate the price paid to cotton farmers. In the absence of access to market information, cotton farmers continue to be price takers and have virtually no leverage to negotiate prices with ginners, particularly as demand for locally produced cotton by the textile and garment industries continues to remain relatively flat.

Diagram 4: Ginning Value Chain for Kenya



Source: Global Development Solutions, LLC™

Generally, farmers are happy with the spot cash payment they receive for their seed cotton, but continue to complain about both the low price they receive for seed cotton, and the irregular purchasing cycle exercised by ginneries. The irregular purchasing cycle exhibited by ginneries is a response to competition created by intermediaries/brokers who undermine ginneries that have an established purchase schedule whereby intermediaries/brokers offer farmers slightly more for their crop immediately before harvest.[11]

Given the absence of a formal market mechanism that link cotton farmers and ginneries, collection and transport of seed cotton from a wide range of smallholder cotton farmers to a processing facility must be coordinated by the ginnery, often times relying on their own transport trucks. In an established market, formal collection schemes and trucking services would be available for hire. However, no such services currently exist in Kenya, thus leaving ginners to take on the added burden of planning, implementing and managing the collection and transfer of seed cotton to their processing facilities.

A small number of ginneries offer farmers input support, particularly to advance farmers necessary inputs such as seeds, fertilizers and occasionally sprays. As contracts are normally not recognized or enforceable, building informal working relationships with village heads and farm groups plays a critical role in forming market based linkages between ginneries and cotton farmers. Reluctance on the part of farmers to trust relationships with ginners is understandable, particularly given the history of abuse and financial losses cotton farmers have faced working with ginneries. In this context, to simulate growth in local cotton production, and to strengthen the entire farm-to-finished product supply chain, substantial focus must be placed on bridging the current gap between farmers and ginners through a range of support programs, including private sector led out grower schemes.

3.2.2 Cleaning and Packing: Reliance on Imported Packing Material

The total cost of cleaning and packing is estimated to be approximately 3.11 Ksh/kg of lint cotton. Of this amount, packing material accounts for 59.6% of the total value, of which nearly all is imported. Generally, there are two types of packing materials required by a ginnery: packing material for lint cotton; and for cotton seeds. Heshian cloth and bailing wire for packing lint cotton, and gunny bags for packing cotton seeds constitutes nearly 98% of the total value of all packing material. Given the limited time, it was not possible to explore whether local production of packing material is a viable option to help reduce costs incurred in this part of the value chain.

3.2.3 Maintenance: High Cost of Imported Spare Parts

Both in the case of cleaning and packing, and drying and cleaning, maintenance costs are prominent in the value chain. In the case of cleaning and packing, maintenance costs constitute 16.1% of the overall cost, while for drying and cleaning, maintenance costs are even higher at about 20.4%. In both instances, the cost of imported spare parts accounts for 60% of the overall cost.

Taking into account that a large portion of lint cotton produced in Kenya works its way into export oriented textile and garment factories, ginners raise concerns about why inputs such as spare parts should incur VAT. While the cotton and textile industries are far from having in place traceability standards for inputs down the entire supply chain, further review may be warranted to determine

[11] Further work is needed to understand and improve transparency of the price and grading mechanism for seed cotton, particularly as ginners currently define both the grade and price of seed cotton.

whether spare parts should enjoy VAT free status.[12]

In addition to spare parts, labor constitutes the remaining 40% of the maintenance cost. Since liberalization, any semblance of institutional support for the industry, particularly with regards to training and technical support services has vanished. In this context, in-house training as it relates to machine operation, and maintenance and repair continues to be ad hoc. As a result, industry players feel that in-factory labor productivity and labor quality can be substantially improved.

Here it is important to note that the revitalization of the farm-to-finished product supply chain in the cotton-to-garment industries will require substantial capacity building of local support institutions. Specifically, capacity building will need to focus on developing cross cutting services capable of covering a wide range of technical issues. Services that capture the needs of the textile and garment industries, and to translate such issues into defining seed varieties, farm inputs, farming practices and standards, as well as to recommend changes in ginning technology and processes to accommodate the fabric and yarn requirements of the textiles and garments industry.

3.2.4 Uncompetitive Electricity Pricing Policy

Like the high cost of transportation, high cost of electricity is a cross cutting issue raised by most companies in the manufacturing sector, including the ginning sector. Proper drying plays a critical role in defining the quality and GOT of lint cotton. In this context, the ginning sector faces two major challenges. First, antiquated ginning line, particularly the dilapidated state of drying equipment contributes to high energy consumption. This is further aggravated by the high cost of electricity. Currently, the industry pays anywhere between Ksh 8 – 14/Kwh ($0.11 - $0.19/Kwh).[13] This is 2.75 – 4.75 times more than the price paid by manufacturers in South Africa ($0.04/Kwh). Similarly, manufacturers in China pay anywhere from 1.5 – 2.7 times less per Kwh ($0.07/Kwh).

Current electricity pricing policy not only creates a handicap for the ginning industry, but as it will be seen in later section of this report, high electricity cost also has a rippling effect up the entire supply chain.

3.3 Summary

While full verticalization of the cotton-to-garment industries is not necessarily a solution for all countries, improving current farming practices and the cost structure of both farming and ginning sectors shows promise in Kenya and plays a pivotal role in improving the country's potential to improve the medium and long-term competitiveness of the textile and garment industries. With this said, however, coordination between the two sectors and further institutionalization of relationships between farmers and ginners is required if it is to be an integral player in supporting the growth and competitiveness of the textile and garment industries.

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[12] As will be evident from this report, the issue of VAT exemption for spare parts is one which cuts across all export oriented industries.

[13] The high cost is also reflected in the inconsistency of electricity supply which requires companies to have off-grid sources of electricity such as diesel generators.

Summary of Constraints Faced by the Ginning Sector in Kenya

Policy Based Distortions	Market Based Distortions
The ginning sector is devoid of a strong institutional representation to help develop and implement a long-term strategy with the cotton farming community that would improve both yield and quality of seed cotton	A critical shortage of investment in upgrading or replacing dilapidated ginning equipment
Institutionalizing mechanisms to define grade and price for seed cotton	Low GOT due to the poor quality of seed cotton and outdated ginning equipment
Absence of institutional support infrastructure to assist ginners expand out grower/supplier programs to help improve seed cotton yield and quality	Low capacity utilization due to limited supply of seed cotton
VAT on spare parts contributing to the high cost of equipment maintenance and the pace of investments in upgrading dilapidated ginning equipment	No market mechanisms to help consolidate harvest from a large number of smallholder farmers and to transport seed cotton to processing facilities
Absence of technical support institutions to help improve the quality and productivity of factory labor force	Reliance on expensive imported packing material with limited drive to expand local sourcing
Absence of institutional infrastructure to facilitate dialogue across the entire farm-to-finished product supply chain to help coordinate and improve responsiveness of value adding activities that help create demand for primary inputs while at the same time enhance the competitiveness of finished goods	Absence of a planning cycle for sales of harvest due to the lack of contractual mechanism between farmers and ginners, and disruptive behavior by intermediaries/brokers
Uncompetitive electricity pricing policy that has a rippling effect across the entire farm-to-finished goods supply chain	No incentives nor support infrastructure to invest in human resources to improve labor productivity

Source: Global Development Solutions, LLC™

4.0 Kenya's Textile Sector

4.1 Background

In 1983 Kenya had 52 textile mills operating with an installed capacity of 115 million square meters per annum. Since then market liberalization, an increase in imports of second hand clothing, exchange rate fluctuations, inequitable import duties and a host of other factors have contributed to the dwindling of the textile sector to the point that today, it is estimated that only 8 integrated textile mills are still in operation.[14]

When military conflict in East and Central Africa escalated during the mid-1970s, Kenya became the staging ground for international humanitarian aid. As a result, used and rejected clothing from Europe and the United States entered Kenya duty free to be redistributed as a part of a humanitarian aid package. Eventually, however, imported new and used garments and fabrics began entering the local market.[15]

By 1990, the import of new and used garments and fabrics captured 54.7% of the Kenyan market, thus effectively choking the local farm-to-finished goods supply chain in the cotton and textile sectors. The Kenyan Government reacted by imposing a duty on such imports, but as we will see in a latter section of this report, the Government's efforts to limit the import of second hand garments and fabrics has enjoyed limited success.

Data from 2001 suggests that the total textile demand in Kenya was 225 million square meter equivalent, where 57.5 million square meter equivalent or 25.5% is supplied through domestic sources, while the remaining 74.5% of demand is met through imported goods.

The following matrix provides a summary of Kenya's textiles sector (Table 6).

[14] The 1999 National MSE Baseline Survey suggests that there are as many as 41,372 hand weaving businesses in operation in Kenya.

[15] A least four types of imported products have dampened the development of the farm-to-finished goods supply chain in the cotton and textiles industry. These products include: new but out of season garments from developed countries; used clothes from second hand markets or through charitable organization, products for exclusive boutiques; and factory rejects from garments manufacturers.

Table 6: Kenya's Textile Sector Profile

1.0 Number of companies currently operating in the sector[16]	[illegible]2
2.0 Production capacity (per annum)	
2.1 Spinning (in millions)	
2.1.1 installed capacity	30 tons
2.1.2 actual production capacity	20 tons
2.2 Weaving (in millions)	
2.2.1 installed capacity	115 m²
2.2.2 actual production capacity	83 m²
3.0 Total Textile Demand (2001)	225 million square met r equivale t
4.0 Local Fabric Production (2001)	57.5 million square met r equivale t
5.0 Imported Textile Goods (2001)	167.5 million square met r equivale t
6.0 Import of Woven Fabric (2002)	
6.1 Quantity	4,265,699 m²
6.2 Value	Ksh 508,119,781
7.0 Export of Woven Products (2002)	
7.1 Quantity	1,041,655 m²
7.2 Value	Ksh 51,802, 299
8.0 Key Export Markets: Yarn	
Democratic Republic of Congo	6.5%
Malawi	5.8%
Sudan	0.5%
Tanzania	29.8%
Uganda	49.3%
Zimbabwe	5.3%
Other COMESA countries	2.8%
9.0 Key Export Markets: Fabrics	
Democratic Republic of Congo	0%
Malawi	0%
Sudan	7.3%
Tanzania	35.2%
Uganda	21.3%
Zimbabwe	22%
Other COMESA countries	14.2%

Source: Global Development Solutions, LLC™

4.2 Textiles Value Chain

Currently, there are 8 textiles mills operating in Kenya, two which do spinning to produce threads, while the remaining 6 are integrated mills that do weaving, knitting, dyeing, and finished fabrics. Cost of milling can vary widely according to the quality and origin of lint cotton used for the process. Textile mills producing yarns and fabrics for export oriented companies tend to rely on imported rather than domestic lint cotton.

[16] This figure reflects the number of enterprise registered with the Registrar of Industries, and does not necessarily reflect the number of firms actually under operation today.

This particular analysis of the textile value chain will focus on the production of woven fabric using lint cotton priced at approximately $1.41/Kg (Ksh 104.4).[17] It should be noted that domestic oriented fabrics and garments producers may opt to use lower quality cotton or even blend imported and local cotton. In this context, the delivered price of yarn and cotton fabric can vary widely. With this said, however, the proportional distribution of costs across the entire value chain will remain relatively consistent.

Generally, spinners oriented toward sales of yarn and fabric for domestic oriented markets tend to use 20% local and 80% imported cotton. On the other hand, export oriented fabric and garment manufacturers tend to rely exclusively on imported material.

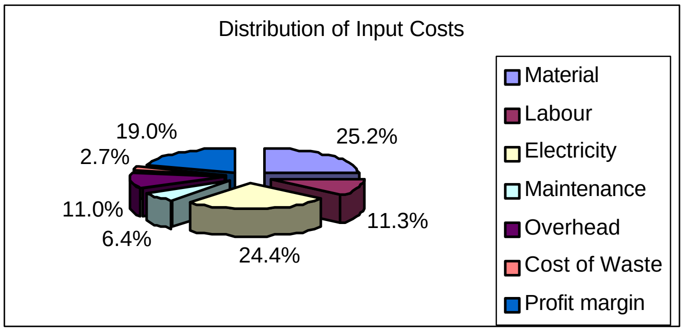
After seed cotton has been ginned, lint cotton must go through four value adding activities:

- Combing;
- Twisting;
- Weaving; and
- Dyeing

According to the value chain analysis the cost per kilogram of 3.2 meter quality fabric is approximately $6.84 (Ksh 505.90). This translates to a cost per meter of cotton fabric of $2.14 (Ksh 158.09). The value chain analysis suggests that the highest value associated with the production of fabric involves dyeing (27.7%), combing (25.0%) and lint cotton as an input (20.6%). When the same data is reviewed with respect to inputs, 25.2% of the cost of producing a meter of fabric is associated with input material, with the cost of electricity 24.4%, and profits of 19% (Diagram 5 and Diagram 6).

[17] $1.41/kg is the delivered price of lint cotton from the ginnery example used in an earlier section. While in fact, export oriented textiles and garment companies operating in Kenya are accessing imported lint for approximately $1.32/kg (Ksh 97.68/kg).

Diagram 5



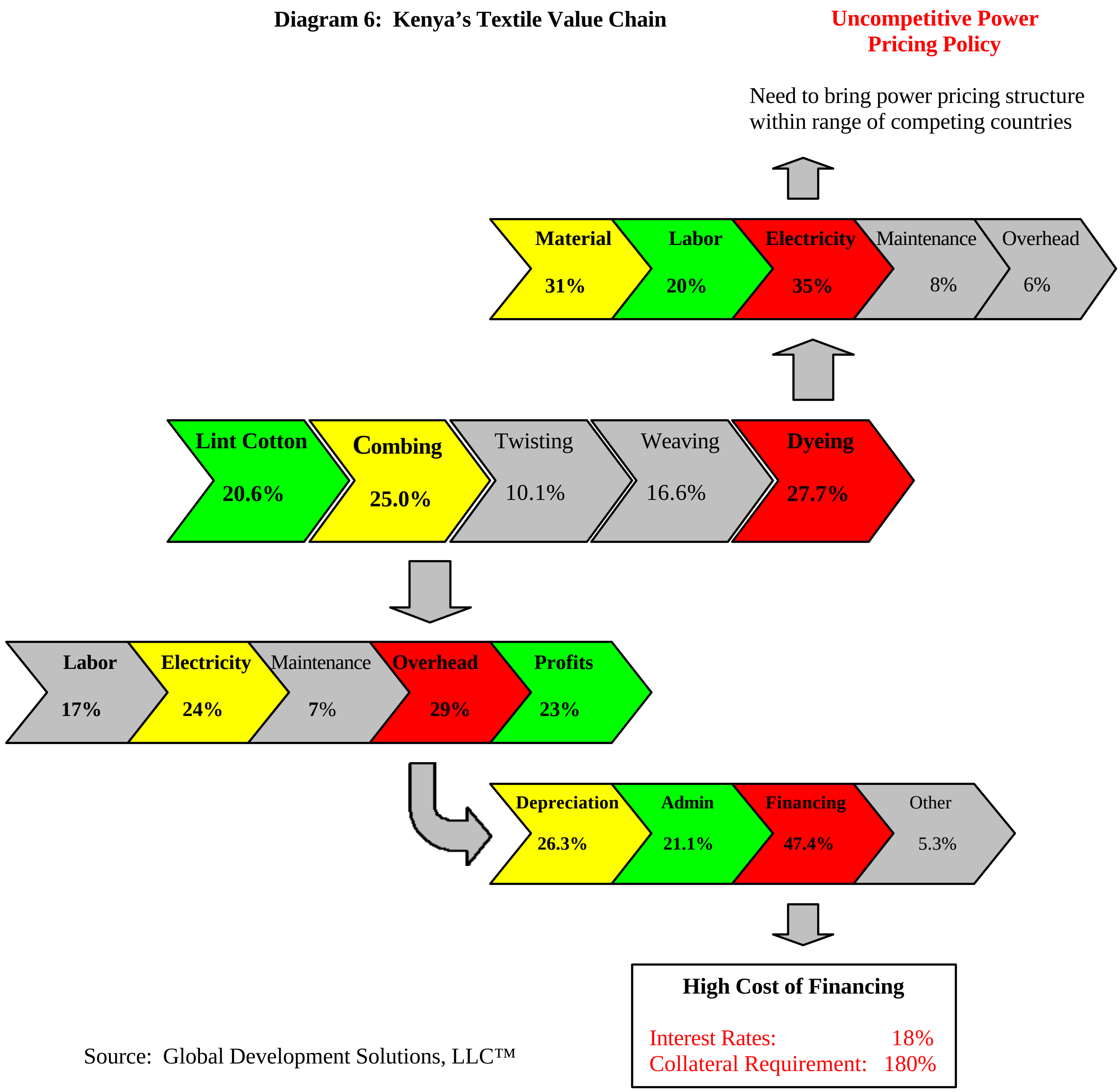
Source: Global Development Solutions, LLC™

According to interviews, similar quality fabric is being produced for nearly 40% less in China at a cost of between $1.30 - $1.50. This is principally due to the fact that much of the cost savings are derived from sourcing competitively priced, high quality local rather than imported lint cotton, and low levels of process waste due to the use of stronger cotton fiber.

4.2.1 Dyeing: Bound by High Cost of Electricity and Imported Chemicals

The value chain analysis suggests that it costs approximately $1/kg to dye fabric. Nearly 35% of this cost is associated with electricity, while the remaining 31% is for imported chemicals, and 20% for labor. Here again, the uncompetitive electricity pricing policy of the country is having an impact on the cost of production. Similarly, imported chemicals, both with respect to high transport costs as well as the lack of local sourcing opportunities for inputs is having an impact on the competitiveness of Kenyan fabrics.

Diagram 6: Kenya's Textile Value Chain



Source: Global Development Solutions, LLC™

4.2.2 Combing and Associated Costs

The value chain analysis for combing suggests that 29% of the cost of combing is for overhead costs, while 24% is for electricity and yet another 24% is absorbed as profits. Further breakdown of overhead costs suggests that 47.4% is applied towards financing charges. Specifically, to improve the ginning outturn (GOT) and ensure economies of scale, a minimum amount of lint cotton must be on hand to help make continuous runs of the combing equipment. This requires access to working capital to purchase lint cotton and other inputs.

According to several medium size local companies, collateral requirements for short-term loans from local banks is about 180% at an interest rate of 18%. In addition, local banks view the textile sector as a 'high risk' sector and are often reluctant to lend to companies in the sector.

In addition to difficulties in accessing affordable financing, interviews with weavers revealed the following bottleneck as factors inhibiting improved productivity and performance in the woven sector (Table 7).

Table 7: Technical and Human Resource Factors Contributing to Low Productivity and Performance in the Spinning Sector

Technical Factors	Human Resource Factors
• Lack of modern equipment which would improve mill speeds and twisting – currently operating at approximately 30% of industry norm • Do not have regular monitoring of waste to identify specific technical solutions to reduce overall cost of waste – current estimates suggest 1% reduction in waste can lead to savings of Ksh 80,000/month • No collection and analysis of operational data to pinpoint recurring technical and mechanical problems • No regular maintenance schedule which would reduce downtime • Maintenance is slow and of poor quality	• Limited in-house training in areas such as piecing and doffing, which can result in improved productivity and reduce stoppage • Poor labor utilization: industry standard for a 'drawing' machine operation is 1 worker to 5 machined. Spinners in Kenya are utilizing an average of 1 worker for 3.5 machines • Labor productivity is 30% lower than industry norm as a result of low quality of technical skills, lack of in-house training activities, and the absence of local training institutions

Source: Global Development Solutions, LLC™

The low productivity is further aggravated by the poor quality of Kenyan cotton. As an indication of the poor quality of Kenyan cotton fiber, one integrated textile mill indicated that 100 kg of imported cotton fiber from India translates into 99 kg of cotton fabric. Using the same process, the textile mill can yield only 60 kg of cotton fabric from 100 kg of Kenyan cotton fiber. The low transformation ratio is a result of fabric breakage and tears due to short and uneven cotton fiber length and quality.

4.3 Opportunity Cost to the Cotton and Textile Industry Imposed by Import of Under- Declared Fabrics into Kenya

The significant role of second hand garments and apparel in the Kenyan economy is clearly evident along back alley markets in Nairobi. While the availability of second hand garments and apparels serve an important role in providing affordable clothing for the poor, this informal sector has had a negative impact on the cotton and textile industries in Kenya. Perhaps what is more disturbing and less evident is the importation of under- declared fabrics into the country.[18]
Current estimates suggest that between 200 – 550 containers per month containing 10 – 12 million square meters of fabric enter Kenya under-declared. Specifically, under current law, goods value at less than $5,000 are not subject to inspection. Consequently, a thriving business has evolved where large volumes of goods are brought into the country under-declared and sold through both formal and informal markets.

Containers enter Kenya through several locations. Principal point of entry for fabrics and garments from India[19] transiting through

[18] It is estimated that 15 –20 companies deal principally in the import of second hand clothing and under-declared fabrics. Most of the second hand clothing come from the U.S. via Hamburg, Germany.

[19] In addition to under paying taxes, Indian textile and garment manufacturers receive a 13% export incentive, which makes the price of landed goods from India substantially less than the total cost of manufacturing a similar product in Kenya.

Dubai enter through Mombasa Port. In addition, others enter through the Somalia border and at PEPE – Athi River.

Once under-declared goods enter Kenya, they are off-loaded to wholesalers and dealers at Garissa lodge and other locations in Eastleigh before being distributed to retailers and distributors in the Nairobi area.

In the case of textiles and garments the following taxes would be imposed on an under-declared container (Table 8).

Table 8: Taxes Paid for Under-declared Container

		Taxes Paid	
Tax Categories	**Tax Rate**	**Under-declared**	**Actual Tax Value**
Duty	15%	$ 750.00	$8,625.00
VAT	18%	$ 900.00	$10,350.00
IDF	2.75%	$ 137.50	$1,581.25
Total		**$ 1,787.50**	**$20,556.25**

Value per Container		**Differential**	11.5 times
Under-declared	**$5,000**		
Average value	**$57,500**		

Source: Global Development Solutions, LLC™

As evident from the table above, importers of under-declared fabric play 11.5 times less taxes than what is prescribed by law. Continued importation of under-declared fabric has had at least two detrimental impact on the Kenyan economy. First, public sector revenue has decreased dramatically. Second, it has choked demand for local textile products, which has in turn eliminated virtually all investments into the ginning sector. As a consequence, this has contributed to further aggravating rural poverty by depriving smallholder cotton farmers from increasing production and reinvigorating the cotton sector in Kenya.

4.3.1 Impact of Under-declared Fabric Imports on Public Sector Revenue

If the current estimates of 200 – 550 containers per month carrying 10 – 12 million square meters of under-declared fabric with an average per container value of $57,500 is indeed correct, the opportunity cost in terms of foregone public sector revenue is estimated to be about $32.4 – $89.2 million per year. In addition to this amount, if under-declared imports were eliminated and replaced by locally produced fabrics, VAT charges from sales of lint cotton would equal between $70.8 - $84.9 million per year. This translates to between $103.2 - $174.1 million per year in foregone public sector revenue (Table 9).

Table 9: Foregone Public Sector Revenue Resulting from Under-declared Fabric Imports

Volume of containers/month	Containers/ month	Foregone Revenue/ month (gross)	Actual charges	Net Revenue loss/month	Net Revenue loss/year
Low	200	$ 2,961,250	$ 257,500	$ 2,703,750	$ 32,445,000
High	550	$ 8,143,438	$ 708,125	$ 7,435,313	$ 89,223,750

Other Revenue Losses	Foregone VAT from sales of lint cotton	Total Revenue Loss/year
Low	$ 70,769,413	$ 103,214,413
High	$ 84,923,295	$ 174,147,045

It should be noted that these figures do not account for whatever taxes that local garment and apparel manufacturers might be assessed for the increase in production resulting from curtailed imports of under-declared fabrics.

4.3.2 Impact of Under-declared Fabric Imports on Private Sector Revenue

As evident from the table above, the public sector is incurring substantial revenue losses as a result of under-declared fabric imports. It is not clearly evident whether the Government has a full appreciation of the opportunity cost that it incurs by allowing these transactions to take place. This is particularly true when measuring the impact that under-declared fabric imports have on the entire cotton-to-textiles supply chain. More specifically, while players in the textile and garment industries are acutely aware of the direct impact that under-declared imported fabrics have on their industry, virtually no data is available on the impact that these transactions have on the entire cotton-to-textile supply chain.

The overall impact of foregone demand as a result of under-declared fabric imports on the cotton-to-textile industry with respect to annual gross revenue is estimated to be between $900.8 million - $1.08 billion. This translates rough to $133.8 – $166.6 million in foregone net profit for the entire cotton-to-textile industry (Table 10).

Table 10: Estimates of Foregone Income for the Cotton-to-Textile Supply Chain

Opportunity Cost for the Private Sector: Low Scenario (200 containers/month)		
	Gross Revenue	Net Profit
Cotton Farmer	$ 202,135,135	$ 32,611,135
Ginners	$ 442,308,830	$ 52,536,460
Textile Mills	$ 256,362,162	$ 48,708,811
TOTAL	$ 900,806,127	$ 133,856,406
Opportunity Cost for the Private Sector: High Scenario (550 containers/month)		
	Gross Revenue	Net Profit
Cotton Farmer	$ 242,562,162	$ 39,133,362
Ginners	$ 530,770,596	$ 63,043,752
Textile Mills	$ 307,634,595	$ 58,450,573
TOTAL	$1,080,967,352	$ 160,627,687

Source: Global Development Solutions, LLC™

Impact on Cotton Farming Sector: Based on the assumption of a 5.54 conversion ratio between a square meter of fabric to seed cotton, it is possible to calculate that the volume of seed cotton required to produce 10 – 12 million square meters of material per month. These figures combined with costs identified through the value chain analysis suggests that the opportunity cost for cotton farmers ranges from $202 - $242 million per year. Based on current production cost and sales price, this translates to net profit loss of $32.6 - $39.1 million per year. Assuming that there are 140,000 smallholder cotton farmers in Kenya today, this is equivalent to a foregone annual net income of $233 - $280 per cotton farm.

Taking into consideration that cotton farmers currently make a net profit of $28.04 per hectare of seed cotton (excluding seed sales), the financial impact of under-declared fabric imports, particularly in the context of rural poverty, is extremely high for cotton farmers. In addition, assuming that a portion of the additional income can be redirected for expenditures on agrochemicals, cotton farmers can meet the required spraying regime and thus in turn improve per hectare yield from the current low of 572 kg/hectare, and possibly increase fiber quality from 25 mm to 28+ mm. This in turn can have a long-term impact not only on the ability of cotton farmers to increase their income generating potential, but also develop the cotton farming sector to a quality level that can be compete head-to-head with imported cotton from Uganda and Tanzania.

Impact on the Ginning Sector: Equally important is the foregone income in the ginnery sector. Specifically, foregone annual gross revenue is estimated to be approximately $442.3 – $530.7 million. This is equivalent to an annual net profit for the industry of $52.5 - $63 million. The significance of these figures is that the level of investments required to rehabilitate and revive the ginning sector, and to help improve GOT from the current low of 33% to an average of 40 – 42% can easily be met by the potential net profits generated by the ginning sector. Similarly, the ginning sector could leverage the increased revenue base as a way of financing critically needed parts and equipment.

Impact on the Textiles Sector: As indicated from the table above, the gross revenue impact of curtailing under-declared imports of fabric is between $256.3 - $307.6 million, which translates to foregone annual net profits of $48.7 – $58.6 million.

While improved fiber quality and per hectare yield rate will have a definitive impact on dramatically improving income generating potential for cotton farmers and ginners, it has an even greater implication for the textiles and garments industries which, to comply with AGOA conditions, must source inputs from local or regional sources. As indicated earlier, textile and garment industries import over 80% of the required input material. Consequently, improved access to competitively priced and high quality lint cotton from local sources can have a dramatic improvement on the delivered price of goods, for both domestic and export markets.

The informal sector is clearly well entrenched in the textiles and garment sector in Kenya. Consequently, curtailing the current level of under-declared imports will require substantial impetus by the Government to introduce and enforce reform measures by Customs, Port Authority, and other public sector bodies. At the same time, however, the potential increase in public sector revenue as a result of limiting the influx of under-declared imports can serve as a basis for improving the salaries of civil servants.

It should also be noted that the importation of under-declared fabric is not simply a public sector issue. A clear need exists to strengthen business associations at the retail and wholesale level, as well as in the textiles and garment sectors to introduce self regulating mechanisms to discourage association members from purchasing and dealing in transactions involving materials that enter Kenya through the informal market.

Similarly, mobilizing support among business associations across the entire supply chain from cotton farming to textiles and garments is require to exert pressure on the government to become more stringent on the import of under-declared fabrics, as well as to use peer pressure among enterprises in these industries to reduce transactions in these products. Mobilizing such support across the entire supply chain is required to define and implement an industry wide strategy for growth.

4.4 Summary

A number of key policy and market based distortions are inhibiting the development of a competitive textiles sector in Kenya. On the policy side, perhaps the three most significant issues include uncompetitive electricity pricing policy, unregulated import of under valued fabrics and, the lack of coordination between various business associations along the entire cotton-to-textiles chain to self regulate companies facilitating illegal transactions while defining a strategic vision for the growth and competitiveness of the cotton-to-textiles and garment industries.

These policy based distortions have constrained the development of the textile sector, and is further aggravated by a number of market based distortions such as low investments in in-house training and the integration of modern shopfloor management practices, high cost of access capital and collateral requirement due to an unresponsive commercial banking sector, and the lack of coordination with the business community to move away from dependence on imported inputs.

These factors suggest a need for much closer collaboration between the public and private sectors to develop a share vision for the future of the textile industry which encompasses the needs and constraints of the entire cotton-to-textile supply chain.

Summary of Constraints Faced by the Textile Sector in Kenya

Policy Based Distortions	Market Based Distortions
Uncompetitive electricity pricing policy adding substantially to the cost of production	High dependence on imported inputs, ie. the price of locally sourced lint cotton is high and fiber quality low
High volume of under-declared fabric imports is stifling the revitalization of the entire cotton-to-textiles supply chain. Weak enforcement of customs regulations and oversight by Kenyan Revenue Authority of duty, VAT and IDF charges	Low quality of lint cotton available through the local market contributes to high level of waste in both spinning and fabric production, thus increasing the unit cost of fabrics and finished products
Weak oversight and inspections at Mombasa Port (Port Authority) and a number of strategic border crossings where under-declared fabrics enter Kenya	Disproportionate dependence on imported fabric, particularly taking into account the potential capacity of local cotton farmers and ginners
Weak inspections and enforcement of business regulations and licensing in targeted locations within Nairobi where a small but prominent group of dealers facilitate transactions of under-declared fabrics	High cost of locally produced lint cotton
Existing regulations allowing cargo valued under $5,000 to enter has unintended consequences	Given the uncompetitive cost of input materials, millers are charging high profit margins, particularly at the twisting and weaving stages
Government is under estimating the impact of allowing under-declared imports to enter the market on the entire cotton-to-textiles supply chain, and particularly on the impact these transactions have on contributing to rural poverty among cotton farming communities	High cost of imported chemicals due to high transport costs and the lack of sourcing options, particularly through local enterprises
Lack of investments by the private sector in upgrading and rehabilitating the ginneries is partly due to the depressed demand for local cotton as a result of unregulated imports of under valued fabrics	High cost of accessing capital (18% for short-term 3 month loan) and high collateral requirements (180%), particularly as the textile industry is viewed by commercial banks as ‘high risk’

Weak and sometime non-existent business associations implies need for stronger institutional infrastructure to help mobilize players along the entire cotton-to-textiles supply chain to help self-regulate and place pressure on local enterprises facilitating illegal transactions in under valued imports	Poor labor utilization and labor productivity, particularly due to the lack of in-house training and poor data on tact time
Limited coordination between various business associations to define and implement an industry wide strategy for growth	Absence of modern shopfloor management practices and adherence to international standards
	High cost of transport for imported input material

Source: Global Development Solutions, LLC™

5.0 Garment Sector

Kenya's garment sector is principally driven by exports to the United States under the AGOA agreement. As of 2002, Kenya surpassed Mauritius to become the third largest exporter of apparel and textiles to the U.S. from Africa generating over $123 million in export sales. This is a far cry from 1994 when the U.S. shut out several products from Kenya over alleged transshipment of goods from Asia.

Currently 37 large scale garment manufacturers export to the U.S. under AGOA of which 25 are located within the export processing zone (EPZ), 7 enjoy MUB status (manufacture under bond), and 5 operate outside both EPZ and MUB. According to the Export Processing Zone Authority, within the EPZ, textile firms employ about 25,288 workers. On the other hand, however, small and micro garment producers, including small ginneries and retailers handling second hand garments, employ as many as 230,956 workers.[20] The growth in employment among small and micro garment manufacturers is a direct reflection of the continued decline in employment in large-scale export oriented textile, garment and apparel industries. Small and micro garment manufacturers sell most of their products to local authorities, schools and local firms, and operate independently of regional and international export markets. Consequently, the welfare of small and micro garment manufacturers producing garments and apparel is being greatly damaged by the growing import of second hand clothing (Table 11).

[20] National MSE Baseline Survey 1999. More than 45% or 103,961 workers in the small and micro garment sector are employed in the sales of second hand garments, which is an indication of the significant role that second hand garments have on the vitality of the Kenyan economy.

Table 11: Kenya's Garment Sector Profile

1. Garment Manufacturers	
1.1 Large scale	170
1.2 Small and micro[21]	74,576
1.3 Export oriented	37
2. Export Destinations	
2.1 USA	79%
2.2 Europe	8%
2.3 EAC/COMESA[22]	7%
2.4 Others	6%
3. Total Exports to USA[23]	**$123 million**

5.1 Large Scale Garment Producers

There are at least two types of garment producers currently operating in Kenya. First are the integrated textile mills producing finished fabrics as well as garment. The second, type are the garment manufacturers that purchase fabrics from local textile mills or that import fabric for assembly in Kenya (CMT).[24] Export oriented garment producers operating in the EPZ tend to source 80% or more of their input material from outside Kenya. On the other hand, garments produced by integrated mills use both local and imported lint and fabric to produce garments for both local and regional markets.

For the purposes of this exercise, a value chain for export quality and domestic and regional market quality cotton T-shirt was prepared. The principal difference between the two types of value chain is the quality and cost of the cotton material used. In the case of a domestic and regional market oriented T-

[21] According to estimates from the National MSE Baseline Survey 1999, small and micro garment producers (spinning, weaving and finished textiles, knitting and crocheting, woven apparel, soft finished clothing, and read-made garments) employ as many as 126,697 workers.
[22] Principal destinations include Uganda, Tanzania, Zimbabwe, and Sudan.
[23] This is equal to nearly 13.2% of the total square meters equivalent of the garments and apparel imported by the U.S. Kenya is now the third largest exporter to the U.S. under AGOA.
[24] CMT: cut, machine, trim.

shirt, cost of the fabric per finished product was approximately $1.85 (Ksh 136.9), while for T-shirts bound for exports, particularly to the U.S., the cost of the fabric per finished product was approximately $2.14 (Ksh 158.36).

5.2 Value Chain Analysis

In addition to the cotton material, the value chain for a cotton T-shirt can be divided into at least five levels of value adding activities:

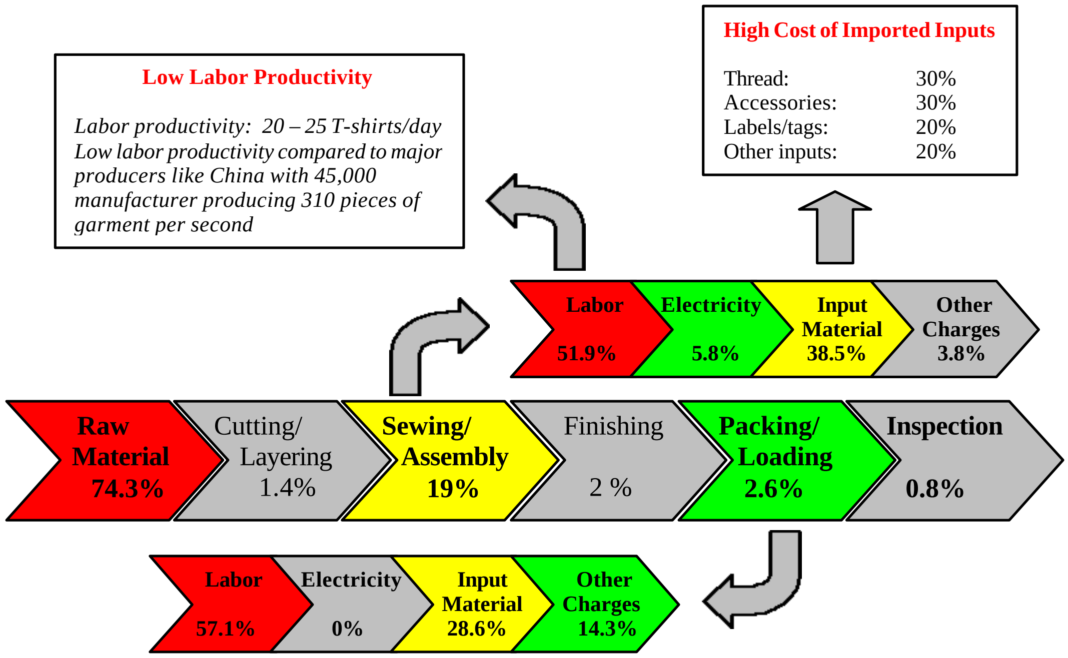
Cutting/layering;
Sewing/assembly;
Finishing;
Packing/loading; and
In-factory inspection/administration.

The cost of cotton material dominates the value chain, but as sewing and assembly are the core value adding activity for garment manufacturing, costs associated with this portion of the value chain tend to be relatively high.

5.2.1 Value Chain for Domestic and Regional Market Oriented T-Shirt

Of the $1.85 expended on producing a cotton T-shirt for domestic and regional markets, sewing and assembly constitutes approximately 19% of the overall value along the value chain, followed by packing and loading, which accounted for approximately 2.6% of the entire value chain. Although sewing and assembly requires substantial amount of investments in capital equipment, activities associated with this part of the value chain continues to be labor intensive. The labor intensive nature of this stage of production is reflected in the breakdown of the sewing and assembly activity, where labor input constitutes nearly 52% of the value of sewing and assembly (Diagram 7).

Diagram 7: Value Chain for Domestic Market Oriented Cotton T-Shirt



Source: Global Development Solutions, LLC™

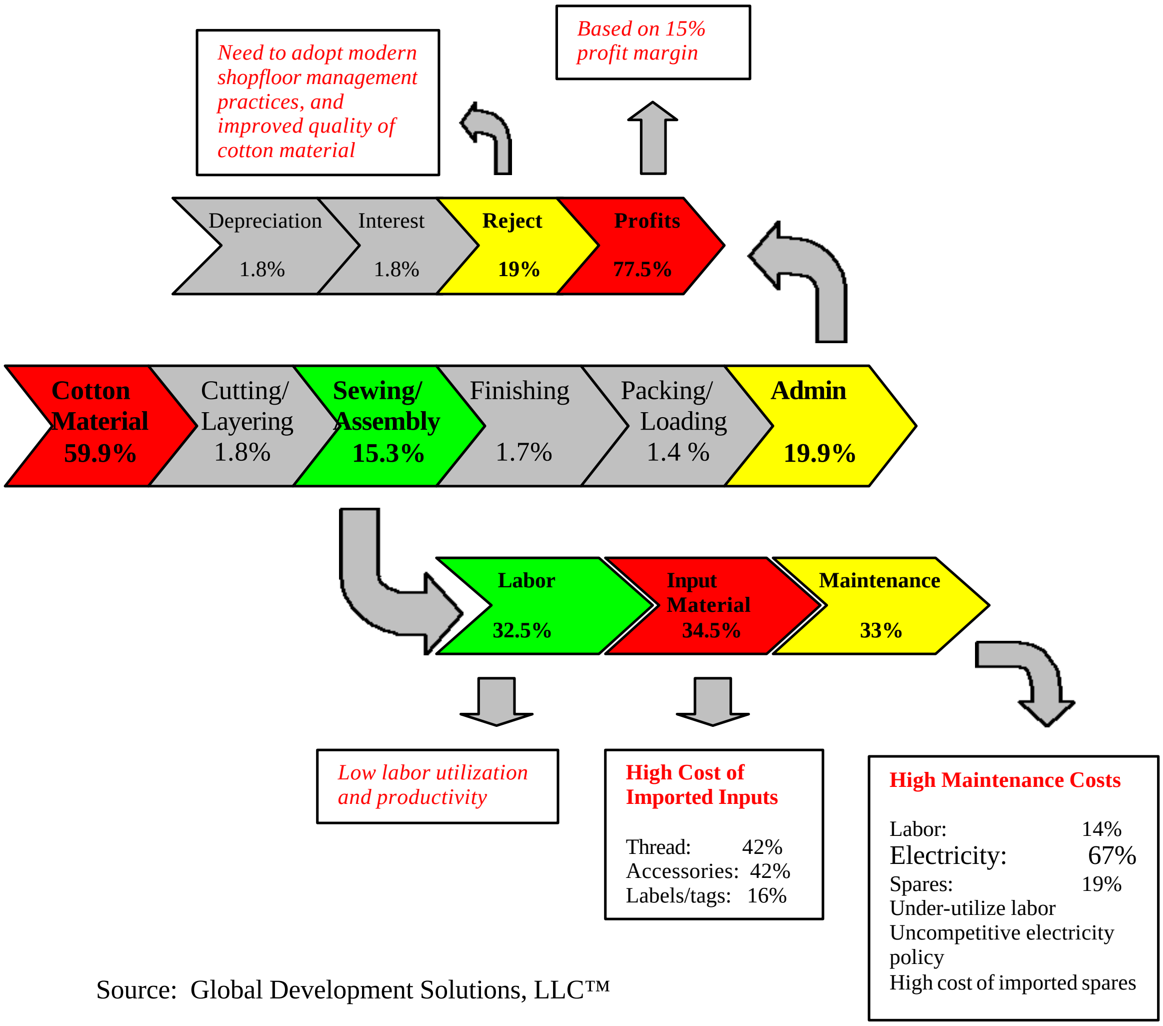
According to local garment manufacturers, labor productivity is approximately 20 – 25 T-shirts per person per day. Given these figures, the productivity in Kenya's garment sector is relatively low, especially compared to competitors like China where there are 45,000 manufacturers producing on average 310 pieces of garment per second.

In addition to low labor productivity, garment manufacturers are dependent on high cost imported input material. Although thread is usually sourced locally, other input materials such as accessories, labels and tags are imported accounting for 38.5% of the value of all input material.

5.2.2 Value Chain for Export Market Oriented T-Shirt

The estimated cost of producing an export oriented cotton T-shirt is approximately $3.57 (Ksh 264.37). Of this amount nearly 60% is accounted for by input material, followed by administrative costs (19.9%) and sewing and assembly (15.3%) – (Diagram 8).

Diagram 8: Value Chain for Export Oriented Cotton T-Shirt



Source: Global Development Solutions, LLC™

Administrative costs are surprisingly high at 19.9% of the entire value chain. A closer analysis suggests that 77.5% of the administrative costs are accounted for by profits, while an additional 19% is a result of the cost of rejects. In both instances the proportions are high. First, the level of profit is based on a 15% profit margin on gross cost. Nonetheless, this suggests that the market is willing to pay for a higher premium for a reasonable quality good and that the current cost structure could be competitive.

Secondly, the reject rate is extremely high, which suggest a need for an aggressive program of shopfloor management including world class manufacturing methods (WCM), poke yoke (error proofing), 5S (quality management), Kanban System (process management) and the implementation of standard operating procedures (SOP). The introduction and integration of modern shopfloor management practices are a must if manufacturers hope to improve their competitive position in the garment sector.

In addition to improving shopfloor management practices, the bulk of the cost of garment production is accounted for by cotton material. Consequently, improving access to high quality, low cost fabrics is expected to play a critical role in determining the future of the garment sector in Kenya. In this context, improving linkages down the supply chain to integrate local cotton and fabric into the value chain is essential if the industry is to remain competitive.

5.3 Comparing the Value Chain of Export and Domestic Oriented Garment Manufacturers

Comparing the distribution of costs across the entire value chain for export and domestic oriented T-shirts tells a revealing story about the two different operations. As evident from the value chain analysis of export oriented garment manufacturers, given a high quality product, export oriented manufacturers are able to charge a premium, while at the same time stay within the buyers' price range. Perhaps the most striking result from the comparison between the value chain of both export and domestic market oriented garment manufacturing is the different levels in which automation or capital intensive production is integrated into the production process. Specifically, with domestic market oriented manufacturers, the proportional distribution of labor is much high than for export oriented manufacturers, which suggests the need for further investments in automation, while at the same time improving in-house training and labor skills of the workers (Table 12).

Taking into account that the average investment required for garment making equipment is about $1.3 million, all of the right market indicators must be in place before local manufacturers can afford to commit to such an investment. Here again, we reflect back on the disastrous impact that import of under declared fabrics has had on the entire cotton-to-textiles value chain and how access to less expensive but higher quality cotton and fabrics through local sourcing can have a rippling effect across the entire supply chain, including the garment sector.

Table 12: Comparison of Proportional Distribution of Cost Between Domestic and Export Oriented T-Shirts

<table>
<tr><th></th><th>Export Oriented</th><th>Domestic Oriented</th><th>Variance</th><th>Possible Explanation</th></tr>
<tr><td>Cotton Material</td><td>59.9%</td><td>74.3%</td><td>80.6%</td><td>Export oriented manufacturers tend to have newer equipment so that the percentage waste is lower than domestic oriented manufacturers that use older equipment. In addition, export oriented manufacturers are generally located in EPZ or have MUB status, allowing them to enjoy duty free import of equipment.</td></tr>
<tr><td>Cutting/Layering</td><td>1.8%</td><td>1.4%</td><td>124.7%</td><td>Higher distribution of costs for cutting and layering by export oriented manufacturers reflects the higher use of electricity due to greater reliance on automated equipment as opposed to more labor intensive manual cutting and layering technique used by domestic oriented manufacturers.
Distribution of Costs for Cutting/Layering
<table>
<tr><th></th><th>Export</th><th>Domestic</th></tr>
<tr><td>Labor</td><td>31.6%</td><td>73.8%</td></tr>
<tr><td>Electricity</td><td>28.4%</td><td>0.5%</td></tr>
<tr><td>Material</td><td>20.3%</td><td>25.6%</td></tr>
<tr><td>Maintenance</td><td>19.7%</td><td>0%</td></tr>
</table></td></tr>
<tr><td>Sewing/Assembly</td><td>15.3%</td><td>19%</td><td>80.5%</td><td>Export oriented manufacturers are more capital intensive (lower labor inputs, higher electricity use, and higher maintenance costs) and enjoy greater efficiency gains than domestic oriented manufacturers that are more labor intensive
Distribution of Cost for Sewing/Assembly
<table>
<tr><th></th><th>Export</th><th>Domestic</th></tr>
<tr><td>Labor</td><td>32.5%</td><td>51.9%</td></tr>
<tr><td>Electricity</td><td>22.0%</td><td>5.8%</td></tr>
</table></td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td></td><td><table><tr><td>Material</td><td>34.5%</td><td>38.5%</td></tr><tr><td>Maintenance</td><td>11.0%</td><td>3.8%</td></tr></table></td></tr>
<tr><td>Finishing</td><td>1.7%</td><td>2%</td><td>89.3%</td><td>Export oriented manufacturers that rely more on automated equipment and require less finishing work than domestic oriented manufacturers which tends to be are more labor intensive.
Distribution of Costs for Finishing<table><tr><td></td><td>Export</td><td>Domestic</td></tr><tr><td>Labor</td><td>45.9%</td><td>80.6%</td></tr><tr><td>Electricity</td><td>20.0%</td><td>0.7%</td></tr><tr><td>Material</td><td>21.5%</td><td>18.7%</td></tr><tr><td>Maintenance</td><td>12.5%</td><td>0%</td></tr></table></td></tr>
<tr><td>Packing/Loading</td><td>1.4%</td><td>2.6%</td><td>55.9%</td><td>Export oriented manufacturers tend to allocate more resources to packing material than do domestic oriented manufacturers. However, domestic oriented manufacturers have more unaccounted charges.
Distribution of Cost of Packing/Loading<table><tr><td></td><td>Export</td><td>Domestic</td></tr><tr><td>Labor</td><td>49.0%</td><td>57.1%</td></tr><tr><td>Electricity</td><td>0%</td><td>0%</td></tr><tr><td>Material</td><td>51.0%</td><td>28.6%</td></tr><tr><td>Other charges</td><td>0%</td><td>14.3%</td></tr></table></td></tr>
<tr><td>Administrative</td><td>19.9%</td><td>0.8%</td><td>2,475.8%</td><td>High distribution in administrative cost reflects the higher margins that export oriented manufacturers are able to command when compared to domestic oriented manufacturers</td></tr>
<tr><td>TOTAL</td><td>100%</td><td>100%</td><td></td><td></td></tr>
<tr><td>Unit Cost</td><td>$3.57</td><td>$1.85</td><td>193%</td><td></td></tr>
</table>

Source: Global Development Solutions, LLC™

5.4 Summary

The success of the Kenyan garment sector is highly dependent on AGOA and exports to the United States. The high levels of dependence on specific markets, combined with an equally high dependence on imported material makes the industry highly vulnerable to market fluctuations and disruptions. Very little evidence exists to suggest that the government and garment manufacturers are actively pursuing dialogue to develop an industrial strategy and vision to help diversify the market demand base, as well as a strategy to strengthen the entire cotton-to-garment supply chain.

The lack of planning associated with market liberalization of the textile and garment sector in 1991 and its repercussions is reflected in the displacement of workers from the entire cotton-to-garment supply chain, and the consequent increase in the number of small and micro garment manufacturers, influx of under-declared fabric, dominance of second hand garments in the economy, and the large number of people whose welfare is dependent on the growth of the second hand garment market. The weak position taken by the government to formulate a strategy to curtail the influx of second hand garment imports, while at the same time, creating alternative employment opportunities in the formal garment manufacturing sector is dampening the potential growth of the entire cotton-to-garment industry in Kenya. This problem is reflected in the continued use of labor intensive production methods among domestic market oriented garment manufacturers, as well as the lack of new investments and investments in rehabilitation activities in the garment sector.

At the factory level, high rejection rate suggests the need for introducing and integrating modern management practices such as world class manufacturing methods, poke yoke, 5S, and standard operating procedures. Low labor productivity also indicates a need for further in-house training, as well as weaknesses in the institutional support infrastructure to help enhance labor performance.

The following matrix provides a summary of policy and market based distortions facing the garment sector in Kenya.

Summary of Constraints Faced by the Garment Sector in Kenya

Policy Based Distortions	Market Based Distortions
Uncompetitive electricity pricing policy	The future of Kenya's garment industry is principally dependent on AGOA and the U.S. market, making the entire industry vulnerable to fluctuations in a singular market and policy
High dependence on AGOA suggests a need for a public-private partnership between government and the cotton-to-textiles and garment sector to formulate an achievable diversification strategy to reduce the dependence on a single market/policy	Market failure has had a displacement effect on employment in the industry resulting in a large number of disorganized small and micro garment producers whose livelihood is principally dependent on the success or failure of second-hand garments
Absence of incentives for non-EPZ, non-MUB status garment manufacturers to investment in new capital equipment and rehabilitation	Large scale export oriented manufacturers are highly dependent on price fluctuations and quality of imported material
Need to contain the influx of under declared fabric to help strengthen the relationship between textile and garment manufacturer	High cost of cotton material, particularly imported material, make both domestic and export oriented manufacturers vulnerable to competition
No incentives for producers in the industry to adopt modern manufacturing practices	High labor content and low labor productivity during sewing and assembly suggests a need for intensifying in-house training, and the introduction of world class manufacturing methods, poke yoke, standard operating procedures, and 5S
Absence of institutional infrastructure to help small and micro garment manufacturers organize into economic groups, as well as to link such groups into a larger export oriented supply chain	High rejection rate suggests a need for in-house training and integration of modern management practices
Lack of political will to curtail the influx of second hand garments into Kenya	Lack of coordination between the entire cotton-to-garment supply chain to improve production and access to high quality, low cost cotton
	Labor intensive garment production, particularly among domestic market oriented manufacturers due to high cost of investment, uncertain market demand and competition from under declared fabrics and second hand garments

Source: Global Development Solutions, LLC™

Summary of Critical Challenges Facing the Cotton-to-Textile/Garment Supply Chain

	Cotton Farming	Ginning	Textile	Garment Manufacturing
Critical Challenges	**Policy Based** • Absence of apex institution to represents cotton growers • Tax regime favoring imported agrochemicals over local formulation • Restrictive registration process for new agrochemicals import • Lack of enforcement to monitor illegal distribution of agrochemicals	**Policy Based** • Uncompetitive electricity pricing policy • Need to strengthen the Kenya Cotton Ginners Association (KCGA) • Institutionalizing mechanisms to define grade and price for seed cotton • Realignment of VAT for spare parts to encourage investments in equipment rehabilitation • Absence of support institutions for labour skills development	**Policy Based** • Uncompetitive electricity pricing policy • High volume of under declared fabric allowed to enter the market due to weak oversight and inspections at port and border crossing • Reconsider the effectiveness of existing regulations allowing cargo valued under $5,000 to enter uninspected	**Policy Based** • Uncompetitive electricity pricing policy • Excessive dependence on AGOA and the U.S. market • No incentive for industry to adopt modern management techniques • Absences of institutional support infrastructure to integrate small and micro garment manufacturers into regional markets • Lack of political will to curtail the influx of second hand garments into Kenya
	Market Based • Unregulated sales of poor quality cotton seeds • High cost of agrochemicals due to uncompetitive distribution arrangements • Lack of market linkages between farmers and ginners • Decline in labour skill and quality • Absence of market infrastructure to support sales of seed oil and other by products	**Market Based** • Shortage of investment capital to rehabilitate old ginning equipment • Low GOT due to poor quality seed cotton • Low capacity utilization • Absence of market mechanism to help consolidate harvest from large number of smallholder farmers • Absence of planning cycle to purchase harvest • Lack of support infrastructure and incentive to improve labour productivity	**Market Based** • High dependence on imported inputs • High level of waste due to low quality lint cotton available through local sources • High cost of local cotton material • High cost of imported chemicals partly as a result of high cost of transport • High cost of accessing capital • Poor labour utilization • Absence of modern management practices	**Market Based** • High dependence on imported inputs • High level of waste due to low quality lint cotton available through local sources • High cost of local cotton material • High labour content and low labour productivity • High finished good rejection rate • Lack of market coordination cross the entire cotton-to-garment supply chain • Lack of vision beyond meeting demand under AGOA

Source: Global Development Solutions, LLC™