

## 9 COTTON MARKET



Cotton is primarily produced for its fibre (“cotton lint”), which is used as a textile raw material. Its seed is also used as cattle feed, or crushed to make oil. The shrub, whose seed and surrounding lint is termed a “boll,” is native to the Americas, Africa and India. Cotton has been cultivated since antiquity, but its use was industrialized after the invention of the mechanical cotton gin in 1793, which allowed for the efficient extraction of cottonseed from its fibre. The consumption of cotton grew to well over 40 per cent of the world’s fibre consumption in the 1990s, but has since dropped to about one-third (U.S. Department of Agriculture (USDA) Foreign Agriculture Service, 2012), largely due to consumption of new synthetic fibres. In 2012, 27.2 million metric tons of cotton lint were produced by about 100 million farmers (Valderrama, 2005) on 0.7 per cent of the world’s agricultural land (see Table 9.1), about one-third of which was exported, for a total export value of US\$20.2 billion (USDA, 2013c). As a reference, the larger textile trade was worth US\$294 billion in 2011.<sup>1</sup>

Cotton has the potential to provide a sustainable source of textile fibre, notably in that it is renewable, recyclable, and drought and saline tolerant; it can be cultivated in areas where few other cash crops would survive. When cultivated using suboptimal agricultural practices, however, cotton production can have significant impacts on its surrounding ecosystem and communities. Although forced labour once dominated the discussion of cotton and sustainability (most infamously, during the U.S. Civil War), environmental,

social and economic concerns including pesticide use, water use, genetically modified organisms (GMOs) and government subsidies have come to the forefront over the last two decades, demonstrating that “sustainability and cotton” is a complex topic—one that can only be addressed and achieved through approaches adapted to local context.<sup>2</sup>

Cotton fibre is cultivated on both plantations and smallholdings and is harvested both mechanically and by hand. Well over three-quarters of annual global cotton production is now genetically modified (International Service for the Acquisition of Agri-Biotech Applications (ISAAA), 2012a), and about half the global area harvested is irrigated (accounting for 73 per cent of production; Ferrigno, 2012). This context has set the stage for the entry of two major international, multisector voluntary sustainability standards, Fairtrade and Organic, as well as two new sector-specific initiatives, the Better Cotton Initiative (BCI) and Cotton made in Africa (CmiA). In 2012, 933,000 metric tons of cotton were produced in compliance with a sustainability standard (3.4 per cent of global production; see Figure 9.1), of which 448,000 metric tons were sold as standard compliant (48 per cent of standard-compliant production, 1.6 per cent of global production and 4.8 per cent of global exports). Brazil and India and Pakistan were the largest producers of standard-compliant cotton by volume in 2012; Figure 9.12 breaks this down by standard.

<sup>1</sup> The apparel trade was worth US\$412 billion during the same year (Fukunishi, Goto & Yamagata, 2013).

<sup>2</sup> This is the case in many sectors, but notably even more so in cotton, due to the plant’s finicky growth cycle and massive variance in production systems across countries and regions.

FIGURE 9.1 CONVENTIONAL VERSUS STANDARD-COMPLIANT COTTON PRODUCTION, 2012.

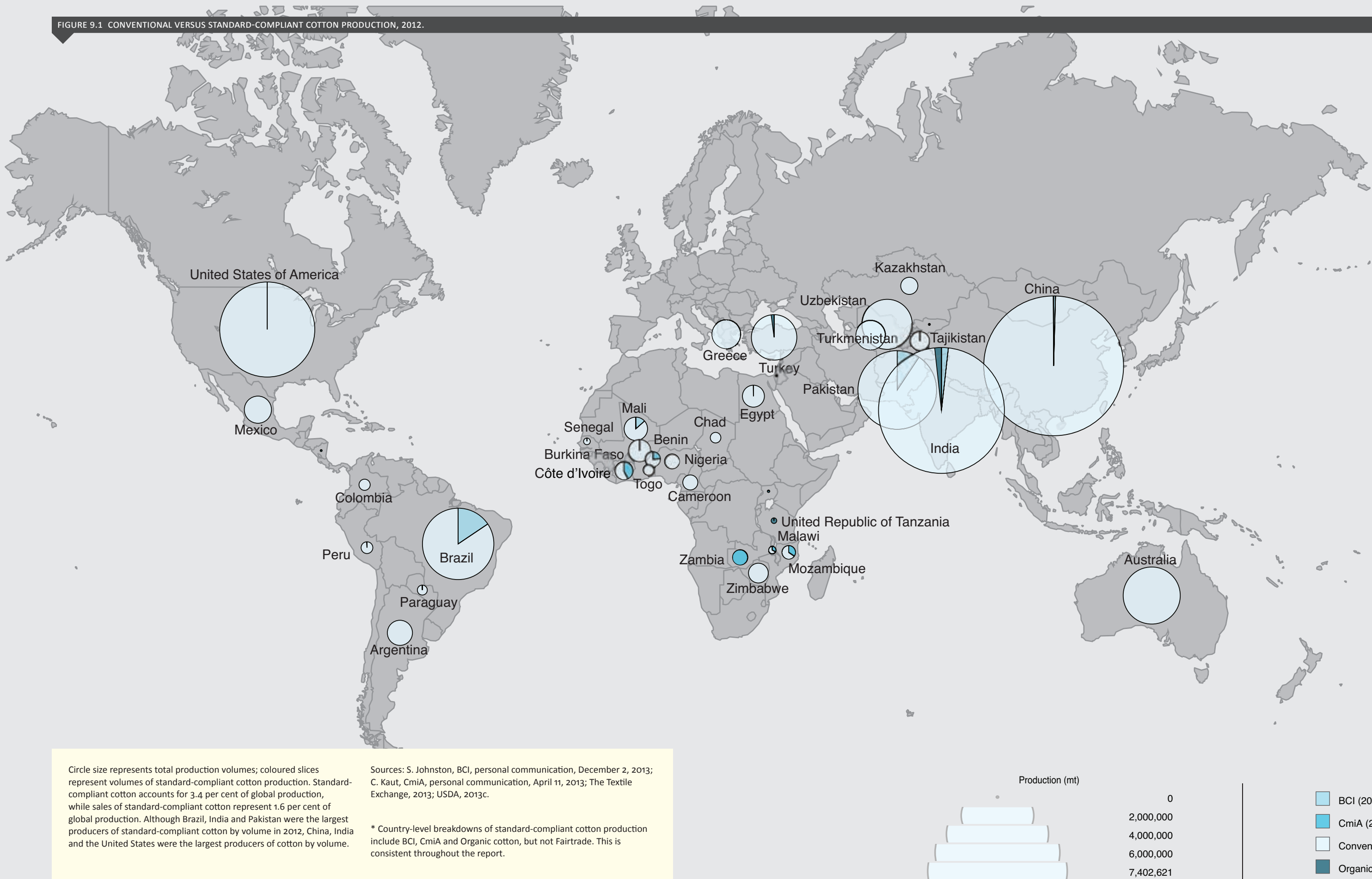


TABLE 9.1 STANDARD-COMPLIANT AND CONVENTIONAL KEY STATISTICS FOR COTTON PRODUCTION AND TRADE (STATISTICS REFER TO COTTON LINT OR COTTON LINT EQUIVALENT).

## KEY STATISTICS

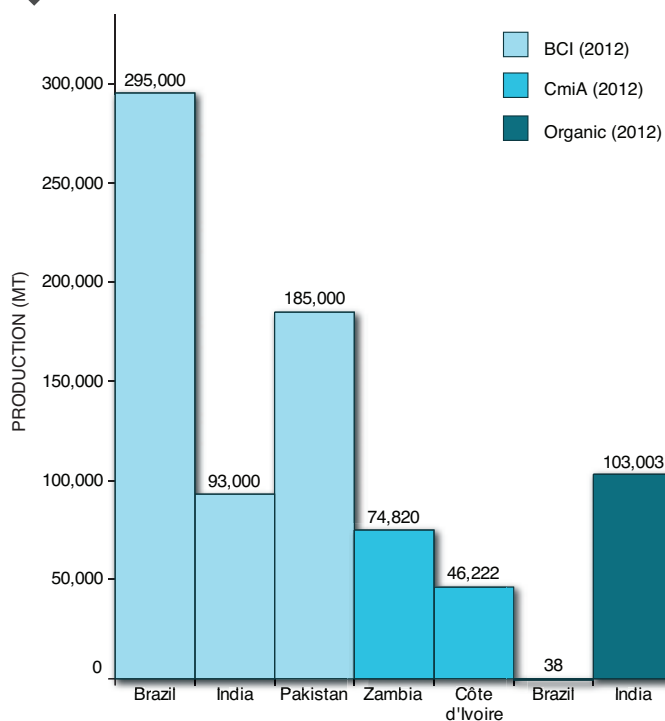
Top 5 producers (80% of global) (2012)	China (28%), India (23%), United States (13%), Pakistan (9%), Brazil (7%)
Top 5 producers of standard-compliant cotton (86% of global) (2012)	Brazil (30%), Pakistan (22%), India (21%), Zambia (8%), Côte d'Ivoire (5%)
Top 5 exporters (75% of global) (2012)	United States (26%), India (24%), Australia (10%), Brazil (10%), Uzbekistan (5%)
Top 5 importers (75% of global) (2012)	China (54%), Turkey (5%), Bangladesh (7%), Indonesia (5%), Vietnam (4%)
Global production (2012)	27.2 million metric tons
Global exports (2012)	10.0 million metric tons (37% of production)
Trade value (2012)	US\$20.2 billion
Global area harvested (2012)	35.7 million hectares (0.7% of agricultural area – compare to 25 million hectares for sugar cane, 163 million hectares for rice, 217 million hectares for wheat)
Total number of farmers involved in cotton production	100 million family units (2 million in West Africa, 10 million across Africa)
Major international voluntary sustainability standards	BCI, CmiA, Fairtrade, Organic
Standard-compliant production (2012)	933,000 metric tons (3.4% of global production)
Standard-compliant production sold (2012)	448,000 metric tons (48% of compliant production, 1.6% of global production, 4.8% of global exports)
Key sustainability issues	Pest management, water management, fertilizer application, GMOs, poverty, worker health and safety

Sources: Top 5 producers: USDA, 2013c; Top 5 producers of standard-compliant cotton: B. Bandi, BCI, personal communication, February 12, 2013; C. Kaut, CmiA, personal communication, April 11, 2013; The Textile Exchange, 2013; Top 5 exporters, top 5 importers, global production, global exports: 2011–2012 crop year data from USDA, 2013c; Total export value: International Trade Centre (ITC), 2013c; Global area under cultivation: Food and Agriculture Organization of the United Nations (FAO), 2013; Total number of farmers: S. Ferrigno, independent researcher, personal communication, 2013; Valderrama, 2005; Standard-compliant production and sales: B. Bandi, BCI, personal communication, February 12, 2013; Fairtrade Labelling Organizations (FLO), 2012; C. Kaut, CmiA, personal communication, April 11, 2013; The Textile Exchange, 2013.



Photo: CIFOR / CC-BY-NC

FIGURE 9.2 LEADING PRODUCERS OF STANDARD-COMPLIANT COTTON BY INITIATIVE, 2012.



Sources: S. Johnston, BCI, personal communication, December 2, 2013; C. Kaut, CmiA, personal communication, April 11, 2013; The Textile Exchange, 2013.





## 9.1 MARKET REVIEW

### Market reach

Approximately 933,000 metric tons of cotton production were standard-compliant in 2012, equivalent to 3.4 per cent of global production; sales of standard-compliant production reached 1.6 per cent of global production during the same year (Figure 9.3).

### Growth

Standard-compliant cotton production grew 54 per cent per annum from 2008 to 2012.<sup>3</sup>

### Regional importance

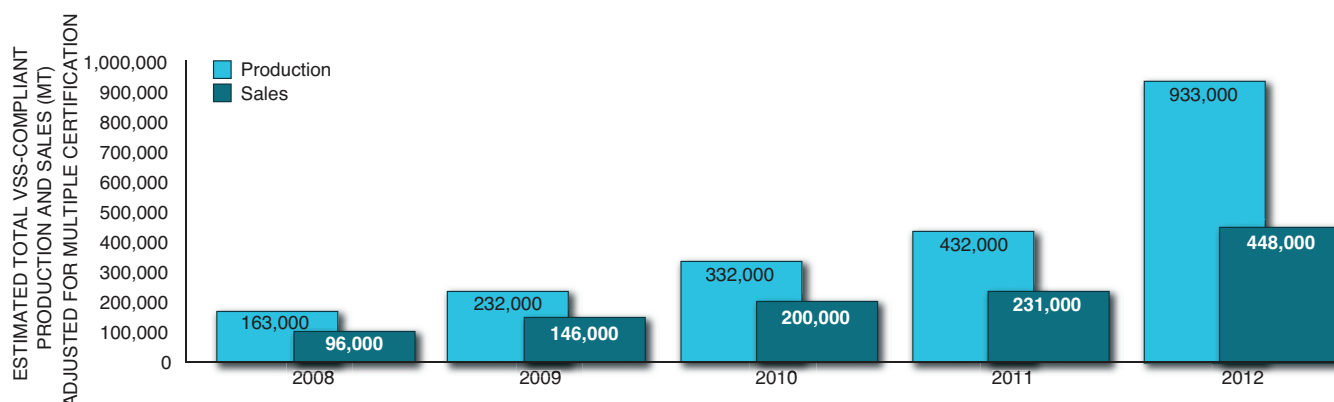
Brazil (30 per cent), Pakistan (22 per cent) and India (21 per cent) produce nearly three-quarters of the world's standard-compliant cotton.

### Pricing and premiums

Premiums for standard-compliant sales have been reported at up to 30 per cent over the past several years.<sup>4</sup> The highest premiums were observed for Organic cotton and the lowest premiums ("surcharges") for Better Cotton.<sup>5</sup>

FIGURE 9.3 GROWTH IN STANDARD-COMPLIANT COTTON PRODUCTION AND SALES, 2008–2012.

From 2008 to 2012, production of standard-compliant cotton grew from 0.7 to 3.4 per cent of global production, and sales grew from 0.4 to 1.6 per cent of global production.



Sources: B. Bandi, BCI, personal communication, February 12, 2013; C. Kaut, CmiA, personal communication, April 11, 2013; FLO, 2011b, 2012; S. Ferrigno, independent researcher, personal communication, 2013; The Textile Exchange, 2011, 2013.

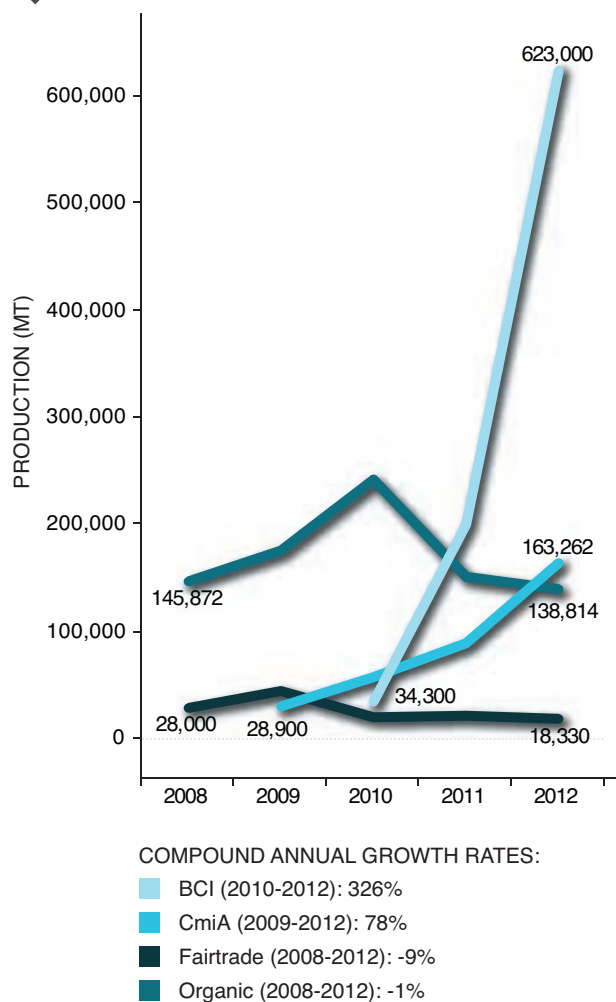
<sup>3</sup> 125 million bales in 2011–2012 versus 120 million bales in 2007–2008 (USDA, 2013c). Cotton area is constrained by lack of new land and competition for existing land, as well as by technological limits to potential yield increases.

<sup>4</sup> For ginned cotton.

<sup>5</sup> Better Cotton has no consumer-facing label, and additional prices paid for cotton are not "premiums" so much as quality surcharges.

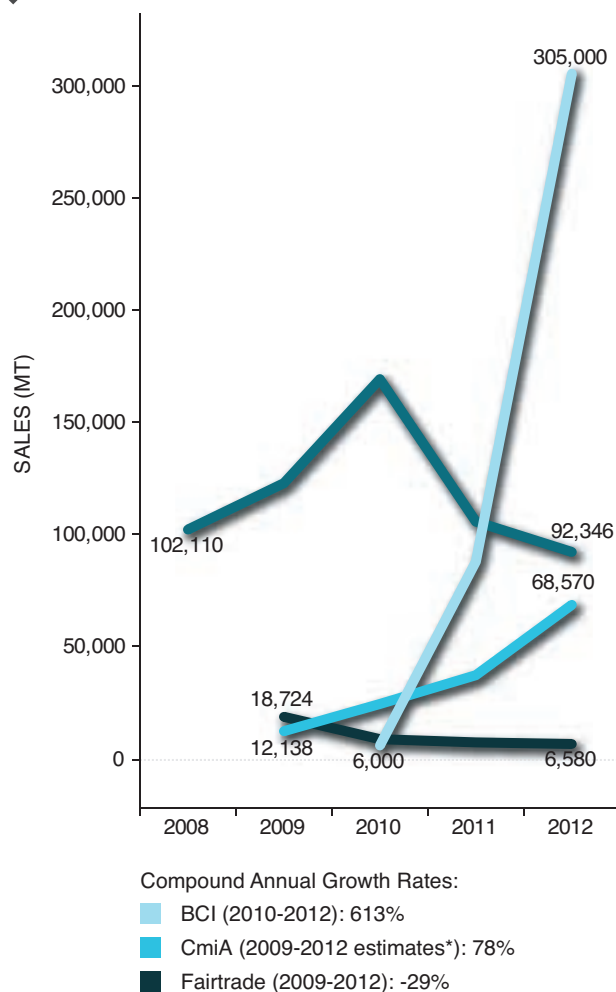


FIGURE 9.4 STANDARD-COMPLIANT BCI, CMIA, FAIRTRADE AND ORGANIC COTTON PRODUCTION, 2008–2012.



Sources: B. Bandi, BCI, personal communication, February 12, 2013; C. Kaut, CMiA, personal communication, April 11, 2013; FLO, 2011b, 2012; S. Ferrigno, independent researcher, personal communication, 2013; S. Johnston, BCI, personal communication, December 2, 2013; The Textile Exchange, 2011, 2013.

FIGURE 9.5 STANDARD-COMPLIANT COTTON SOLD UNDER BCI, CMIA, FAIRTRADE AND ORGANIC, 2008–2012.



\*Sales of CMiA are estimated based on a cross-sector, average sales-to-production ratio of about 42 per cent, and estimates indicate that about 70 per cent of Organic production volumes are sold as certified (S. Ferrigno, independent researcher, personal communication, 2013).

Sources: B. Bandi, BCI, personal communication, February 12, 2013; C. Kaut, CMiA, personal communication, April 11, 2013; S. Ferrigno, independent researcher, personal communication, 2013; S. Johnston, BCI, personal communication, December 2, 2013; FLO, 2011b, 2012; The Textile Exchange, 2011, 2013.



## 9.2 MARKET DEVELOPMENT

In 2012, 3.4 per cent of the world's cotton was produced in compliance with a voluntary sustainability standard (933,000 metric tons),<sup>6</sup> with about half of compliant production actually sold as compliant from the certificate holder to the first buyer (see Figure 9.3, Figure 9.4 and Figure 9.5). In the case of cotton, this is generally from the producer/producer organization to the gin (see Figure 9.3 and Table 9.2).<sup>7</sup> Although the emergence of voluntary standards in the sector is a relatively new phenomenon, the desire to create more sustainable cotton supply chains dates back many years. As early as the U.S. Civil War period, for example, the English Ladies' Free Grown Cotton Movement was an organized group of women who committed to purchasing only cloth produced without slave labour (Beckert, 2004; Ferrigno, 2012). Recent reports of forced labour in Uzbekistan (Cotton Campaign & Uzbek-German Forum for Human Rights, 2012) and Burkina Faso (Simpson, 2011) have brought more recent attention to labour issues within the cotton sector, but forced labour is one of several factors that have contributed to a renewed focus on sustainability within the sector, along with pesticide and water use, GMOs, government price subsidies, and other forms of social justice.

A combination of several campaigns are notable in having significantly advanced awareness of some of the challenges facing the cotton sector in recent years, one of the more recognizable being the "Dirty Dozen" campaign launched by the Pesticide Action Network in the 1980s (Pesticide Action Network UK, 2009). WWF has also campaigned around cotton's water use and other environmental impacts, while Oxfam has campaigned extensively on issues related to international trade tariffs and their links to social and economic problems for cotton producers (Oxfam, 2007; WWF, 1999). Technical assistance programs by Solidaridad, Helvetas and the Pesticide Action Network have also aided in the uptake of voluntary sustainability standards and are notable for their contributions to development of the sustainable cotton sector, as are dozens of other public and private institutions (Helvetas, 2008; Solidaridad, n.d.).

The picture that has emerged from these (and other) organizations with respect to cotton and sustainability can be summarized as follows: cotton is cultivated on 2 to 3 per cent of the world's arable land<sup>8</sup> and accounts for 6 per cent of the world's pesticide (insecticide and herbicide) use, 14 per cent of insecticide use,<sup>9</sup> and 2

to 3 per cent of the world's agricultural water use (Ferrigno, 2012; S. Ferrigno, independent researcher, personal communication, 2013). In 2012 genetically modified cotton was planted in 15 countries and accounted for 81 per cent of global planting (ISAAA, 2012a), and its presence within sustainable production systems is the subject of much debate. Forced labour is still present in some areas and it is very difficult to ensure its exclusion in larger supply chains.

Each voluntary sustainability standard emerging within the cotton sector has implemented its own strategy for addressing the above points. With respect to pesticide use, for example, the use of integrated pest management or Integrated Production and Pest Management practices can drastically reduce pesticide application by applying a systematic approach to diagnosing and treating pest-related problems. All voluntary sustainability standards active within the sector incorporate integrated pest management either in its explicit sense, as defined by the FAO (e.g., BCI), or implicitly in their support of natural pest control systems, crop rotation, intercropping, non-use of the most hazardous pesticides, and so forth.<sup>10</sup> Pesticides can also account for a significant amount of total input costs (up to 60 per cent in West Africa, and averaging around 30 per cent) (S. Ferrigno, independent researcher, personal communication, 2013), and their systematic and reduced applications can have significant positive financial impacts for cotton producers.

With respect to water use, cotton does require significant amounts of water at certain points in its life cycle, but the crop is also drought and saline tolerant.<sup>11</sup> Extremely inefficient irrigation practices can negatively impact water systems used for cotton production, and each voluntary sustainability standard within the sector addresses the problem uniquely, be it through good agricultural practices (e.g., CmiA), integrated pest management (e.g., BCI), organic farming systems (e.g., Organic) or other methods.

On the social and economic side, rising input costs such as seed and fertilizer (linked to oil prices) as well as falling cotton prices, price variability and unsecured markets all contribute to keeping many producers systemically underprivileged. Low prices, taxes and other costs imposed by intermediaries often further reduce prices received by farmers. The negative impacts of U.S. cotton subsidies on African producers are documented (Oxfam, 2007), but there are also estimates that any gains from total elimination of subsidies might be short lived (Baffes, 2006). Regardless, there are between

6 Adjusting for estimated multiple certification.

7 The remainder would be sold as conventional, due to a lack of buyers or logistical reasons.

8 Cotton is cultivated on 0.7 per cent of the world's agricultural area. Arable land is used here to remain consistent with other such references made to the sector. Agricultural area is true "cultivable land" in that it includes temporary and permanent crops. Arable land refers only to temporary crops, which in some ways is more appropriate for comparing cotton to other crops with more similar production systems (a significant portion of the production is monocropped, reseeded every year, and so on). The pesticide and water figures are not as limited in their scope as the definition of arable land.

9 Down from 11 per cent (in 1988) and 22.5 per cent (in 1990), respectively (Ferrigno, 2012).

10 With regard to pesticide use, selective breeding of cotton lint for qualities like "staple length" and "character" over other qualities like resistance to pests is one fundamental reason why cotton now accounts for such a high proportion of global insecticide use. A weakened genetic pool resulting from selective breeding is another factor, as is the misuse of insecticides and subsequent resistance to them by insects (Ferrigno, 2012).

11 Cotton's impact on water use is perhaps most often associated with the infamous early 1960s' Soviet government project to irrigate the desert between modern day Uzbekistan and Kazakhstan, which led to the virtual disappearance of the Aral Sea; however, this calamity was more a result of poor policy and production systems than due to the crop itself.

50 million and 100 million households involved in cotton production, with roughly two-thirds of all cotton production occurring in developing countries (Clay, 2004), where cotton production is often maintained manually and under impoverished conditions. Improper storage and application of pesticides is also of particular concern for worker safety.

The cotton sector presents an interesting case study for sustainability standards more generally, given the dramatic variations in the production systems applied and corresponding sustainability challenges faced around the world. For example, in areas where cotton is irrigated, the implementation of drip irrigation systems, as opposed to flood systems, has the potential to improve the efficiency of cotton irrigation (currently only 1 per cent of the world's irrigated cotton is drip irrigated). Most African cotton, however, is rain-fed, as it is in Brazil, the United States and some parts of India. With about half of cotton's area harvested and one-third of its production coming from rain-fed cotton, yield increases for rain-fed cotton through the implementation of integrated pest management or good agricultural practices may be of particular importance not only for environmental sustainability, but also for economic sustainability (Ferrigno, 2012). Since most cotton standards require the adoption of some level of good agricultural practices, the most appropriate standards (from a sustainability perspective) will depend on the degree to which a standard's good agricultural practices system is in alignment with the local conditions of a given producing region.

Similarly, given the high penetration of GMO cotton across global production (81 per cent of global planting was genetically modified in 2012 [ISAAA, 2012a]), the scalability of a given sustainability initiative will be largely dependent on whether or not GMO cotton is considered eligible for conformity within the system. In select regions where cotton production has not adopted GMO production or is not reliant on irrigation, such as in much of Africa, clear opportunities exist for differentiation through affiliation with any of the sustainability standards active within the sector.

Organic cotton has been present in the market since the late 1980s,<sup>12</sup> but increasing demand for social and environmental accountability has resulted in the emergence of several new cotton initiatives, including California's Sustainable Cotton Project ("Cleaner Cotton," established in 1996 [Sustainable Cotton Project, n.d.]), the Australian national standard Australian Best Management Practices

(MyBMP, established in 1999<sup>13</sup>), Fairtrade cotton (first production in the 2004–2005 season [Koolskools, 2010]), BCI (established in 2005 [WWF, n.d.-a], first production in the 2009–2010 season), CmiA (established in 2005 [CmiA, 2013], first production in the 2008–2009 season), and Bayer's e3 (first production in the 2011–2012 season).<sup>14</sup>

In the following section we report on sustainability standards with international scope: BCI, CmiA, Fairtrade and Organic. Of these, it is important to note that BCI permits GMO cotton, while CmiA, Fairtrade and Organic do not. Also, due to a one-way partnership agreement between CmiA and BCI, CmiA can also be sold as Better Cotton, but not vice-versa.<sup>15</sup> Fairtrade and Organic also each have a shared "dual" standard, which was held by 57 per cent of all Fairtrade cotton producer organizations in 2011 (FLO, 2012).

Both BCI and CmiA draw heavily from integrated pest management and good agricultural practices. More holistically, both follow the approach to improve sustainability along the three principles of "people" (social criteria), "planet" (ecological criteria) and "profit" (economic criteria) (C. Kaut, CmiA, personal communication, December 16, 2013). Both also lean heavily on technical assistance as part of their strategy—BCI through its partners, including Solidaridad, and CmiA through its partner, the Competitive African Cotton Initiative (COMPACI).

Overall, the aggregate production of compliant cotton has been undergoing significant expansion over the past five years. Despite this, Fairtrade and Organic certified cotton have seen relatively stable sales, and the continued growth of global production levels over this period speak to the importance of CmiA and Better Cotton within the sustainable cotton supply (see Figure 9.4). BCI, which permits the use of genetically modified seed, has made massive production expansions in the major producing countries of Brazil and Pakistan and currently comprises 68 per cent of global standard-compliant cotton and 53 per cent of global sales of compliant cotton. CmiA comprises 16 per cent of compliant production and 29 per cent of sales. Average annual changes in compliant production volumes for BCI, CmiA, Fairtrade and Organic cotton from the 2008 season to the 2012 season (i.e., four years) were 343 per cent (from 2010), 78 per cent (from 2009), -9 per cent and -1 per cent, respectively.

12 The first organic cottons were produced in the United States and Turkey; these were grown as rotational crops on organically certified farms (S. Ferrigno, independent researcher, personal communication, 2013; ITC, 2007).

13 Land and Water Australia (2005); 1999 was the first year that voluntary BMP audits were established; 1997 was the year that the BMP manual was first published.

14 Note that our market review below only accounts for the major multistakeholder initiatives with international presence, notably BCI, CmiA, Fairtrade and Organic.

15 Therefore, the 2012 data for BCI may also include production or sales of CmiA cotton.



TABLE 9.2 IMPORTANCE OF VOLUNTARY SUSTAINABILITY STANDARD (VSS) COTTON PRODUCTION AND SALES RELATIVE TO THE GLOBAL MARKET.

	VSS production (mt)	VSS production market share of global production	VSS production market share of global exports	VSS sales (mt)	VSS sales market share of global production	VSS sales market share of global exports
BCI	623,000	2%	6%	305,000	1%	3%
CmiA	163,262	1%	2%	*68,570	0%	1%
Fairtrade	18,330	0%	0%	6,580	0%	0%
Organic	138,841	1%	1%	*81,631	0%	1%
Global VSS production / sales (mt and %), adjusted for multiple certification	933,000	3%	9%	448,000	2%	4%

\*Estimates based on a cross-sector, average sales-to-production ratio of 42 per cent.

### 9.3 MARKET PERFORMANCE



#### Better Cotton Initiative (BCI)

Better Cotton production accounted for 2 per cent of global cotton production in 2012, and BCI is currently the voluntary sustainability standard with the most compliant production on the market. Programs in Brazil, Pakistan and India accounted for 92 per cent of Better Cotton production, while volumes in China and Mali accounted for the remaining 8 per cent (see Figure 9.6 and Table 9.3). Better Cotton is produced by larger estates in Brazil and Pakistan (almost exclusively in the case of Brazil), and these countries accounted for three-quarters of the tripling of volumes of Better Cotton from 2011 to 2012, pointing at efficiencies in securing compliant supply through larger production systems. Better Cotton accounted for 16 per cent of Brazil's cotton production and 8 per cent of Pakistan's cotton production in 2012.

BCI reported that sales of Better Cotton from the certificate holder to the gin were 305,000 metric tons in 2012 (as reflected in Figure 9.7 and Table 9.4), or 49 per cent of Better Cotton production, and 1 per cent of global production.<sup>16</sup>

Turkey, traditionally one of the largest producers of Organic cotton, is licensed to produce 14,923 metric tons of Better Cotton in the 2013 season (Fibre2fashion.com, 2013). Likewise, new producers of Better Cotton in Tajikistan and Mozambique are licensed to produce 10,196 and 3,389 metric tons, respectively, of Better Cotton during the same year (S. Johnston, BCI, personal communication, December 2, 2013). Also notable is the program's development via its partnership with CmiA, which allows the latter organization to sell its product as Better Cotton and to access BCI's markets. These developments are part of an aggressive expansion strategy by BCI, which hopes to expand production to 2.5 million metric tons by 2015 (quadrupling 2012 production) and to reach 10 million metric tons (or 30 per cent of global cotton production) by 2020 (BCI, 2013c). BCI refers to the period from 2016 to 2020 as its projected "mainstreaming phase," which is expected to feature a normalizing of supply and demand.

<sup>16</sup> Sales refer to cotton sold from the certificate holder to the gin as Better Cotton. Retail sales of Better Cotton were slightly less than 100,000 metric tons in 2012 (BCI, 2013b).



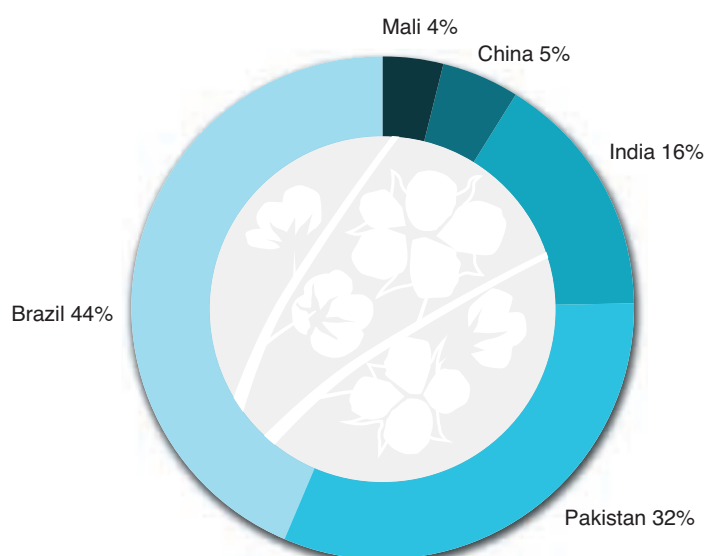
TABLE 9.3 BETTER COTTON AREA HARVESTED AND PRODUCTION BY COUNTRY, 2012.<sup>17</sup>

	Area harvested (ha)	Production (mt)
<b>Brazil</b>	210,000	295,000
<b>China</b>	15,000	26,000
<b>India</b>	138,000	93,000
<b>Mali</b>	63,000	24,000
<b>Pakistan</b>	260,000	185,000
<b>Total</b>	<b>686,000</b>	<b>623,000</b>

Sources: B. Bandi, BCI, personal communication, February 12, 2013;  
S. Johnston, BCI, personal communication, December 2, 2013.

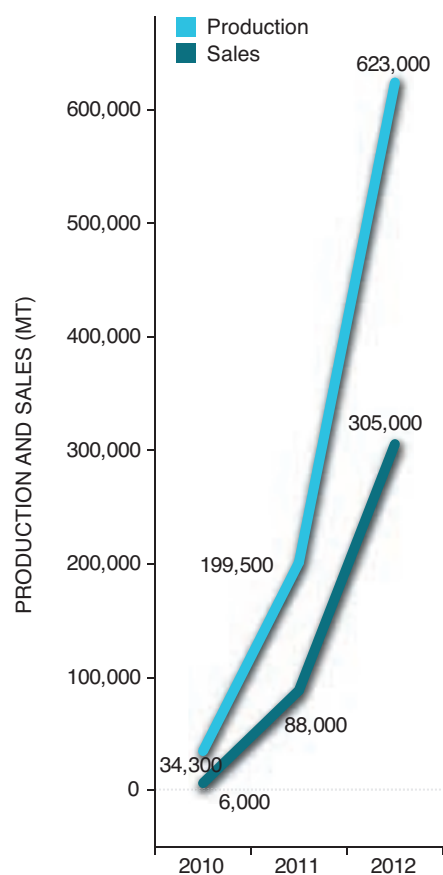
17 For the purpose of this review, “Better Cotton Initiative” and “Better Cotton” will be used interchangeably.

FIGURE 9.6 BETTER COTTON PRODUCTION BY COUNTRY, 2012.



Source: S. Johnston, BCI, personal communication, December 2, 2013.

FIGURE 9.7 BETTER COTTON PRODUCTION AND SALES, 2010–2012.



Sources: B. Bandi, BCI, personal communication, February 12, 2013; S. Johnston, BCI, personal communication, December 2, 2013.

TABLE 9.4 BETTER COTTON AREA HARVESTED, PRODUCTION AND SALES, 2010–2012.

	Area harvested (ha)	Production (mt)	Sales (mt)
2010	65,000	34,300	6,000
2011	249,500	199,500	88,000
2012	686,000	623,000	305,000

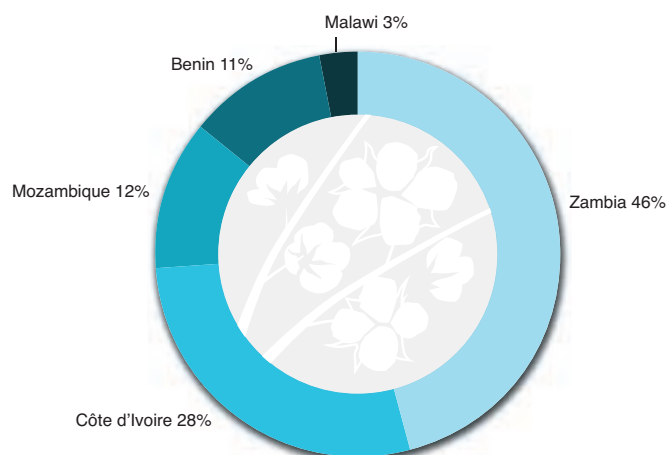
Sources: B. Bandi, BCI, personal communication, February 12, 2013;  
S. Johnston, BCI, personal communication, December 2, 2013.

### Cotton made in Africa (CmiA)

CmiA-compliant production accounted for 0.6 per cent of global production in the 2012 season and came from the traditionally smallholder-based, rain-fed production systems of Western and Southern Africa (see Figure 9.8 and Table 9.5). CmiA's total compliant production accounted for 42 per cent of Côte d'Ivoire's cotton production, 23 per cent of Benin's production, 33 per cent of Malawi's production, 34 per cent of Mozambique's production and virtually all of Zambia's production.<sup>18</sup> Production under compliance with CmiA accounted for about 15 per cent of cotton lint produced in Africa in 2012.<sup>19</sup>

Since first coming onto the market in 2009, CmiA-compliant cotton production has grown more than five-fold (see Figure 9.9 and Table 9.6). More recently, production has continued to grow, with volumes between the 2011 and 2012 seasons nearly doubling.<sup>20</sup> Moving forward, the organization's partnership with BCI should allow it to access new markets and expand production beyond the corresponding demand provided by its Demand Alliance.

FIGURE 9.8 CmiA PRODUCTION BY COUNTRY, 2012.



Source: C. Kaut, CmiA, personal communication, April 11, 2013.

<sup>18</sup> Estimates made are based on total production figures (USDA, 2013c) and CmiA production figures (C. Kaut, CmiA, personal communication, April 11, 2013). This has not been confirmed by CmiA.

<sup>19</sup> Total cotton produced in Africa was about 4.88 million 480-pound bales in 2012 (USDA, 2013c).

<sup>20</sup> Note that most of the production increases during 2011–2012 were attributed to Zambia, whose production roughly doubled in the last year, and to Mozambique, whose production came online for the first time in 2011–2012.

TABLE 9.5 CmiA AREA HARVESTED AND PRODUCTION BY COUNTRY, 2012.

	Area harvested (ha)	Production (mt)
Benin	43,183	17,740
Côte d'Ivoire	103,396	46,222
Malawi	17,424	4,600
Mozambique	82,833	19,880
Zambia	317,450	74,820
<b>Total</b>	<b>564,286</b>	<b>163,262</b>

Source: C. Kaut, CmiA, personal communication, April 11, 2013.

TABLE 9.6 CMiA AREA HARVESTED AND PRODUCTION, 2009–2012.

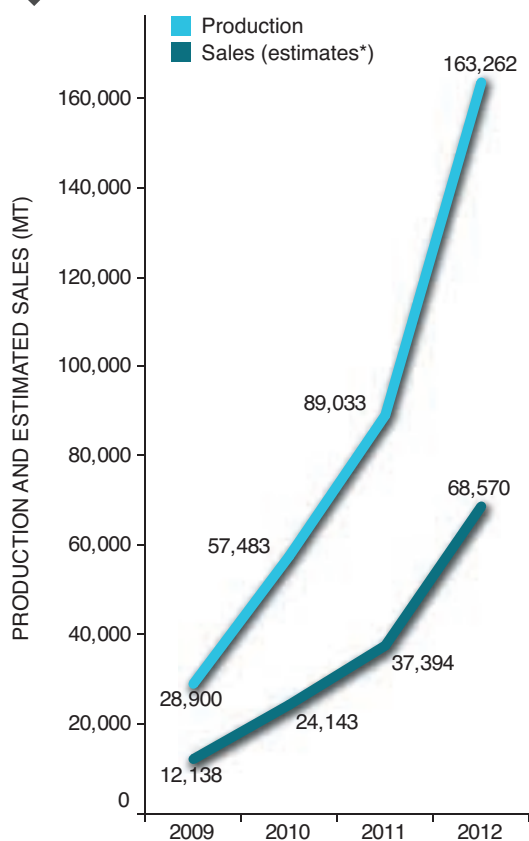
	Area harvested (ha)	Production (mt)
2009	117,750	28,900
2010	162,403	57,483
2011	309,219	89,033
2012	564,286	163,262

Source: C. Kaut, CmiA, personal communication, April 11, 2013.



Photo: CIFOR / CC-BY-NC

FIGURE 9.9 CMiA PRODUCTION AND ESTIMATED SALES, 2009–2012.



\*Sales of CmiA are estimated based on a cross-sector, average sales-to-production ratio of 42 per cent.

Source: C. Kaut, CmiA, personal communication, April 11, 2013.

### Fairtrade International

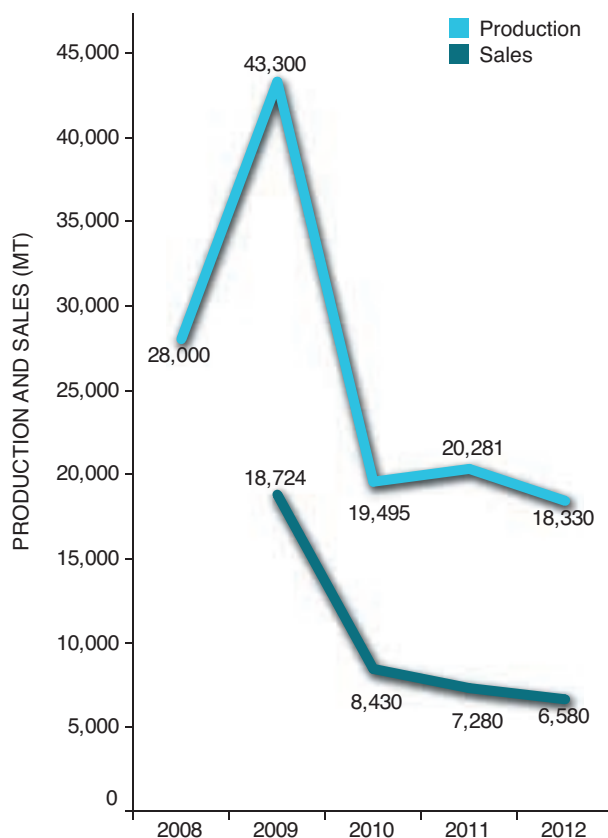
Fairtrade cotton production accounted for 0.1 per cent of global production in 2012, with 18,000 metric tons of cotton lint produced. Notably, Fairtrade is currently rolling out a new Fairtrade cotton model, and until that time, producers and buyers have been advised to hold off on any expansion plans (The Textile Exchange, 2013); this would likely explain in part Fairtrade's recent declines in production and sales (see Figure 9.10 and Table 9.7 for overviews of 2008–2012).

In 2012, about 37 per cent of the production licensed under Fairtrade was sold as certified, and sales were down to 7,000 metric tons from 19,000 metric tons in 2009. Fairtrade mandates a fixed premium for cotton sold as certified, and establishing markets ("reducing their volatility") is crucial for the model's uptake.<sup>21</sup> Reduced sales of Fairtrade cotton have recently been reported to have had deleterious effects on the incomes of producers in West and Central Africa (The Textile Exchange, 2013), and unsecured markets can result in producers moving away from certification or even the entire crop.

Fairtrade cotton is sourced along the following lines: Nicaragua and Brazil provide supply through 120 smallholders; Burkina Faso, Cameroon, Egypt, Mali and Senegal provide supply through 30,000 organized smallholders (45 per cent of total); and India and Kyrgyzstan provide supply through 7,000 organized smallholders (10 per cent of total) and 30,000 smallholder contract producers (45 per cent of total), respectively.

<sup>21</sup> This conclusion was reached in a 2011 impact study on Fairtrade cotton in Mali, Senegal, Cameroon and India (Nelson & Smith, 2011).

FIGURE 9.10 FAIRTRADE COTTON PRODUCTION AND SALES, 2008–2012.



Sources: FLO, 2011b, 2012; The Textile Exchange, 2013.

TABLE 9.7 FAIRTRADE COTTON AREA HARVESTED, PRODUCTION AND SALES, 2008–2012.

	Area harvested (ha)	Production (mt)	Sales (mt)
2008	--	28,000	--
2009	--	43,300	18,724
2010	117,200	19,495	8,430
2011	141,400	20,281	7,280
2012	--	18,330	6,580

Sources: FLO, 2011b, 2012; The Textile Exchange, 2013.



## International Federation of Organic Agriculture Movements (IFOAM, or “Organic”)

In 2012, 139,000 metric tons of Organic cotton were produced, accounting for 0.5 per cent of global cotton production. About three-quarters of the world’s Organic production came from India, while the remaining quarter came primarily from Turkey, China, Tanzania and the United States (Figure 9.11 and Table 9.8).

Although Organic certified cotton had, as recently as 2010, accounted for 68 per cent of the world’s standard-compliant cotton produced, by 2012 it accounted for only 39 per cent (see Figure 9.12 and Table 9.9 for overviews of 2008–2012). Over the last production year (2011–2012), Organic production also dropped 8 per cent.<sup>22</sup>

There are several forces in action that have contributed to Organic’s fall from its market leadership position. The rapid emergence of BCI and CmiA has attracted mainstream attention and may have diverted potential investment in Organic production as these initiatives expand their production and marketing strategies. However, with CmiA and BCI target markets being mainstream supply chains, the extent to which these initiatives have led to declining market penetration for Organic cotton may be limited. Instead, a more systemic cause, and certainly a longer-term challenge facing the continued growth of Organic cotton, relates to the growing difficulty in obtaining non-GMO seeds in major producing countries such as India. Temporary challenges in other major supply countries

include internal political strife in Syria and drought-like conditions in the United States. Allegations of genetically modified cotton being exported as Organic in India and the subsequent implementation of TraceNet in the country<sup>23</sup> may have also played a role in India’s stable/declining production over the past three years. A mismatch between production and demand (and corresponding downward pressure on prices) has led to a reduction in the number of forward agreements and may also affect current Organic production volumes (S. Ferrigno, independent researcher, personal communication, 2013).

While Organic production dropped over the last year,<sup>24</sup> it is nevertheless worth noting that Organic production actually rose nine-fold between 2005 and 2009 (The Textile Exchange, 2013).

22 Note that the actual area harvested showed a somewhat reduced decline of 2 per cent in the last production year.

23 The TraceNet system, which allows Organic cotton to be traced back through a bar code and requires producers to register information such as production details and GPS coordinates of farms, was introduced in 2010 in India after heavily debated rumours of genetically modified cotton entering the European Union from India as fraudulently Organic certified (Pepper, 2010). Thus, a possible decrease in production of the alleged fraudulent Organic cotton, producer drop-outs due to increased costs of the system, or a reduction in double counting may have all contributed to the drop in Indian Organic cotton production from 2010 to 2012 (approximately 92 million metric tons, or roughly two-thirds of current Organic production). India is the world’s largest Organic cotton producer.

24 Note that the actual area harvested showed a somewhat reduced decline of 2 per cent in the last production year.

TABLE 9.8 ORGANIC COTTON PRODUCTION BY COUNTRY, 2012.

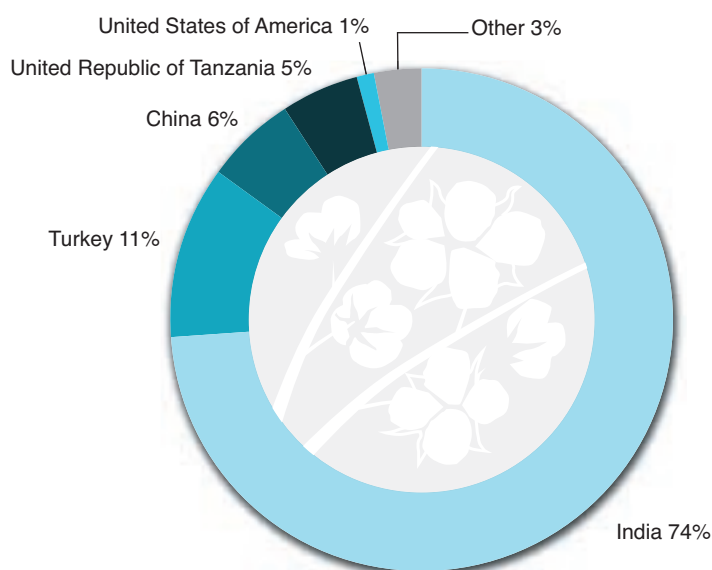
	Production (mt)
Benin	328
Brazil	38
Burkina Faso	370
China	8,106
Egypt	420
India	103,003
Israel	70
Kyrgyzstan	156
Mali	860
Nicaragua	122
Paraguay	100
Peru	479
Senegal	17
Tajikistan	16
Turkey	15,802
Uganda	456
United Republic of Tanzania	6,891
United States	1,580
<b>Total</b>	<b>138,814</b>

Source: The Textile Exchange, 2013.

Also, the incidence of Organic production in Africa more than doubled from 2011 to 2012, with much of this increased production coming from Tanzania. Mali, Uganda, Egypt, Burkina Faso and Benin are other important African cotton-producing countries, with each producing between 200 and 800 metric tons of Organic cotton in 2012. Tanzania produced 7 million metric tons during the same year.

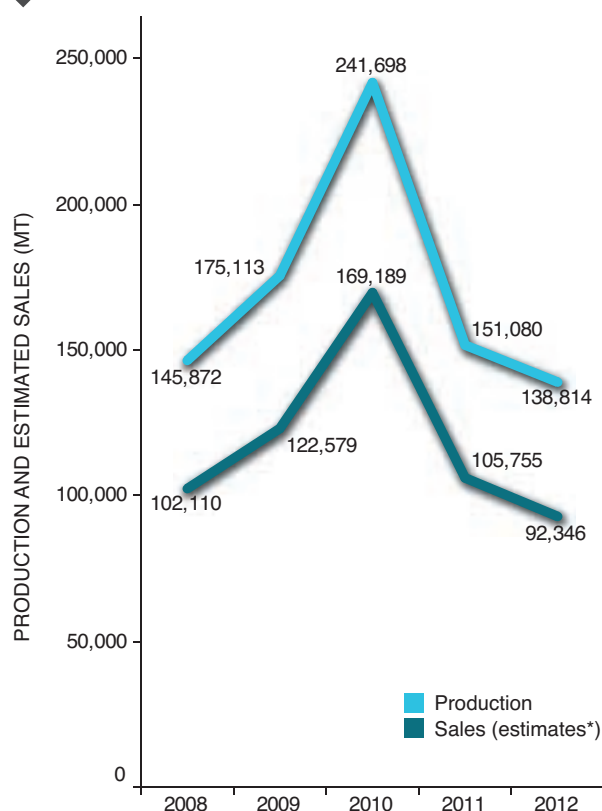
Certified sales of Organic cotton are estimated to be no more than 70 per cent of production, with a lack of forward contracts by buyers (i.e., long-term commitments) cited as the primary cause of selling Organic production as conventional (S. Ferrigno, independent researcher, personal communication, 2013).

FIGURE 9.11 ORGANIC COTTON PRODUCTION BY COUNTRY, 2012.



Source: The Textile Exchange, 2013.

FIGURE 9.12 ORGANIC COTTON PRODUCTION, 2008–2012.



\*Estimates indicate that about 70 per cent of Organic production volumes are sold as certified (S. Ferrigno, independent researcher, personal communication, 2013).

Source: The Textile Exchange, 2013.

TABLE 9.9 ORGANIC COTTON AREA HARVESTED AND PRODUCTION, 2008–2012.

	Area harvested (ha)	Production (mt)
2008	--	145,872
2009	253,000	175,113
2010	461,000	241,698
2011	324,577	151,080
2012	316,907	138,814

Source: The Textile Exchange, 2013.



Table 9.10 shows the percentage of total national production produced according to compliance with one or more major voluntary sustainability standards in 2012, for the world's 20 largest cotton producers. In China, India and the United States, the world's largest producers of cotton, 0.5 per cent, 3.3 per cent, and 0.0 per cent of cotton, respectively, were produced under one or more of the four major international sustainability standards. Brazil and Pakistan, the world's fifth- and fourth-largest producers of cotton, are the first- and second-largest producers of sustainable cotton (see Figure 9.13).

Globally, cotton production is highly concentrated, with 80 per cent coming from China, India, the United States, Pakistan and Brazil (see Figure 9.14). The compliant cotton market is even more concentrated, with 85 per cent coming from Brazil, Pakistan, India, Zambia and Côte d'Ivoire; 72 per cent comes from Brazil, Pakistan and India alone (see Figure 9.15 for a breakdown of standard-compliant production by country in 2012 and Figure 9.16 for breakdown by continent). The importance of voluntary sustainability standard (particularly CmiA) activity in Africa is noteworthy; although African countries produce 11 per cent of the world's cotton, 20 per cent of the world's compliant cotton is supplied from Africa; this is due almost entirely to production compliant with the CmiA standard.

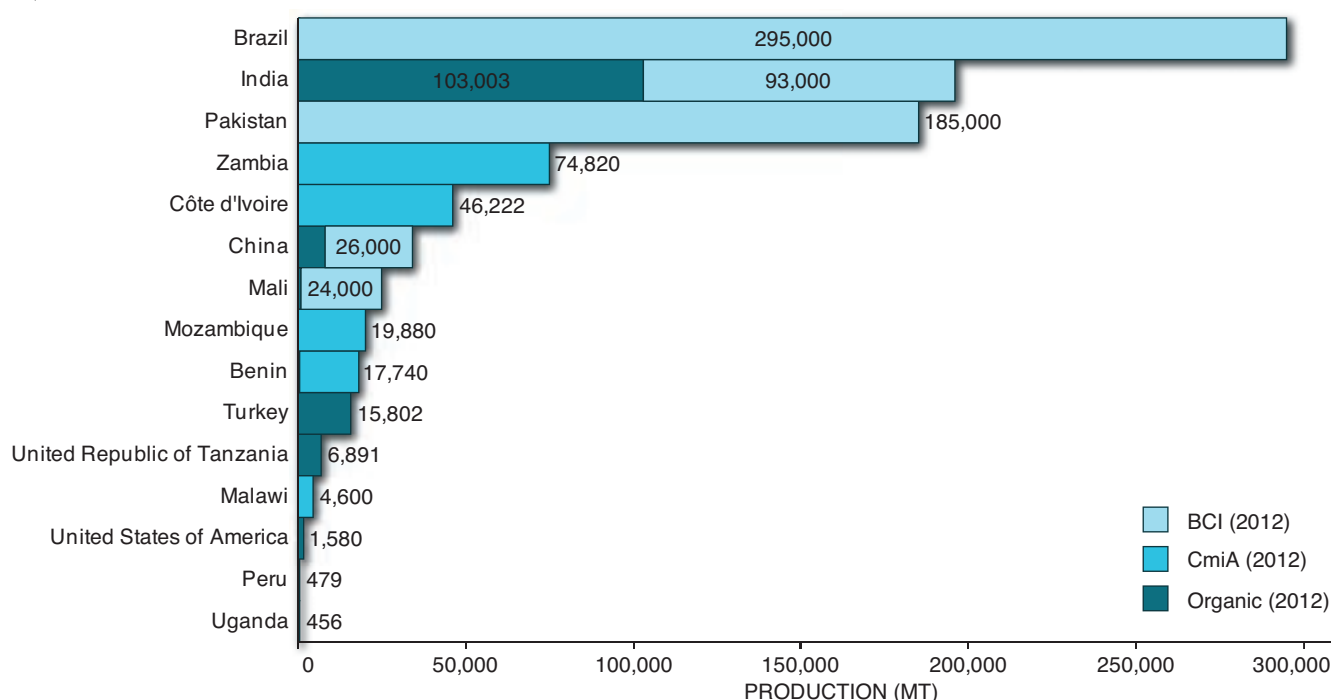
With respect to the largest cotton producers, participation in sustainable markets is dominated by Brazil and Pakistan (52 per

cent of total standard-compliant production). The United States and Australia are, however, home to several strictly domestic cotton programs not detailed in this report—for example, the Sustainable Cotton Project and Bayer e3 in the United States, and the national program MyBMP in Australia. Arguably, the general absence of forced labour and extreme poverty in American and Australian production has led to reduced pressures for standard-compliant production in these countries.<sup>25</sup> This remains particularly relevant for initiatives such as Fairtrade and CmiA, which have explicit development objectives within their standards systems. BCI and Organic standards, however, are not constrained by this larger objective and therefore have significant potential for expansion in these markets.

Although China is not a significant player in the production of standard-compliant cotton at present, there are signs that this may change in the near future. As of 2012, 0.5 per cent of China's production was produced as compliant with a voluntary sustainability standard, versus 3.3 per cent in India, 8.0 per cent in Pakistan and 15.6 per cent in Brazil (see Table 9.10).

<sup>25</sup> Note that heavy reliance on GMO cotton in both the United States and Australia could render them vulnerable to scrutiny, depending on where the evidence falls with respect to sustainability and GMO cotton.

FIGURE 9.13 FIFTEEN LARGEST STANDARD-COMPLIANT COTTON PRODUCERS, 2012.



Where space permits, data points are visible.

Sources: S. Johnston, BCI, personal communication, December 2, 2013; C. Kaut, CmiA, personal communication, April 11, 2013; The Textile Exchange, 2013.

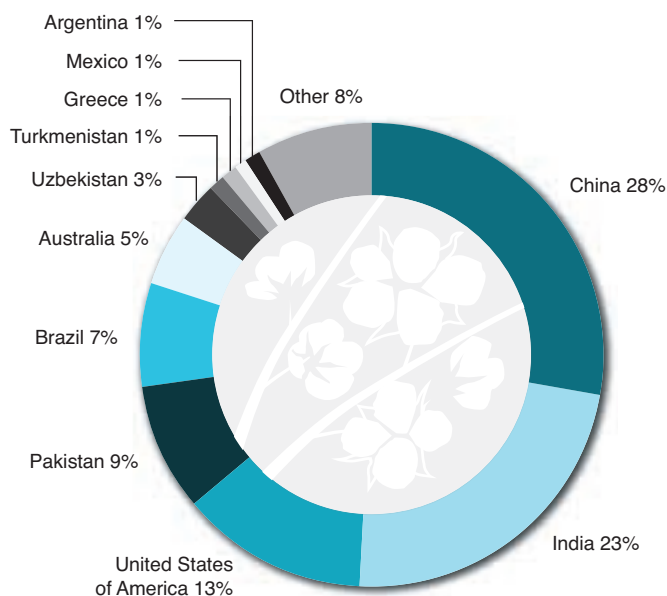
TABLE 9.10 STANDARD-COMPLIANT PRODUCTION AS A PERCENTAGE OF TOTAL NATIONAL PRODUCTION FOR 20 LARGEST COTTON PRODUCERS, 2012.

Dashes represent negligible or no standard-compliant production relative to national production; they may also reflect an absence of data.

	BCI	CmiA	Fairtrade	Organic	Total
China	0.4%	-	-	0.1%	0.5%
India	1.6%	-	-	1.7%	3.3%
United States	-	-	-	-	-
Pakistan	8.0%	-	-	-	8.0%
Brazil	15.6%	-	-	-	15.6%
Australia	-	-	-	-	-
Uzbekistan	-	-	-	-	-
Turkey	-	-	-	2.1%	2.1%
Turkmenistan	-	-	-	-	-
Greece	-	-	-	-	-
Mexico	-	-	-	-	-
Argentina	-	-	-	-	-
Mali	12.8%	-	-	0.5%	13.3%
Burkina Faso	-	-	-	0.2%	0.2%
Egypt	-	-	-	0.3%	0.3%
Zimbabwe	-	-	-	-	-
Tajikistan	-	-	-	-	-
Côte d'Ivoire	-	42.5%	-	-	42.5%
Kazakhstan	-	-	-	-	-
Benin	-	23.3%	-	0.4%	23.7%

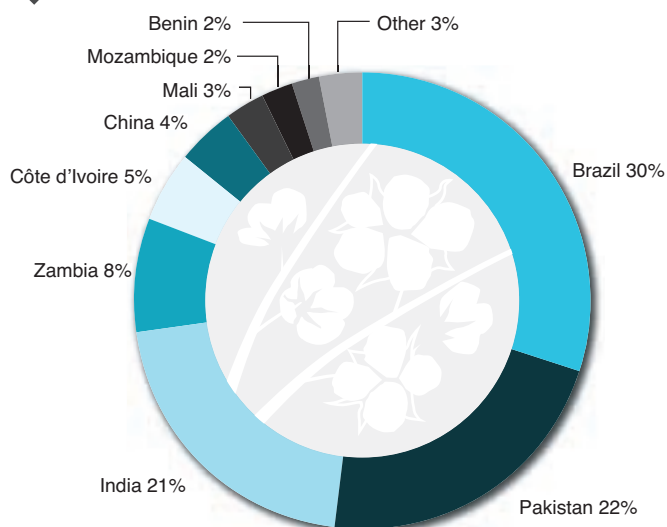
Sources: S. Johnston, BCI, personal communication, December 2, 2013; C. Kaut, CmiA, personal communication, April 11, 2013; The Textile Exchange, 2013; USDA, 2013c.

FIGURE 9.14 GLOBAL COTTON PRODUCTION BY COUNTRY (INCLUDES CONVENTIONAL AND SUSTAINABLE), 2012.



Source: USDA, 2013c.

FIGURE 9.15 STANDARD-COMPLIANT COTTON PRODUCTION BY COUNTRY, 2012.

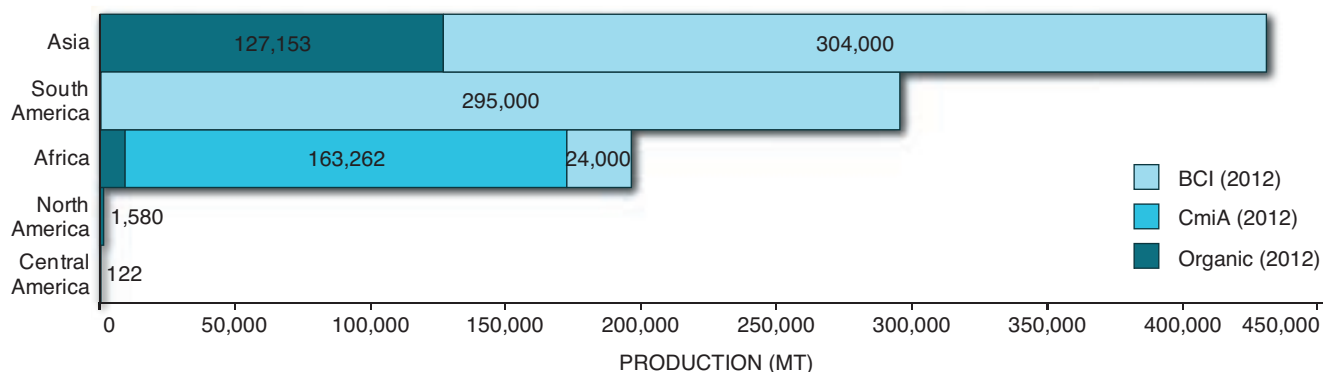


Where space permits, data points are visible.

Sources: B. Bandi, BCI, personal communication, February 12, 2013; C. Kaut, CmiA, personal communication, April 11, 2013; The Textile Exchange, 2013.



FIGURE 9.16 STANDARD-COMPLIANT COTTON PRODUCTION BY CONTINENT, 2012.



Sources: S. Johnston, BCI, personal communication, December 2, 2013; C. Kaut, CmiA, personal communication, April 11, 2013; The Textile Exchange, 2013.

## 9.5 PRICING AND PREMIUMS

Pricing and premiums<sup>26</sup> associated with the varying sustainability standards on the market vary considerably depending on the business model and target audience of the initiative, as well as the source country. Overall, standard-compliant cotton has been reported sold at prices ranging from 0 to 30 per cent over market price, depending on the standard and country of origin.

Organic cotton premiums ranging from 8 to 30 per cent, depending on the program and region, have been reported over the past several years (S. Ferrigno, independent researcher, personal communication, 2013). Although a downward pressure on Organic premiums has been observed in recent years (Ferrigno, 2012), the additional conversion costs involved within Organic production systems<sup>27</sup> suggest overall constraints on oversupply and price decline in the near future.

BCI operates primarily as a business-to-business initiative targeting mainstream markets. The initiative's focus on quality improvement seeks to enable economic gains through "quality based" premiums, rather than premiums associated with standard compliance per se.<sup>28</sup> Indeed, throughout its evolution BCI has explicitly sought to avoid associating BCI compliance with direct premiums in order to ensure accessibility to cost-sensitive markets (BCI, 2009). Notwithstanding BCI's conservative approach to compliance-related premiums, BCI cotton has reportedly been associated with quality "surcharges" in the range of 6 to 8 per cent (S. Ferrigno, independent researcher, personal communication, 2013).

Like BCI and Organic, CmiA also does not fix premiums, but reports farm gate prices in U.S. dollars per kilogram, as seen in Table 9.11.<sup>29</sup> Using available data on prices paid to cotton farmers in the relevant regions, it is possible that surcharges may be paid for CmiA cotton for quality features. Comparing average prices paid for CmiA with these countries' cotton prices for the same season, CmiA surcharges ranged from 8 per cent in Côte d'Ivoire<sup>30</sup> to 13 per cent in Zambia.<sup>31</sup> Note also that CmiA also charges a license fee of 1 per cent on retail sales to the members of its Demand Alliance (C. Kaut, CmiA, personal communication, 2013), which is reinvested in farms within CmiA's project countries. BCI has begun to do the same (as of May 2012) with its "volume based fee" (BCI, 2012).

Fairtrade is the only standard within the cotton sector that actually fixes a premium for seed cotton. Fairtrade currently sets its "social premium" at \$0.05 per kilogram for seed cotton, roughly equivalent to \$0.11 per pound, or 13 per cent over 2012 international lint prices. This premium is distributed among producers through Fairtrade certified producer organizations. The Fairtrade pricing model, however, may be subject to change as Fairtrade rolls out its new model for cotton certification in the coming years.

26 For purposes of comparison in this section, we treat quality surcharges and premiums as interchangeable.

27 Note that it normally takes about three years to convert to organic production.

28 This business model is further reinforced by the absence of any consumer-facing label, which reduces the ability of manufacturers to secure a premium for BCI products at the retail level.

29 While it is difficult to extract what this might mean with regard to a market premium, it is clear that this cotton is receiving some sort of premium at the farm gate—whether this is due to better quality product or the CmiA label cannot be easily disentangled.

30 Where prices were set at US\$0.50 per kilogram in the 2011–2012 season versus US\$0.54 paid for CmiA; see IRIN (2014).

31 Where prices were set at US\$0.31 per kilogram in 2012 versus an average of US\$0.35 for CmiA; see Bariyo (2012).

TABLE 9.11 PRICES PAID FOR CMIA, 2010–2012.

	2010	2011	2012
	US\$/kg	US\$/kg	US\$/kg
<b>Benin</b>	0.43	0.42	0.51
<b>Burkina Faso</b>	0.38	0.44	0.56
<b>Côte d'Ivoire</b>	0.39	0.44	0.54
<b>Malawi</b>	0.38	0.80	0.42
<b>Zambia</b>	0.43	0.70	0.35
<b>Mozambique</b>	0.23	0.54	0.36

Source: C. Kaut, CmiA, personal communication, April 11, 2013.

## 9.6 CHALLENGES AND OPPORTUNITIES



Despite the industry's diverse production systems and its dynamic relationship with environmental, social and economic sustainability, there is a clear consensus on the need for increased social and environmental accountability, which is a positive sign for growth of voluntary standards within the industry.<sup>32</sup> The global call for accountability, and the industry's corresponding ability to respond to such calls, will likely play a significant role in determining the place of the crop as a major textile fibre moving forward, and in itself will be an important driver for standard-compliant production. Over the past decade, cotton's global position as a source of textile fibre has declined from 42 per cent (1997) to 33 per cent (2011).<sup>33</sup> As cotton's market leadership position comes under increasing threat, the development and expansion of sustainable supply may provide a valuable basis for differentiation between cotton and its

substitutes. The adoption of sustainable practices also holds the potential of improving overall quality and security of supply, which may also serve in building the fibre's competitiveness on global markets.

This background points toward the massive potential for growth in standard-compliant production across the sector in the coming years. Based on the investments in the development of standard-compliant supply over the past several years, combined with existing corporate commitments, we estimate standard-compliant cotton to reach at least 25 per cent of global production by 2020.

BCI and CmiA were born out of a desire to improve the environmental, economic and social conditions associated with mainstream cotton production and trade,<sup>34</sup> and mark a significant development in the relationship between sustainability standards and global cotton markets. Notably, the proactive participation of major industry players in these initiatives points toward strong

32 A panel of experts recently convened by The Textile Exchange (2013) noted, "The trend [...] can be summarized as an Increasing Call for Social and Environmental Accountability – including evaluation of natural capital, and even a "new capitalism" based on triple bottom line accounting. This would lead to greater supply chain integration and transparency, plus a recognition of "tier 4" (farm level) impacts and their connection to the rest of the textile supply chain."

33 The International Cotton Advisory Committee reports that the drop in market share from 2009 to 2010 was the largest single-year decline on record (USDA Foreign Agriculture Service, 2012).

34 Their interests align in such a way that a memorandum of understanding has been signed between the two initiatives to harmonize systems and procedures and make CmiA available to BCI manufacturers and retailers as early as mid-2012.

demand in the future;<sup>35</sup> BCI, for example, estimates that 30 per cent of the world's cotton production will be Better Cotton by 2020. The ability of BCI to reach this objective will depend on the successful implementation of major corporate commitments, such as those made by IKEA and Adidas to source 100 per cent of their cotton from BCI by 2015 and 2018, respectively.<sup>36</sup> CmiA's Demand Alliance can be expected to carry it forward on a significant growth pattern for the coming years, though its overall supply is limited by its focus on African-sourced cotton, which currently accounts for less than 8 per cent of global production.

Overall Organic cotton supply is increasingly limited due to the wide-scale transition to GMO cotton. While it remains unclear how significant this constraint is in terms of global production volumes in the short term given the relatively low volumes of Organic production, it is clear that Organic cotton will likely have to diversify the distribution of its supply if it is to ensure longer-term stability and growth. The existence of smaller levels of Organic production across a wide range of African countries (where GMO cotton is

less prevalent) suggests that Organic is well positioned to expand production as necessary; however, maintaining the availability of this potential supply base will likely require proactive strategies to ensure that Organic supply can be maintained as GMO production expands across the continent.

To be sure, market volatility and the general absence of long-term commitments by buyers represent major roadblocks in the expansion of both Organic and Fairtrade cotton, which require market security for expansion. Closing this gap will likely require more proactive strategies for the integration of private sector needs within the overall business models of these initiatives. Organic certification is well on its way to maintaining significant growth through its expanding markets and partnership, having grown its retail value four-fold over the past decade,<sup>37</sup> while securing high-profile commitments from retailers ranging from H&M<sup>38</sup> to C&A.<sup>39</sup> Fairtrade's ability to do the same will depend on its ability to secure longer-term private sector commitments as part of its new cotton strategy.

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35 Adidas, H&M, IKEA, Levi Strauss & Co., Your M&S, Walmart, Nike and Olam are partners of BCI, while Otto Group, REWE Group, Tchibo GmbH, TOM TAILOR Holding AG, Accenture, Accuracy, Avery Dennison, Puma and Ethical Export are partners of CmiA.

36 In the case of IKEA, this represents a significant increase from its 2012 level of 34 per cent of total supply sourced from BCI (see IKEA, 2013a).

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37 Growing from US\$15 billion in 1999 to US\$63 billion in 2011 (Willer, Kilcher & Lernoud, 2013).

38 The world's largest user of Organic cotton worldwide.

39 Currently sources 13 per cent Organic cotton.







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