



POLICY BRIEF

ENHANCING INVESTMENT ATTRACTIVENESS IN KENYA'S COTTON SECTOR

*How can improvements in the environment for Climate-Smart Agriculture (CSA) improve investment attractiveness? The following analysis showcases potential improvements in **Standardization and Certification, Aggregation Models, and Financial Incentives**, using the **cotton** sector as a case study. This brief builds on a Public-Private Dialogue, which was organized by Climate Focus in Nairobi, Kenya in February 2018 to determine priority actions.*

I. Executive Summary

The cotton-to-garment value chain was once a key contributor to Kenya's rural livelihoods and foreign exchange earnings. However, since liberalization, cotton production has suffered in terms of production and productivity. Domestic cotton seed and lint production is well below demand from the seed-oil and textile-apparel industries. Though the government has included the cotton sector in a number of its strategic growth plans, targeted supports through standards and certification, promoting aggregation, and financial incentives have been lacking. Incorporating CSA criteria throughout each of these target issue areas could raise the competitiveness of Kenya's cotton sector through niche marketing and lowering the costs of production while improving climate adaptation and raising yields.

I.1 Main Challenges

Value Chain: Cotton yields remain low and total domestic production is unable to satisfy demand by manufacturers leading to growing imports of raw materials. The value created in the cotton and textile sector is therefore largely confined to the downstream part of the value chain with little engagement of upstream, production level actors.

Standards: Existing standards at the production level are poorly defined and implemented, and largely do not include environmental or CSA criteria. Voluntary certifications are piecemeal and not widely adopted.

Aggregation: Aggregation models—including cooperatives—suffered after the downturn in cotton production, wherein many farmers abandoned cotton production. These weak organizations provide few services to farmers while providing limited bargaining power.

Financial Incentives: The government provides only limited support to cotton producers through subsidized seed, irrigation infrastructure, and research. Meanwhile the bulk of financial incentives, including tax breaks, exemption from import duties, and subsidized electricity, target apparel manufacturers downstream in the value chain, primarily those in Export Processing Zones (EPZs). Some private ginneries are investing backward in their supply chains to increase farmer production by entering purchase contracts, financing access to inputs, and importing their own hybrid seed. However, none of these efforts are explicitly tied to environmental or CSA standards.

1.2 Key Recommendations

Value Chain: Enhance productivity and total production through better seeds, irrigation, and CSA management practices. Develop targeted incentives to encourage stronger engagement of producers by downstream actors.

Standards: Existing cotton standards and classifications should be redesigned to align with Kenya’s climate-smart agriculture strategy, in coordination with relevant institutions across the sector. Farmer cooperatives and private ginneries should receive public support to promote and enable higher quality production through input access and CSA extension training.

Aggregation: Downstream actors, including ginneries, yarn spinners, and textile manufacturers, should be incentivized to invest backward in their supply chain by investing in training and service provision for farmers. Partnerships between farmer cooperatives and ginneries can strengthen market linkages, set guaranteed prices for farmers, and enable access to resilient, high-yielding seeds and other climate-smart inputs.

Financial Incentives: Financial incentives can be designed to incentivize private sector, downstream value chain actors to provide services to producers, for example through conditional subsidies. The government may opt to continue its efforts to implement quality-based cotton payments, including CSA-criteria, while offering comprehensive service provision for producers through public-private partnerships. Building public-private partnerships is key to filling service gaps for smallholders to improve productivity and disseminate CSA practices.

Table 1 | **Barriers and Opportunities for Climate-Smart Cotton**

Issue Area	Barriers	Opportunities
Value Chain	Globally uncompetitive cotton yields	<ul style="list-style-type: none"> • Provide support at the farm level through climate-smart application of high-quality inputs, investment in irrigation infrastructure, and extension services
	Poor quality cotton and inefficiencies across the value chain limit production quality and quantity	<ul style="list-style-type: none"> • Streamline CSA criteria into a revised quality-based payments scheme to incentivize targeted investment
	Benefits of international trade confined to export-oriented textile and apparel firms	<ul style="list-style-type: none"> • Provide targeted incentives for downstream actors to engage and support the upstream part of the value chain
Standards & Certifications	Inadequate support for farmers in existing classification schemes	<ul style="list-style-type: none"> • Support farmer cooperatives and private ginneries in promoting and enabling higher quality production through input access and CSA extension training • Coordinate key institutions across the cotton sector to develop of new, CSA-aligned standards along the value chain
	Low rates of participation in voluntary certifications	<ul style="list-style-type: none"> • Increase demand for high-quality, climate-smart domestic production through further development of brand identity for environmentally-friendly made-in-Kenya textiles
Aggregation	Low levels of cotton aggregation	<ul style="list-style-type: none"> • Target incentives at the farmer and ginnery level to build a strong base for domestic production • Provide financial incentives for ginneries, spinners, and textile manufacturers to invest backward in the supply chain • Design a voluntary environmental certification program for downstream actors tied to financial incentives
Financial Incentives	Current financial incentives do not support sector transition to climate-smart production	<ul style="list-style-type: none"> • Incentivize higher quality production and uptake of environmental practices by tying incentives to quality and environmental performance.

	Export promotion incentives confined to manufacturers without supporting domestic cotton production	<ul style="list-style-type: none"> • Design financial incentives that reward manufacturers for engaging and supporting actors at the production level
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2. Overview

2.1 Market

The cotton, textile, and apparel industry is Kenya's second largest manufacturing sector¹ and supports about 200,000 households.² In 2016, the textile sector made up about 9% of total exports, bringing in \$438 million in earnings, of which \$352 million came from the United States.³ Currently the cotton-to-garment value chain is top-heavy: dominated by manufacturer with a strong export-orientation and the majority of inputs including cotton imported rather than produced domestically. As a result, only a fraction of the overall value generated arrives at the farm level.

Once a vertically-integrated sector thanks to government controlled markets and donor support, liberalization in the early 1990s significantly reduced domestic cotton and textile production. Kenya began producing cotton in the early 1900s with heavy reliance on the colonial administration. After independence in 1963, the government helped cooperatives buy out colonially-administrated ginneries and instituted market control measures to boost domestic cotton production. As international donor support declined in the 1980s so did cotton production and overall sector output, which was further hit by the United States (US) import ban in 1994 and increasing import of used clothes into the Kenyan market.⁴

Kenya's domestic cotton production is below manufacturing demand for yarn and fabric. Domestic textile and apparel manufacturers cannot rely on domestic production due to shortages and inability to meet quality requirements to export to Western countries.⁵ In 2009, estimated domestic demand came to 37,000 tonnes of cotton lint. At the production peak in the late 1970s and early 1980s, Kenya's cotton farmers produced up to 13,000 tonnes of cotton lint⁶ per year.⁶⁷ Between 2013 and 2016, total average production had declined to approximately 4,760 tonnes⁸.

As a result, most of the cotton-based inputs for textiles and apparel are imported from neighbouring East African countries⁹ and Asia.¹⁰ Some apparel firms import over 90% of their fabric supply.¹¹ In 2013, Kenya imported over \$70 million worth of cotton, cotton yarns, and fabrics compared to a textile export value of \$384 million. While successful value generation in Kenya's apparel industry is a promising sign, additional value could be generated at the farm level. In addition to a ready market for cotton lint in the textile sector, the markets for edible oil and livestock feed derived from cottonseed are also far from saturated.

Cotton production has significant room for growth both in terms of area and yield. Kenya has an estimated 385,000 ha of land suitable to produce up to 200,000 tonnes of cotton lint annually,¹² but only 10% is currently being utilized.¹³ There appears to be a modest increase with an additional 4,000 hectares having been converted to cotton production between 2013 and 2018, however these is still room to grow.¹⁴ Average yields are below those achieved by the main competitors, mostly due to poor seeds, unreliable rainfall, high exposure to pests, and lacking financial resources and management practices to counter these risks.¹⁵ Yields peaked in 2006 at 303 kg/ha and averaged 196 kg/ha from 2006 to 2018. Key competitors including Uganda and China, ¹⁶ averaged 325 kg/ha and 1535 kg/ha, respectively, over the same period.¹⁷

Over the past decade, the government has introduced initiatives to increase cotton production through both increased area under cultivation and improved productivity. Kenya's *Vision 2030* plan

³ A bale of cotton lint weighs about 185 kg. Cotton lint is one of three main components of seed cotton, the direct output of cotton farming. Through the ginning process, seed cotton is separated into three main products, cotton lint, cottonseed, and cotton linters. Cotton lint goes on to be processed into yarn for fabric production. Cottonseed enters a different value chain, being processed to make (edible) cottonseed oil and seed cakes for animal feed. Cotton linters are tiny fibers that remain stuck to the seed after lint is removed; these are processed into paper, films, plastics, and other products.

identified cotton as a key area for strategic support as part of the Economic pillar.¹⁸ President Kenyatta announced his “Big Four” agenda in December 2017, highlighting the cotton-to-garment chain as a particular focus of his efforts to grow manufacturing from 9% to 15% of GDP.¹⁹ The government has announced that new high-yielding cotton

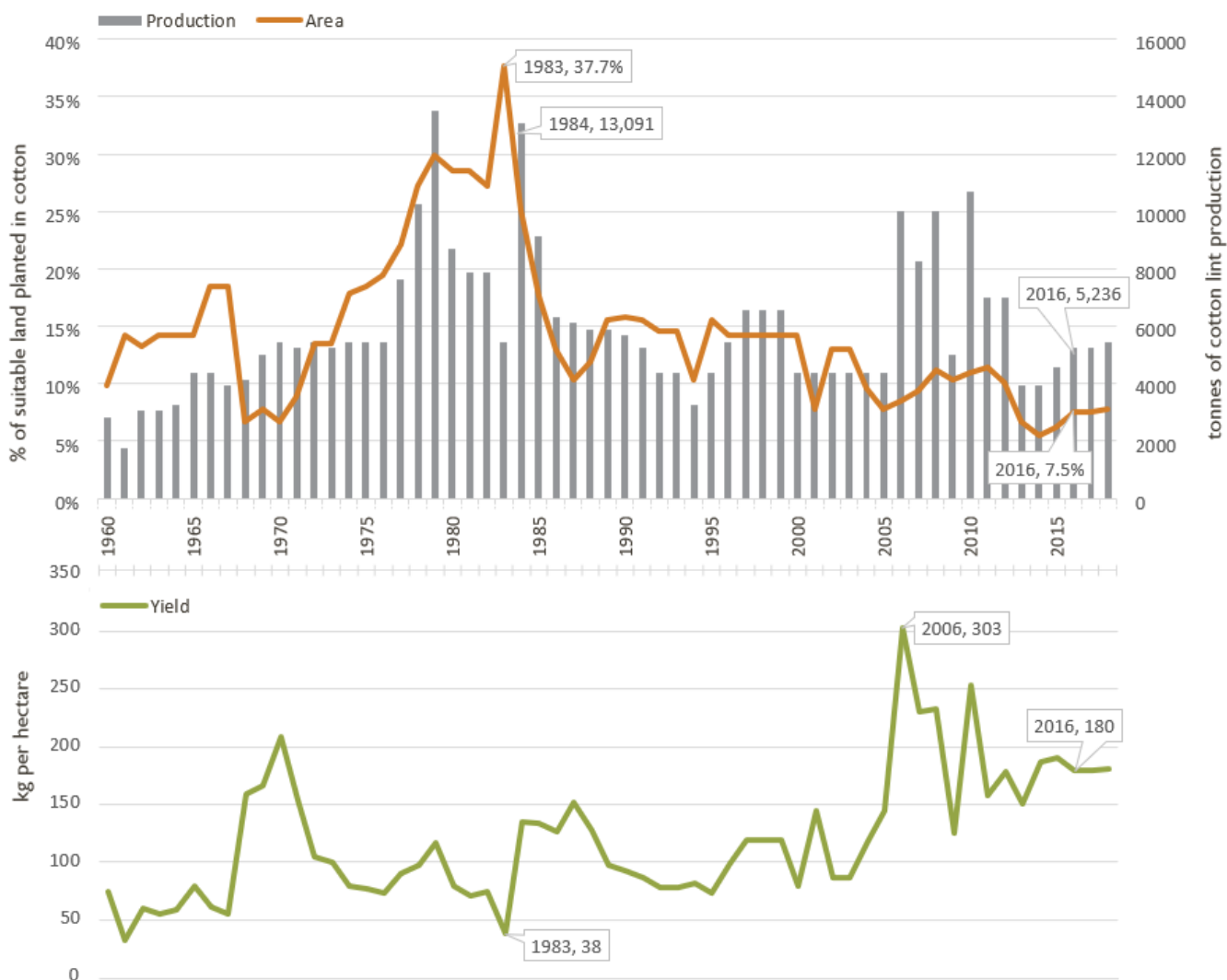


Figure 1 | Trends in land utilization, overall production, and yields in Kenyan cotton since 1960
Data: USDA FAS

varieties from Turkey, Israel, India, and Pakistan are being tested,²⁰ while the Fibre Crops Directorate is also pushing for the commercialization of genetically-modified (GM) cotton. Known as Bt cotton because it has been modified to express a protein from the bacterium *Bacillus thuringiensis*, which controls the African bollworm, it is expected to triple yields while reducing the need for insecticides.²¹ However, the Directorate admits that it has insufficient funds to produce and distribute certified and Bt seed to farmers.²²

Cotton production contends with a range of challenges that will have to be addressed holistically if climate-smart sector growth is to be achieved:

- While cotton is one of the few cash crops able to grow in low-rainfall areas, thanks to the crop’s relative tolerance for heat and drought,²³ reduced rainfall during flowering and boll formation can significantly reduce yields. Because the majority of Kenya’s cotton production is rain-fed, changes in local precipitation patterns can have large impacts on yields. Climate change is expected to lower precipitation levels and increase unpredictability throughout Kenya’s arid regions.²⁴ Therefore it is important to invest in climate-adaptive technologies like irrigation infrastructure and local water harvesting to offset yield declines.

- Cotton is a resource-intensive cash crop. It accounts for almost a quarter of all insecticide use despite being grown on just 2.4% of the world's arable land.²⁵ Maintaining soil fertility is critical to ensuring high cotton yields but excessive use of nitrogen fertilizer, common in many cotton growing countries, can lead to nitrous oxide emissions at a rate of 50 to 100 kg N/ha.²⁶ Kenya's smallholders use relatively few fertilizers and pesticides compared to global averages which leave the country at the lower end of the emission intensity range of 1.3 to 12 kg CO₂eq²⁷ but also partly explains low yields. In order to maintain a comparatively low carbon footprint while increasing yields, efficient fertilizer application will be crucial.
- Harvests are conducted almost exclusively by hand rather than through mechanization. If the area under cultivation is to be increased, significant investments in machinery will be required.

Private investment will be crucial to achieving the mission of increasing Kenya's cotton production while mitigating harmful environmental impacts and adapting to changing climatic conditions.

However, a range of barriers in the value chain prevent capital from flowing to enterprise and cotton farmers at scale. The following sections discuss barriers and possible solutions that would enhance the attractiveness to deploy capital in the cotton, textile and apparel value chain.

2.2 Value Chain Structure

Approximately 40,000 smallholder farmers form the production base of the cotton industry.²⁸ This is a substantial decrease from over 200,000 when the industry peaked in the mid-1980s.²⁹ A study from 2010 found that Kenyan cotton farmers had an average landholding of 4.25 ha with 0.77 ha under cotton cultivation, and over half intercropped cotton with legumes.³⁰ Despite the relatively low proportion of each farm devoted to cotton, farmers still earn over 60% of their incomes from this one crop. Though some cotton farmers receive free seeds subsidized by the government, most farmers source inputs from agro-input dealers or their local ginneries at high cost. Cotton is generally harvested manually and roughly sorted for quality before being sold.³¹

After harvest, cotton is sold to local ginneries that separate seed from fiber to produce cotton lint.

The majority of ginneries purchase seed cotton directly from the farmer, while roughly 30% of seed cotton is sold to agents before being sold to ginneries.³² Ginneries are the key actors between producers and manufacturers, and their

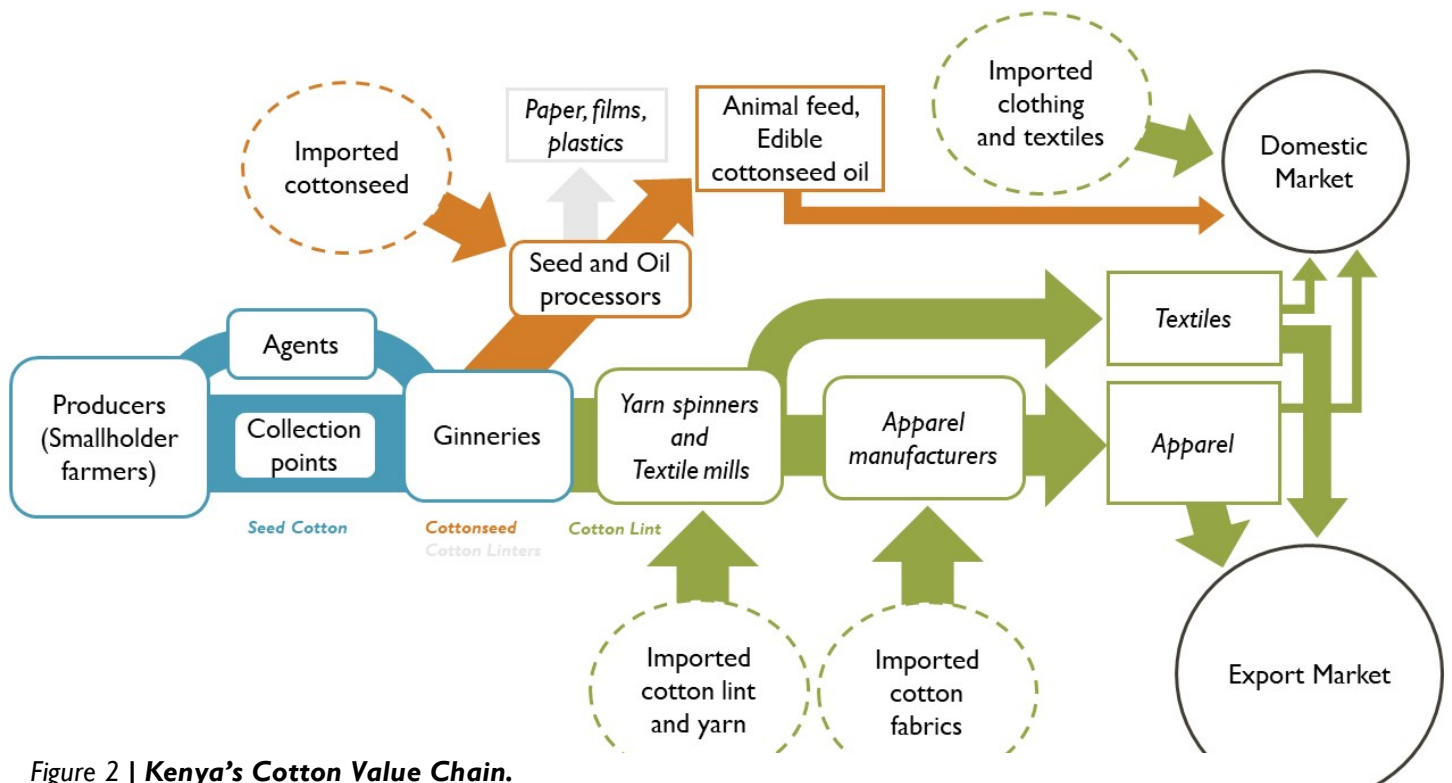


Figure 2 | Kenya's Cotton Value Chain.

Adapted by Climate Focus from Monroy, Mulinge, and Witwer (2012) and CODA (2012)

output of cotton lint competes with imports to be sold to spinners. Generally the local supply of cottonseed is not enough to meet ginning capacity. Before sector liberalization, over 90% of Kenya's ginneries were cooperatives that also marketed their members' cotton.³³ However, most cooperatives ceased operations after the sector downturn when farmers transitioned away from cotton cultivation.

After ginning, cotton lint is sent to yarn spinners and/or integrated textile mills for further processing. At this stage cotton is used for yarn spinning, weaving and knitting, dyeing, and finishing. As of 2015, only 15 of Kenya's 52 textile mills were operating, with most at under 50% capacity³⁴ Domestic cotton and yarn supply could therefore double without straining existing mill capacity.³⁵ About 10% of ginned cottonseed is used for replanting, and the remainder is crushed by oilseed processors to make seed cakes for animal feed and edible oil.³⁶ Kenya has high domestic demand for vegetable oil, and oil processing capacity has grown to more than 20 processors and refineries nationwide.

The downstream actors in the textile value chain are mostly small and micro clothing manufacturers. Over 74,000 apparel companies operate in Kenya with 170 medium and large firms and 22 foreign firms, while the remaining are small and micro operations generally subcontracted to the larger operations.³⁷ The main market for these companies is the US with 70% of Kenya's apparel companies selling over 80% of their products to the US.³⁸

2.3 Main Challenges

Farmers struggle to achieve globally competitive yields. Reports suggest that farmers cite high input costs, poor quality seed, weather, and low farmgate prices that prevent re-investment as key contributors to low yields.³⁹ Additionally, farmers lack access to finance for high-quality inputs and other investments for farm improvements. Pesticides account for almost a third of farmers' input costs, yet the majority of cotton farmers fail to spray even half of the recommended number of times per season.⁴⁰ Thus, most farmers are unable to meet the market demands for both yield and quality, perpetuating low incomes and preventing investments in higher quality inputs. In addition, limited public capacity for extension services excludes farmers from climate-smart agriculture practices that could offset costs, improve yields and build resilience.

Poor quality of cotton production and inefficiencies across the value chain limit quality and quantity of cotton lint and domestic textiles. Farmers plant with poor quality seeds and contend with high pest pressures, resulting in low-quality cottonseed output. This in turn adversely affects the volume and quality of lint outputs produced by ginners, who are also impeded by old and inefficient ginning equipment.⁴¹ The average cotton lint yield achieved by Kenyan ginneries is only 33% compared to a potential of 40% for the cotton varieties grown.⁴² Kenya also has a relatively low value addition rate per worker in the garment sector, which will require further investments in capital, equipment, and training to improve.⁴³

There are low levels of aggregation in the sector. The *Fibre Crop Regulations, 2016* stipulate that seed cotton shall only be sold to licensed fiber buying stores.⁴⁴ Weakened farmer organization groups and inert cotton cooperatives reduce farmers' bargaining potential and compromise their ability to reach economies of scale.⁴⁵ Producers face many obstacles that stem from the lack of aggregation, including lack of access to affordable credits for input purchases or high-quality cotton seeds, unimproved land management practices, improper pest and disease management, and inadequate fertilizer application and manure use. Aggregation approaches in cotton are further compromised by price fluctuations that reduce smallholders bargaining power for marketing and access to other benefits.⁴⁶

While trade is viewed as an important vehicle for revitalizing growth in the sector, the benefits have been confined to export-oriented firms. The African Growth and Opportunity Act (AGOA) allows for preferential trade treatment with the US through September 2025.⁴⁷ As part of AGOA, most Sub-Saharan Africa firms received duty and quota free access to the US.⁴⁸ The Special Apparel Rule allows for third-country sourcing of inputs, which has thus far allowed apparel manufacturers to grow without relying on or investing in domestic cotton production. From 2000 to 2015, Kenya's apparel exports increased from \$8.6 million⁴⁹ to \$368 million.⁵⁰ Under the

Industrial Transformation Program launched in June 2015, Kenya aims to grow its cotton-textile exports to \$1 billion by 2019 while creating an additional 150,000 jobs.⁵¹ Approximately 66,000 textile sector jobs are directly or indirectly supported by the AGOA provisions.⁵²

Informal and second-hand markets undercut apparel production for the domestic market. In the mid-1980s, second-hand clothing donations from the US and Europe began entering the local apparel market and severely undercut domestic clothing production.⁵³ These used clothes, known as mitumba, provide a cheap source of high-quality apparel nearly cost-free. While the mitumba trade generates direct or indirect income for up to 5 million Kenyans, according to one 2004 estimate, this informal market has been blamed by the textile sector and the government for impeding sector growth. As of 2013, imported new and used clothing supplied 37% of the domestic apparel market.⁵⁴ After six East African Community member countries agreed in 2015 to institute a phased-in ban of mitumba, the US pushed back and threatened revocation of AGOA eligibility for these countries. Kenya quickly reversed plans to implement a new tariff by July 2017 to maintain eligibility.⁵⁵

3. Standardization and Certification

Few formal standards or certification schemes exist to regulate cotton production. The government has instituted mandatory manual classification for cotton at the producer-level with differential pricing, but compliance is incomplete due to a lack of training and inadequate support. Limited efforts have been made to incorporate environmental criteria into classification standards with little evidence of implementation so far. While there is an uptick in voluntary certification schemes and initiatives that promote environmentally-friendly practices, these tend to be narrow and not systematically applied to the sector as a whole.

Both standards and certification schemes tend to promote export. As such, the regulations are often based on technical specifications regarding requirements for export and are applied to downstream and larger actors in the value chain. However, few of these regulations seem to impact domestic production quality or practices.

3.1 Key institutions

Most of the key institutions regulating and overseeing the cotton sector have been significantly restructured over the past 10 years. The Cotton Development Authority (CODA) was established as an independent agency in 2006 to “promote, co-ordinate, monitor, regulate and direct the cotton industry in Kenya.”⁵⁶ With its own budget and mandate, CODA was relatively effective at promoting and coordinating the cotton sector.⁵⁷ However, since CODA was merged with the Kenya Sisal Board in 2013 to form the Fibre Crops Directorate, one of eight directorates under the Agricultural and Food Authority, cotton has had to compete for funding with high-priority export crops like coffee and tea. In the context of the constitutional devolution of agricultural authority to the county-level, the institutional reorganization has led to a de-prioritization of the cotton sector for financial support, a sharp decline in extension services due to lack of funding and expertise at the county level, and a lack of political will to create and enforce climate-friendly standards to incentivize investment.⁵⁸

- The **Fibre Crops Directorate (FiCD)** under the Agricultural and Food Authority (AFA) is commissioned to oversee the regulation, development and promotion of fiber crops, including promoting the production and marketing of cotton. FiCD is further mandated to foster sustainable production systems that follow enhanced crop production practices. Most importantly, it inspects cotton production and enforces fiber crops standards.⁵⁹ To receive official registration marks, cotton growers (and ginners) have to formally apply to FiCD.⁶⁰
- **Kenya Plant Health Inspectorate Service (KEPHIS)** shapes the development of standards for cotton seeds, thus setting guidelines and authorizing seed certification activities in the Kenyan cotton sector. KEPHIS promotes the introduction of new, more resistant varieties and cultivars of cotton seeds, and is an essential player for addressing the current lack of quality seeds and the introduction of Bt cotton seeds through a public-private partnership with FiCD.⁶¹

- The **Kenya Agricultural and Livestock Research Organization (KALRO)** is the successor organization to the Kenya Agricultural Research Institute, first established in 1979. KALRO's mission is to coordinate and regulate agricultural research and development while promoting innovation in the sector.
- **Technical Committees (TCs)** under the **Kenya Bureau of Standards (KEBS)**. KEBS houses regulations concerning cotton primarily under its Textile and Manufacturing technical working group. For the development of standards for the cotton sector, responsibility lies with different TCs depending on the type of cotton products, e.g. TC 069 Towels, medical and hygienic textile products, TC 064 Blankets, non-wovens, threads and fibers, TC025 Edible Fats and Oils. The TC 069 is, for example, involved in the development of standards for fiber e.g. cotton and sisal.

3.2 Existing Standards and Certifications

FiCD sets two simple classifications for seed cotton: Grade A is of “superior quality” while Grade B is of “lower quality.” These differences are not well-defined, and farmers struggle to sort accurately due to a lack of clear standards and training.⁶² Sorting is based on feel and appearance, considering factors like color, average fiber length, and degree of contamination.⁶³ Grade A cotton earns almost twice the minimum price as Grade B, which is intended to incentivize higher quality production and more accurate sorting.⁶⁴ However, low prices for Grade B cotton can exacerbate cycles of low returns that drive farmers away from cotton cultivation. Dry weather and high pest pressures both reduce cotton quality, but the standards do not prescribe any environmental or climate-smart practices that could mitigate these effects. While the *Fibre Crop Regulations, 2016* stipulate that inspectors and county governments shall monitor cotton growing, it does not further explain how the monitoring is to be conducted.

Box 1: Existing Standards and Gaps for Kenyan Cotton

Cotton producers are required to sort their production into two quality based classes, Grade A and Grade B. These categories are tied to different prices to encourage higher-quality production. However, the standards do not incorporate environmental or climate-related considerations.

Similarly, Kenya's attempt to introduce universal classification of its cotton supply through instrument-based testing has not been coupled with clear guidelines for climate-friendly practices.

In order to mainstream climate-smart practices, mandatory standards and classification schemes must incorporate CSA considerations while explicitly tying these practices to their economic and environmental benefits.

CODA and FiCD have made efforts to introduce universal classification of all cotton lint bales through instrument-based testing. Using High Volume Instruments (HVI) provides advantages over manual sorting as the technology is able to measure more factors with greater precision than human perception.⁶⁵ 100% of the US cotton supply is tested with HVI, and the technology has become the international trade standard for classification.⁶⁶ A series of presentations given by CODA staff in 2014 show that the Authority intended to include an “Environmental monitoring system” in the classification reports;⁶⁷ however, there is little evidence of implementation and compliance to these standards. FiCD relies on ginners and spinners to submit samples for testing and to cover costs. Thus far, participation has been limited despite adequate testing capacity.⁶⁸ Even if Kenya were to achieve universal cotton classification at the ginnery or spinner level, conducting this testing after the primary market stage limits the flow of quality information to producers and therefore lessens the incentive to improve quality.⁶⁹

Downstream quality standards largely omit environmental considerations. In the processing stage, environmental guidelines are largely absent for businesses pursuing cotton seed milling and ginning licenses. These businesses are required to acquire certification from the National Environment Management Authority (NEMA), which automatically subjects them to a preceding Environmental Impact Assessment (EIA).^{70, 71} Some large-scale textile and apparel manufacturers may be regulated under the *Energy Act (2006)* and the *Energy (Energy Management) Regulations (2012)* which require energy audits and energy conservation measures for manufacturers using a certain threshold of electricity annually.⁷² However, the vast majority of downstream value chain actors would not fall under this requirement.

A number of public standards, private certifications, and voluntary standards have been developed to facilitate access to export markets. Many of the standards apply to exporting textile and clothing products, and as such their development and compliance is shaped largely by market forces.⁷³ Throughout the cotton value chain, businesses aiming to sell their produce internationally need to follow technical standards and are subject to product testing and certification.⁷⁴ Producers and traders wanting to export their cotton outputs are required to complete national registration, licencing, and certification procedures. These mandatory procedures do not cover aspects of CSA practices, and environmentally-related directives only go as far as phytosanitary certification of pest-free cotton plant products.⁷⁵

A number of voluntary international cotton standards and certification schemes have emerged with CSA-related criteria. One of the most advanced voluntary cotton certification schemes is the *Better Cotton Initiative (BCI)*. The BCI has developed a set of production principles and criteria aimed at smallholders⁷⁶ that include CSA-related provisions such as sustainable soil management practices. Other voluntary standards relevant for Kenyan cotton production with regards to improving smallholders' productivity and adopting CSA practices include: Cotton made in Africa (CmiA) standards,⁷⁷ sustainable sourcing principles of the Cotton On Group,⁷⁸ and organic cotton standards within the International Federation of Organic Agriculture Movements (IFOAM) family of standards (Global Organic Textile Standard (GOTS) and Organic Content Standard (OCS)).⁷⁹

3.3 Barriers

Existing incentive payment for improved cotton quality remain inaccessible for many farmers due to lacking support for achieving quality. Though FiCD has attempted to incentivize high quality cotton production through manual classification and quality-based payments (QBPs), a lack of support for farmers to achieve higher quality production limits the effort's effectiveness. Without explicit environmental- and climate-smart criteria, existing standards and classification schemes do not promote best farm management practices that would improve quality of production.

There are low rates of participation in voluntary certifications. Voluntary adoption of CSA-relevant practices is low and primarily confined to smallholders' participation in donor-supported projects. The *BCI pilot project* in Kerio County was supported by the Cotton Development Authority and Solidaridad to increase productivity, enhance market access, and improve growers' knowledge and technical capacity to apply more sustainable techniques.⁸⁰ However, the BCI partnership has since been suspended.⁸¹ The Australian government-supported *Ethical Cotton Production Project* promoting sustainable cotton farming expanded as planned in 2017, but its reach remains low, serving 1,500 smallholders in Kwale County.⁸² Although these pilot projects demonstrate how cotton production can successfully be improved while simultaneously seeking a CSA pathway, scaling up such efforts to the national level requires public sector support and private sector willingness to pay for CSA attributes.

3.4 Opportunities

In the absence of public capacity for extension services, farmer cooperatives and private gineries can be key vehicles for promoting and enabling higher quality production. Public sector extension services are often underfunded and may not prioritize cotton farming due to its relatively limited scale. Gineries rely on farmers' production for their operations and are therefore incentivized to support farmers with access to inputs, finance, and training. Professionalized farmer cooperatives can serve as a channel for targeting support or incentives from processors to enable producers to attain higher standards.

For the development of new, CSA-aligned standards for the cotton sector, coordination among key intuitions involved in standard setting need to be enhanced. Political stimulus first and foremost needs to come from the Fibre Crops Directorate, as its mandate is explicitly tailored towards the stimulation of new standards, the coordination of required training as well as capacity building of county government staff and industry stakeholders.⁸³ NEMA's future participation in standardization processes in the cotton sector and relevant TCs would further be conducive. Enhanced integration of CSA practices in cotton production standards could be oriented towards good agricultural practices (GAP), integrated pest management (IPM), improved irrigation with

renewable energy-powered water pumps, intercropping and crop rotation practices, and better fertilizer and manure management. In downstream process, the integration of CSA could be promoted through energy efficiency in ginneries and textile manufacturers. The benefits of CSA-practices in terms of enhancing productivity and improving economic returns need to be better communicated if greater adoption is to be achieved.

Further development of a brand identity for environmentally-friendly Kenyan products could increase consumer demand for high-quality, climate-smart domestic cotton production. Demonstrating the on-farm returns of CSA practices through improved yields and niche market access will incentivize more farmers and processors to participate in voluntary certification schemes.

4. Financial Incentives

There has been renewed interest in revitalizing cotton production as part of the government's plan to boost manufacturing. However, this intent has been met with few public details of the types of support available. It is unknown whether financial incentives will be a component of this strategy and where that support is targeted on the value chain. As the agenda moves forward there should be more details available.

Direct financial support to the sector has so far focused on downstream actors. These are generally targeted at actors in the textile, apparel, and manufacturing parts of value chain that are export-oriented. Other types of indirect support include the promotion of improved seed varieties through investment and research and public investment in irrigation schemes to expand the land area suitable for production.

4.1 Existing Financial Incentives

Current government incentives for producers focus on physical delivery of inputs and funding research into new varieties rather than delivering financial incentives. The primary strategies to increase domestic cottonseed production are distributing high-quality seeds to increase yields, increasing the total area in cotton, and revitalizing irrigation schemes. As part of the *Vision 2030* strategy, the government has revived two irrigation schemes in the Bura and Hola regions where 40% of cotton was formerly produced.⁸⁴ Funding research on Bt cotton is a cornerstone of the government's strategic support to smallholders to increase yields, reduce costs, and increase the number of new growers. FiCD has been advocating for an adjustment to legislation banning GM crops while conducting approved research trials of new Bt cotton varieties in locations across the country.⁸⁵ Promoters of the GM tech anticipate that yields will produce three to eight times higher yields than the current average due to improved control of bollworms, which currently cause 50 to 90% harvest loss,⁸⁶ and reduced cost of pesticide application. However, the government has yet to address the issue of financing for distribution of Bt cotton seed, which is considerably more expensive than even traditional hybrids that most farmers already cannot afford.⁸⁷ Current government seed distribution programs are already underfunded.⁸⁸

Current financial incentives are focused on downstream actors. Textile manufacturers primarily receive fiscal incentives from the government through operations in Export Processing Zones (EPZs). These zones offer a range of incentives including: a corporate income tax holiday, exemption from import duties on inputs, streamlined license processing,⁸⁹ and subsidized electricity.⁹⁰ A "super sale" launched in 2017 through the "Buy Kenya, Build Kenya" program allows for up to an additional 20% of an EPZ firm's annual clothing production to be sold on the local market without sales taxes or import duties on raw materials and equipment.⁹¹ Textile manufacturing is also being touted as a key sector for international investment, being promoted by the government, to inject much-needed capital for new equipment and facilities, even as it seeks to bolster domestic production and supply local jobs.⁹²

Farm gate prices are used to influence producer behaviour. FiCD sets the minimum floor price and uses this tool to influence farmer income and draw more farmers into cotton production.⁹³ In 2018, FiCD raised producer prices from Sh42 per kg to Ksh50 per kg.⁹⁴ According to an FAO analysis, Kenya has the highest rate of disincentives in cotton among cotton-producing countries in Sub-Saharan Africa.⁹⁵ This could largely be traced to the price-setting system at the farm gate. Though the government sets a minimum price, buyers and sellers still negotiate

at the point of sale. Due to uneven power distribution along the value chain, downstream actors have a high degree of market power, leaving farmers at a disadvantage.⁹⁶ After farm gate prices began to rise in 2015,⁹⁷ it appears this trend is reversing⁹⁸ and the farm gate prices are more closely matched to world prices, attracting more farmers to the sector.⁹⁹

Some ginneries are providing incentives directly to farmers. Currently, some ginneries are increasing their supply by entering purchase contracts with farmers while also providing free seeds and access to inputs through off-taker financing.¹⁰⁰ FiCD has encouraged these private sector-led market improvement initiatives, recognizing its own incapacity to support ginneries directly. Meanwhile, ginnery operators recognize that public sector support is currently unreliable, and that to ensure their own supply they must invest in farmers directly.¹⁰¹

4.2 Barriers

Current financial incentives are not tied to technical support, extension services, or improved production practices like CSA. There is a marked lack of financial incentives that would support producers in the pre-production or the production stages, such as subsidies for fertilizer, access to improved technologies, or other types of financing to increase farm-level investment. In-kind subsidies in the form of improved seeds have limited reach and are underfunded.

AGOA's export promotion incentives are not being met with upstream incentives to encourage domestic production. Domestic cotton supply is well below national demand, and processors have been importing from other countries in the region to satisfy their production needs and exploit AGOA's benefits. Due to import duties and the limited value added to export products through Kenyan labour, the net benefit to the Kenyan economy of most exported textiles remains below AGOA's full potential.¹⁰²

4.3 Opportunities

Premium payments for quality cotton need to go hand in hand with farmer support programs to achieve quality. The government already ties basic quality standards to differential pricing for Grade A and Grade B cotton. However, these incentives have yet to improve the overall quality of production due to a lack of comprehensive support for farmers to implement best practices. FiCD's new push to institute QBP for cotton lint based on instrument-based classification¹⁰³ similarly depends on providing extension services to disseminate best practices to farmers while facilitating input access through financial service provision. If CSA criteria are streamlined into classification schemes and tied to premium payments, actors all along the cotton value chain will benefit from improved market linkages and producer productivity.

Leveraging the private sector for service, input, and finance delivery can increase efficiency and effectiveness. With the responsibility for extension services currently devolved to underfunded county governments,¹⁰⁴ public-private partnerships could provide creative financing and service provision to meet producers' needs. Some ginneries already offer producer supports through off-taker contracts and input provisions. However, downstream value chain actors like textile and apparel manufacturers could be incentivized to strengthen ties with domestic suppliers through conditional subsidies or tax breaks tied to local sourcing levels. FiCD is supporting the formation of additional savings and credit cooperatives organisations (Saccos) and farmer cooperatives to strengthen farmer bargaining power.¹⁰⁵

5. Conclusion: Criteria for Success

Though public-sector support is currently limited, targeted public-private interventions on climate-smart productivity and aggregation can revitalize competitive cotton production. The cotton sector benefits from strong domestic fiber and oilseed markets driven by export manufacturers as well as high production potential. Climate-smart investment in hybrid seeds would increase yields while lowering the costs of inputs such as pesticides. Improved training in climate-smart practices like integrated pest management and soil management would further increase resilience and climate adaptation. Downstream manufacturers can support increased irrigation

access while providing training on water conservation techniques, like targeting irrigation use during the most critical periods of cotton lint formation.¹⁰⁶ Combined access to infrastructure and extension training would offset the negative yield effects of unreliable rainfall while conserving ground and surface water. Though Kenya's smallholders cannot yet compete on efficiency of mechanization of neighboring countries where cotton is grown on a much larger scale, cooperation and aggregation amongst smallholders could lower transaction costs and provide a conduit for improving practices, increasing quality, and raising farm gate prices.

5.1 Incentivizing Production

Opportunities to increase production at the farm level center on the provision of adequate support and financing. Productivity levels could be boosted by facilitating access to high-quality inputs via producer financing models, public and private sector investment in reviving irrigation schemes to increase reliability, and providing extension services through national- and county-level coordination with private sector actors. Financial support by the government and extension service provision are key for Kenyan farmers to face foreign competitors in cotton markets.¹⁰⁷

Public-private partnerships are key to overcoming public sector funding gaps to align targeted action with existing strategy signals. County governments can strategically align with local ginneries and spinners to promote farmers' standard compliance by enhancing their capability to follow good agricultural practices. This could be support for integrated input systems such as aggregation and cooperative approaches or through contract farming in collaboration with the private sector. The government may also consider coordinating partial subsidies with ginneries and spinners to supply quality and climate-resilient seeds to prevent farmers from fake seed purchases and yield losses due to pest infestation, while guaranteeing a certain return on investment for private sector funders. Any of these options would require more support from public institutions.

A revised quality-based payments program with CSA criteria can provide benefits all along the value chain. QBPs combined with support services provision would enable farmers to invest in their farms and would provide an incentive to farmers to improve post-harvest practices, ensuring better quality that would allow ginneries to get higher lint yields from raw seed cotton, and in turn pay farmers higher prices. Yarn spinners, textile and apparel manufacturers would get higher-quality domestic cotton inputs, allowing them to build on the made-in-Kenya branding while meeting international demand for climate-conscious apparel. However, expanding and ensuring the success of QBPs would require substantial upfront investment to achieve the quality based on which higher prices would be paid.

5.2 Promoting Aggregation and Partnerships

Supporting targeted incentives at the farmer and the aggregation level could build a strong base for domestic production. FiCD is currently promoting a "stop-gap" solution to the problem of ginnery profitability, encouraging ginneries to contract farmers to ensure a minimum guaranteed supply.¹⁰⁸ While many ginneries are doing so and offering several incentives to farmers (see: Financial Incentives section above), it is unclear whether they are receiving any public support in doing so. Given that the incentives they offer are replacing the services that would be offered by government-run extension agents, ginneries could receive financial or in-kind support to continue their delivery of needed resources to farmers. Further financing arrangements, extending lines of credit at low interest rates, or subsidies for inputs or seeds could allow ginneries to support a greater number of farmers while benefitting from increases in production.

Farmer cooperatives should also be promoted as a form of aggregation. For farmers that are not in areas where ginneries are immediately available and where relying on their private provision of inputs may be too costly, the government could promote the formation of farmer cooperatives. This could help to increase economies of scale and also improve farmer bargaining power. Additionally, it would ease public provision of inputs.

A voluntary certification program for spinners and manufacturers tied to environmental practices and financial incentives could support aggregation and improved production. The government may

consider the design of a certificate that eligible downstream actors can earn after certain local sourcing production levels are met according to a set of environmentally-friendly standards. For companies that meet certain purchasing thresholds with domestic producers, public support can center on the disbursement of targeted incentives to meet domestic cotton sourcing targets in their production, meeting quality and production standards in their producer base, or offering VAT or import duty exemptions to upgraded equipment.

DISCLAIMER

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