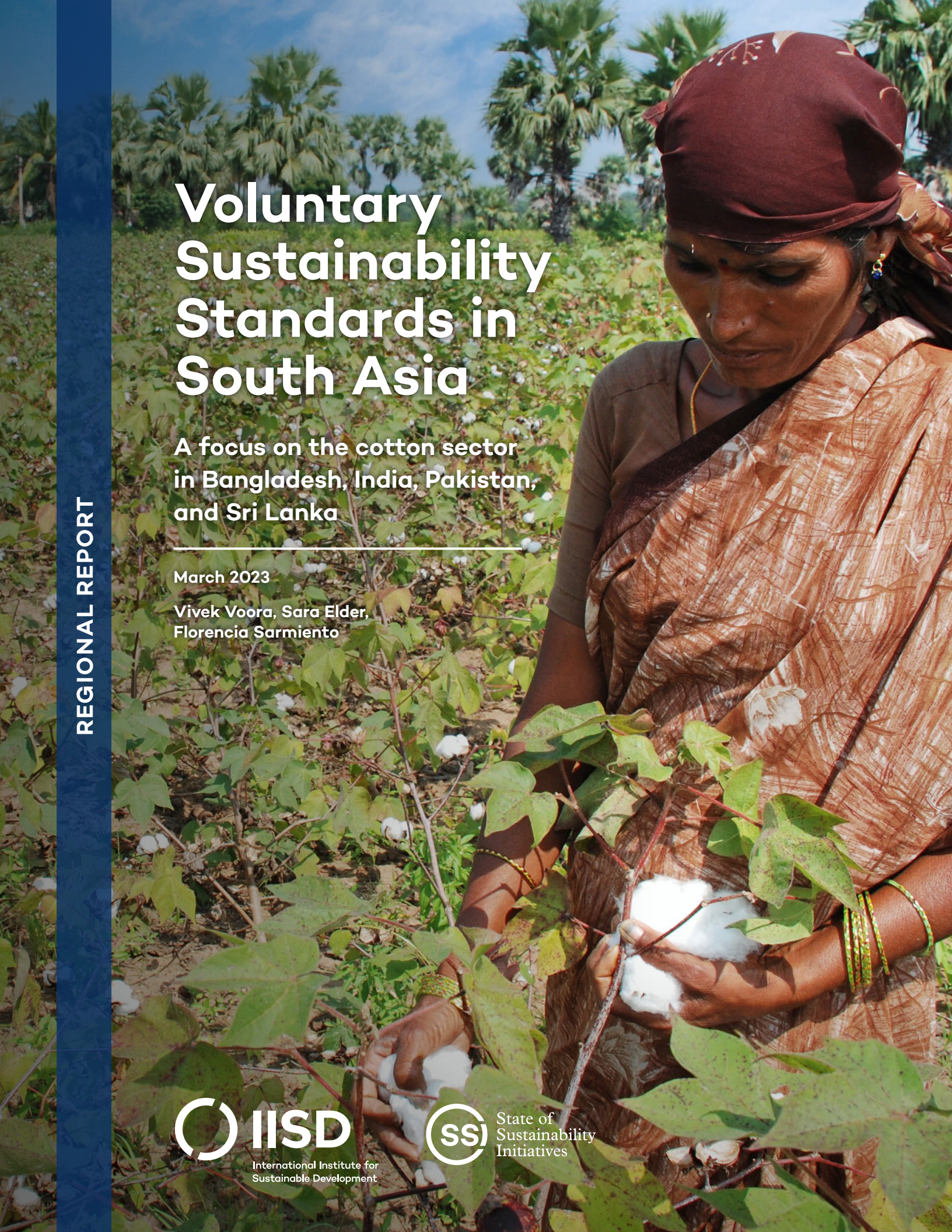


Voluntary Sustainability Standards in South Asia

A focus on the cotton sector in Bangladesh, India, Pakistan, and Sri Lanka

March 2023

Vivek Voora, Sara Elder,
Florencia Sarmiento



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March 2023

Written by Vivek Voora, Sara Elder, Florencia Sarmiento

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Executive Summary

Cotton is a key sector in South Asia, and there is still room to improve the sector's sustainability. Our mapping of voluntary sustainability standard (VSS) criteria and market potential shows that VSSs can help address three major sustainability issues: pest management, water conservation, and farmers' incomes and prices. Policy-makers and standard-setting bodies can build synergies between policies and VSSs in many ways to improve the conditions of cotton production and boost intraregional trade.

From 2008 to 2018, South Asia contributed about 30% to total global cotton lint production annually. The cotton textile sector is one of the key drivers of economic growth and employment in the region. Yet, despite its importance, cotton cultivation has led to significant environmental degradation and persistent social challenges that undermine the long-term sustainability of the sector.

This report focuses on Bangladesh, India, Pakistan, and Sri Lanka as selected South Asian countries with a strong relationship with cotton. It analyzes the interplay between VSSs and trade agreements as potential policy tools to address pest management, water conservation, and farmers' prices and incomes. The excessive use of agrochemicals aimed at pest management is a major threat to the environment and contributes to the high cost of cotton production. Water is also an important factor, given the high footprint of the sector. Farmers' prices and incomes are a social concern, following the underpinning volatility of cotton prices and poor working conditions.

There is market potential for the main VSSs operating in the cotton sector in South Asia: Organic, Fairtrade, Better Cotton, and the Responsible Environment Enhanced Livelihoods (REEL) Cotton Code. South Asia produced approximately 7.37 million tonnes (Mt), or 29%, of total cotton production in 2018, of which 1.66 Mt to 1.67 Mt were compliant with a VSS. As 90% of total cotton production in 2018 was genetically modified (GM), the Better Cotton standard and the REEL Cotton Code, which allow the use of GM cotton, have greater potential to expand than the Organic and Fairtrade standards. Organic and Fairtrade are limited to certifying non-GM cotton, which represents a much smaller fraction of the total cotton production in the region. The potential for expanding cotton produced under Better Cotton and the REEL Cotton Code represents about 5.4 Mt while expanding Organic- and Fairtrade-certified cotton is limited to 300,000 tonnes.

The main VSSs operating in South Asian cotton markets—Better Cotton, Organic, Fairtrade, and the REEL Cotton Code—have grown markedly in recent decades. For instance, India has become the second-largest global purveyor of Better Cotton-certified cotton and the largest global purveyor of Organic-, Fairtrade-, and REEL-certified cotton.

VSSs also have the potential to improve sustainability in the sector. Our analysis of the main VSSs' production requirements against the identified issues of concern, together with a spatial analysis of VSSs, reveals that they require farmers and textile facilities to adopt more sustainable production practices with potentially far-reaching benefits for the region. Various studies have

shown that the implementation of VSSs' requirements has led to improvements in agrochemical use, water conservation, and the incomes of South Asian cotton farmers and textile workers.

Although they may vary in terms of approach and stringency, all the VSSs examined have requirements related to sustainable pest control, water conservation, and producer incomes. Furthermore, the spatial analysis reveals that they are, for the most part, implemented in South Asian cotton-growing regions that have the greatest need to reduce pesticide use, improve water conservation, and enhance productivity.

VSSs do not operate in isolation within the region; there is some basis—albeit limited—for regional collaboration and cooperation through intraregional and bilateral trade agreements. Our analysis reveals that none of the trade agreements has specific provisions to support advancing sustainable production practices in the region. Moreover, there is a lack of national policies and legislation to address sustainability in the cotton sector, though general environmental policies and regulations in the region may have some impact on improving pest-management practices, promoting water conservation, and ensuring fair prices and incomes for farmers.

In our recommendations, we conclude that policy-makers and standard-setting bodies can take several actions to create synergies between public policies and VSSs for coordinated action in South Asia. We offer ideas for policy-makers as well as standard-setting bodies. VSSs can support regional and national policies and collaboration to improve pest management, water conservation, and farmers' prices and incomes in the South Asian cotton sector while boosting intraregional cooperation and trade.

In sum, to advance alignment between VSSs and policy in the region, we recommend the following:

For VSS-setting bodies:

- Develop targeted guidelines and training opportunities for farmers.
- Improve assurance systems and product traceability requirements to increase trust in certification and verification processes.
- Provide a platform for regional dialogues and action among different stakeholders.
- Build partnerships between standard-setting bodies as well as with private initiatives to increase their impact and efficiency.

For policy-makers in South Asia:

- Update sectoral, environmental, and labour policies to support best practices in sustainable production and VSS compliance.
- Strengthen sustainability provisions in trade agreements.
- Generate domestic and regional demand for VSS-compliant cotton.
- Establish organic seed banks.
- Target the promotion of VSS compliance in specific regions as a tool to improve agricultural practices where they are needed most.

Abbreviations and Acronyms

APEDA	Agricultural and Processed Food Products Export Development Authority
APTA	Asia-Pacific Trade Agreement
BCI	Better Cotton Initiative
BIMSTEC	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation
CABI	Centre for Agriculture and Bioscience International
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FiBL	Research Institute of Organic Agriculture
FTA	free trade agreement
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GM	genetically modified
GOTS	Global Organic Textile Standard
GSP	Generalized System of Preferences
IFOAM	International Federation of Organic Agricultural Movements
ILO	International Labour Organization
IPM	integrated pest management
NGO	non-governmental organization
NPOP	National Programme for Organic Production
OCS	Organic Content Standard
PGS	participatory guarantee scheme
REEL	Responsible Environment Enhanced Livelihoods
SAARC	South Asian Association for Regional Cooperation
SAC	SAARC Agriculture Centre
SACEP	South Asia Co-operative Environment Programme

SAFTA	South Asian Free Trade Area
VSS	voluntary sustainability standard
WHO	World Health Organization
WTO	World Trade Organization
WWF	World Wildlife Fund

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Introduction

In this report, we examine the potential role of voluntary sustainability standards (VSSs) in addressing three major sustainability challenges for South Asia’s cotton sector: pest management, water conservation, and farmers’ prices and incomes. The report provides analysis and guidance for policy-makers in South Asia on how they might a) use VSSs to boost intraregional trade and improve conditions in cotton production and b) use public policy and trade agreements to increase the impact of VSSs in the region. The findings and recommendations are also relevant to standard-setting bodies in cotton value chains.

In Section 1, we show why regional action on cotton is important for Bangladesh, India, Pakistan, and Sri Lanka, particularly vis-à-vis production-level challenges related to pest management, water conservation, and farmers’ prices and incomes. We identify the main VSSs used in the cotton sector in South Asia—Organic, Fairtrade, Better Cotton, and the Responsible Environment Enhanced Livelihoods Code of Conduct (REEL Cotton Code)—and introduce the policy landscape in which they operate.

In Section 2, we assess whether VSSs have a role to play in the region by evaluating the market potential for standard-compliant cotton in South Asia.

In Section 3, we examine whether the VSSs in the region address pest management, water conservation, and farmers’ prices and incomes a) through their production requirements and b) by operating in

geographic areas where these issues are of concern.

In Section 4, we analyze the policy landscape in South Asia, describing the status of regional cooperation and trade policy as well as national initiatives related to the promotion of sustainable cotton production.

Our recommendations address synergies between public policies and VSSs for coordinated action in South Asia. They offer ideas for policy-makers as well as standard-setting bodies. They include ways in which VSSs could support regional and national policies and collaboration to improve pest management, water conservation, and farmers’ prices and incomes in the South Asian cotton sector. They also suggest ways governments in the region could leverage VSSs to address the sustainability of cotton production and boost intraregional cooperation and trade.

1.0 The Cotton Sector in South Asia



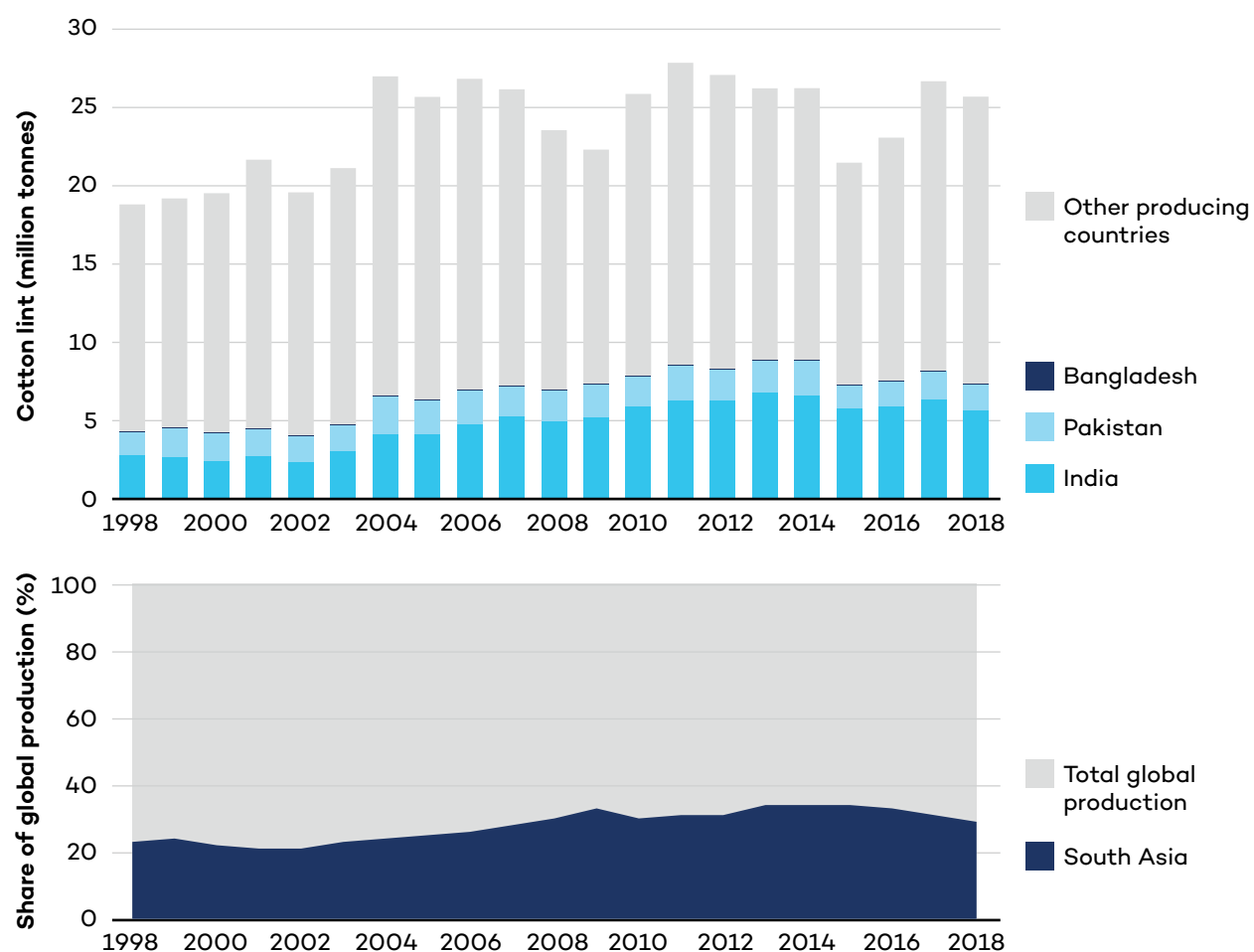
1.1 The Importance of Cotton in South Asia

Cotton is intricately woven into the historical fabric of South Asia. The fibres and textiles produced in the region played an integral role in India’s freedom movement from Great Britain that eventually led to the establishment of India, Pakistan, and Bangladesh—countries that remain essential to the global cotton and textile sectors to this day. India and Pakistan have become

two of the largest cotton lint producers and exporters in the world; this supports their domestic textile sectors. Bangladesh, which also produces raw cotton, and Sri Lanka have important textile-processing sectors, providing them with significant export earnings. As shown in Figure 1, South Asia contributed about 30% to total global cotton lint production annually from 2008 to 2018.

The cotton and textile sectors have contributed tremendous economic growth and employment to the region. In India, the

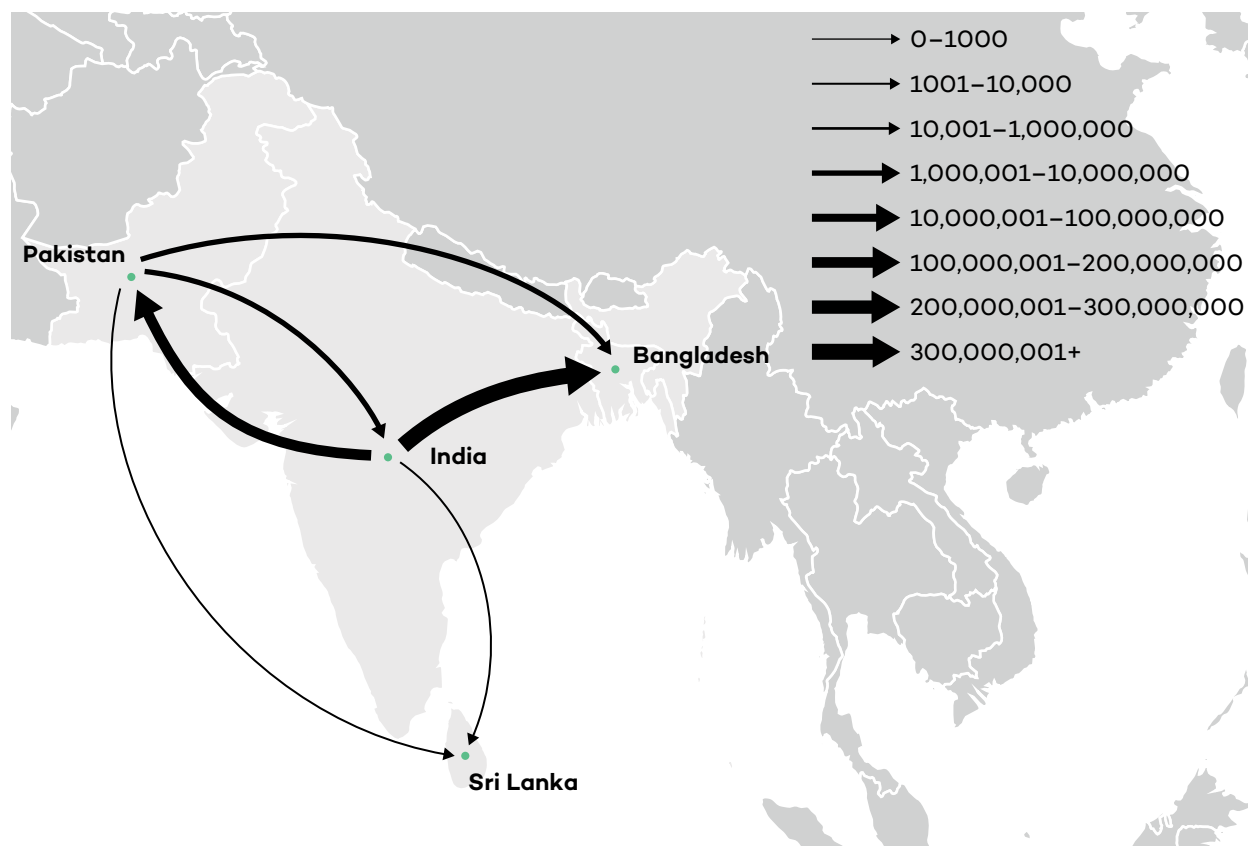
Figure 1. South Asia’s contribution to global cotton lint production



Note: Bangladesh’s production is so minimal that it is imperceptible in the graph.

Sources: Cotton lint data was obtained from the International Cotton Advisory Committee, 2022; VSS-compliant cotton lint data was obtained from Meier et al., 2020.

Figure 2. Regional trade flows of cotton lint from 2016 to 2020, average trade volumes in kilograms



Source: FAO, 2023.

textile sector accounts for 2% of GDP and 15% of export earnings (Sood, 2021). Six million farmers cultivate cotton, and the textile sector provides direct employment for more than 45 million people and indirect employment for another 60 million people (Sood, 2021). In Pakistan, 1.5 million farmers grow cotton primarily on less than 5 ha of land (Rehman, 2021). The textile sector is the largest industry in Pakistan, employing 10 million people and accounting for 8% of the GDP and 60% of foreign exchange earnings (Rehman, 2021). Although Bangladesh does produce some cotton lint, readymade garments are the key export for the country, representing 82%

to 85% of its total export value (Hossain, 2021). Sri Lanka's textile sector accounts for around 46% of total exports in 2022 (Sri Lanka Expert Development Board, 2022) and provides 33% of the manufacturing employment in the economy (International Trade Administration, 2022).

Cotton is important to the region not only in terms of global exports but also in terms of intraregional trade. Much of the cotton produced in South Asia feeds the domestic and regional textile and readymade garment industries. While India is an important cotton lint exporter, the 1,366 textile mills in the country also use a lot of the cotton lint the nation produces. Pakistan's textile sector

Bangladesh, Pakistan, and India are expected to have the highest cotton mill consumption, alongside China and Vietnam (Organisation for Economic Co-operation and Development & Food and Agriculture Organization of the United Nations [FAO], 2021).

South Asia is one of the least economically integrated regions in the world (World Bank, 2022a): just 5.6% of its global trade in 2017 was intraregional trade, compared to 50% in East Asia and the Pacific and 22% in sub-Saharan Africa (Sinha & Sareen, 2020). The cost of trading in the region is exceptionally high due to protectionist policies, para-tariffs, high logistics costs, poor infrastructure, high informal trade, and low trust and political will (Sinha & Sareen, 2020). Regional integration allows countries to improve market efficiency, share the costs of public goods and infrastructure projects, and facilitate the flow of trade, capital, people, and ideas (World Bank, 2022b). In this context, the emergence of regional value chains for cotton textiles and clothing provides a basis for increased collaboration and intraregional trade among South Asian countries.

1.2 Three Major Challenges Related to Cotton in South Asia

Despite its importance in the region, cotton cultivation in South Asia has led to significant environmental degradation and persistent social challenges that undermine the long-term sustainability of the sector. This report focuses on three major challenges in the South Asian cotton textile sector at the level of cotton production: pest-control management, water conservation, and farmers' prices and incomes.

1.2.1 Pest-Control Management

Considerable amounts of synthetic pesticides are used in cotton production in South Asia. India's cotton sector consumes nearly 45% of all pesticides used in the country (Ward & Mishra, 2019). These pesticides can be hazardous to human health and biodiversity. The introduction of genetically modified (GM) cotton—varieties engineered to have one of two genetic traits, herbicide resistance or bollworm resistance—was largely motivated by a desire to counter the American bollworm's damage to cotton plants. Initially, this resulted in lower amounts of pesticides used to control outbreaks, but the use of GM varieties has since led to an emergence of various sucking pests, which has caused increased use of pesticides to levels similar to those used before the introduction of GM cotton in South Asia. For example, the introduction of Bt Cotton in India led to a drop in pesticide use from 1 kg/ha to 0.5 kg/ha from 2000 to 2006, which then rose back to 0.9 kg/ha by 2013 to control sucking pests (Karanthi, 2014, as cited in Ferrigno et al., 2017).

As importantly, hazardous chemicals are still being used. India and Pakistan continue to approve chemicals classified by the World Health Organization (WHO) as extremely or highly hazardous pesticides for use on cotton, while carbofurans, which have an acute or chronic effect on the human nervous system, are widely used in Bangladesh (Ferrigno et al., 2017; Hossain, 2018; Khan et al., 2011).

1.2.2 Water Conservation

Water resources are under extreme pressure in South Asia due to growing populations and economies. This pressure is likely to intensify as climate change continues to affect regional

temperatures and precipitation patterns. The availability of water is very important to the South Asian cotton and textile sectors, as most cotton grown in Pakistan and northern India is irrigated and the textile sector requires water for fibre processing. Water consumption was identified as the greatest external cost (35%) associated with cotton cultivation in India due to excessive irrigation (an average of 1,800 m³ of water is used per ha of cotton) and domestic water scarcity (India experiences water scarcity for 8–10 months a year) (Grosscurt et al., 2016). Furthermore, India's cotton cultivation water footprint is the highest in the world, with an estimated 8,663 L/kg of cotton seed and 20,217 L/kg of lint cotton, which is much higher than the global average of 3,544 L/kg and 8,506 L/kg, respectively (Ward & Mishra, 2019). Water conservation is also an issue in Pakistan, where water use efficiency is very low compared to the rest of the world (Sahito et al., 2015). Most farmers in Pakistan use flood irrigation and dikes, which leads to over-irrigation (Zulfiqar & Thapa, 2021). Water is also essential for the apparel industry in Sri Lanka and Bangladesh, with wet processing being among the most water-consuming industries (Hussain & Wahab, 2018). On average, more than 2,700 L of water is used to produce one cotton T-shirt (Drew & Yehounme, 2017).

1.2.3 Farmers' Prices and Incomes

Providing South Asian cotton farmers with pricing certainty gives them some assurances associated with potential returns for their harvest. Indian cotton farmers have benefited from government minimum support prices for many years, and Pakistan has started

implementing the same (Singh, 2019). Nevertheless, cotton prices can be improved in many ways, including by enhancing quality and yields. Cotton cultivation remains highly labour intensive in South Asia: 1 ha of cotton cultivated requires 190–225 days of labour per year in India (Singh, 2019). Almost one third of total cotton production costs in India is attributed to labour (Singh, 2019). Labour is often provided by the poorest landless segments of society (Singh, 2019), and workers are often paid less than minimum and living wages. Hired and family workers supporting conventional as well as VSS-compliant cotton cultivation in India are often underpaid, with family workers earning EUR 1,000 a year on conventional farms versus EUR 1,560 a year on VSS-compliant farms (Grosscurt et al., 2016).

1.3 VSSs Operating in the Cotton Textile Sector in South Asia

VSSs have the potential to help tackle sustainability concerns in the South Asian cotton textile sector. VSSs are “standards specifying requirements that producers, traders, manufacturers, retailers, or service providers may be asked to meet, relating to a wide range of sustainability metrics, including respect for basic human rights, worker health and safety, the environmental impacts of production, community relations, land use planning, and others” (United Nations Forum on Sustainability Standards, 2013).

The main VSSs operating in the global cotton sector are Better Cotton, Cotton made in Africa, Organic, and Fairtrade, as well as the REEL Cotton Code. Four main international VSS systems operate in the cotton sector in

the South Asian region with varying levels of uptake: Organic, Fairtrade, Better Cotton, and the REEL Cotton Code. These VSSs include criteria related to pest management, water conservation, and prices and incomes, and, as such, could lead to improvements on these three issues of concern. VSSs operate at the intersection between trade regimes and production practices and can therefore bring together producers, policy-makers, and private actors to support work toward sustainability goals at a regional level.

The presence of VSSs in the South Asian cotton sector can be traced back to organically grown Indian cotton in the early 1990s. Since then, India has become the largest Organic cotton producer in the world, with around 75% of all land dedicated to growing Organic cotton globally (Willer et al., 2021). The Organic standard's lack of focus on addressing social issues in the cotton sector, such as forced and child labour, motivated the introduction of the Fairtrade standard in the Indian cotton sector in 2004. About 73% of the world's Fairtrade cotton producers also held Organic certification in 2015 (Ward & Mishra, 2019). The Fairtrade standard provides minimum price guarantees and requires price premiums to be invested in farming cooperatives and communities. Along with Organic cotton, India has become the top global purveyor of Fairtrade cotton. Small amounts of Organic and Fairtrade cotton have been produced in Pakistan over the last 2 decades, but the focus has yet to turn toward the implementation of the Organic or Fairtrade standards among Bangladeshi and Sri Lankan cotton farmers (Daya, 2021; Mancombu, 2021).

The rapid uptake of GM cotton varieties in India and Pakistan greatly stifled the expansion of the Organic and Fairtrade standards, as they prohibit the use of modified varieties. The dominance of Bt Cotton in the Indian and Pakistani cotton sectors, which accounts for some 95% of cotton sown in both countries, has greatly facilitated the propagation of the Better Cotton standard, which allows cotton farmers to use GM varieties (FAS Islamabad, 2019; Singh, 2019). The Better Cotton standard was first implemented in India and Pakistan around 2010¹ and expanded rapidly due to the Better Cotton Fast Track Program. For instance, this program invested EUR 2.6 million from 2010 to 2015 in India, which led to a 14-fold increase in Better Cotton-verified farmers and a 30-fold increase in tonnes of Better Cotton lint (Ward & Mishra, 2019). Today 1.46 million farmers in South Asia produce almost 2 Mt of Better Cotton-verified cotton lint (Better Cotton, 2021b, 2021a). The Better Cotton program has yet to expand into Bangladesh and Sri Lanka; possible reasons for the delay include the prioritization of food security in Bangladesh and organic agriculture in Sri Lanka. Cotton production is also very low in Sri Lanka. In both countries, the demand for cotton is significant, so there remains potential for Better Cotton expansion.

The REEL Cotton Code, jointly established by CottonConnect and FLOCERT in 2010, is more flexible than a standard as it can be tailored to address specific sustainability issues—such as enhancing the role of women in the cotton industry, establishing farmer business schools, or implementing health and

¹ Originally called the Better Cotton Initiative (BCI), the organization rebranded to simply Better Cotton in 2021.

safety measures in cotton ginning (Ward & Mishra, 2019). The REEL program is being implemented in India and Pakistan, where it offers training to cotton farmers and supports women working in the cotton sector.

These four VSSs do not operate in isolation and are not the only tools that target cotton with the aim of addressing the three above-mentioned challenges at the production stage. VSSs operate in a wider policy context that includes regional cooperation efforts, trade agreements, and national legislation, all of which can also shape value chain operations and how cotton is grown. They are increasingly being referenced and integrated into public policy measures to build synergies and achieve common development goals. As South Asian countries, individually and as a region, aim to advance the Sustainable Development Goals, VSSs can play a role, particularly with regard to Goal 12 on responsible production and consumption (Bissinger et al., 2020; Kosolapova et al., 2023).

1.4 Regional Cooperation, Trade Agreements, and Policies in the Sector

While South Asia is considered one of the least integrated regions in the world, some initiatives aim for greater integration. These include the establishment of regional organizations such as the South Asian Association for Regional Cooperation

(SAARC). Integration in South Asia through SAARC has resulted in shared goals and areas of cooperation that include agriculture, environment, and trade.

Regional integration efforts have also resulted in the implementation of free trade agreements (FTAs), such as the Agreement on the South Asian Free Trade Area (SAFTA). In parallel, countries in the region have also signed bilateral trade agreements among themselves.² However, intraregional trade remains low, and there is still room for promoting further trade among these countries while also addressing common environmental and social concerns.

Governments are also taking on national initiatives that highlight their interest in VSSs and the growing overlap between private and public efforts to improve the environmental performance of cotton operations and the growth of VSS-compliant production. We see this in government promotion of VSSs in India and Pakistan, for instance, through the implementation of Better Cotton projects and legislation such as India's Agriculture Export Policy, which includes the promotion of organic exports and the National Programme for Organic Production.

In this report, we focus on VSSs and explore ways that governments in the region can maximize the impact of voluntary standards to address the identified issues of concern in the cotton sector and expand VSS-compliant production through trade.

² India has signed the most FTAs (15) and recently engaged in new negotiations, including with the European Union. Bangladesh has four, Sri Lanka six, and Pakistan nine. <https://aric.adb.org/database/fta>

2.0 VSS Cotton Production and Market Potential in South Asia



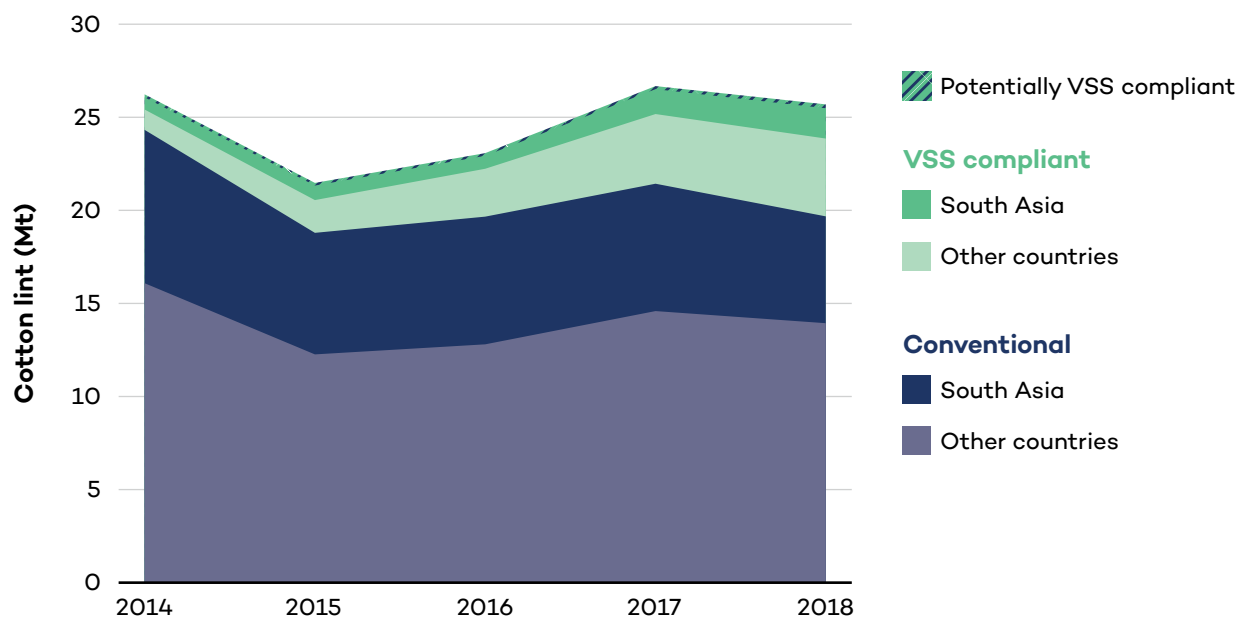
2.1 VSS Production Trends

VSS-compliant cotton accounted for about 23% of total global cotton production in 2018 (see Figure 4) (Meier et al., 2020) and almost 25% in 2019 (Meier et al., 2021). Most VSS-compliant cotton is produced under the Better Cotton standard (5.2 Mt), while cotton produced under the Organic (0.18 Mt) and Fairtrade (0.05 Mt) standards as well as the REEL Cotton Code (0.02 Mt) represent much smaller volumes (Granger Iovacchini et al., 2020; Meier et al., 2020). South Asia accounted for almost 30% of all conventional and VSS-compliant global cotton production in 2018 (see Figure 4). Cotton farmers are less likely to comply

with more than one VSS due, in part, to the rapid proliferation of GM cotton in the region. The exception to this rule applies to the Organic and Fairtrade standards, which are complementary, as neither allows GM production. Around 65% of all Fairtrade-certified cotton was also Organic-certified in 2018 (Granger Iovacchini et al., 2020).

South Asia produced 1.6 Mt of VSS-compliant cotton in 2018, representing 22% of total regional cotton production (see Figure 5). All South Asian VSS-compliant cotton production comes from India and Pakistan, which represent 13% and 54% of their respective domestic production. In 2018, most VSS-compliant cotton was grown

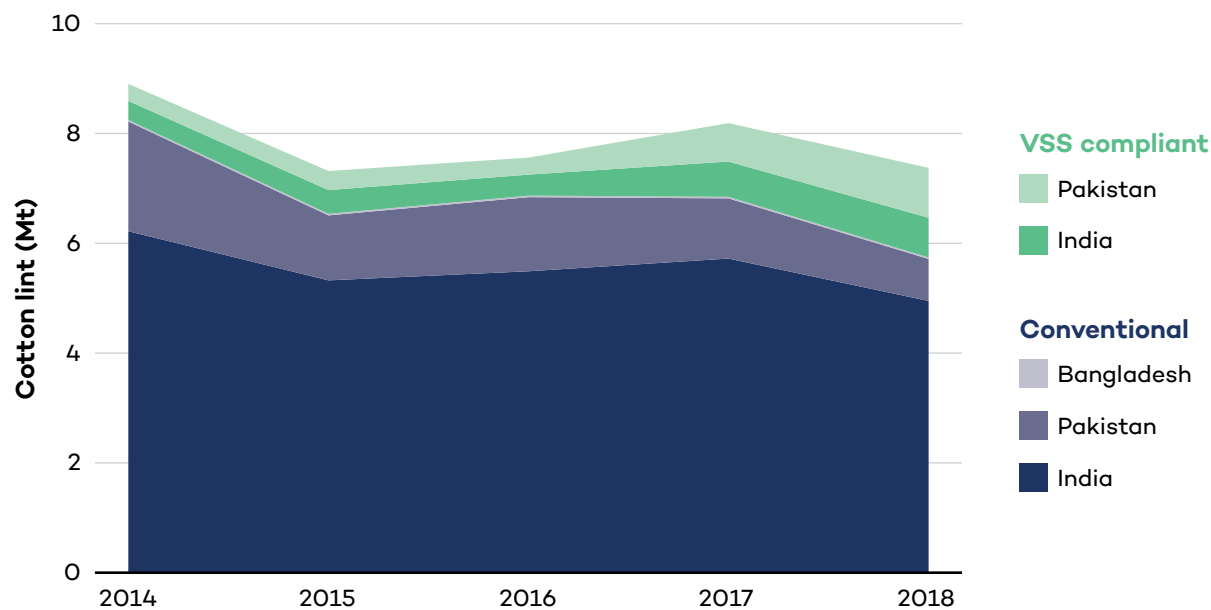
Figure 4. Global and South Asian VSS-compliant cotton lint production in tonnes



Note: The figure does not include potentially VSS-compliant cotton for South Asia as there is very little multiple certification in cotton. Farmers who are VSS compliant are mostly certified by either Better Cotton or Organic. There is some multiple certification between Organic and Fairtrade in India, but it represents very small volumes.

Sources: Cotton lint data was obtained from the International Cotton Advisory Committee, 2022; VSS-compliant cotton lint data was obtained from Meier et al., 2020.

Figure 5. South Asian conventional and VSS-compliant cotton lint production



Sources: Cotton lint data was obtained from the International Cotton Advisory Committee, 2022; VSS-compliant cotton lint data was obtained from Meier et al., 2020.

Table 1. South Asia cotton lint production in 2018 (in tonnes)

Country	Total cotton lint	Better Cotton	Organic	Fairtrade ^a	REEL ^b
Bangladesh	34,567	0	0	0	0
India	5,661,000	652,000 (12%)	85,530 (2%)	43,154 (0.8%)	14,885 (0.3%)
Pakistan	1,670,000	906,000 (54%)	0	77 ^b (0.005%)	1,775 (0.1%)
Sri Lanka	0	0	0	0	0
South Asia	7,365,567	1,558,000 (21%)	85,530 (2%)	43,231 (0.6%)	16,660 (0.2%)

^aFairtrade production data for Pakistan were obtained from Granger Iovacchini et al., 2020.

^bREEL production figures were obtained from Granger Iovacchini et al., 2020.

Source: All other source data from Meier et al., 2020.

under the Better Cotton standard (1.56 Mt), followed by Organic (85,530 tonnes), Fairtrade standards (43,231 tonnes), and the REEL Cotton Code (16,660 tonnes) (Granger Iovacchini et al., 2020; Meier et al., 2020) (see Table 1). The trend toward VSS-compliant cotton lint production has grown over time.

2.2 Market Potential for VSS Cotton in the Region

2.2.1 Better Cotton

The Better Cotton standard is well positioned to continue expanding in South Asia, as it can be applied to GM and non-GM cotton-farming operations. The dominance of GM cotton in India and Pakistan and newly introduced GM cotton in Bangladesh mean that most South Asian cotton production can only comply with VSSs that allow modified varieties to be used (Mancombu, 2021; Singh, 2019; Subramani, 2021). Consequently, Better Cotton has the potential to further expand cotton lint by 5.8 Mt based on 2018 South Asian production figures.³ The most recent production figures published on Better Cotton's website indicate that around 1 million Indian cotton farmers produced a little over 1 Mt of Better Cotton-certified cotton, while approximately 460,000 Pakistani cotton farmers produced almost 0.95 Mt (Better Cotton, 2021b, 2021a). The Better Cotton standard does not require major changes to cotton production approaches, as it focuses on improving yields and quality, as well as implementing cost-

saving measures such as integrated pest management (IPM), using organic fertilizers and water-conservation techniques (Singh, 2019). Better Cotton farmers in South Asia reported better yields (an additional 11% in India and Pakistan) and profitability (an additional 22% and 38% in India and Pakistan, respectively) compared to conventional cotton farmers in the region (BCI, 2019b). This bodes well for expanding the Better Cotton standard in South Asia, as inferior cotton fibre yields and quality have persisted (Singh, 2019). Furthermore, the level of awareness associated with child labour was mostly advanced among South Asian Better Cotton farmers, meaning the majority could distinguish between acceptable support provided by children on the farm and hazardous child labour (BCI, 2019b).

While the Better Cotton standard has great potential for expanding further into the South Asian cotton sector, it is oriented toward meeting mass market demands, and its cotton production standard, assurance system, and chain-of-custody requirements are shaped to achieve this objective. The Better Cotton program relies on improving cotton profitability by enhancing yields and production cost-saving measures as opposed to offering farmers minimum price guarantees and/or price premiums. This could be problematic for South Asian cotton farmers seeking to access more lucrative markets. The Better Cotton standard is based on a continuous improvement model where farmers are encouraged to join the program with the promise that their cotton operations will become more sustainable over time.

³ Total South Asian cotton lint production in 2018: 7,365,567 tonnes; Better Cotton lint production in 2018: 1,558,000 tonnes = 5,807,567 tonnes of additional potential Better Cotton lint production (see Table 1 for figure sources).

The Better Cotton approach to assurance is based on self-reporting, which is verified by third parties on a sample of Better Cotton farmers. This less-costly approach has made the standard more accessible compared to other VSSs, such as Organic and Fairtrade, which require a more stringent level of standard compliance via third-party certification (Singh, 2019). The Better Cotton chain-of-custody model consists of product segregation to the gin and mass balance beyond the gin (Better Cotton, 2022). A Better Cotton Claim Unit is issued and moved up the supply chain for every kilogram of ginned Better Cotton lint (Better Cotton, 2022). These units are tracked via the Better Cotton Platform, which follows how Better Cotton lint is bought and sold as it is transformed into final products. In this way, supply chain stakeholders can inform their customers how much Better Cotton-certified cotton they sourced while maintaining their business models.

2.2.2 Organic

Expanding the Organic and Fairtrade standards in the South Asian cotton sector is an entirely different dynamic than for Better Cotton, as both Organic and Fairtrade prohibit the use of GM varieties. This means that if GM cotton continues to dominate the Indian and Pakistani cotton sectors, Organic and/or Fairtrade cotton production could only expand by an additional 0.3 tonnes of cotton lint based on 2018 production figures.⁴ Efforts are underway to expand global Organic cotton production as some

textile companies aim to maintain sufficient supplies to meet the steady and growing demand for Organic cotton-based products (Ward & Mishra, 2019). To this end, the Organic Cotton Accelerator started operating in India in 2016 to expand its Organic cotton production (Dorsey, 2016; Ward & Mishra, 2019). The accelerator now works with more than 20,000 Indian Organic cotton farmers, linking them to companies seeking to secure their Organic cotton supplies (Cropin, 2021). A major challenge they aim to address is access to Organic cotton seed supply, which remains difficult for farmers. Small amounts of Organic and Fairtrade cotton were being grown in Pakistan from 2002 to 2009, reaching 289 tonnes, and efforts are ongoing to resurrect this production with 15,000 tonnes of certified Organic cotton lint planned for 2021 (Mowbray, 2019).

Despite having compatible government policies and significant demand, Organic cotton has yet to find a foothold in Bangladesh, as cotton farmers are primarily smallholders with limited resources to pay certification costs (Daya, 2021; Tabib, 2016). The Bangladeshi government has tended to focus on food security due to the country's limited cultivable land, emphasizing food crops over cotton (Tabib, 2016). Organically grown cotton can also result in lower yields, as the standard prohibits synthetic agricultural inputs (Seufert, 2019). Challenges reported by Indian Organic cotton farmers include sourcing non-GM cotton seeds, establishing adequate internal control systems, meeting certification costs,

⁴ Percent (5%) of Indian and Pakistani cotton lint production that was non-GM in 2018 (366,550 tonnes) plus total Bangladeshi cotton lint production (34,567 tonnes) minus Organic cotton lint production in 2018 (85,530 tonnes) minus percent of cotton lint production in 2018 certified as Fairtrade only (35% of Fairtrade cotton production) (15,130 tonnes) equals 300,456 tonnes of additional potential Organic/Fairtrade cotton lint production.

and no having assured premiums (Singh, 2019). Despite these potential disadvantages, Organic cotton farming provides flexibility, as farmers can easily switch to growing other Organic-certified crops, which is not the case for farmers compliant with VSSs focused on cotton, such as Better Cotton or the REEL Cotton Code.

To counter Organic farming certification costs, participatory guarantee schemes (PGSs) have emerged in the South Asian cotton sector as a more affordable way for farmers' organic farming to be recognized. PGSs provide an alternative to costly third-party certification and focus on offering organic products to local markets (Willer & Lernoud, 2016). With the exception of India, which has a PGS platform and various organic farming support programs in place, PGSs are not widespread in the South Asian cotton sector (Agriculture Post, 2021). As of 2019, there were 25 PGS organizations in India, two each in Bangladesh and Sri Lanka, and none in Pakistan (International Federation of Organic Agricultural Movements [IFOAM] & FAO, 2019). Although some PGS organizations in India, such as the Deccan Development Society in Andhra Pradesh, are involved in enabling Organic cotton cultivation, for the most part, they focus on growing food crops for local markets as opposed to growing cash crops for export (IFOAM & FAO, 2019).

Organic cotton farmers also benefit from textile and chain-of-custody standards that support maintaining the integrity of Organic cotton fibres as they are converted into final products. This is of great importance, as Organic cotton is susceptible to being contaminated with GM cotton.⁵ Manufacturers and retailers are also concerned with maintaining this integrity to ensure the final product sold to consumers complies with Organic requirements. The Global Organic Textile Standard (GOTS) is a processing standard working from ginning to the end product, in which a product must contain at least 70% Organic cotton to be considered compliant (Ward & Mishra, 2019).⁶ South Asia has the largest number of GOTS-certified facilities in the world, reaching 5,095 facilities by 2020 (Textile Exchange, 2021).⁷ Bangladesh ranks second in terms of the total number of GOTS-certified facilities (GOTS, 2020a), while Sri Lanka had the greatest growth rate in GOTS certification in 2020, at 103% (GOTS, 2020a). GOTS has led to major social and environmental improvements in South Asian textile facilities, such as meeting minimum health and safety standards and requiring wastewater treatment for any wet textile-processing facilities (Ward & Mishra, 2019). The Organic Content Standard (OCS) is a chain-of-custody standard that focuses on non-food products containing organic material to ensure that claims associated with their organic content are accurate; products must have a minimum of 95% of organic

⁵ As much as 33% of Organic cotton sourced by large global retailers tested positive for GM cotton in 2010 (Singh, 2019).

⁶ GOTS specifies that products must contain at least 95% Organic cotton to be labelled "Organic" or at least 70% Organic cotton to be labelled "made with Organic" (Ward & Mishra, 2019).

⁷ According to the GOTS 2020 annual report, India, Bangladesh, Pakistan, and Sri Lanka were among the top 10 countries with certified facilities with 2,994; 1,584; 391; and 126 facilities respectively.

material to be labelled OCS 100 and at least 5% of organic material to be labelled OCS Blended (Ward & Mishra, 2019). The OCS, managed by the Textile Exchange, specifies that each stage of the supply chain must be certified via on-site audits and document reviews for companies to receive scope certificates (Textile Exchange, n.d.). Certification bodies issue transaction certificates to buyers and sellers as Organic cotton moves up the supply chain. For a final product to receive an OCS transaction certificate, all previous transaction certificates along the supply chain must have been issued (Textile Exchange, n.d.). As of 2020, there were 2,947 OCS-certified facilities in South Asia (Textile Exchange, 2021).⁸

2.2.3 Fairtrade

Along with Organic cotton, there are signs that Fairtrade cotton could expand in South Asia, though limitations remain. Due to their complementarity, Organic and Fairtrade cotton have, for the most part, gone hand in hand in many parts of the world. Like the Organic standard, Fairtrade prohibits the use of GM varieties (Fairtrade International, 2014, 2019). Fairtrade cotton is well established in India, with about 40% of the Fairtrade cotton value chain located in the country (Ward & Mishra, 2019). There were around 25,000 Indian Fairtrade-certified cotton farmers in 2018 (Ward & Mishra, 2019). On the other hand, Fairtrade cotton production standards have only just begun penetrating other South Asian cotton-producing countries. The first Fairtrade

and Organic cotton-farming cooperative was established in 2015 in Pakistan, which produced 77 tonnes of Fairtrade cotton in 2020 (Ethletic, 2016; Granger Iovacchini et al., 2020). Despite significant domestic demand for textile and apparel production, efforts to promote Organic and Fairtrade cotton cultivation in Bangladesh have not been successful. The proliferation of GM cotton, which has come to dominate the Indian and Pakistani cotton sectors, limits the expansion of Fairtrade cotton in South Asia.

Fairtrade's focus on addressing social sustainability issues has motivated its adoption among South Asian cotton farmers. The Fairtrade minimum price guarantee and premiums offer farmers and wage workers fairer returns for their efforts. However, Fairtrade's minimum price guarantee has limited influence in the South Asian cotton sector, as government minimum prices exceed the Fairtrade minimum in both India and Pakistan: the former has long offered a minimum support price to its cotton farmers, and the latter recently started offering similar support (Ahmed, 2021; Singh, 2019).⁹ Nevertheless, Fairtrade's premiums—which must be invested back into cotton-farming cooperatives and communities—have been beneficial. In 2019, for instance, Indian Fairtrade cotton farmers generated a little over EUR 1.3 million in premiums, which were reinvested in farming cooperatives and communities. Furthermore, a 2014 impact study found that Fairtrade certification was economically advantageous for 60% of Indian cotton farmers (Ward & Mishra, 2019).

⁸ The Textile Exchange's *Organic Cotton Market Report 2021* says that Bangladesh, India, Pakistan, and Sri Lanka were in the top 10 countries, with 1,313; 1,279; 316; and 39 OCS certified facilities, respectively (Textile Exchange, 2021).

⁹ A cotton intervention price of INR 5,000 for 40 kg of cotton was set by Pakistan in 2021 (Ahmed, 2021).

Fairtrade has traceability requirements that are specific to fibre crops, including cotton. Supply chain stakeholders operating under the Fairtrade sourcing program model must report their Fairtrade cotton purchases and sales to the Fairtrade system, and spinners operating under this model must produce signed purchase contracts with ginners before the equivalent yarn is sent out for delivery (Fairtrade Foundation, 2022). Fairtrade's Fairtrace online system tracks and verifies Fairtrade cotton volume transactions along supply chains, providing a chain of custody from farmer organizations to commercial partners (Fairtrade Foundation, 2022). Companies are required to enter Fairtrade cotton transactions in the Fairtrace system. These cotton chain-of-custody and traceability requirements offer companies opportunities to label end products as produced using Fairtrade cotton.

Fairtrade International's new Textile Standard and program, introduced in 2016, aims to improve the sustainability of the textile sector from seed cotton to finished product (Ward & Mishra, 2019). The Textile Standard is based largely on Fairtrade's Hired Labour Standard and allows Fairtrade to cover the entire textile supply chain from cotton ginning to final products, such as readymade garments (Wight, 2020). It also allows Fairtrade to work toward improving the lives of textile workers and preventing catastrophic outcomes associated with disregarding worker quality of life and health and safety, such as was found to be the cause of the Rana Plaza tragedy in Bangladesh (Fashion Revolution, 2016). Purecotz

became the first sewing operation in India to become Fairtrade-certified in accordance with the Textile Standard in 2020 (Wight, 2020). The Fairtrade Textile Standard is also being applied in Bangladesh and Sri Lanka, allowing for South Asian textile value chains to work toward becoming completely Fairtrade-certified (Jayasooriya, 2021; Sri Lanka Apparel, 2021).

The Fairtrade Textile Program has focused on building capacity for the uptake of the Fairtrade Textile Standard in South Asia by interacting with relevant non-governmental organizations (NGOs), unions, and vocational schools in India and Bangladesh (Fairtrade International, 2021a; Fibre2Fashion, 2017). Fairtrade International has also made inroads in the South Asian textile sector, particularly in Sri Lanka (Sri Lanka Fairtrade, 2014). By requiring textile companies to source Fairtrade cotton and other responsible fibres, the Textile Standard may contribute to increased demand for and expansion of Fairtrade cotton in South Asia.

2.2.4 REEL Cotton Code

The REEL Cotton Code, developed by CottonConnect in partnership with FLOCERT, has great potential to expand in the South Asian cotton sector, as it applies to non-GM and GM cotton (Granger Iovacchini et al., 2020). The REEL Cotton Code has the potential to expand by 7.3 Mt of cotton lint based on 2018 South Asian production figures.¹⁰ The flexibility it provides to adopt tailor-made projects to meet corporate objectives could also draw interest from

¹⁰ Total South Asian cotton lint production in 2018 (7,365,567 tonnes) minus REEL-certified cotton lint production in 2018 (16,660 tonnes) equals 7,348,907 tonnes of additional potential for REEL-certified cotton lint production (see Table 1 for figure sources).

the private sector. The implementation of the REEL Cotton Code is preceded by 3 years of training on sustainable cotton-farming practices offered by the REEL Cotton program (Ward & Mishra, 2019). Farmers applying the REEL Cotton Code are verified first by the local partner, then by the CottonConnect Monitoring, Evaluation, and Learning team. They then undergo external verification by third-party verifier FLOCERT. REEL Cotton can be traced from farmer to retailer; the REEL program uses documentary traceability with the help of Tracebale, a real-time transaction-monitoring system, along with physical verification of the product using records and processes (i.e., farmer procurement booklet entries, procurement receipts, invoices, and bills of lading) to verify the information entered into Tracebale (CottonConnect, 2021b). The REEL Cotton Code seeks to improve the lives of cotton farmers in India and Pakistan (Granger Iovacchini et al., 2020). Implementation of the REEL program in India in 2014 and 2015 led to average improvements in yields and profitability of 22% and 58%, respectively, based on information collected across REEL projects (Ward & Mishra, 2019).

2.3 Conclusion: VSSs have market potential in South Asia

South Asia produced about 7.37 Mt of cotton, or 29% of the global total, in 2018, of which 1.66 Mt to 1.67 Mt was compliant with a VSS. The expansion potential of the Better Cotton, Organic, and Fairtrade standards, as well as the REEL Cotton Code in the South Asian cotton sector, is largely

dictated by the predominance of GM cotton in the region. Given that about 90% of total cotton production in 2018 was GM, the Better Cotton standard and the REEL Cotton Code, which allow the use of GM cotton, have greater potential to expand than the Organic and Fairtrade standards. Organic and Fairtrade are limited to certifying non-GM cotton, which represents a much smaller share of total cotton production in the region. The potential to expand cotton produced under Better Cotton and the REEL Cotton Code represents about 5.4 Mt, while the potential for Organic and Fairtrade-certified cotton is limited to 0.3 Mt.

Furthermore, the Bangladeshi agricultural sector is oriented toward supporting domestic food security as opposed to growing crops with lower productivity potential, such as Organic cotton. Nevertheless, Organic- and Fairtrade-certified cotton production may be good candidates for Sri Lanka, which supports a large textile sector and has prohibited the cultivation of GM crops on the island.

3.0 VSSs' Potential to Enable a More Sustainable South Asian Cotton Sector

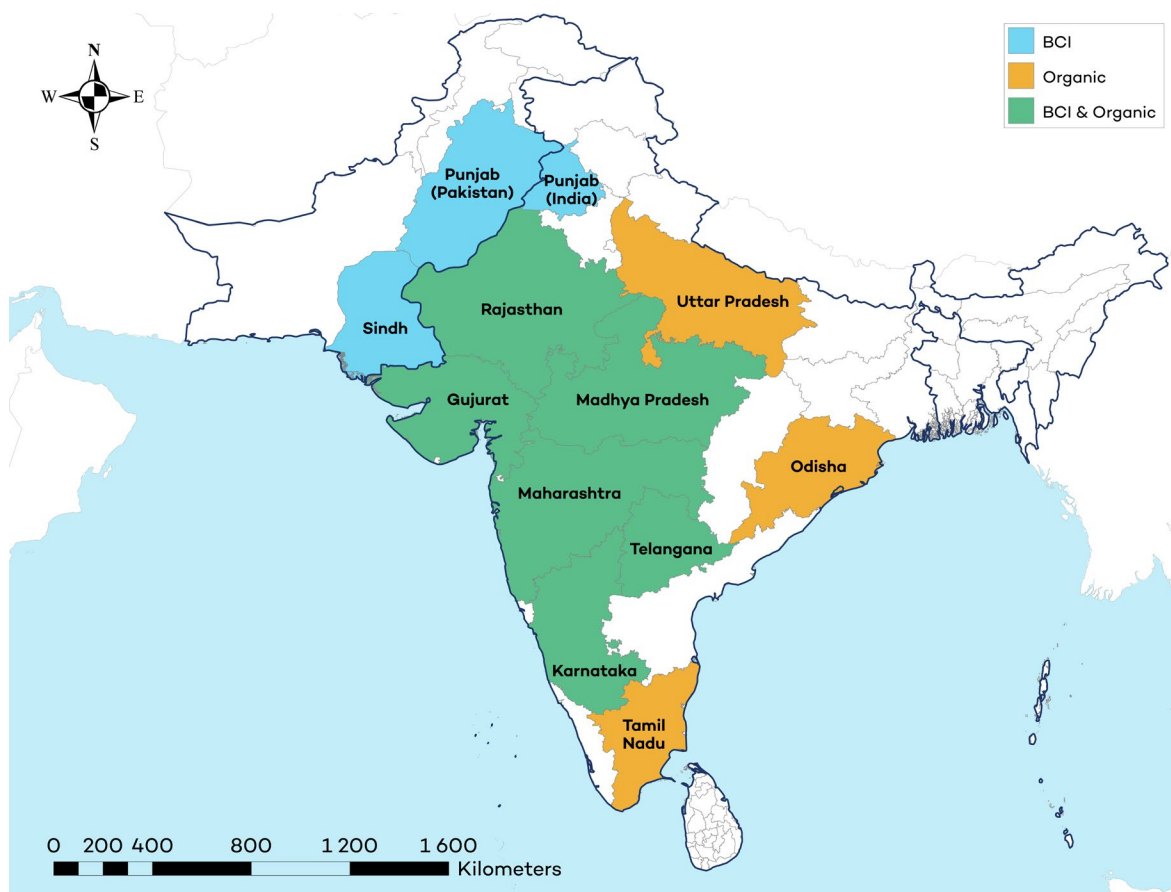


The projected growth in VSS markets discussed above indicates that the VSSs operating in the South Asian cotton sector have the potential to improve the sustainability of the sector. To better understand this potential, we

1. Analyzed the production requirements of the main VSSs in the sector to see if they address the three key issues of concern in the South Asian cotton sector: pest-control management, water consumption, and farmers' prices and incomes.

2. Conducted a spatial analysis to determine if VSSs in the South Asian cotton sector operate in areas of the region where pesticide use is high, water is being depleted, and cotton productivity is low. This involved mapping and examining three spatial datasets relative to where Better Cotton, Organic, Fairtrade, and the REEL Cotton Code are implemented to draw more informed conclusions on their potential to address pesticide use, support water conservation, and enhance productivity.

Figure 6. South Asian jurisdictions where the Better Cotton and Organic standards were implemented in 2020



Sources: Better Cotton, 2021a, 2021b; Textile Exchange, 2021.

Figure 6 shows where the Better Cotton and Organic standards were being implemented in the South Asian cotton sector in 2020. The Better Cotton standard was being implemented in the Indian states of Gujarat, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Telangana, and Karnataka, as well as the Pakistani provinces of Sindh and Punjab. According to Textile Exchange (2021), the Organic standard was implemented in the 2019/20 growing season across the following Indian states, ordered by production volumes: Odisha (38,226 tonnes), Madhya Pradesh (31,339 tonnes), Maharashtra (23,577 tonnes), Gujarat (20,714 tonnes), Rajasthan (8,588 tonnes), Tamil Nadu (877 tonnes), Telangana (497 tonnes), Karnataka (426 tonnes), and Uttar Pradesh (0.4 tonnes). In the same growing season, Pakistan produced 2,026 tonnes of Organic cotton lint and Sri Lanka cultivated Organic cotton on 2,525 ha (Research Institute of Organic Agriculture [FiBL], 2022a; Textile Exchange, 2022).

The map indicates that VSSs operate in the largest cotton-producing jurisdictions of South Asia, which in 2020 included the Indian states of Gujarat (1.513 Mt), Maharashtra (1.479 Mt), Telangana (918,000 tonnes), and Karnataka (493,000 tonnes), as well as the Pakistani provinces of Punjab (1.073 Mt) and Sindh (467,000 tonnes) (Agriculture Marketing Information Service, 2020; Cotton Corporation of India Ltd., 2020). It can be assumed that Fairtrade and REEL Cotton Code production fell in the jurisdictions identified on the map due to their smaller production volume: around 15,000 tonnes of cotton lint were

strictly Fairtrade certified, and about 16,000 tonnes were produced in accordance with the REEL Cotton Code in 2018 (Granger Iovacchini et al., 2020).

3.1 Pest-Control Management

3.1.1 Requirements Analysis

Examining the VSS production requirements associated with pest-control management reveals that they all limit synthetic pesticide use to varying degrees (see Table 2). Some VSSs prohibit their use, while others specify which ones are permissible for cotton cultivation. All VSSs operating in the South Asian cotton sector require the adoption of IPM, which typically requires monitoring pest and pest predator populations to determine when to intervene and prioritizing other pest-control measures over synthetic pesticide use. Table 2 summarizes the pest-control management requirements for the VSSs examined, which are discussed in detail in the subsequent paragraphs.

Except for the Better Cotton standard, all VSSs examined require the immediate banning of toxic pesticides as prescribed by international conventions and WHO 1a and 1b substances.¹¹ The Better Cotton standard requires the immediate banning of toxic pesticides as prescribed by international conventions and phasing out of WHO 1a and 1b substances over time. The Organic standard is the only VSS examined that prohibits the use of synthetic pesticides.

¹¹ Globally Harmonized System Category 1a substances are known human carcinogens, mutagens, or reproductive toxicants based on human evidence, while Category 1b are presumed to be so based on animal studies.

Table 2. VSS requirements to limit and prevent synthetic pesticide use

VSS examined	Better Cotton		Organic	Fairtrade		REEL Cotton Code
	Small farms	Medium-sized & large farms		Small-scale producer org.	Hired labour	
Synthetic pesticide use						
International banned substances are not used.	✓	✓	✓	✓	✓	✓
WHO 1a and 1b substances are not used.	🔄	🔄	✓	✓	✓	✓
Synthetic pesticide use is recorded.	✓	✓	⊘	✓	✓	✓
Synthetic pesticide use must be reduced.	⊘	⊘	✓	⊘	⊘	✓
Synthetic pesticide use is completely prohibited.	⊘	⊘	✓	⊘	⊘	⊘
Integrated pest management						
Pest and pest predator monitoring.	🔄	✓	⊘	3	✓	✓
Other pest-control measures prioritized over synthetic pesticides.	🔄	✓	✓	3	✓	✓

To be implemented: ✓ immediately, 3 within 3 years, 🔄 over time, ⊘ not covered.

Consequently, it does not have a criterion requiring producers to record pesticide use: “Record keeping requirements or other requirements related to certification are not within the scope of this standard” (IFOAM, 2014). With the exception of the REEL Cotton Code, none of the VSSs examined have requirements for reducing synthetic pesticide use over time. All four VSSs require cotton farmers to adopt IPM measures. However, the Organic standard does not require pest and pest predator monitoring, though it does require the establishment of suitable habitats for pest predators as well as the release of natural pest enemies (IFOAM, 2014). Better Cotton requires small farms to adopt pest and pest predator monitoring and to prioritize other pest-control measures over synthetic pesticide use over time. The Fairtrade Small-Farm Producer Organization standard requires small farms to adopt these measures within 3 years.

The Better Cotton standard has one principle dedicated to crop-protection measures that requires the development of an IPM¹² program, specifies pesticide restrictions, and details safe pesticide storage, application, and disposal measures. The Better Cotton standard requires the adoption of an IPM program that must include measures to maintain healthy crops, prevent pest buildup, enhance pest predators, and manage pest resistance. Cotton farmers are prohibited from using pesticides listed by the Stockholm Convention, the Montreal Protocol, and the Rotterdam Convention. They are also required to phase out pesticides with active

ingredients known to be highly hazardous, carcinogenic, mutagenic, or reprotoxic, such as WHO 1a and 1b substances. Pesticides must be stored safely to prevent human and environmental harm. Workers applying pesticides must be trained, healthy adults who are not bearing children or nursing, and they must use personal protective equipment when applying pesticides. Spent pesticide containers cannot be reused and must be disposed of safely.

The Organic standard prohibits the use of synthetic pesticides and requires farmers to use biological, mechanical, and physical means to prevent pest damage (IFOAM, 2014). The standard requires, first and foremost, the selection of plant varieties that are resistant to pests and diseases. Substances specified by the standard—such as neem, coffee grounds, and copper salts—can be used when biological, mechanical, and physical measures are insufficient to stave off pests. Exceptions may be granted under extreme circumstances. None of the substances used can be carcinogenic, teratogenic, mutagenic, or neurotoxic (IFOAM, 2014). Prohibiting pesticides in cotton farming is an important opportunity for South Asia, where the amount of pesticides applied per area of cotton farmed is one of the highest in the world.¹³

The Fairtrade Small-Scale Producer Group and Hired Labour standards both require the adoption of IPM by either providing training or receiving guidance from IPM experts (Fairtrade International, 2014, 2019). The application of pesticides must be

¹² IPM adopts a more holistic way of preventing pest damage.

¹³ “In some major developing world cotton producing countries, such as India and Pakistan, cotton production accounts for over 50% of all pesticides used in agriculture—despite covering just 5% and 15% of primary cropland respectively” (Environmental Justice Foundation & Pesticide Action Network UK, 2007, p. 12).

minimized based on sound pest and disease knowledge. Training must be provided on the safe handling, use, and storage of pesticides, and personal protective equipment must be used. Buffer zones must be in place between where pesticides are sprayed and human activity areas. Proper facilities and measures must be adopted for storing and disposing of pesticides to prevent human health and environmental impacts. Fairtrade prohibits the use of pesticides that are on its red list and permits the limited use of pesticides on its orange list, though they must be phased out over time (Fairtrade International, 2014, 2019). Fairtrade farmers are also required to minimize the use of herbicides via weed prevention and control measures.

The REEL Cotton Code requires cotton farmers to adopt IPM, in which pesticides and herbicides must be used only as a last resort (CottonConnect, 2021a). The focus is on crop health and monitoring pest and pest predator populations. Using border and trap crops, establishing pest predator habitats, and using pheromones and organic repellents, such as neem extracts, are some of the measures promoted by the code (CottonConnect, 2021a). Farmers adhering to the REEL Cotton Code must reduce pesticide consumption over time and record this. Pesticides with WHO 1a and 1b substances and those banned by the Stockholm Convention, the Montreal Protocol, and the Rotterdam Convention cannot be used (CottonConnect, 2021a). Pesticides that are used must be registered in the producing country and suitable for combating the targeted pests. All

pesticides must be stored, handled, and disposed of safely.

Based on this review of VSS requirements, expanding VSS-compliant cotton in South Asia should result in the immediate elimination of the most hazardous and detrimental pesticides as well as a general reduction in pesticide use over time compared to conventional cotton. The external costs associated with soil and water pollution, driven in part by pesticides used in the Indian cotton sector, are significant (Grosscurt et al., 2016).¹⁴ For instance, the water pollution cost of Indian conventional cotton is INR 39/kg (USD 0.47/kg) of seed cotton compared to INR 23/kg (USD 0.28/kg) of Indian Fairtrade seed cotton (Fairtrade Foundation, 2020). The Better Cotton Farmer Results Report published in 2019 finds that Indian and Pakistani Better Cotton farmers have reduced their pesticide consumption by 10% and 18%, respectively, compared to their counterparts (BCI, 2019b). Organically grown cotton virtually eliminates synthetic pesticide consumption, which is almost 1 kg/ha of cotton cultivated in India (Ferrigno et al., 2017). Fairtrade cotton farming was found to have 20% of the environmental cost of conventional cotton, in part due to the replacement of synthetic pesticides with organic-based substances, such as leaf extracts, to ward off pests (Fairtrade Foundation, 2020). Ward and Mishra (2019) report that the REEL program implemented in India led to an average reduction of 52% in pesticide consumption based on REEL projects conducted from 2014 to 2015. These findings substantiate the potential for VSSs

¹⁴ Grosscurt et al. (2016) estimate that the external costs attributed to the water and soil pollution caused by cotton cultivation in India was approximately EUR 0.84 per kg of seed cotton in the 2014/15 cotton production season or almost twice the farm gate price of EUR 0.55 per kg of seed cotton.

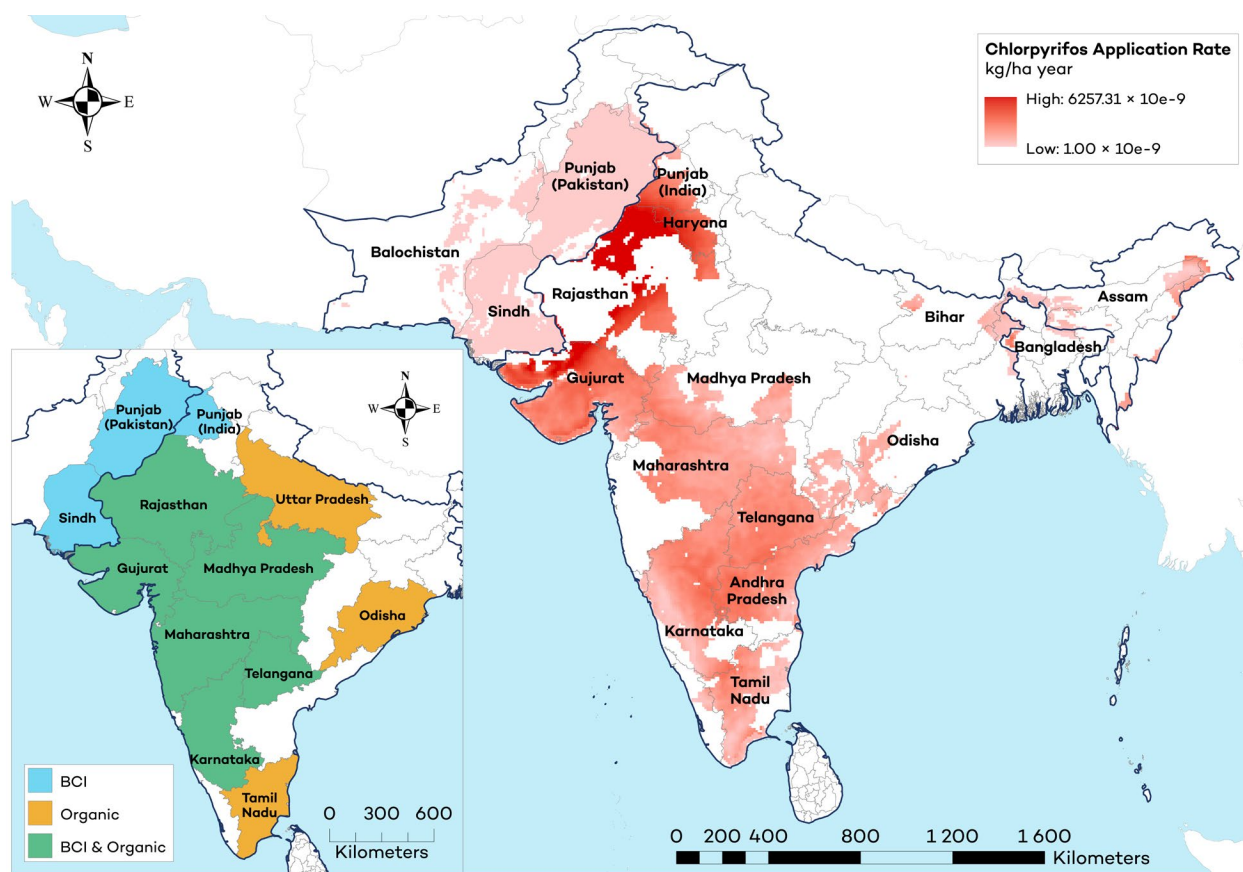
to reduce synthetic pesticide use in the South Asian cotton sector.

3.1.2 Spatial Analysis

To examine if VSSs in the South Asian cotton sector are being implemented in areas where they have the potential to lower pesticide use, the application rates of three pesticides—chlorpyrifos, dicofen, and glyphosate—are examined. Chlorpyrifos and dicofen are active ingredients in acaricides and insecticides and are listed by the WHO as moderately hazardous (Class II) and highly hazardous (Class Ib), respectively, while

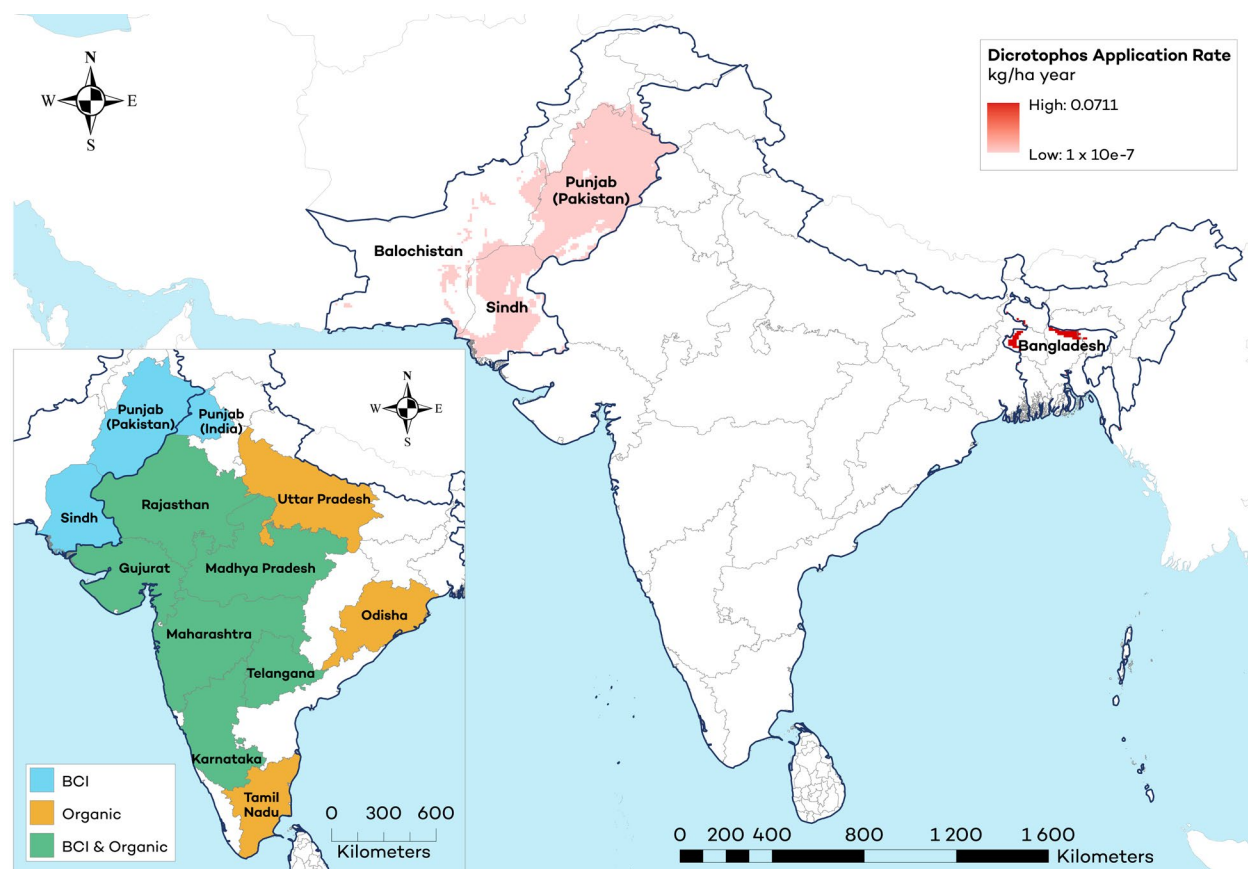
glyphosate is a commonly used herbicide for the cultivation of GM crops listed by the WHO as slightly hazardous (Class III) (Maggi et al., 2019; WHO, 2020). The chlorpyrifos, dicofen, and glyphosate application rates estimated by Maggi et al. (2019) as part of the Global Pesticide Grids (PEST-CHEMGRIDS) project provided the spatial information needed to undertake the assessment. More specifically, the spatial layers used for the analysis provided low application rate estimates in kg/ha/year for 2020 with a spatial resolution of about 100 km² (Maggi et al., 2019).

Figure 7. Application rates of chlorpyrifos in the South Asian cotton sector



Sources: Spatial information for the pesticide application rates was obtained from Maggi et al., 2019; Organic data comes from Textile Exchange, 2021; and Better Cotton data from Better Cotton, 2021a, 2021b.

Figure 8. Application rates of dicotophous in the South Asian cotton sector

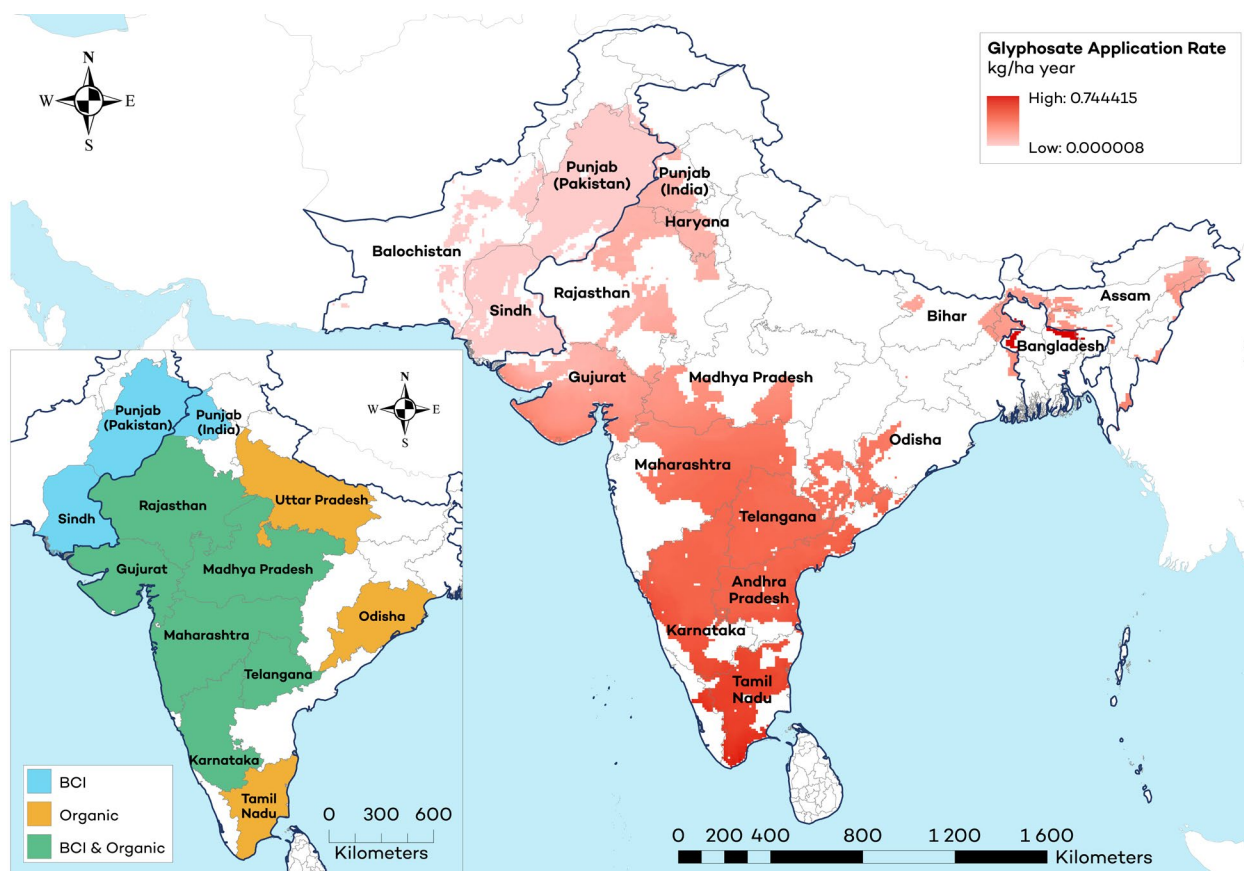


Sources: Spatial information for the pesticide application rates was obtained from Maggi et al., 2019; Organic data comes from Textile Exchange, 2021; and Better Cotton data from Better Cotton, 2021a.

As shown in Figures 6, 7, and 8, application rates in the South Asian cotton sector were estimated to range from 1×10^{-9} to $6,257 \times 10^{-9}$ kg/ha/year for chlorpyrifos, 1×10^{-7} to 0.071 kg/ha/year for dicotophous, and 8×10^{-6} to 0.744 kg/ha/year for glyphosate in 2020. Chlorpyrifos and glyphosate are more broadly used across the South Asian cotton sector, with higher concentrations of chlorpyrifos applied in northern India (2.01×10^{-6} to 6.25×10^{-6} kg/ha-year) and higher concentrations of glyphosate applied in northern Bangladesh (0.36 to 0.74 kg/ha-year) and southern India (0.18 to 0.26 kg/ha-year). Dicotophous is applied in small

concentrations in the Pakistani cotton sector (ranging from 0.1×10^{-6} to 2.5×10^{-6} kg/ha-year) and much greater concentrations in cotton-growing regions in Bangladesh (ranging from 0.07 to 0.03 kg/ha-year).

As shown in Figure 7, the presence of VSSs intersects with the higher chlorpyrifos application rates in the South Asian cotton sector, which is primarily concentrated in the Indian states of Gujarat, Rajasthan, and Haryana. Aside from these hotspots, chlorpyrifos is used broadly in the majority of the Indian cotton sector at a moderate rate of application and at lower levels in Bangladesh

Figure 9. Application rates of glyphosate in the South Asian cotton sector

Sources: Spatial information for the pesticide application rates was obtained from Maggi et al., 2019; Organic data comes from Textile Exchange, 2021; and Better Cotton data from Better Cotton, 2021a, 2021b.

and Pakistan. The growing presence of the Better Cotton and Organic standards in the South Asian cotton sector, particularly in the Indian states of Gujarat and Rajasthan, is important, as the implementation of Organic should result in the elimination of the use of chlorpyrifos while the implementation of the Better Cotton standard should lead to reducing its application via IPM measures. Expanding VSSs in the cotton sectors of the Indian states of Haryana and Andhra Pradesh represents an important opportunity to lower chlorpyrifos use in South Asia's cotton sector.

As shown in Figure 8, dicofol is still applied in the Pakistani and Bangladeshi cotton sectors despite being classified by the WHO as highly hazardous (Class Ib). Low application rates are broadly applied across the Pakistani cotton sector, while higher application rates are used in specific parts of Bangladesh within the divisions of Rajshahi and Mymensingh but also in limited parts of Rangpur, Sylhet, and Dakshin. The implementation of the Better Cotton standard in Pakistan offers promise for eliminating the use of dicofol as all Better Cotton farmers must have a plan to phase out WHO

Class Ib substances by 2024 to remain compliant (BCI, 2018). VSSs are absent from the Bangladeshi cotton sector today, but this will likely change, as the country is poised to cultivate more GM cotton to meet the growing demands of its textile sector, which is moving toward producing more socially conscious and eco-friendly clothing (Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH [GIZ], 2021; Subramani, 2021). This development would favour the expansion of the Better Cotton standard in Bangladesh, which would help with phasing out dicotophos from its cotton sector.

As shown in Figure 9, glyphosate is applied in most of South Asia's cotton sector. Its highest application rates are found in the southern Indian States of Karnataka, Andhra Pradesh, and Tamil Nadu. Besides these hotspots, high glyphosate application rates are observed in the Bangladeshi divisions of Rajshahi and Mymensingh. In contrast, cotton farmers in the northern Indian states and Pakistan apply glyphosate at lower rates. VSSs have a limited presence in the Karnataka and Tamil Nadu cotton sectors but not in Andhra Pradesh. As of the 2020/21 growing season, Karnataka has started producing Better Cotton in accordance with the Better Cotton standard, and small volumes of Organic cotton are produced in Tamil Nadu, which represents 1% of the state's total cotton production (Better Cotton, 2021a; Cotton Corporation of India Ltd., 2020; Textile Exchange, 2021). Expanding the presence of VSSs in the Karnataka and Tamil Nadu cotton sectors could help lower glyphosate application rates as the Organic standard bans the use of all pesticides, and the Better Cotton standard requires the use of IPM measures, such as using mechanical means to control weeds

(BCI, 2018; IFOAM, 2014). Implementing VSSs in Andhra Pradesh's cotton sector could also lower glyphosate application rates in South Asia's cotton sector.

3.2 Water Conservation

3.2.1 Requirements Analysis

VSSs in the South Asian cotton and textile sectors with water conservation requirements have great potential to relieve pressure on water resources, which are severely stressed. The VSSs examined all require cotton farmers to implement water conservation measures (see Table 3). Some require water stewardship plans and risk assessments, while others require soil moisture conservation and efficient irrigation practices. They all require preserving natural water sources and preventing agricultural runoff. Table 3 summarizes the water conservation requirements for the VSSs examined. These are then discussed in detail in the subsequent paragraphs.

The Better Cotton standard is the only VSS examined that requires the development and implementation of a water stewardship plan as well as risk assessments for water sources (over time for small farms and immediately for medium-sized and large farms). The Organic standard does not require measures to conserve soil moisture, although using green manure and mulch as recommended by the standard to improve soil fertility could also maintain soil moisture (IFOAM, 2014). All four VSSs require efficient irrigation approaches, the protection of natural water resources, and the prevention of agricultural runoff. The Better Cotton and Fairtrade Small-Farm Producer Group standards allow

Table 3. VSSs' water conservation requirements

VSS examined	Better Cotton		Organic	Fairtrade		REEL Cotton Code
	Small farms	Medium-sized & large farms		Small-scale producer org.	Hired labour	
Water management						
Water stewardship planning	✓	✓	⊘	⊘	⊘	⊘
Water risk assessment	🕒	✓	⊘	6	3	✓
Water conservation						
Soil moisture conservation	🕒	✓	⊘	3	3	✓
Efficient irrigation	🕒	✓	✓	3	1	✓
Natural water resources protection	🕒	✓	✓	6	3	✓
Agricultural runoff prevention	🕒	🕒	✓	3	3	✓

To be implemented: ✓ immediately, 1 within 1 year, 3 within 3 years, 6 within 6 years, 🕒 over time, ⊘ not covered.

smallholder farmers to implement the water conservation measures examined over time.

One of the Better Cotton standard's seven principles is dedicated to water stewardship, focusing primarily on the development and implementation of a water stewardship plan comprising mapping water resources, managing soil moisture, irrigation efficiency, managing water quality, and engaging in collaborative action to conserve water resources (BCI, 2018). In addition to

devising the plan, smallholder farmers must establish a timeline to implement the plan, while medium-sized and large farms are required to implement the plan right away to be compliant. All farms are required to engage with external entities to enable sustainable water management. The Better Cotton standard also aims to enable climate adaptation as water is a limiting factor for cotton cultivation in many parts of the world, and changing weather patterns could further limit water availability.

The Organic standard requires the preservation of water resources, and those standards are typically adopted by national organic agriculture programs, such as the Indian National Standard for Organic Production and the Sri Lankan Export Development Board National Organic Control Unit.¹⁵ Certified Organic farmers must adopt water conservation measures that primarily focus on preventing its depletion and degradation. Farmers are required to prevent and remediate soil and water salinization, though the standard does not specify how to do so. They also need to avoid the depletion and degradation of water resources via excessive exploitation by monitoring water extraction and harvesting rainwater. Organic farmers who have livestock must maintain stocking densities and grazing approaches that do not pollute water resources. The PGS India standard specifies similar farming requirements to conserve and properly use water and prevent ground and surface water pollution (Participatory Guarantee System for India, 2020).

Fairtrade cooperatives and companies that follow the Small-Scale Producer Organizations and Hired Labour standards have similar water conservation requirements (Fairtrade International, 2014, 2019). The water sources used for irrigating and processing Fairtrade crops must be identified, and it must be demonstrated that their condition is monitored. Fairtrade cooperatives must give their members sustainable water use training so they can apply more efficient water consumption methods over time. Fairtrade companies must optimize water use by measuring water consumption

and implementing water-conservation technologies and approaches. Fairtrade processing facilities must avoid polluting water resources, and training on wastewater risks and treatment must be provided.

Water management is one of the eight principles of the REEL Cotton Code. It requires farmers to irrigate cotton in an optimal manner using water from sustainable sources and of sufficient quality. Water extracted for irrigation must be recorded, legally permitted, and must avoid source depletion. Water-recharging efforts should be undertaken with other farmers if there are opportunities to do so. Irrigation water must be of suitable quality, and untreated sewage cannot be used. Irrigation must be done in an optimal manner by accounting for rainfall patterns and physiological requirements, as well as using the most effective irrigation methods and adequately maintained technologies available.

Based on the VSS requirements reviewed, their implementation in the South Asian cotton sector should result in improved water conservation. For instance, Indian conventional cotton has a water use externality of INR 20/kg (USD 0.24/kg) of seed cotton compared to INR 14/kg (USD 0.17/kg) for Indian Fairtrade seed cotton (Fairtrade Foundation, 2020). The 2019 *BCI Farmer Results* report finds that Indian and Pakistani Better Cotton farmers reduced their water consumption by at least 13% compared to their counterparts while improving yields and profitability (BCI, 2019b). The Textile Exchange commissioned a life-cycle assessment that concluded that organically grown cotton uses less water

¹⁵ Although Pakistan and Bangladesh both support some amount of organic agriculture, neither country has established a national organic program.

than conventional cotton (Textile Exchange, 2015). Others argue that prohibiting more productive GM cotton means that organic farmers are likely to use more water (Bain, 2017; Chan, 2019). Nevertheless, as most organically grown cotton in India is rainfed (18% is strictly rainfed, 71% is mostly rainfed, and 12% is mostly irrigated), the water conservation impacts of organic cotton are limited (Textile Exchange, 2015). Two Indian Fairtrade cooperatives used, on average, 30% less water per kg of seed cotton compared to conventional cotton farmers (Fairtrade Foundation, 2020). Ward and Mishra (2019) report that the REEL program in India led to an average reduction of 15% in irrigation water based on REEL projects conducted from 2014 to 2015.

3.2.2 Spatial Analysis

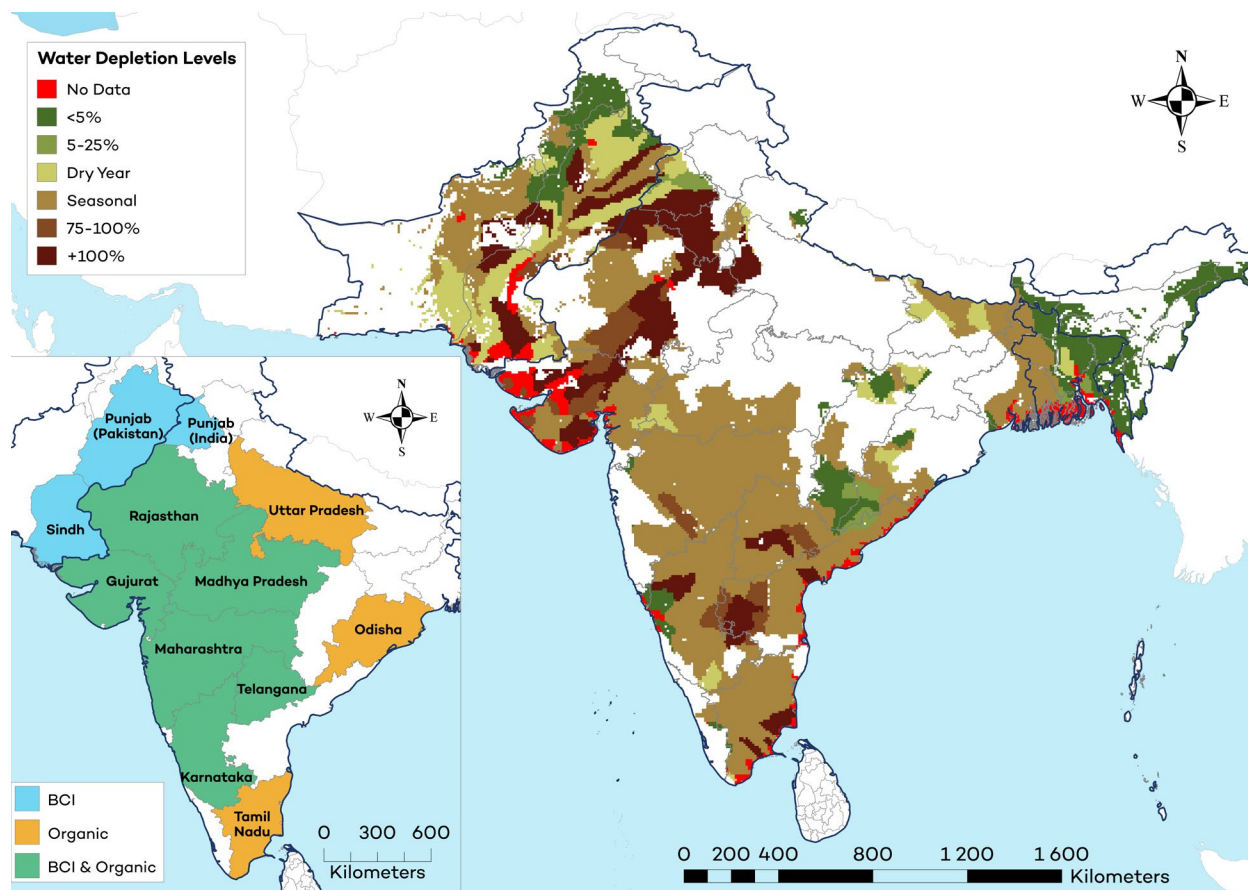
Water depletion levels are examined to see if VSSs in the South Asian cotton sector are being implemented in areas where they have the greatest potential to conserve water. Water depletion is a metric developed by Brauman et al. (2016) conveying the amount of renewable water consumed for human activities within 15,091 watersheds across the world, covering 90% of total land area. The WaterGAP 3 model was used to estimate the amount of renewable water, in the form of precipitation received and upstream inflows, relative to water consumed for domestic needs, irrigation, livestock, energy production, and manufacturing to determine water-depletion levels categorized as follows: (i) less than 5%, (ii) 5% to 25%, (iii) 25% to 50%, (iv) 50% to 75%, (v) dry year, (vi) seasonal, (vii) 75% to 100%, and (viii) more than 100%. “Seasonal” is defined by areas with water-depletion levels lower than 75% but

where at least one month surpasses the 75% water depletion level. A “dry” year is defined by areas that have a water depletion level that exceeds 75% in at least 10% of the years examined but, on average, are not annually or seasonally depleted. A water depletion spatial layer developed by examining a historical renewable water and water consumption dataset spanning from 1971 to 2000 provided a means to examine water depletion in the South Asian cotton sector (Brauman et al., 2016).

As shown in Figure 10, watersheds located in the irrigated cotton-growing regions of South Asia, such as the Indian states of Gujarat, Rajasthan, Haryana, and Punjab, as well as the Pakistani provinces of Punjab and Sindh, experience water-depletion levels greater than 75%, which is also observed in some southern Indian rainfed cotton-growing areas. The vast majority of cotton-growing areas in South Asia experience seasonal water depletion. Very few growing areas, located primarily in northern Pakistan and Bangladesh, have water-depletion levels that are less than 25%.

VSS production occurs in all the South Asian cotton-growing areas that experience more than 75% water depletion, with the exception of the Indian states of Andhra Pradesh and Haryana, as well as the Pakistani province of Balochistan. All the VSSs in the South Asian cotton sector require the implementation of water conservation measures, which may support reducing water-depletion levels. The Organic standard requires farmers to conserve water resources by requiring them to protect natural water bodies, adopt more efficient irrigation practices, and prevent agricultural runoff that can enhance soil moisture retention (IFOAM, 2014). The Better Cotton standard requires farmers

Figure 10. Water depletion in the cotton-growing areas of South Asia



Sources: Water depletion spatial information was obtained from Brauman et al., 2016. Spatial information for Organic comes from Textile Exchange, 2021; for Better Cotton, it comes from Better Cotton, 2021a, 2021b. “Seasonal” is defined by areas where at least one month surpasses the 75% water-depletion level. A “dry” year is defined as having areas where water depletion surpasses 75% in at least 10% of the years examined but that are not, on average, annually or seasonally depleted.

to develop water stewardship plans that detail water conservation measures to be implemented (BCI, 2018). Improving irrigation practices and efficiencies is particularly important in the northern cotton-growing regions of South Asia, where cotton cultivation primarily relies on irrigation. The Better Cotton standard also requires cotton farmers to collaborate with other stakeholders to undertake collective action for water conservation beyond the units of cotton production (BCI, 2018). This requirement is particularly important, as

addressing water depletion challenges in an equitable and sustainable manner can often require collective action at watershed and jurisdictional scales. The VSSs operating in the South Asian cotton sector are, for the most part, well located to improve water depletion in South Asia, which is a significant limiting factor for sustainable development in the region. Expanding into Andhra Pradesh and Haryana in India, as well as Balochistan in Pakistan, represents important opportunities for VSSs to further enhance water conservation in the region.

3.3 Farmers' Prices and Incomes

3.3.1 Requirements Analysis

VSSs operating in the South Asian cotton and textile sectors have the potential to improve both cotton prices and farmer and worker incomes in the South Asian cotton and textile sectors. Examining the production requirements of VSSs operating in the South Asian cotton sector reveals that they all have measures to improve cotton prices and farmer and worker incomes to varying degrees (see Table 4). For instance, Fairtrade offers a minimum price guarantee, while the Better Cotton standard and the REEL Cotton Code require cotton fibre quality improvements. All the VSSs examined require equal pay for equal work. Table 4 summarizes the farmer income and worker wage improvements required by the VSSs examined, which are discussed in detail in the subsequent paragraphs.

The Better Cotton standard and the REEL Cotton Code rely on lowering production costs and improving fibre quality to improve the profitability of cotton farmers, while the Organic and Fairtrade standards offer cotton farmers a premium for their products. Fairtrade is the only VSS examined that offers a minimum price guarantee in addition to a price premium that must be invested in farming cooperatives or communities via a Fairtrade Development Plan or Fairtrade Premium Investment Committee. Except for Better Cotton, all the VSSs examined require workers to receive minimum wages to be standard compliant. Better Cotton requires medium-sized and large cotton farms to give workers a minimum wage over time, which is tracked as an improvement

indicator. The Fairtrade standard and the REEL Cotton Code require cotton farmers to provide living wages over time. Equal pay for equal work is required immediately by all the VSSs examined, except for Fairtrade cotton farmers, who need to implement equal remuneration within 1 to 3 years.

The Better Cotton standard does not provide minimum price guarantees or price premiums, as it focuses on improving cotton profitability by improving productivity, lowering production costs, and improving fibre quality. Some requirements oriented toward improving productivity focus on irrigation timing and soil health. The standard requires IPM and organic fertilization, which can both lower agricultural input costs. The Better Cotton standard has one principle dedicated to improving fibre quality that requires the adoption of best practices for harvesting and storing cotton fibres and cultivation practices that can maximize potential fibre quality, such as adequate cultivar selection and row spacing (BCI, 2018). Medium-sized and large farms must offer their workers minimum wages. Better Cotton requires equal pay for equal work by specifying “equal wages are paid to workers who perform the same job, irrespective of gender” (BCI, 2018, p. 85).

The Organic standard does not offer minimum price guarantees but garners price premiums that are supposed to be passed down to cotton farmers. For instance, ARMEDANGELS, a company based in Germany, offers Indian Organic cotton farmers in its supply chains a 2% price premium in their first year of conversion, which increases to 3% in the second year and 4% in the third year (Textile Exchange, 2020). The Organic standard requires the

Table 4. VSS requirements for improving farmer incomes and worker wages

VSS examined	Better Cotton		Organic	Fairtrade		REEL Cotton Code
	Small farms	Medium-sized & large farms		Small-scale producer org.	Hired labour	
Prices						
Minimum price guarantees are provided	⊘	⊘	⊘	✓	✓	⊘
Price premiums are collected	⊘	⊘	✓	✓	✓	⊘
Fibre quality	✓	✓	⊘	⊘	⊘	✓
Incomes						
Minimum wages offered	⊘	🕒	✓	✓	✓	✓
Living wages offered	⊘	⊘	⊘	3	1	✓
Equal pay for equal work	✓	✓	✓	3	1	✓

To be implemented: ✓ immediately, 1 within 1 year, 3 within 3 years, 🕒 over time, ⊘ not covered.

establishment of purchasing contracts. As they are grown without the use of synthetic pesticides, Organic cotton fibres are not affected by toxic chemicals that can reduce their strength and longevity (Cariki, 2021), though they can also be of lower quality for processing purposes compared to regular cotton (Yu, 2015). The Organic standard requires minimum wages to be paid to workers but does not require or recommend that certified Organic farmers pay living

wages (IFOAM, 2014). Although the Organic standard does not explicitly require equal pay for equal work, all employees and contractors must be treated without discrimination.

The Fairtrade standard is the only VSS examined that provides a minimum price guarantee to cotton farmers;¹⁶ however, it is less consequential in India and Pakistan, where government minimum support prices have been established to support cotton

¹⁶ Fairtrade minimum prices for South Asia cotton are set based on staple length (i.e., short staple varieties [20 mm and below], medium staple varieties [20.5 mm–24.5 mm], medium-long staple varieties [25 mm–27 mm], long staple varieties [27.5 mm–32 mm], and extra-long staple varieties [32.5 mm and above]) (Fairtrade International, 2011, p. 8).

farming (Gardezi, 2022). It is also set well below the current market price for cotton, having last been updated in 2011 (Fairtrade International, 2022). Fairtrade premiums are intended to be reinvested in cotton farmers or farming communities via Fairtrade Development Plans and Fairtrade Premium Committees (Fairtrade International, 2014, 2019). Binding purchase contracts must be in place between producers and buyers that must follow Fairtrade requirements. Fairtrade ascribes to upholding International Labour Organization (ILO) Convention 95 on Protection of Wages and Convention 100 on Equal Remuneration. For this reason, the Fairtrade Smallholder Producer Organizations and Hired Labour standards require minimum wages to be offered to workers that must increase over time to reach a living wage. Fairtrade standards also explicitly require equal pay for equal work for all workers, whether they are local, migrants, seasonal, temporary, or permanent (Fairtrade International, 2014, 2019). In 2019, Fairtrade looked at paying farmers in India an Organic cotton premium of EUR 0.03/kg of cottonseed on top of the minimum Fairtrade price and Fairtrade premium for the country (Fairtrade International, 2021b).

The REEL Cotton Code does not offer a minimum price guarantee or price premiums. Nevertheless, it requires the establishment of clear terms of trade between cotton producers and prospective buyers that specify volumes, quality, price, payment terms, and delivery conditions where cotton producers must be paid above a reference price (i.e., regional prices or a minimum support price) (CottonConnect, 2021a). Measures to maintain cotton lint quality during harvesting are specified, such as preventing contamination before and after

picking. Farmers adhering to the REEL Cotton Code must also offer workers a wage that is equivalent or superior to the official minimum wage for the given occupation or the country or region-specific living wage. Equal pay for equal work must also be offered regardless of gender.

Based on the reviewed VSSs' requirements, their implementation in the South Asian cotton sector could result in better cotton prices for farmers and wages for cotton labourers. For instance, the Better Cotton standard and the REEL Cotton Code have measures to lower production costs and improve cotton lint quality, both of which can enhance profitability via cost-saving measures and securing better prices. Fairtrade is the only VSS examined that offers minimum price guarantees, but as they fall far below current prices and as India and Pakistan have established minimum support prices for their cotton-farming sectors, this alone is unlikely to incentivize farmers to become VSS compliant. The Organic and Fairtrade standards enable cotton farmers to benefit from price premiums. Furthermore, the Fairtrade Hired Labour standard allows 20% of premiums to be paid as cash payments, which can be as high as 50% under extraordinary circumstances (Singh, 2019). Except for Better Cotton, all the VSSs examined require their farming operations to offer minimum wages for hired labour, but only Fairtrade and the REEL Cotton Code require living wages to be paid. All of the VSSs examined require equal pay for equal work. For these reasons, VSS-compliant cotton farms in South Asia can attract better prices for farmers and better incomes for hired workers. More remains to be done to establish a living income benchmark for cotton.

There is also field-level evidence that supports the potential for VSSs to improve cotton farmers' incomes and wages in South Asia. According to Ward and Mishra (2019), agricultural input-cutting measures and yield improvements allowed Indian Better Cotton and REEL Cotton Code farmers to improve their profits by 32% and 52%, respectively, over those obtained by conventional Indian cotton farmers. A 2014 Fairtrade impact study reported that 60% of Indian Fairtrade farmers said they were better off economically after joining Fairtrade (Ward & Mishra, 2019). Although the adoption of VSSs in the South Asian cotton sector may not lead to improved farmer incomes and worker wages

in all instances, they have the potential to push the sector toward sustainability, which is directly aligned with improving profitability.

3.3.2 Spatial Analysis

We used cottonseed productivity as a proxy to examine if VSSs in the South Asian cotton sector are being implemented in areas where they have the greatest potential to improve farmer incomes and worker wages. We took this approach, as publicly available spatial information on farmer incomes and worker wages at a regional scale does not exist, and assessing productivity is closely linked to farmer profitability (Australian Bureau of

Table 5. Cotton productivity levels across major cotton-producing Indian states from 2016/17 to 2019/20 growing seasons

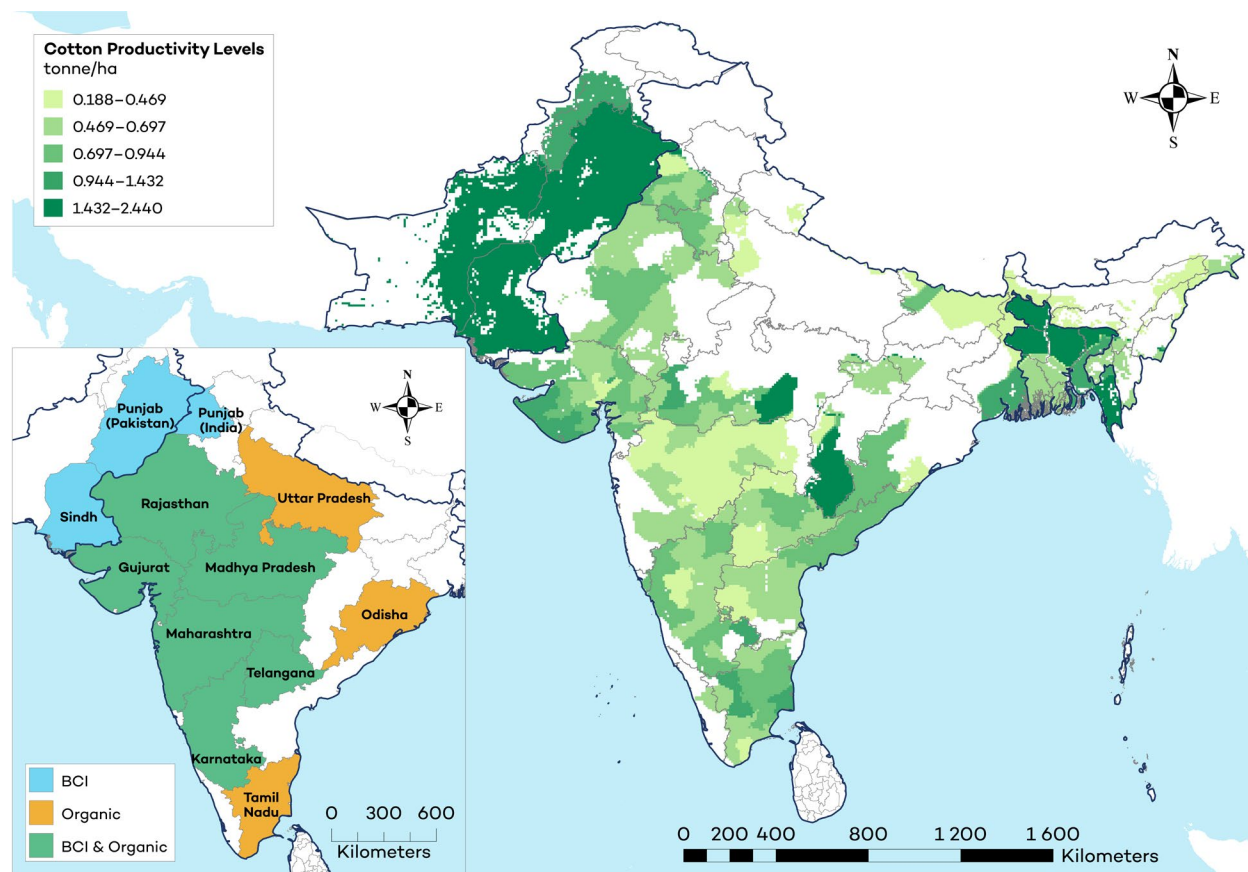
Indian state	Cotton productivity in tonnes per hectare			
	2016–17	2017–18	2018–19	2019–20
Punjab	0.537	0.687	0.539	0.651
Haryana	0.611	0.549	0.552	0.623
Rajasthan	0.596	0.677	0.743	0.649
Gujarat	0.678	0.673	0.575	0.57
Maharashtra	0.396	0.326	0.306	0.329
Madhya Pradesh	0.582	0.624	0.637	0.523
Telangana	0.579	0.488	0.388	0.432
Andhra Pradesh	0.684	0.559	0.411	0.466
Karnataka	0.6	0.538	0.379	0.416
Tamil Nadu	0.599	0.511	0.767	0.6
Orissa	0.375	0.428	0.433	0.4

Source: Cotton Corporation of India Ltd., 2020.

Agricultural and Resource Economics and Sciences, 2022). A cotton yield spatial layer developed by Monfreda et al. (2008) based on average cotton yields obtained from 1997 to 2003 was used to examine how cotton productivity levels intersect with the presence or absence of VSSs in the South Asian cotton sector. Although cotton productivity has changed in various parts of South Asia, it has remained relatively low compared to other cotton-growing regions. The Cotton Corporation of India Ltd. (2020) reports relatively low yields across the major cotton-producing states of India from 2016 to 2020

(see Table 5). This is consistent with the productivity levels depicted in Figure 11, which show that the major cotton-producing Indian states have low cotton productivity levels. The Indian states of Maharashtra, Telangana, and Bihar stand out as cotton-growing areas with the lowest productivity, while Pakistan, northern Bangladesh, and parts of the Indian states of Madhya Pradesh and Chhattisgarh enjoy the highest yields. For the most part, the higher yields experienced across the South Asian cotton sector are due to the availability of sufficient moisture for optimal cotton fibre production.

Figure 11. Cottonseed productivity in South Asia



Source: Spatial information on cotton yields was obtained from Monfreda et al., 2008; spatial information for Organic comes from Textile Exchange, 2021; and for Better Cotton, it comes from Better Cotton, 2021a, 2021b.

For instance, Pakistan grows mostly irrigated cotton, while most of Bangladesh is not water depleted (see Figure 10) (Rehman et al., 2015).

As shown in Figure 11, VSSs are in all the major South Asian cotton-growing areas that experience low yields. VSSs in the South Asian cotton sector require the implementation of measures that can improve productivity, such as crop protection and fertilization strategies, as well as soil and water-conservation practices. Neither the Better Cotton nor the Organic standards have direct requirements to improve cotton yields, but they do require the implementation of several farming and business practices that can lead to productivity improvements. The Better Cotton standard requires farmers to adopt measures such as adequate varietal selection, row spacing, and fertilization to maintain and enhance cotton productivity (BCI, 2018). The Organic standard enhances crop productivity primarily by maintaining and enhancing soil quality by using natural fertilizers, minimal tillage, and contour plowing (IFOAM, 2014). Nonetheless, the prohibition of synthetic agricultural inputs required by the Organic standard can lower yields in the short term to maintain long-term agricultural productivity (Seufert, 2019). The cotton productivity levels conveyed in Table 5 and Figure 11 clearly indicate that the cotton sectors of the Indian states of Maharashtra and Telangana offer VSSs the greatest potential for yield improvements. Furthermore, enhancing the productivity of the cotton sectors of Andhra Pradesh and Bihar, where VSSs have yet to be implemented, could also improve the productivity of the South Asian cotton sector.

3.3.3 Textile Standards

In addition to cotton production, cotton processing to produce textiles can also have deleterious effects on the socio-ecological sustainability of South Asia. For this reason, textile processing sustainability standards that have been developed are linked to some of the VSSs operating in the South Asian cotton-farming sector. The GOTS and the Fairtrade Textile Standard are processing standards for Organic and Fairtrade cotton-based products that have requirements that can affect chemical use, water conservation, and worker incomes. For instance, GOTS-compliant facilities must improve their environmental performance by switching to more benign processing chemicals, lowering water consumption tracked per kilogram of textile output, reducing and treating wastewater, and paying worker wages that meet basic needs with some discretionary income (Global Standard, 2020). GOTS also requires certified facilities to inform their workers of the wage gap between what they pay and the local living wage (Global Standard, 2020). The implementation of GOTS in India has led to improved working conditions for around 400,000 workers, the reduction of harmful chemicals used in the textile sector, and only treated wastewater discharged from certified facilities (Ward & Mishra, 2019).

The Fairtrade Textile standard has similar requirements specifying the processing chemicals that can be used and those that must be phased out over time, as well as water consumption reduction and wastewater treatment (Fairtrade International, 2016). Fairtrade-compliant textile facilities must also pay workers minimum wages as determined by local regulations or collective bargaining agreements and must close the gap

between the wages paid and the local living wage within 6 years of becoming certified (Fairtrade International, 2016). The Fairtrade Textile Standard also requires equal pay for equal work.

For its part, the REEL Cotton Code includes sustainability requirements that need to be implemented at the ginning level (CottonConnect, 2021a). When limited to the sustainability indicators examined, these requirements touch on the need to establish purchasing contracts and pay minimum wages to workers (CottonConnect, 2021a). These textile standards can help improve the sustainability of the South Asian textile sector by requiring the implementation of environmentally friendly processing practices and the ethical treatment of workers (Ward & Mishra, 2019).

3.4 Conclusion: VSSs have the potential to promote sustainable cotton production

The South Asian cotton and textile sectors are vital to the economic well-being of the region, as it provides livelihoods for millions of farmers and workers. For this reason, addressing persistent socio-ecological challenges faced by these sectors, including pest control, water conservation, and farmer prices and incomes, is critical to its long-term sustainability. Implementing VSSs in the South Asian cotton and textile sectors offers great potential to address these challenges, as they require farmers and textile facilities to adopt more sustainable production practices with potentially far-reaching benefits for the region.

The main VSSs operating in these sectors—Better Cotton, Organic, Fairtrade, and the REEL Cotton Code—have grown greatly in recent decades. For instance, India has become the second-largest global purveyor of Better Cotton and the largest global purveyor of Organic cotton, Fairtrade cotton, and REEL Cotton. Despite this impressive growth, significant opportunities exist to further expand in the Indian, Pakistani, Bangladeshi, and Sri Lankan cotton and textile sectors, as they only capture between 0% and 54% of their domestic cotton production (see Table 1). Different studies have shown that their implementation has led to improvements in agrochemical use, water conservation, and incomes for South Asian cotton farmers and textile workers (Grosscurt et al., 2016; Singh, 2019; Textile Exchange, 2015; Ward & Mishra, 2019). These studies convey that the requirements of the VSSs examined that have been implemented by farmers and textile facilities are having positive socio-ecological impacts. Although they may vary in terms of approach and stringency, all the VSSs examined require more sustainable pest-control measures and water conservation practices, as well as improved cotton prices for farmers and incomes for workers. Furthermore, they are, for the most part, implemented in South Asian cotton-growing regions with the greatest need to reduce pesticide use, improve water conservation, and enhance productivity. Therefore, expanding VSSs in the South Asian cotton and textiles sector may contribute to a more sustainable region, which could also facilitate trade within and outside South Asia as demand for more sustainable cotton-based products continues to grow.

4.0 The Policy Landscape for VSSs in South Asia



South Asia remains one of the least economically and politically integrated regions in the world (World Bank, 2022b), yet increased regional integration could support economic growth and help address common sustainability challenges. In this section, we examine the policy landscape in which VSSs operate in South Asia and identify ways that trade and VSSs can support regional progress toward improved pest management, water conservation, and farmers' prices and incomes in the cotton sector.

For a comprehensive analysis of the policy landscape and initiatives related to the cotton and textile sector, we conducted interviews with six expert stakeholders in the region between March and July 2022. The interviewees included government officials and private organizations working in the region and were held via videoconference.

We find there is some, albeit limited, basis for regional collaboration around issues of concern in the cotton textile sector in regional organization entities or bodies and trade policy instruments, as well as national initiatives. We also identify potential synergies for scaling up cooperation and action using VSSs to promote sustainable production in the cotton textile sector in South Asia.

4.1 Regional Organization to Promote Collaboration and Sustainable Cotton Production

Though not specific to the cotton textile sector, there is some movement toward regional cooperation in South Asia in the

form of intergovernmental organization that has the potential to support increased trade measures and initiatives to promote sustainable cotton production and consumption. There is some high-level political integration via SAARC and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC). There is also a regional focus on sustainable consumption and production via the South Asia Co-operative Environment Programme (SACEP). There is no specific dedicated regional organization in the public or private sector on cotton textiles.

SAARC, which is broadly focused, was formed in 1985 to strengthen cooperation, assistance, and self-reliance among South Asian countries, with a view to advancing development and quality of life in the region.¹⁷ In 2004, SAARC member states advanced regional integration and cooperation in trade by establishing SAFTA (SAARC, 2020). It remains active but has not been updated, given that biennial summits of the heads of member states—where SAARC decisions are made—have not occurred since 2014 due to political tensions between member states. Such tensions may have implications for trade and value chain integration in the region, limiting intraregional business relationships and leading the private sector to operate within political bounds (Asian Development Bank, 2009). Yet despite the halt of the summit process, SAARC members continue to collaborate on agriculture, standards, and trade.

The SAARC Agriculture Centre (SAC) provides a hub for regional cooperation

¹⁷ Charter of the South Asian Association for Regional Cooperation (1985), Article I.

around agricultural knowledge and the adoption of information and communication technologies, management practices, and standards (SAC, 2022). The SAC has ongoing work related to the sustainability of agrochemical usage, water management, and farmer incomes in South Asia. While not specific to cotton, findings and collaboration on these issues would necessarily pertain to the sector. For example, SAC organized two regional expert consultation meetings in April 2021, one on Impacts of Agricultural Chemicals Inputs on the Environment and Human Health in South Asia (SAC, 2021b) and the other on Advanced Water Management Options for Sustainable Crop Production in South Asia (SAC, 2021a).

During the meeting on agrochemicals, experts shared regulatory frameworks, strategies, and best practices, and produced a list of recommendations on the use of agrochemicals by farmers in the SAARC countries. Recommendations included providing incentives to bio-pesticide and bio-fertilizer users, strengthening research and development of IPM practices, and improving the enforcement of agrochemical rules and regulations to control negative environmental and health impacts (SAC, 2021b). At the water management meeting, SAARC country experts shared information on practices and lessons learned on conserving irrigated water resources and stressed the need for farmers to adopt water management practices to prevent water losses and improve crop production and rural livelihoods (SAC, 2021a).

At a 2018 conference on doubling the income of farmers in SAARC countries, representatives from SAARC member states highlighted the importance of the agriculture

sector in enhancing the income of smallholder farmers (SAARC, 2018).

SAARC also has a specialized body, the South Asian Regional Standards Organization, that works to develop and advance harmonized standards for the region to facilitate intraregional trade and market access. The organization's sectoral technical committee on jute, textile, and leather has developed standards on cotton drill and cotton twill that are in the final stages of approval (SAARC, 2022).

BIMSTEC was established in 1997 to promote cooperation between countries bordering the Bay of Bengal (BIMSTEC, 2022b). It is comprised of seven member states, including Bangladesh, India, and Sri Lanka, but not Pakistan. The initial vision of BIMSTEC included eliminating tariff and non-tariff barriers to trade, and the idea that member states would continue to work toward a BIMSTEC Free Trade Area Framework Agreement to promote regional trade (BIMSTEC, 2022c). There is no specific action by BIMSTEC in the cotton sector, but BIMSTEC cooperation on agriculture has included a workshop on developing good agriculture practices and a common project on private sector participation in value chain management for agricultural products (BIMSTEC, 2022a). Close public-private partnerships are a major pillar of the BIMSTEC vision for economic cooperation (BIMSTEC, 2022c).

SACEP is an intergovernmental organization—involving Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka—that seeks to promote regional cooperation on the environment and sustainable development.

SACEP initiated the South Asia Forum on Sustainable Consumption and Production to provide a regional platform specifically to develop synergies to promote and implement sustainable consumption and production policies, strategies, and technologies (SACEP, 2021).

4.2 Trade Policies to Address Collaboration on the Issues of Concern

For the most part, the current state of regional collaboration related to sustainable cotton remains general to agriculture and trade at the level of exchange and cooperation (i.e., meetings, summits, forums) and has not materialized into regional policies or agreements. However, efforts to advance trade integration have resulted in two intraregional trade agreements, as well as two bilateral trade agreements between the countries of focus: the Asia-Pacific Trade Agreement (APTA) (1975); the Agreement on SFTA (2004); the India–Sri Lanka Free Trade Agreement (1998); and the Pakistan–Sri Lanka Free Trade Agreement (2002) (See Box 1). These remain very limited in their reference to pest management, water conservation, and farmers’ prices and incomes, so they are unlikely to be a tool for change on these issues of concern in the

cotton sector in the region in their current form (see Appendix B). However, they may form a basis for enhanced collaboration and action bilaterally or multilaterally.

APTA is the only one of these trade agreements that contains a reference to employment and living standards in its preamble, which outlines the contracting parties’ objectives and aims regarding the agreement. Even if it does not set forth binding obligations, it can be useful for interpretation purposes, as stated in Article 31(1) and (2) of the Vienna Convention on the Law of Treaties. The usefulness of preambles for interpretation purposes has been further supported in the World Trade Organization (WTO) context by the Appellate Body, which stated that the preamble to the Marrakech Agreement “must add colour, texture, and shading” to their interpretation of the WTO agreements.¹⁸

All the region’s agreements contain an exception modelled on the General Agreement on Tariffs and Trade’s (GATT) Article XX.¹⁹ These exceptions allow states to adopt measures in the listed areas, but rather than actively promoting specific actions in the different policy areas, they merely allow measures that are inconsistent with WTO obligations to be justified and thus remain in place. In other words, these exceptions allow

¹⁸ See United States—Import Prohibition of Certain Shrimp and Shrimp Products, 1998, para. 153.

¹⁹ The General Agreement on Tariffs and Trade (GATT 1994) is a trade treaty covering international trade in goods and aiming to liberalize trade by reducing or eliminating tariffs, quotas, and subsidies. Art. XX is one of the most commonly invoked provisions, stating that “subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures: (a) necessary to protect public morals; (b) necessary to protect human, animal, or plant life or health; (c) relating to the importations or exportations of gold or silver; (...) (g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption (...).”

Box 1. General information on trade agreements in South Asia

Asia-Pacific Trade Agreement (1975)

The Asia-Pacific Trade Agreement (APTA) is the oldest preferential trade agreement among countries of the Asia-Pacific region (APTA Secretariat, 2020). It was signed in 1975 and was formerly known as the Bangkok Agreement. The agreement was an initiative of the United Nations Economic and Social Commission for Asia and the Pacific.

Three of the four countries under study are parties to the agreement, namely Bangladesh, India, and Sri Lanka. The APTA seeks to promote the “economic development of its members through the adoption of mutually beneficial trade liberalization measures that contribute to regional trade expansion and economic cooperation” (UN Economic and Social Commission for Asia and the Pacific, 2020). Even though it was originally limited to tariff concessions in trade, its scope has expanded since 2005 to include the negotiation of liberalization in investment, trade services, and trade facilitation.

In terms of addressing the issues of concern, APTA only contains a reference related to prices/incomes in its preamble, stating that “the expansion of trade could act as a powerful stimulus to the development of their national economies, ... thus **providing greater opportunities of employment and securing higher living standards for their populations**” (APTA, 1975, Preamble). Regarding the environment, the agreement merely contains an exception on “**the protection of human, animal, and plant life and health**” (APTA, 1975, Art. 30).

South Asian Free Trade Area (2004)

SAFTA, the SAARC free trade arrangement signed in 2004, entered into force in 2006. SAFTA replaced the 1993 SAARC Preferential Trading Arrangement. The agreement aims to promote mutual trade and economic cooperation among the members through trade concessions. SAFTA only contains an exception on the protection of “human, **animal, or plant life and health**” (SAFTA, 2004, Art. 14).

India–Sri Lanka Free Trade Agreement (1998)

The India–Sri Lanka Free Trade Agreement, signed in 1998 and in force since 2000, was among the first attempts to promote trade liberalization in South Asia. The agreement constituted India’s first bilateral FTA, entailing substantial growth in trade between the two countries.

Like SAFTA, this trade agreement only contains a reference to the protection of human, animal, or plant life and health in the general exceptions clause.

Pakistan–Sri Lanka Free Trade Agreement (2002)

The trade agreement between Pakistan and Sri Lanka was signed in 2002 and came into force in 2005. Following the approach of the India–Sri Lanka FTA, this agreement between Pakistan and Sri Lanka only contains an exception clause.

WTO members to prioritize the protection or promotion of the listed policy areas (e.g., protection of public morals, human or animal health, compliance with laws and regulations that are not inconsistent with GATT, protection of national treasures, and conservation of natural resources) over trade liberalization under specific conditions (van den Bossche & Zdouc, 2021). However, there are some concerns about the ability of these exceptions to effectively protect states' right to regulate and adopt non-protectionist and non-discriminatory labour and environmental measures, as, when invoked, the exceptions are rarely upheld (Public Citizen's Global Trade Watch, 2015). With no commitments and only broad exceptions, the trade agreements are unlikely to support the advancement of sustainable production practices in the cotton sector in their current form.

4.3 National Initiatives to Promote Sustainable Cotton Production and Consumption

Despite limited regional initiatives promoting the sustainable production of cotton in South Asia, we see several national-level initiatives that do so in the region. The efforts of Bangladesh, India, Pakistan, and Sri Lanka to promote sustainable production, as well as consumption, fall under three categories: (a) domestic policy and legislation, (b) compliance with and promotion of VSSs, and (c) international cooperation and NGO initiatives.

4.3.1 Domestic Policy and Legislation

Given the importance of the cotton textile sector to their economies, all four countries have cotton/textile authorities and/or related domestic legislation. In most cases, this relates to research, quality control, and export promotion, and not to the social and environmental sustainability of production or sourcing practices. Legislation covering environment and labour remains independent and general but can apply to the cotton sector. However, while limited, there is growing attention paid to policies and legislation that can address sustainability in the cotton textile sector in a more targeted way.

All four countries have government agencies that oversee the cotton and/or textile sector, and domestic legislation for cotton has a long history reflecting the importance of cotton in the region. The Cotton Corporation of India was established under the Ministry of Textiles in 1970 to market cotton (Cotton Corporation of India, 2022). The Pakistan Cotton Cess Act XIV 1923 implemented duties and fixed rates for cotton ginning and other supply chain activities, while the Cotton Transport Act 1923 restricted the transport of cotton to prohibit imports by any route and protect the quality and reputation of cotton. The Punjab Cotton Control Ordinance 1966 set basic quality standards, and the Cotton Standardization Ordinance 2002 (Pakistan Central Cotton Committee, 2017) established the Pakistan Cotton Standards Institute to support regional needs (Baloch et al., 2021). For the most part, these institutions and policies are dedicated to research and quality control

Box 2. Spillover effects: Trade partner regulations with implications in South Asia

The four countries under study are integrated into the world market economy and international trade. As a consequence, regulations from trade partners may affect the cotton and textile sector in South Asia.

The Generalized System of Preferences (GSP) is an example. Under the GSP, trade partners such as the European Union (EU) and the United States grant preferential treatment to imports from developing countries, subject to compliance with certain labour or environmental standards.

For instance, Bangladesh is part of the EU's GSP, under which additional trade preferences are granted subject to compliance with United Nations Covenants and ILO Core Conventions. Sri Lanka and Pakistan both benefit from the EU GSP+, which provides

more benefits than the standard GSP to middle-income countries that implement 27 international conventions related to human rights, labour rights, protection of the environment, and good governance.^a

The current EU GSP system expires by the end of 2023, and the European Commission has already presented a new proposal for the years 2024–2034. The new proposal is intended to reinforce the importance of compliance with climate change and environmental protection standards and introduces the possibility of withdrawing the GSP benefits in cases of “serious and systematic violations of the principles of the conventions on climate change and environmental protection” (European Commission, 2021). Moreover, the proposal adds the Paris Agreement to the current seven environmental and climate instruments that countries must

with a view to generating export revenue and are less focused on advancing sustainable cotton production. However, in some cases, there are specific clauses that could support the movement toward sustainable cotton production. For example, the Punjab Cotton Control Ordinance contains a clause allowing the restriction of cotton production to a specific trait-containing variety in a growing area—only the designated variety or hybrid seed is allowed to be sold or grown in that area. This clause could be used to promote Organic cotton production if used to require that only organic-compatible seeds be sold

and grown in a specific region (Baloch et al., 2021). Bangladesh's 1957 Cotton Act established a Cotton Board, and the country has a dedicated Department of Textiles under its Ministry of Textiles and Jute. Similarly, the Sri Lanka Export Development Board is dedicated to the promotion of exports, but the country does not have policy related to imports of sustainable cotton.

The four countries have limited legislation pertaining specifically to the issues of concern in the cotton textile sector. An exception is price supports in India and Pakistan that address farmer prices and incomes.

ratify to benefit from the GSP+ (European Commission, 2021).

In addition, the EU has recently proposed several regulations that will affect the textile sector. These include, for example, a strategy for sustainable and circular textiles (European Commission, 2022b) and corporate sustainability due diligence requirements (European Commission, 2022a). Following these developments, environmental and labour concerns would need to be addressed in the cotton and textile value chain to be able to enter the EU market.

Pakistan and Sri Lanka are beneficiaries of the U.S. GSP, subject to compliance with certain labour standards. Among the criteria for eligibility, countries must “have taken or are taking steps to grant internationally recognized worker rights (including collective bargaining, freedom

from compulsory labour, minimum age for employment of children, and acceptable working conditions with respect to minimum wages, hours of work, and occupational safety and health)” and must “implement their commitments to eliminate the worst forms of child labour” (Congressional Research Service, 2022.) Some members of Congress have proposed adding new criteria related to the enforcement of environmental laws and international agreements, but no changes have been introduced so far (Congressional Research Service, 2022).

The practical impacts and the effectiveness of these policy initiatives are still being debated, yet they highlight the increasing interlinkages between trade, environmental, and labour issues.

^a See the list of the core conventions of the GSP+ at <https://gsphub.eu/conventions>.

The Cotton Corporation of India sets and provides a minimum price to farmers and procures cotton for the domestic textile industry (Cotton Corporation of India, 2022). Pakistan’s Federal Minister for National Food Security and Research recently announced the imminent approval of a minimum support price for cotton producers (Amin, 2022).

For the most part, legislation related to agrochemical usage, water conservation,

and farmers’ prices and incomes in the four countries is general and occurs independently of cotton sector legislation, though it can still apply to activities related to cotton textile production. The four countries have umbrella acts setting out a basic environmental legal framework²⁰ complemented by specific legislation on topics such as water, soil conservation, and fertilizers.²¹ However, some of these are outdated; for example, the National Environmental Law of Sri

²⁰ Pakistan Environmental Protection Act, 1997 (Act No. XXXIV of 1997), Bangladesh Environmental Conservation Act of 1995, India Environment Protection Act, 1986, and National Environmental Law of Sri Lanka, 1980.

²¹ See, for example, the India Water (Prevention and Control of Pollution) Act, 1974, Bangladesh Water Act 2013, Sri Lanka Soil Conservation Act No. 25 of 1951, and Sri Lanka Control of Pesticides Act No. 33 of 1980.

Lanka was enacted in 1980, and the latest amendment was in 2000. All four countries have legislation on minimum wages: the Code on Wages Act (2019) in India pertains to all industries (Dezan Shira & Associates, 2021), wage rates are legislated provincially in Pakistan, minimum monthly and daily wages are included in various legislative acts in Sri Lanka, and the Bangladesh Labour Act 2006 was most recently amended in 2018 with a new minimum wage for the readymade garment sector.

Laws are not without challenges in both implementation and enforcement. For example, the minimum wage introduced in Bangladesh in 2018 did not meet workers' expectations, and huge protests took place, leading to mass dismissals (Business & Human Rights Resource Centre, 2018). Another example is Sri Lanka's ban on synthetic fertilizer and pesticide imports, which attempts to encourage organic agriculture, enacted in 2021. However, the ban had to be lifted as it caused rice and tea production volumes to drop by 18% and 20%, respectively. The government was forced to spend far more on subsidies and compensation than the USD 400 million that would have been saved by banning fertilizer imports (Torella, 2022). While policies that promote sustainable production and fair conditions for workers are needed, the two examples—although not specific to cotton—underscore the importance of considering the particular context—including economic, political, and social concerns—when developing domestic legislation and the transition periods for their successful implementation.

There is some movement toward domestic policy that could address sustainability

in the cotton sector in a more targeted way. For example, Pakistan is drafting an organic agriculture policy (Baloch et al., 2021). A main motivator behind this is the government's desire to put in place a long-term strategy to increase Organic cotton production, support farmers, and establish Organic cotton textile supply chains (Baloch et al., 2021).

For the most part, policies and legislation to promote sustainable cotton production are limited. A textile industry expert in South Asia said sustainable cotton is not a priority for governments, given the small volumes of sustainable cotton that are traded. Of all the brands sourcing cotton in India, for example, only a handful have sustainability at the core of their business activity. During our interviews, we learned that just 12 to 15 brands are estimated to be sourcing 100% sustainable raw materials—for instance, Better Cotton is working with six brands in India—and consequently, there is not enough incentive for governments to make a policy change.

In sum, there are no specific national policies or legislation on sustainable cotton in place. Yet, some environmental policies and regulations may address sustainability challenges to some extent—for example, the introduction of limits to waste discharge in textile processing or regulations on the use of pesticides.

4.3.2 Compliance With and Promotion of VSSs

VSSs are being used to address sustainability in the cotton textile sector to varying degrees in each of the four countries. The selected countries have different levels of compliance

with VSSs, as well as different levels of promotion. For instance, compliance with VSSs in India and Pakistan is a key strategy for promoting sustainable cotton production. Certification is also important in Bangladesh and Sri Lanka but is not actively promoted at the national level.

As detailed in Section 2, Better Cotton is well established in Pakistan and India. In both countries, NGOs such as the World Wildlife Fund (WWF) have led the rise of Better Cotton. However, provincial governmental agricultural extension departments in the cotton-growing areas of Pakistan are taking a growing role in implementing Better Cotton projects. In 2019 the Punjab agricultural extension department began leading a Better Cotton project implementation and jointly running crop clinics for cotton farmers (BCI, 2019). The Pakistan Central Cotton Committee is also working with Better Cotton (Ministry of National Food Security and Research, 2021).

The Government of India has taken an active role in the promotion of organic production, including cotton. One of the main objectives of India's Agriculture Export Policy is promoting organic exports (Ministry of Commerce and Industry, n.d.). The policy mentions that standards on Organic textiles could be a way to add value to Indian textile exports (Ministry of Commerce and Industry, n.d., p. 20). The Ministry of Commerce and Industry's Agricultural and Processed Food Products Export Development Authority (APEDA) implemented its National Programme for Organic Production (NPOP) in 2000. The NPOP provides standards for organic production, accredits certification bodies, and promotes organic farming and the marketing of organic products.

Exporters, manufacturers, and processors whose products are certified according to the National Standards for Organic Production can use the national "India Organic" logo (APEDA, 2014). Organic cotton sold in India can be certified by NPOP or by the Participatory Guarantee System.

The European Commission and Switzerland have recognized APEDA's standards for production and accreditation as equivalent to their own country standards, thus facilitating exports of Indian organic products to those markets (APEDA, 2022). APEDA is in ongoing negotiations to achieve the same recognition from countries such as Canada, Japan, South Korea, and Taiwan (APEDA, 2022). However, organic cotton fraud is a challenge in India (GOTS, 2020b). Findings of fraud led the U.S. Department of Agriculture to stop recognizing organic products certified by companies overseen by APEDA in 2021 (Wicker et al., 2022). That same year, the EU stopped importing organic imports certified by five Indian companies (Wicker et al., 2022).

Organic policy is in the early stages of development in Pakistan. Originally motivated by the cotton sector, the country is now developing a broader organic agriculture policy that would cover all agricultural commodities. The Pakistani government aims to put policy in place that will increase Organic cotton production and establish an organic textile supply chain (Baloch et al., 2021). The governments in the region are not actively promoting other VSSs, such as Fairtrade and the REEL Cotton Code.

The governments of Bangladesh and Sri Lanka do not actively promote VSSs, despite the important role certification plays in

both countries' cotton textile sectors. In Sri Lanka, apparel manufacturers have introduced their own certification called "Garments without Guilt" to address fair labour practices and safe working conditions (Joint Apparel Association Forum Sri Lanka, 2022). The voluntary certification is implemented under the umbrella of the Joint Apparel Association Forum, which appoints an independent auditor to certify compliance with requirements laid out in a charter. The charter requires that factories be free of child labour, forced labour, and discrimination; adhere to limits on working hours; guarantee freedom of association; and receive payments and incentives in accordance with Sri Lanka's labour law (SGS, 2022). On the environment, the charters call for the reduction of the carbon footprint and recycling of industrial waste and water. Nearly 80% of local factories have become Garments without Guilt-certified (Sri Lanka Export Development Board, 2015).

4.3.3 Public, Private, and Not-for-Profit Partnerships

Another way South Asian governments are promoting sustainability in the cotton textile sector is through partnerships with other countries, international organizations, NGOs, and businesses. In all four countries, numerous projects aim to promote social and/or environmental conditions in the cotton textile supply chain. Yet, for the most part, these occur independently of each other both between and within countries, though in some cases, projects span countries.

Bilateral aid from foreign governments is one way this is achieved. For example, the German Development Agency (GIZ) is

supporting the Indian Textiles Ministry to increase value addition in sustainable cotton production in India (Fibre2Fashion, 2021). GIZ has also trained advisers, managers, and staff in Bangladesh's textile industry on fair pay and safe handling of chemicals, as well as water management (GIZ, 2020).

Governments may also work with NGO-led initiatives. Such is the case in Pakistan, where various levels of government participate in a process led by the NGO Centre for Agriculture and Bioscience International (CABI) to draft a national organic agriculture policy and scale up Organic cotton production (Baloch et al., 2021). CABI's projects in Pakistan also involve promoting the adoption of Better Cotton production principles and training on good agricultural practices, particularly for improved pest-management practices (CABI, 2021).

In some cases, broader partnerships have been formed between cotton textile supply chain actors. The implementing partners of the ILO's Promoting Fundamental Principles and Rights at Work in the Cotton Supply Chain projects in India (2017–2021) and Pakistan (2017–2022) include national and state government, district administration, workers' organizations, employers' organizations, businesses, research organizations, civil society organizations, and farmer cooperatives (ILO, 2017). The projects support producer organizations in adopting organic methods of pest management and addressing fair wages and connecting with buyers who support environmental and labour standards (ILO, 2021). In Bangladesh, the International Finance Corporation-led Partnership for Cleaner Textile works with actors across the entire textile value chain—such as brands, technology suppliers,

industrial associations, financial institutions, and the government—to adopt cleaner production practices and reduce water consumption (Partnership for Cleaner Textile, 2022).

In other cases, governments are working with the private sector. For example, the Pakistani province of Balochistan’s Department of Agricultural Extension partnered with Pakistani manufacturing company Soorty and WWF-Pakistan for the Soorty Organic Cotton Initiative. Soorty leads the initiative to accelerate the transition to organic cotton production and improve

traceability, providing Soorty with supply while contributing to improved livelihoods for farmers (Wightman-Stone, 2021). There are similar projects in India: for example, the Sustainable Cotton Initiative, whereby Gujarat Green Revolution Company Ltd. and WWF-India promote good agricultural practices and Better Cotton among farmers to advance sustainable cotton productivity.

For the most part, these projects occur independently of each other, and there is no coordination across countries. An exception is the Better Work program, an initiative of the ILO and the International

Box 3. Private-led initiatives

In parallel to government initiatives with international organizations, NGOs, and/or businesses, initiatives led by both industry associations and businesses also operate in the cotton sector.

For example, the Pakistan Cotton Ginners Association works to improve cotton practices and policies, such as the promotion of Organic cotton in the region. In Sri Lanka, there is a Joint Apparel Association Forum, an apex body supporting sustainable manufacturing. The Bangladesh Garment Manufacturers and Exporters Association, one of the largest trade associations in the country representing the readymade garment industry, is also working toward sustainability in the sector. In India, the Confederation of Indian Textile Industry and the Cotton Textiles Export Promotion Council organized a meeting with stakeholders to discuss ways to adopt best practices and support the growth of the cotton textile value chain, including using testing facilities from farm to industry, having strategies to curb the illegal sale of counterfeit seeds, and educating younger farmers on using genetically pure and certified seeds. The textile industry aims to submit a proposal to the government to improve cotton quality and productivity (Preetha, 2022).

There are also examples of multinational brands partnering with international and local NGOs to promote sustainable cotton in their supply chains—for instance, Primark’s Sustainable Cotton Program works with CottonConnect and local NGOs in India and Pakistan to train cotton farmers in sustainable agricultural practices (Mathews, 2018). Primark says the training has resulted in improved cotton quality and thus increased profits for farmers (Primark, 2021).

Finance Corporation, which is active in three of the four countries of focus: Pakistan, Bangladesh, and Sri Lanka. In each country, the program brings together government, employers, and worker organizations to improve wages and working conditions in garment factories, including aligning labour laws with international labour standards (BetterWork, 2022a, 2022b).

In terms of working conditions, including wages, health, and safety, as well as environmental compliance, trade unions also play a vital role.

4.4 Conclusion: Synergies between VSSs and public policy

Cotton is very important in South Asia—in India and Pakistan due to its production, and in Bangladesh and Sri Lanka with respect to the textile sector. Consequently, it is important to address the issues of concern associated with cotton production to increase the economic development of these countries while at the same time ensuring environmental and social protection.

VSSs have market potential and can help address the issues of concern, as they operate in areas where these issues persist (see Section 3 on spatial analysis) and can deliver

positive results. Moreover, as shown, there is potential for growth in VSS-compliant cotton production and for maximizing the benefits for farmers to better control pests, preserve water sources, and get higher prices and incomes.

VSSs do not operate in a vacuum to advance more sustainable cotton practices in South Asia. Despite limited regional integration in South Asia, there are emerging cooperation initiatives between these countries on issues of concern in the cotton sector. There are also national initiatives that can reinforce VSSs' activities and vice-versa to advance sustainable cotton practices (pest management, water conservation, and better prices and incomes for farmers/workers), as well as public-private, non-profit partnerships.

VSSs have the potential to support sustainable cotton production and consumption. Yet, the current policy landscape does not take advantage of this potential. In the next section, we propose several options to build synergies between VSS-setting bodies and regional entities, national bodies, and private-public partnerships to increase cooperation, promote sustainable cotton production addressing the identified issues of concern, and maximize the role of VSSs in achieving these goals.

5.0 Recommendations



In this section, we offer recommendations to advance alignment between VSSs and policy in the region. We recommend ways VSSs could support regional and national policy processes and partnerships to advance sustainability in the cotton textile sector and boost intraregional cooperation and trade in South Asia. We also suggest ways that governments in the region could maximize the impact of VSSs to address sustainability in the cotton sector and expand VSS-compliant production and consumption through trade.

5.1 For VSS-Setting Bodies

5.1.1 Develop Targeted Guidelines and Training for Farmers

VSSs such as Better Cotton and Organic can train farmers and facilitate peer-to-peer learning between VSS-compliant farmers and other farmers on best practices for sustainable production. Interviewees pointed to under-budgeted and understaffed public institutions and a rotation of public stakeholders that hinder continuous development and the enforcement of production practices via government extension services. Better Cotton has a team that works with farmers at the field level to train them on production principles and criteria. VSSs can collaborate with regional government organizations such as SAARC to prioritize and target training on specific practices that support the implementation of regional recommendations on agrochemical use and water management. Similarly, VSSs can help SAARC produce materials for farmers that support implementing these practices and, as appropriate, adopt VSS-compliant practices in a stepwise approach. For example, VSS requirements

and training on resource management could support the implementation of the SAARC recommendation for farmers to conserve irrigated water resources and prevent water losses (SAC, 2021a). VSS requirements on pest management could support CABI's recommendation for a capacity-building program focused on IPM and good agricultural practices for farmers to shift to organic production.

5.1.2 Improve Assurance Systems and Product Traceability

VSSs can continue to improve assurance systems, including chain-of-custody standards and product traceability requirements, to build trust in certification and verification processes. This is especially important in the face of recent concerns about the falsification of certification documents in the cotton sector (Wicker et al., 2022). Existing systems may allow for tracking product origins and characteristics but do not ensure the visibility of farming practices and sustainability performance. VSSs could expand transparency pilots in the sector to test technological developments such as mobile phone-based platforms for farmers that support real-time farm monitoring and reporting, which can support management decisions, and blockchain for more transparent transactions throughout the supply chain from farm to consumer. These pilots should ensure that the methods and technologies that VSS-setting bodies use to verify farmers' practices and their compliance with the standard also support farmers in applying practices correctly and resolving any issues identified.

5.1.3 Provide a Platform for Regional Dialogue and Action

VSSs provide multistakeholder platforms that can be a basis for improved coordination in the region and an opportunity for regional effort, as they are present in all the countries and provide common criteria and language/indicators. In interviews, we heard examples of a lack of awareness among stakeholders on cotton sector activities, including action by VSSs at the grassroots level. We recommend a forum on sustainable cotton and textiles to be held every 2 years to advance awareness and dialogue among key cotton sector actors across South Asia. VSSs could use and collaborate with regional organizations such as SAARC or SACEP to establish the multistakeholder regional platform.

5.1.4 Build Partnerships

VSSs can increase their involvement and activities in the cotton sector through joint efforts with each other as well as with private initiatives to increase impact and efficiency. Coordination across initiatives and projects in India, Pakistan, Bangladesh, and Sri Lanka could trigger dialogue, the identification of gaps, and the sharing of lessons learned. According to our interviews, much funding in this area comes from private partners or non-profits, so it is important that partnerships include these actors. For example, based on the approach of the Global Living Wage Coalition—an initiative of the International Social and Environmental Accreditation and Labelling Alliance and researchers—VSSs are leading partnerships with other VSSs, brands, and local governments to facilitate dialogue and develop and pilot living income reference prices for that specific

location. VSSs can also partner and invest in research and development in the cotton sector. For example, two new Organic cotton seed varieties were developed through an organic breeding program of Switzerland's Research Institute of Organic Agriculture, known as FiBL, along with several partners, including CottonConnect (which founded the REEL Cotton Code with FLOCERT) (FiBL, 2022b).

5.2 For Policy-Makers in South Asia

5.2.1 Update Sectoral, Environmental, and Labour Policies to Support Best Practices in Sustainable Production and VSS Compliance

Governments should update sectoral, environmental, and labour policies with a view to supporting best practices in sustainable production and making VSS compliance easier for farmers.

At a sectoral level, national organic or sustainable cotton strategies/standards could facilitate the shift to production practices and, thus, farmers' eligibility for Organic certification. India's NPOP and Pakistan's movement toward a national organic agriculture policy are important initial steps toward this. At the regional level, mutual recognition of Organic certification could also boost intraregional trade. An example of what this could look like is the Association of Southeast Asian Nations' mutual recognition agreement on organic agriculture through which association members agreed to harmonize their national organic standards to facilitate trade in organic products between

them. The association is also discussing an organic mark.

Another sectoral policy approach would be an industrial policy focused on developing a sustainable cotton textile sector. This could involve measures aimed at improving the competitiveness of sustainable cotton textile companies, such as subsidies for sustainable production and lower barriers to trade in sustainable cotton and textiles within the region.

Environmental policies that are consistent with VSS requirements, such as those that ban hazardous agrochemicals—WHO Class 1a and 1b substances and those banned by international conventions (POP/PIC/Montreal/Stockholm)—and labour policies in line with ILO standards can support compliance with common VSS environmental and labour criteria. The development of these policies must consider the economic, social, and political contexts. Some policies, such as a ban on fertilizers, need to consider the impact on farmers' practices and may require additional measures to assist their implementation. For example, Sri Lanka's ban on the import of chemical fertilizers and pesticides was not supported by training for farmers, and there were not enough quantities of organic fertilizers offered as substitutes. This lack of complementing measures and consideration for producer needs regarding implementation, coupled with bad weather and the ongoing economic crisis, led to a food crisis and the lifting of the ban (Torella, 2022).

5.2.2 Strengthen Sustainability Provisions in Trade Agreements

Trade agreements can reference VSSs to promote social and environmental objectives in the cotton sector. Nineteen FTAs in the world now have provisions that mention VSSs, eco-labelling, sustainability standards, or certifications as mechanisms to advance sustainability objectives (United Nations Forum on Sustainability Standards, 2020). So far, trade agreements in the countries examined for this report do not refer to sustainability or specific issues, such as pest management, water conservation, or income. They are, therefore, unlikely to influence cotton-farming practices. Trade negotiators can include provisions related to sustainability issues in existing or new trade agreements to help guide progress toward sustainability in agriculture in general, including the cotton sector—for instance, “the promotion, training, exchange, cooperation for applying integrated pest management practices” or “the promotion, training, exchange on water-conservation practices.” Including such cooperation provisions in key areas of interest would boost dialogue and the promotion of best practices and help enhance consistency across markets.

5.2.3 Generate Domestic and Regional Demand for VSS-Compliant Cotton

Governments can develop policies and programs to boost the consumption of—and increase regional demand for—VSS-compliant cotton. This can include government policies that require the procurement of cotton/textile products that meet environmental, social, and economic

criteria, such as VSS-compliant products. For example, Mexico's federal government procurement policy requires all timber and wooden furniture products to be third-party certified, recognizing certifications such as the Forest Stewardship Council and the Programme for the Endorsement of Forest Certification standards (Bermúdez, 2021). Another option would be tax reductions to lower the price of more sustainably grown cotton for consumers. Another way to increase demand is to create incentives for buyers to source sustainable cotton, such as a rebate for those who purchase above a specified volume of sustainable cotton. In addition, retail branding can be used to foster awareness and interest among consumers of sustainable cotton, as has been done by Project SU.RE India, a commitment by 16 Indian apparel brands to advance sustainable sourcing and communicate those initiatives to consumers and media (Ministry of Textiles, 2019).

5.2.4 Establish Organic Seed Banks

To ensure that farmers can access the right quality and type of non-GM cottonseed appropriate for their local context and way of farming, government can support the establishment of organic seed banks, potentially collaborating with the Organic standard to do so. As farmers play an important role in seed banking, community seed banks are especially important. The SAARC Seed Bank was ratified in 2016, and the SAARC Seed Forum was established with the mandate to promote the sustainable and coherent development of a seed system in the region, including advocating for and supporting the development of harmonized

and well-designed policies. The Agreement on Establishing the SAARC Seed Bank mentions that initial collaboration would involve rice, wheat, pulses, and oilseeds, and gradually other crops may be considered (SAARC, 2010). The Seed Bank could consider adding organic cotton as a seed of focus to support farmer efforts and learning across the region.

5.2.5 Target the Promotion of VSS Compliance in Specific Regions as a Tool to Improve Agricultural Practices Where They Are Needed Most

Governments can leverage VSSs to improve farming practices with a view to improving pest management and water conservation by promoting them in areas where they are likely to have the most impact. Based on our spatial analysis, prioritizing the expansion of VSS cotton production in the states of Balochistan in Pakistan and Haryana and Andhra Pradesh in India could support water conservation and help lower chlorpyrifos use. National or state governments could develop targeted policies and programs that aim to frame/regulate cotton production practices in these regions, considering the content criteria and practices supported by VSSs in these areas of concern. Dialogues between policy-makers and VSS-setting bodies could help to spur this cooperation.

References

- Agricultural and Processed Food Products Export Development Authority. (2014). Organic certification mark. In *National programme for organic production: India Organic*. (pp. 183–206). https://apeda.gov.in/apedawebsite/organic/ORGANIC_CONTENTS/Chapter_6.pdf
- Agricultural and Processed Food Products Export Development Authority. (2022). *National Programme for Organic Production (NPOP)*. <https://apeda.gov.in/apedawebsite/organic/PresentStatus.htm>
- Agriculture Marketing Information Service. (2020). *Province wise production of cotton from 1947-48 to 2019-20*. <http://www.amis.pk/agristatistics/Data/HTML%20Final/Cotton/Production.html>
- Agriculture Post. (2021, December 3). *5 govt schemes, promoting organic farming in India*. [AgriculturePost.com. https://agriculturepost.com/5-govt-schemes-promoting-organic-farming-in-india/](https://agriculturepost.com/5-govt-schemes-promoting-organic-farming-in-india/)
- Ahmed, A. (2021, August 5). Cotton intervention price fixed at Rs5,000 per 40kg. *Dawn*. <https://www.dawn.com/news/1638877>
- Amin, T. (2022, June 16). ECC will fix minimum support price for cotton at Rs7,000. *Business Recorder*. <https://www.brecorder.com/news/40180380>
- APTA Secretariat. (2020). *APTA: Asia Pacific Trade Agreement*. United Nations, Economic and Social Commission for Asia and the Pacific. https://www.unescap.org/sites/default/files/Brochure-of-the-APTA_Nov-2020.pdf
- Asia-Pacific Trade Agreement. (1975). <https://www.unescap.org/sites/default/files/1-Bangkok-Agreement.pdf>
- Asian Development Bank (Ed.). (2009). *Study on intraregional trade and investment in South Asia*. <https://think-asia.org/handle/11540/2416>
- Australian Bureau of Agricultural and Resource Economics and Sciences. (2022). *Agricultural productivity*. <https://www.agriculture.gov.au/abares/research-topics/productivity>
- Bain, M. (2017, May 28). *Your organic cotton t-shirt might be worse for the environment than regular cotton*. Quartz. <https://qz.com/990178/your-organic-cotton-t-shirt-might-be-worse-for-the-environment-than-regular-cotton/>
- Baloch, B. L., Nahiyoon, A. A., Rehman, A., & Hussain, M. Z. (2021). *Pakistan National Organic Cotton Policy GAP Analysis* (CABI Working Paper 19). CABI. <https://doi.org/10.1079/CABICOMM-62-8145>
- Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation. (2022a). *Agriculture and food security*. https://bimstec.org/?page_id=5713

- Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation. (2022b). *Purposes*. https://bimstec.org/?page_id=4913
- Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation. (2022c). *Trade, investment and development*. https://bimstec.org/?page_id=6124
- Bermúdez, S. (2021, January 4). *How can voluntary sustainability standards drive sustainability in public procurement and trade policy?* State of Sustainability Initiatives. <https://www.iisd.org/ssi/publications/how-can-voluntary-sustainability-standards-drive-sustainability-in-public-procurement-and-trade-policy/>
- Better Cotton. (2021a). *Better Cotton in India*. <https://bettercotton.org/where-is-better-cotton-grown/better-cotton-in-india/>
- Better Cotton. (2021b). *Better Cotton in Pakistan*. <https://bettercotton.org/where-is-better-cotton-grown/better-cotton-pakistan/>
- Better Cotton. (2022). *Connecting supply & demand: Chain of custody*. <https://bettercotton.org/what-we-do/connecting-supply-demand-chain-of-custody/>
- Better Cotton Initiative. (2018). *Better Cotton principles and criteria* (v. 2.1). <https://bettercotton.org/wp-content/uploads/2019/06/Better-Cotton-Principles-Criteria-V2.1.pdf>
- Better Cotton Initiative. (2019a). *Better Cotton Initiative: 2019 annual report*. <https://stories.bettercotton.org/2019AnnualReport/>
- Better Cotton Initiative. (2019b). *BCI farmer results 2018–2019*. <https://stories.bettercotton.org/bci-farmer-results--2018-2019/>
- BetterWork. (2022a). *Better Work Bangladesh: Our programme*. <https://betterwork.org/where-we-work/bangladesh/bwb-our-programme/>
- BetterWork. (2022b). *Better Work Sri Lanka: Home*. <https://betterwork.org/sri-lanka-home/>
- Bissinger, K., Brandi, C., Cabrera de Leicht, S., Fiorini, M., Schleifer, P., Fernandez de Cordoba, S., & Ahmed, N. (2020). *Linking voluntary standards to Sustainable Development Goals*. International Trade Centre. <https://intracen.org/es/media/2462>
- Brauman, K. A., Richter, B. D., Postel, S., Malsy, M., & Flörke, M. (2016, January 20). Water depletion: An improved metric for incorporating seasonal and dry-year water scarcity into water risk assessments. *Elementa: Science of the Anthropocene*, 4. <https://doi.org/10.12952/journal.elementa.000083>
- Business & Human Rights Resource Centre. (2018, September 27). *Bangladesh: Widespread garment worker protests over minimum wage increase; leads to mass dismissals*. <https://www.business-humanrights.org/en/latest-news/bangladesh-widespread-garment-worker-protests-over-minimum-wage-increase-leads-to-mass-dismissals/>

- Cariki. (2021, September 25). *Organic cotton vs. regular cotton: Why it's better?* <https://cariki.co.uk/blogs/the-green-road/why-is-organic-cotton-better>
- Centre for Agriculture and Bioscience International. (2021). *Producing better cotton in Pakistan*. <https://www.cabi.org/projects/producing-better-cotton-in-pakistan/>
- Chan, E. (2019, October 15). How sustainable is organic cotton, really? *Vogue Australia*. <https://www.vogue.com.au/fashion/news/how-sustainable-is-organic-cotton-really/image-gallery/fb482e3c60f8278705a7b76f2fafd069>
- Charter of the South Asian Association for Regional Cooperation. (1985). <https://www.sarc-sec.org/index.php/about-sarc/sarc-charter>
- Chatham House. (2020). *Resource Trade. Earth*. <https://resourcetrade.earth>
- Congressional Research Service. (2022). *Generalized System of Preferences (GSP): Overview and issues for Congress* (No. RL33663).
- CottonConnect. (2021a). *REEL Cotton code of conduct 3.0*. https://static1.squarespace.com/static/5ff5d85f409193661a071749/t/6194cbc423f52c385328360c/1637141479285/CC_REEL_cotton_code.pdf
- CottonConnect. (2021b). *Tracebale*. https://static1.squarespace.com/static/5ff5d85f409193661a071749/t/62f5f5162795346977515f0c/1660286244801/CC_traceBale2021.pdf
- Cotton Corporation of India. (2022). *About us*. <https://cotcorp.org.in/AboutUs.aspx>
- Cotton Corporation of India Ltd. (2020). *Statistics*. <https://cotcorp.org.in/statistics.aspx?AspxAutoDetectCookieSupport=1>
- Cropin. (2021). *Thought leadership with Jaskiran Warrik*. Cropin Cloud. <https://www.cropin.com/thought-leadership/thought-leadership-with-jaskiran-warrik/>
- Daya, P. (2021, November 23). *Nuclear techniques help Bangladeshi experts develop improved cotton varieties in record time*. International Atomic Energy Agency. <https://www.iaea.org/newscenter/news/nuclear-techniques-help-bangladeshi-experts-develop-improved-cotton-varieties-in-record-time>
- Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH. (2020). *Bangladesh: Producing socially-conscious and eco-friendly clothing*. <https://www.giz.de/en/workingwithgiz/11859.html>
- Dezan Shira & Associates. (2021, April 12). *A guide to minimum wage in India*. India Briefing News. <https://www.india-briefing.com/news/guide-minimum-wage-india-2021-19406.html>
- Dorsey, S. (2016, February 19). *The race to accelerate global organic cotton production*. Triple Pundit. <https://www.triplepundit.com/story/2016/race-accelerate-global-organic-cotton-production/57201>

- Drew, D., & Yehounme, G. (2017). *The apparel industry's environmental impact in 6 graphics*. World Resources Institute. <https://www.wri.org/insights/apparel-industrys-environmental-impact-6-graphics>
- Environmental Justice Foundation & Pesticide Action Network UK. (2007). *The deadly chemicals in cotton*. https://ejfoundation.org/resources/downloads/the_deadly_chemicals_in_cotton.pdf
- Ethletic. (2016, October 21). *First Fairtrade cooperative of Pakistan*. <https://ethletic.com/en/2016/10/first-fairtrade-cooperative-of-pakistan/>
- European Commission. (2021, September 22). *Commission proposes new EU Generalised Scheme of Preferences to promote sustainable development in low-income countries*. https://policy.trade.ec.europa.eu/news/commission-proposes-new-eu-generalised-scheme-preferences-promote-sustainable-development-low-income-2021-09-22_en
- European Commission. (2022a). *Corporate sustainability due diligence*. https://ec.europa.eu/info/business-economy-euro/doing-business-eu/corporate-sustainability-due-diligence_en
- European Commission. (2022b). *EU strategy for sustainable and circular textiles*. https://environment.ec.europa.eu/strategy/textiles-strategy_en
- Fairtrade Foundation. (2020). *Fairtrade and cotton*. https://www.fairtrade.org.uk/wp-content/uploads/2020/10/Cotton_commodity_briefing_2020.pdf
- Fairtrade Foundation. (2022). *Fairtrade sourced cotton*. <https://www.fairtrade.org.uk/farmers-and-workers/cotton/fairtrade-sourced-cotton/>
- Fairtrade International. (2011). *Fairtrade Standard for Fibre Crops for Small Producer Organizations and Traders*. https://files.fairtrade.net/standards/FibreCrops_SPO_EN.pdf
- Fairtrade International. (2014). *Fairtrade Standard for Hired Labour* (v. 1.7). Fairtrade International. https://files.fairtrade.net/standards/HL_EN.pdf
- Fairtrade International. (2016). *Fairtrade Textile Standard*. https://www.fairtrade-deutschland.de/fileadmin/DE/01_was_ist_fairtrade/03_standards/fairtrade_textilstandard_englisch.pdf
- Fairtrade International. (2019). *Fairtrade Standard for Small-scale Producer Organizations* (v. 2.5). https://files.fairtrade.net/standards/SPO_EN.pdf
- Fairtrade International. (2021a). *The Fairtrade Textile Programme*. <https://www.fairtrade.net/about/the-fairtrade-textile-programme>
- Fairtrade International. (2021b). *Fairtrade pilots additional income for organic cotton farmers*. <https://www.fairtrade.net/news/pilot-additional-income-organic-cotton-farmers>
- Fairtrade International. (2022). *Fairtrade minimum price and premium table*. <https://files.fairtrade.net/Fairtrade-Minimum-Price-and-Premium-Table-EN-PUBLIC.pdf>
- Fashion Revolution. (2016, March 22). *New Fairtrade textile standard and programme*. <https://www.fashionrevolution.org/new-fairtrade-textile-standard-and-programme/>

- FAS Islamabad. (2019). *Pakistan cotton and products annual 2019* (Global Agricultural Information Network Report PK1908). USDA Foreign Agricultural Service. [https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Cotton%20and%20Products%20Annual Islamabad Pakistan 4-2-2019.pdf](https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Cotton%20and%20Products%20Annual%20Annual%20Islamabad%20Pakistan%204-2-2019.pdf)
- Ferrigno, S., Guadagnini, R. & Tyrell, K. (2017). *Is cotton conquering its chemical addiction? A review of pesticide use in global cotton production*. Pesticide Action Network UK. <https://www.laundesfoundation.org/en/resources/2017/cottons-chemical-addiction-final-low-res-2017.pdf>
- Fibre2Fashion. (2017, May 1). *Fairtrade in talks with groups in India, Bangladesh*. Fashion Network. <https://www.fashionnetwork.com/news/fairtrade-in-talks-with-groups-in-india-bangladesh,822200.html>
- Fibre2Fashion. (2021). *Indian ministry, GIZ sign MoU on project on cotton value addition*. <http://www.fibre2fashion.com/news/textile-news/indian-ministry-giz-sign-mou-on-project-on-cotton-value-addition-276757-newsdetails.htm>
- Food and Agriculture Organization of the United Nations. (2023). *Food and agriculture data (FAOSTAT)*. <https://www.fao.org/faostat/en/#home>
- Gardezi, A. (2022). *Govt approves new support price for cotton during FY23*. <https://propakistani.pk/2022/03/15/govt-approves-new-support-price-for-cotton-during-fy23/>
- General Agreement on Tariffs and Trade (1994). https://www.wto.org/english/docs_e/legal_e/gatt47_01_e.htm
- Global Organic Textile Standard. (2020a). *GOTS annual report 2020*. https://global-standard.org/images/resource-library/documents/GOTS_Word_Annual_Report_2020.pdf
- Global Organic Textile Standard. (2020b). *GOTS detects evidence of Organic cotton fraud in India* [Press release]. <https://global-standard.org/news/gots-press-release-gots-detects-evidence-of-organic-cotton-fraud-in-india>
- Global Standard. (2020). *Global Organic Textile Standard (GOTS)*. [https://global-standard.org/images/resource-library/documents/standard-and-manual/gots version 6 0 en1.pdf](https://global-standard.org/images/resource-library/documents/standard-and-manual/gots%20version%206%200%20en1.pdf)
- Granger Iovacchini, S., Pepper, L. R., Crossland, B., & Bettany, P. (2020). *2025 Sustainable Cotton Challenge: Second annual report*. Textile Exchange. https://textileexchange.org/wp-content/uploads/2021/05/2025_Sustainable-Cotton-Challenge-Report_20201.pdf
- Grosscurt, C., de Groot Ruiz, A., & Fobelets, V. (2016). *The true price of cotton from India*. IDH the sustainable trade initiative & True Price. <https://trueprice.org/wp-content/uploads/2022/07/TP-Cotton.pdf>
- Hossain, E. (2018, September 14). *Hazardous pesticides in wide use in Bangladesh*. New Age. <https://www.newagebd.net/article/50556/hazardous-pesticides-in-wide-use-in-bangladesh>

- Hossain, T. (2021). *Cotton and products annual* (BG2021-0013). Global Agricultural Information Network & USDA Foreign Agricultural Service. [https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Cotton%20and%20Products%20Annual Dhaka Bangladesh 04-01-2021.pdf](https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Cotton%20and%20Products%20Annual%20Dhaka%20Bangladesh%2004-01-2021.pdf)
- Hussain, T., & Wahab, A. (2018). A critical review of the current water conservation practices in textile wet processing. *Journal of Cleaner Production*, 198, 806–819. <https://doi.org/10.1016/j.jclepro.2018.07.051>
- India–Sri Lanka Free Trade Agreement (1998). <https://commerce.gov.in/international-trade/trade-agreements/india-sri-lanka-fta/free-trade-agreement-between-the-republic-of-india-and-the-democratic-socialist-republic-of-sri-lanka/>
- International Cotton Advisory Committee. (2022). *Data portal*. <https://www.icac.org/DataPortal/DataPortal?MenuId=23>
- International Federation of Organic Agricultural Movements. (2014). *The IFOAM norms for organic production and processing*. IFOAM Organics International. https://www.ifoam.bio/sites/default/files/ifoam_norms_july_2014_t.pdf
- International Federation of Organic Agricultural Movements & Food and Agriculture Organization of the United Nations. (2019, December 19). *Global map of PGS initiatives*. Participatory Guarantee System Worldwide. <https://pgs.ifoam.bio/>
- International Labour Organization. (2017, May 10). *Promoting fundamental principles and rights at work in the cotton supply chain*. http://www.ilo.org/newdelhi/whatwedo/projects/WCMS_654951/lang--en/index.htm
- International Labour Organization. (2021, August 2). *Sustainable cotton farming brings better lives for farmers and their families*. http://www.ilo.org/newdelhi/info/public/fs/WCMS_814029/lang--en/index.htm
- International Trade Administration. (2022). *Sri Lanka—Country Commercial Guide*. International Trade Administration, United States Department of Commerce. <https://www.trade.gov/country-commercial-guides/sri-lanka-textiles>
- Jayasooriya, V. (2021, June). Textile ecolabelling: Where we stand now, and the way forward. *The Official E-Newsletter of the Institution of Engineers Sri Lanka*, 55. <https://iesl.lk/SLEN/55/Textile%20Ecolabelling.php>
- Joint Apparel Association Forum Sri Lanka. (2022). *Garments without Guilt*. <https://www.srilankaapparel.com/social/>
- Khan, M., Akram, N., Iftikhar, M., Husnain, M., & Qureshi, S. (2011). Poverty-environment nexus: Use of pesticide in cotton zone of Punjab, Pakistan. *Journal of Sustainable Development*, 4. <https://doi.org/10.5539/jsd.v4n3p163>

- Kosolapova, E., Verma, R., Turley, L., and Wilkings, A. (2023). *Standards and sustainable development goals* [Manuscript in preparation]. International Institute for Sustainable Development
- Maggi, F., Tang, F. H. M., la Cecilia, D., & McBratney, A. (2019). PEST-CHEMGRIDS, global gridded maps of the top 20 crop-specific pesticide application rates from 2015 to 2025. *Scientific Data*, 6(170). <https://doi.org/10.1038/s41597-019-0169-4>
- Mancombu, S. R. (2021, March 13). *Bangladesh holds Bt cotton field trials*. BusinessLine. <https://www.thehindubusinessline.com/markets/commodities/bangladesh-holds-bt-cotton-field-trials/article34058096.ece>
- Mathews, B. (2018, September 22). Primark sustainable cotton initiative expands to Pakistan. *Apparel Insider*. <https://apparelinsider.com/primark-sustainable-cotton-initiative-expands-to-pakistan/>
- Meier, C., Sampson, G., Larrea, C., Schlatter, B., Voora, V., Dang, D., Bermudez, S., Wozniak, J., & Willer, H. (2020). *The state of sustainable markets 2020: Statistics and emerging trends*. International Trade Centre. https://orgprints.org/id/eprint/39273/1/meier-et-al-2020-SustainableMarkets2020-layout_20201012_web.pdf
- Meier, C., Sampson, G., Larrea, C., Schlatter, B., Bermúdez, S., Dang, D., & Willer, H. (2021). *The state of sustainable markets 2021: Statistics and emerging trends*. International Trade Centre. <https://vss.fibl.org/vss-report/report-2021>
- Ministry of Commerce and Industry. (n.d.). *Agriculture export policy*. Government of India. https://commerce.gov.in/wp-content/uploads/2020/02/NTESCL636802085403925699_AGRI_EXPORT_POLICY.pdf
- Ministry of National Food Security and Research. (2021). *Better Cotton Initiative for sustainable cotton production in Pakistan*. <https://mnfsr.trancemedia.pk/2021/06/24/better-cotton-initiative/>
- Ministry of Textiles. (2019). *Union Textiles Minister launches Project SURE on Sustainable Fashion Day at Lakmé Fashion Week*. <https://pib.gov.in/PressReleasePage.aspx?PRID=1582685>
- Monfreda, C., Ramankutty, N., & Foley, J. A. (2008). Farming the planet: 2. Geographic distribution of crop areas, yields, physiological types, and net primary production in the year 2000. *Global Biogeochemical Cycles*, 22(1). <https://doi.org/10.1029/2007GB002947>
- Mowbray, J. (2019, February 7). *Pakistan resurrects organic cotton production*. Ecotextile News. <https://www.ecotextile.com/2019020724037/materials-production-news/pakistan-resurrects-organic-cotton-production.html>
- Observatory of Economic Complexity. (2022). *Raw cotton*. <https://oec.world/en/profile/hs/raw-cotton>

- Organisation for Economic Co-operation and Development & Food and Agriculture Organization of the United Nations. (2021). Cotton. In *OECD-FAO agricultural outlook 2021-2030* (214–224). <https://doi.org/10.1787/7980a57f-en>
- Pakistan Central Cotton Committee. (2017). *History of PCCC*. <http://www.pccc.gov.pk/history.html>
- Pakistan–Sri Lanka Free Trade Agreement (2002). https://www.commerce.gov.pk/wp-content/uploads/pdf/PSFTA_Text.pdf
- Participatory Guarantee System for India. (2020). *PGS-India standards* (updated April 2020). Department of Agriculture & Farmers Welfare Ministry of Agriculture and Farmers Welfare, Government of India. https://pgsindia-ncof.gov.in/uploads/operational_manuals/165217729821PGS_India_Standards.pdf
- Partnership for Cleaner Textile. (2022). *What is PaCT?* <https://www.textilepact.net/what-is-pact.html>
- Preetha, M. S. (2022, July 26). *Textile industry to submit proposal to raise cotton productivity*. The Hindu. <https://www.thehindu.com/business/Industry/textile-industry-to-submit-proposal-to-raise-cotton-productivity/article65685746.ece>
- Primark. (2021). *Our Sustainable Cotton Programme*. <https://corporate.primark.com/en/product/sustainable-cotton-programme>
- Public Citizen’s Global Trade Watch. (2015). *Only one of 44 attempts to use the WTO’s “General Exception” has ever succeeded*. Public Citizen. <https://www.citizen.org/article/only-one-of-44-attempts-to-use-the-wtos-general-exception-to-only-one-of-44-attempts-to-use-the-gatt-article-xx-gats-article-xiv-general-exception-has-ever/>
- Cotton Connect. (2021). *REEL Cotton code of conduct 3.0*. https://static1.squarespace.com/static/5ff5d85f409193661a071749/t/6194cbc423f52c385328360c/1637141479285/CC_REEL_cotton_code.pdf
- Rehman, S. (2021). *Cotton and products annual*. (Global Agricultural Information Network Report No. PK2021-0004). USDA Foreign Agricultural Service. <https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Cotton%20and%20Products%20Annual%20Islamabad%20Pakistan%2004-01-2021>
- Rehman, A., Jingdong, L., Shahzad, B., Chandio, A. A., Hussain, I., Nabi, G., & Iqbal, M. S. (2015). Economic perspectives of major field crops of Pakistan: An empirical study. *Pacific Science Review B: Humanities and Social Sciences*, 1(3), 145–158. <https://doi.org/10.1016/j.psrb.2016.09.002>
- Research Institute of Organic Agriculture FiBL. (2022a). *Organic area data for selected crops*. FiBL Statistics. https://statistics.fibl.org/world/selected-crops-world.html?tx_statisticdata_pi1%5Bcontroller%5D=Element2Item&cHash=7dc7312efa295d7a1673ae0448ead0ad

- Research Institute of Organic Agriculture FiBL. (2022b). *Success in the battle against the cotton seed crisis: First ever release of organic cotton varieties in India*. <https://www.fibl.org/en/info-centre/news/first-ever-release-of-organic-cotton-varieties-in-india>
- SAARC Agriculture Centre. (2021a, April). *Regional consultation meeting on advanced water management options for sustainable crop production in South Asia*. <https://www.sac.org.bd/regional-consultation-meeting-on-advanced-water-management-options-for-sustainable-crop-production-in-south-asia/>
- SAARC Agriculture Centre. (2021b, April). *Regional expert consultation meeting on impacts of agricultural chemicals inputs on the environment and human health in South Asia, 21-22 April 2021*. <https://www.sac.org.bd/regional-expert-consultation-meeting-on-impacts-of-agricultural-chemicals-inputs-on-the-environment-and-human-health-in-south-asia-21-22-april-2021/>
- SAARC Agriculture Centre. (2022). *About SAC*. <https://www.sac.org.bd/about-sac/>
- Sahito, A., Baloch, Z. A., Mahar, A., Otho, S. A., Kalhor, S. A., Ali, A., Kalhor, F. A., Soomro, R. N., & Ali, F. (2015). Effect of water stress on the growth and yield of cotton crop (*Gossypium hirsutum*). *American Journal of Plant Sciences*, 6(7), 1027–1039. <https://doi.org/10.4236/ajps.2015.67108>
- Seufert, V. (2019). Comparing yields: Organic versus conventional agriculture. In P. Ferranti, E. M. Berry, & J. R. Anderson (Eds.), *Encyclopedia of food security and sustainability* (pp. 196–208). Elsevier. <https://doi.org/10.1016/B978-0-08-100596-5.22027-1>
- Seufert, V., & Ramankutty, N. (2017). Many shades of gray—The context-dependent performance of organic agriculture. *Science Advances*, 3(3), e1602638. <https://doi.org/10.1126/sciadv.1602638>
- SGS. (2022). *Garments without Guilt*. <https://www.sgs.ca/en/sustainability/social-sustainability/social-responsibility-sr/garments-without-guilt>
- Shuli, F., Jarwar, A. H., Wang, X., Wang, L., & Ma, Q. (2018). Overview of the cotton in Pakistan and its future prospects. *Pakistan Journal of Agricultural Research*, 31(4). <https://doi.org/10.17582/journal.pjar/2018/31.4.396.407>
- Singh, S. (2019). Competing for space and making a difference? An assessment of sustainability standards in the Indian cotton sector. In B. Arora, P. Budhwar, & D. Jyoti (Eds.), *Business responsibility and sustainability in India: Sectoral analysis of voluntary governance initiatives* (pp. 161–193). Springer International Publishing. https://link.springer.com/chapter/10.1007/978-3-030-13716-8_6
- Sinha, R., & Sareen, N. (2020). *India's limited trade connectivity with South Asia* (Policy Brief No. 052020–03). Brookings Institution India Center. <https://www.brookings.edu/research/indias-limited-trade-connectivity-with-south-asia/>

- Sood, D. (2021). *India—Cotton and products annual* (No. IN2021-0045; Global Agricultural Information Network, p. 19). USDA Foreign Agricultural Service. <https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Cotton%20and%20Products%20Annual%20New%20Delhi%20India%2004-01-2021.pdf>
- South Asia Co-operative Environment Programme. (2021). *South Asia Forum on Sustainable Consumption and Production*. <http://www.sacep.org/programmes/south-asia-forum-on-sustainable-consumption-and-production>
- South Asian Association for Regional Cooperation. (2010). *Agreement on establishing the SAARC Seed Bank*. <https://www.saarc-sec.org/index.php/resources/agreements-conventions/33-agreement-on-establishing-the-saarc-seed-bank/file>
- South Asian Association for Regional Cooperation. (2018). *H. E. Mr. Amjad Hussain B. Sial, SAARC, addressed the Inaugural Session of the International Conference on Doubling the Income of Farmers of SAARC Countries in Kathmandu today*. <https://www.saarc-sec.org/index.php/press-release/256-h-e-mr-amjad-hussain-b-sial-saarc-addressed-the-inaugural-session-of-the-international-conference-on-doubling-the-income>
- South Asian Association for Regional Cooperation. (2020). *Economic trade and finance*. <https://www.saarc-sec.org/index.php/areas-of-cooperation/economic-trade-and-finance>
- South Asian Association for Regional Cooperation. (2022). *Economic trade and finance*. <https://www.saarc-sec.org/index.php/areas-of-cooperation/economic-trade-and-finance>
- South Asian Free Trade Area (2004). <https://commerce.gov.in/wp-content/uploads/2020/05/safta.pdf>
- Sri Lanka Apparel. (2021). *Compliance*. <https://www.srilankaapparel.com/compliance/>
- Sri Lanka Export Development Board. (2015). “*Garments without Guilt*” from Sri Lankan apparel manufacturers & suppliers. Sri Lanka Export Development Bank. <https://www.srilankabusiness.com/blog/garments-without-guilt.html>
- Sri Lanka Export Development Board. (2022). *Sri Lanka export performance report*. Sri Lanka Export Development Board. <https://www.srilankabusiness.com/buyers/export-performance-report.html>
- Sri Lanka Fairtrade. (2014). *Sri Lanka Fairtrade*. <http://www.srilankafairtrade.org/>
- Subramani, M. R. (2021, June 13). *Bangladesh conducts field trials of Bt cotton even as India drags its feet on new GM crops*. Swarajya. <https://swarajyamag.com/business/bangladesh-conducts-field-trials-of-bt-cotton-even-as-indian-drags-its-feet-on-new-gm-crops>
- Tabib, F. A. I. (2016, November 23). *Prospects and challenges of organic cotton in Bangladesh* [Paper presentation]. National Seminar on GOTS Certification, Radisson Blu Dhaka Water Garden, Bangladesh. <https://global-standard.org/images/gots-images/gots-events/gots-bangladesh-seminar-2016/7-Fakhre-Alam-Ibne-Tabib-CDB-Organic-Cotton-Bangladesh-.pdf>

- Textile Exchange. (n.d.). *Chain of custody tracks fibres at every stage of their journey*. <https://textileexchange.org/standards/certification/what-is-chain-of-custody/>
- Textile Exchange. (2015). *Organic Cotton Sustainability Assessment—Summary of findings*. <https://store.textileexchange.org/product/organic-cotton-sustainability-assessment-summary-of-findings-download-and-link-to-self-assessment-tool/>
- Textile Exchange. (2020). *Organic cotton market report 2020*. <https://store.textileexchange.org/product/2020-organic-cotton-market-report/>
- Textile Exchange. (2021). *Organic cotton market report 2021*. <https://textileexchange.org/wp-content/uploads/2021/07/Textile-Exchange-Organic-Cotton-Market-Report-2021.pdf>
- Textile Exchange. (2022). Organic cotton. In H. Willer, J. Trávníček, C. Meier, & B. Schlatter (Eds.), *The world of organic agriculture: Statistics and emerging trends 2022* (pp. 128–132). Research Institute of Organic Agriculture FiBL and IFOAM—Organics International. <https://www.fibl.org/fileadmin/documents/shop/1344-organic-world-2022.pdf>
- Torella, K. (2022, July 15). Sri Lanka’s organic farming disaster, explained. *Vox*. <https://www.vox.com/future-perfect/2022/7/15/23218969/sri-lanka-organic-fertilizer-pesticide-agriculture-farming>
- United Nations Economic and Social Commission for Asia and the Pacific. (2020). *APTA: Asia Pacific Trade Agreement*. United Nations. <https://www.unescap.org/sites/default/files/Brochure-of-the-APTA-Nov-2020.pdf>
- United Nations Forum on Sustainability Standards. (2013). *Voluntary sustainability standards: Today’s landscape of issues & initiatives to achieve public policy objectives*. <https://unctad.org/publication/voluntary-sustainability-standards-todays-landscape-issues-and-initiatives-achieve>
- United Nations Forum on Sustainability Standards. (2020). *Scaling up voluntary sustainability standards through sustainable public procurement and trade policy*. <https://unfss.org/wp-content/uploads/2020/10/UNFSS-4th-Report-revised-12Oct2020.pdf>
- United States—Import Prohibition of Certain Shrimp and Shrimp Products. Appellate Body Report. (12 October 1998). https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds58_e.htm
- van den Bossche, P. & Zdouc, W. (2021). *The law and policy of the World Trade Organization: Text, cases, and materials* (5th ed.). Cambridge University Press.
- Vienna Convention on the Law of Treaties (1969). https://legal.un.org/ilc/texts/instruments/english/conventions/1_1_1969.pdf
- Ward, A., & Mishra, A. (2019). Addressing sustainability issues with voluntary standards and codes: A closer look at cotton production in India. In B. Arora, P. Budhwar, & D. Jyoti (Eds.), *Business responsibility and sustainability in India: Sectoral analysis of voluntary governance initiatives* (pp. 161–193). Springer International Publishing. https://doi.org/10.1007/978-3-030-13716-8_7

- Wicker, A., Schmall, E., Raj, S., & Paton, E. (2022, February 14). That organic cotton t-shirt may not be as organic as you think. *The New York Times*. <https://www.nytimes.com/2022/02/13/world/organic-cotton-fraud-india.html>
- Wight, B. (2020, January 31). *Indian sewing factory gets first Fairtrade certification*. Just Style. <https://www.just-style.com/news/indian-sewing-factory-gets-first-fairtrade-certification/>
- Wightman-Stone, D. (2021, April 6). *Soorty launches organic cotton initiative*. FashionUnited. <https://fashionunited.com/news/business/soorty-launches-organic-cotton-initiative/2021040639277>
- Willer, H., & Lernoud, J. (Eds.). (2016). *The world of organic agriculture: Statistics and emerging trends 2016*. Research Institute of Organic Agriculture (FiBL) & IFOAM Organics International. <http://www.organic-world.net/yearbook/yearbook-2016.html>
- Willer, H., Trávníček, J., Meier, C., & Schlatter, B. (Eds.). (2021). *The world of organic agriculture: Statistics and emerging trends 2021*. Research Institute of Organic Agriculture (FiBL) and IFOAM Organics International. <https://www.fibl.org/en/shop-en/1150-organic-world-2021>
- World Bank. (2022a). *Regional integration overview*. <https://www.worldbank.org/en/topic/regional-integration/overview>
- World Bank. (2022b). *Why #OneSouthAsia?* <https://www.worldbank.org/en/programs/south-asia-regional-integration/overview>
- World Health Organization. (2020). *The WHO recommended classification of pesticides by hazard and guidelines to classification 2019*. <https://apps.who.int/iris/handle/10665/332193>
- Yu, C. (2015). Natural textile fibres: Vegetable fibres. In R. Sinclair (Ed.), *Textiles and fashion* (pp. 29–56). Woodhead Publishing. <https://doi.org/10.1016/B978-1-84569-931-4.00002-7>
- Zulfiqar, F., & Thapa, G. B. (2021). The effect of cotton management practices on water use efficiency and water security challenges in Pakistan. In M. Babel, A. Haarstrick, L. Ribbe, V. R. Shinde, & N. Dichtl (Eds.), *Water security in Asia* (pp. 557–566). Springer International Publishing. https://doi.org/10.1007/978-3-319-54612-4_41

Appendix A. Voluntary Sustainability Standard Production Criteria Mapping Results

Excerpts are taken directly from VSS documents to support the sustainability mapping.

Table A1. VSS requirements for crop protection

Crop protection indicators	VSS requirement
International banned substances are not used	
Better Cotton ²²	1.3.1 Pesticides listed in: i. Annex A and B of the Stockholm Convention; or ii. Annexes of the Montreal Protocol; or iii. Annex III of the Rotterdam Convention; are not used—core indicator applicable to small, medium and large farms.
Organic ²³	4.5.3 Substances that do not appear in Appendix 3 are prohibited for use in Organic production. 4.5.6 Any formulated input shall have only active ingredients listed in Appendix 3. All other ingredients shall not be carcinogens, teratogens, mutagens, or neurotoxins.
Fairtrade small-scale producer organizations ²⁴	3.2.16 Hazardous Materials List: You and your members do not use any of the materials on the Fairtrade International HML part 1 (Red List) on all Fairtrade crops that the organization is certified for and also on the fields where they are grown (see Annex 2). All synthetic materials are used only if officially registered and permitted for use on the crop in the country of usage. Prohibited materials are clearly marked not for use on Fairtrade crops—core indicator year 0. 3.2.18 Procedure for compliance with Hazardous Materials List: You develop a procedure to ensure that members do not use any materials on their Fairtrade crops that appear on the Fairtrade International HML part 1 (Red List). The procedure at least includes activities that raise your members' awareness of the HML—core indicator year 1.

²² Excerpts from the BCI Principles and Criteria are taken from Better Cotton Initiative, 2018.

²³ Excerpts from The IFOAM norms for organic production and processing are from International Federation of Organic Agricultural Movements (IFOAM), 2014.

²⁴ Refers to Appendix 3: Crop Protectants and Growth Regulators of the IFOAM Standard for Organic Production and Processing. Appendix 3 provides substances description, compositional requirements, and conditions for use.

Crop protection indicators	VSS requirement
Fairtrade Hired Labour ²⁵	<p>4.2.11 Hazardous Materials List: Your company does not use materials on the Fairtrade International Hazardous Materials List (HML) part 1 (Red List) on Fairtrade crop(s) (see annex 2). All synthetic materials are used only if officially registered and permitted for use on the crop/product in the country of usage. Pesticides prohibited in the HML part 1 (Red List) are clearly marked ‘Not for use on Fairtrade crops’—core indicator year 0.</p> <p>4.2.13 Procedure for compliance with hazardous materials list: Your company has a procedure in place to ensure that materials on the Fairtrade International HML part 1 (Red List) are not used on the Fairtrade crop—core indicator year 0.</p>
REEL Cotton Code	<p>4.2.2 WHO Class 1a and 1b substances and those banned by international conventions (POP/PIC/Montreal/Stockholm) are not used.</p> <p>4.2.2.1 Cotton farmers do not use pesticides containing substances listed in WHO Classes 1a and 1b.</p> <p>4.2.2.2 Cotton farmers do not use pesticides containing substances banned by international conventions. 4.2.2.3 List of locally available safe pesticide shall be provided to the farmer groups.</p>
WHO 1a & 1b substances are not used	
Better Cotton	<p>1.4.1 The Producer has a plan to phase out by 2021 pesticides listed in category 1 of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS); 1a of the World Health Organization (WHO) classification—core indicator applicable to small, medium and large farms.</p> <p>1.4.2 The Producer has a plan to phase out by 2024 pesticides listed in category 2 of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS); 1b of the World Health Organization (WHO) classification—core indicator applicable to small, medium and large farms.</p> <p>1.5.1 The Producer has a plan to phase out Pesticides defined as carcinogenic, mutagenic or reprotoxic (CMR) substances according to Categories 1a and 1b of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) and 1a and 1b of the World Health Organization (WHO) classification—core indicator applicable to small, medium and large farms.</p>
Organic	<p>4.5.3 Substances that do not appear on Appendix 3 are prohibited for use in organic production.</p> <p>4.5.6 Any formulated input shall have only active ingredients listed in Appendix 3. All other ingredients shall not be carcinogens, teratogens, mutagens, or neurotoxins.</p>

²⁵ Excerpts from the Fairtrade Standard for Hired Labour (v. 1.7) are taken from Fairtrade International, 2014.

Crop protection indicators	VSS requirement
Fairtrade small-scale producer organizations	<p>3.2.16 Hazardous Materials List: You and your members do not use any of the materials on the Fairtrade International HML part 1 (Red List) on all Fairtrade crops that the organization is certified for and also on the fields where they are grown (see Annex 2). All synthetic materials are used only if officially registered and permitted for use on the crop in the country of usage. Prohibited materials are clearly marked not for use on Fairtrade crops—core indicator year 0.</p> <p>3.2.18 Procedure for compliance with Hazardous Materials List: You develop a procedure to ensure that members do not use any materials on their Fairtrade crops that appear on the Fairtrade International HML part 1 (Red List). The procedure at least includes activities that raise your members’ awareness of the HML—core indicator year 1.</p>
Fairtrade Hired Labour	<p>4.2.11 Hazardous Materials List: Your company does not use materials on the Fairtrade International Hazardous Materials List (HML) part 1 (Red List) on Fairtrade crop(s) (see annex 2). All synthetic materials are used only if officially registered and permitted for use on the crop/product in the country of usage. Pesticides prohibited in the HML part 1 (Red List) are clearly marked ‘Not for use on Fairtrade crops’—core indicator year 0.</p> <p>4.2.13 Procedure for compliance with hazardous materials list: Your company has a procedure in place to ensure that materials on the Fairtrade International HML part 1 (Red List) are not used on the Fairtrade crop—core indicator year 0.</p>
REEL Cotton Code	<p>4.2.2 WHO Class 1a and 1b substances and those banned by international conventions (POP/PIC/Montreal/Stockholm) are not used. 4.2.2.1 Cotton farmers do not use pesticides containing substances listed in WHO Classes 1a and 1b.</p> <p>4.2.2.2 Cotton farmers do not use pesticides containing substances banned by international conventions. 4.2.2.3 List of locally available safe pesticide shall be provided to the farmer groups.</p>
Synthetic pesticide use is recorded	
Better Cotton	<p>7.3.2 The Producer maintains a farm-level record keeping mechanism e.g. Farmer Field Book for essential production data on inputs and outputs in an accurate manner—core indicator applicable to small, medium and large farms.</p>
Organic	Not covered
Fairtrade small-scale producer organizations	<p>3.2.15 Choice of pesticides: You compile a list of the pesticides that are used on Fairtrade crops and keep it updated. The list has the name of the active ingredients, commercial name, crop on which the pesticides are used and the targeted pests. You indicate which of those materials are in the Fairtrade International Hazardous Materials List (HML), Part 2 (Orange List) and Part 3 (Yellow List)—core indicator year 0.</p>

Crop protection indicators	VSS requirement
Fairtrade Hired Labour	<p>4.2.15 Documenting pesticide use: Your company records pesticides used. Your company indicates which of those materials are on the Fairtrade International HML (Part 1 Red List; Part 2 Orange List and Part 3 Yellow List; see annex 2). At minimum is the name of person who applied the pesticides, name of active ingredient, commercial brand name and amount of pesticide used, method of application, name of target pest or disease, crop, date and site are included—core indicator year 0.</p>
REEL Cotton Code	<p>4.2.1 REEL farmers strive to reduce the amounts of pesticides over time, records of pesticide use are available.</p> <p>4.2.1.1 Farmers keep records of types and amounts of pesticides used, pests and pesticide details in the FFB.</p> <p>4.2.1.2 With help of records and inventories farmers can demonstrate that pesticide application is carried as needed.</p>
Synthetic pesticide use must be reduced over time	
Better Cotton	Not covered
Organic	<p>4.5.1 The organic production system shall include biological, cultural and mechanical mechanisms to manage pests, weeds and diseases. These include: a. choice of appropriate species and varieties; b. appropriate rotation programs, intercropping and companion planting; c. mechanical cultivation; d. protection of natural enemies of pests through provision of favorable habitat, such as hedges, nesting sites and ecological buffer zones that maintain the original vegetation to house pest predators; e. natural enemies including release of predators and parasites; f. mulching and mowing; g. grazing by animals; h. mechanical controls such as traps, barriers, light and sound. i. on-farm preparations from local plants, animals and micro-organisms.</p> <p>4.5.2 When the measures in 4.5.1 are not sufficient, pest, disease and weed management substances permitted under Appendix 3 may be used.</p> <p>4.5.4 Physical methods for pest, disease and weed management are permitted, including the application of heat.</p>
Fairtrade small-scale producer organizations	Not covered
Fairtrade Hired Labour	Not covered
REEL Cotton Code	<p>4.2.1 REEL farmers strive to reduce the amounts of pesticides over time, records of pesticide use are available. 4.2.1.1 Farmers keep records of types and amounts of pesticides used, pests and pesticide details in the FFB.</p> <p>4.2.1.2 With help of records and inventories farmers can demonstrate that pesticide application is carried as needed.</p>

Crop protection indicators	VSS requirement
Pest and pest predator monitoring	
Better Cotton	<p>1.1.1 A locally adapted and time-bound plan, based on agro-ecosystem analysis, and which identifies appropriate specific practices to implement the five components of IPM, is established - core indicator applicable to small farms.</p> <p>1.1.2 An Integrated Pest Management Programme is implemented that includes all the following components: i. growing a healthy crop; ii. preventing the build-up of pest populations and the spread of disease; iii. preserving and enhancing populations of beneficial organisms; iv. regular field observations of crop health and key pest and beneficial insects; v. managing resistance - core indicator applicable to medium and large farms.</p> <p>1.1.3 A timeline for implementing the five components of the Integrated Pest Management plan is established - core indicator applicable to small farms.</p>
Organic	Not covered
Fairtrade small-scale producer organizations	<p>3.2.2 Integrated pest management training: You train your members on integrated pest management. You ensure that this training includes: the monitoring of pests and diseases; alternative ways to control pests and diseases; preventive measures against pests and diseases; measures to avoid that pests and diseases build up resistance to pesticides—dev indicator year 3.</p> <p>3.2.3 Responsible pesticide application: Your members are able to demonstrate that pesticides are applied based on knowledge of pests and diseases—dev indicator year 6.</p>
Fairtrade Hired Labour	<p>4.2.3 Monitoring pests: Your company monitors the main pests and diseases of the Fairtrade crop, and establishes a level of damage beyond which the need to use chemical pesticides is justified. The company avoids the build-up of resistance to pesticides—core indicator year 0.</p>
REEL Cotton Code	<p>4.1.2 Monitoring to determine the economic threshold of pests and time of application is practiced.</p> <p>4.1.2.1 The cotton producer scouts and monitors pest attack.</p> <p>4.1.2.2 When feasible, farmers use pheromone traps for identification of pests with the aim to ensure targeted pesticide use.</p> <p>4.1.2.3 Economic injury levels and action thresholds are respected.</p>

Crop protection indicators	VSS requirement
Other pest-control measures are prioritized over synthetic pesticides	
Better Cotton	<p>1.1.1 A locally adapted and time-bound plan, based on agro-ecosystem analysis, and which identifies appropriate specific practices to implement the five components of Integrated Pest Management, is established - core indicator applicable to small farms.</p> <p>1.1.2 An Integrated Pest Management Programme is implemented that includes all the following components: i. growing a healthy crop; ii. preventing the build-up of pest populations and the spread of disease; iii. preserving and enhancing populations of beneficial organisms; iv. regular field observations of crop health and key pest and beneficial insects; v. managing resistance - core indicator applicable to medium and large farms.</p> <p>1.1.3 A timeline for implementing the five components of the Integrated Pest Management plan is established - core indicator applicable to small farms.</p>
Organic	<p>4.5.1 The organic production system shall include biological, cultural and mechanical mechanisms to manage pests, weeds and diseases. These include: a. choice of appropriate species and varieties; b. appropriate rotation programs, intercropping and companion planting; c. mechanical cultivation; d. protection of natural enemies of pests through provision of favorable habitat, such as hedges, nesting sites and ecological buffer zones that maintain the original vegetation to house pest predators; e. natural enemies including release of predators and parasites; f. mulching and mowing; g. grazing by animals; h. mechanical controls such as traps, barriers, light and sound. i. on-farm preparations from local plants, animals and micro-organisms.</p> <p>4.5.2 When the measures in 4.5.1 are not sufficient, pest, disease and weed management substances permitted under Appendix 3 may be used.</p> <p>4.5.4 Physical methods for pest, disease and weed management are permitted, including the application of heat.</p>
Fairtrade small-scale producer organizations	<p>3.2.2 Integrated pest management training: You train your members on integrated pest management. You ensure that this training includes: the monitoring of pests and diseases; alternative ways to control pests and diseases; preventive measures against pests and diseases; measures to avoid that pests and diseases build up resistance to pesticides—dev indicator year 3.</p>

Crop protection indicators	VSS requirement
Fairtrade Hired Labour	4.2.2 Alternative controls and preventive measures against pests: Your company implements at least one alternative control other than pesticide application and at least one preventive measure to avoid pest development in order to demonstrate control against pest and Year O disease in the Fairtrade crop—core indicator year O.
REEL Cotton Code	<p>4.1.3 Farmers have been encouraged to recur to herbicides as a last resort.</p> <p>4.1.3.1 Weed control is done manually and/or mechanically.</p> <p>4.1.3.2 Farmers are encouraged not to use herbicides.</p> <p>4.1.3.3 Application of herbicide is reduced over time.</p> <p>4.1.4 Cultural, physical and biological measures are applied before resorting to chemical pest control (only applicable if scouting has shown pest infestation).</p> <p>4.1.4.1 Farmers shall plant cotton along with border crop and trap crop.</p> <p>4.1.4.2 At least one cultural measure to control pests has been adopted (e.g. bird perches; traps (pheromone) etc).</p> <p>4.1.4.3 At least one biological method has been considered, e.g. release and augmentation of natural enemies; use of microbial products; use of natural products/biological pesticides; organic pest repellents (e.g. neem extract).</p>

Table A2. VSS requirements for water conservation

Price and Income Indicators	VSS Requirement
Minimum price guarantee	
Better Cotton	Not covered
Organic	Not covered
Fairtrade small-scale producer organizations	<p>2.3.4 Honouring contracts: You ensure that all elements of the transactions fixed in the contract are honoured, unless you and the other party agree to a change. If you become aware that exceptional and/or unforeseen circumstances prevent you from supplying the volume stated in the contract, you promptly notify the buyer in writing and actively seek a solution.</p> <p>If Fairtrade International publishes new Fairtrade Minimum Prices, you fulfil all signed contracts at the price agreed in the contract. The price in the contract can be modified only if you and your buyer both agree to it in writing—core indicator year O.</p>

Price and Income Indicators	VSS Requirement
Fairtrade Hired Labour	<p>5.3.4 Binding purchase contracts: You sign binding purchase contracts provided by your buyers, which are in line with Fairtrade requirements. Unless otherwise stated in the product Standards, contracts at minimum clearly indicate the agreed volumes, quality, price (Fairtrade Minimum Price or market price; whichever is higher), payment terms, and delivery conditions. All contracts between operators and Fairtrade payers or conveyors stipulate a mechanism to resolve conflicts separate from jurisdiction, agreed by both parties—core indicator year 0.</p>
REEL Cotton Code	Not covered
Price premiums	
Better Cotton	Not covered
Organic	<p>There are not specifications in the Organic standard concerning price premiums which are driven primarily by supply and demand as described by Seufert and Ramankutty below. As Organic cotton farmers do not always benefit directly from price premiums, Fairtrade has started piloting a price differential (or premium) of 0.03 Euros to be paid directly to Organic cotton farmers in India (Fairtrade International, 2021b).</p> <p>“Organic food typically has a substantial price premium, which benefits producers, but at the expense of consumers. Higher organic prices are due to limited supply relative to demand, the need to maintain separate distribution channels, and lower yields and sometimes higher production costs. Although direct organic marketing initiatives such as farmers markets and Community Supported Agriculture (CSA) aim to be more accessible to low-income consumers, they usually mostly reach middle-class consumers. However, some studies suggest that CSA shares in an organic farm can provide considerable cost savings to consumers, even compared to conventional produce (Seufert & Ramankutty, 2017, p. 9).”</p>
Fairtrade small-scale producer organizations	<p>4.1.4 Fairtrade Premium: You include all the activities that you plan to fund with the Fairtrade Premium in the Fairtrade Development Plan before you implement the activities—core indicator year 1.</p> <p>4.1.10 Fairtrade Premium use reporting: You report at least once a year on Fairtrade Premium use. You send the report on the Premium use from the previous year, three months after the General Assembly. You send the information to Fairtrade International / your respective Producer Network—core indicator year 1</p>

Price and Income Indicators	VSS Requirement
Fairtrade Hired Labour	<p>2.1.1 Fairtrade Premium Committee: A Fairtrade Premium Committee (FPC), with elected FPC worker members and appointed advisors from the management is created, with the purpose of managing the Fairtrade Premium (FP) for the benefits of all workers. The number of workers' members in the Fairtrade Premium Committee is significantly higher than the number of management advisors. In the case of multi-estates there are FPCs at each affiliated plantation to the multi-estate. There may also be a central FPC at the head office—core indicator year 0.</p>
REEL Cotton Code	Not covered
Fibre quality	
Better Cotton	<p>5.1.1 Good management practices for the harvest and storage of seed cotton are adopted—core indicator small, medium and large farms.</p> <p>5.1.2 No polypropylene, polyethylene or any synthetic bags are used during the harvesting of cotton by hand, nor during storage and transportation—improvement indicator small, medium and large farms.</p>
Organic	Not covered
Fairtrade small-scale producer organizations	Not covered
Fairtrade Hired Labour	Not covered
REEL Cotton Code	<p>1.4.1 Farmers adopt quality and traceability practices at pre-harvesting, harvesting, post harvesting handling and storage.</p> <p>1.4.1.1 Farmers adopt proper crop harvest management techniques, timing and judgement.</p> <p>1.4.1.2 Cotton is prevented from being contaminated with foreign material during and after picking.</p> <p>1.4.1.3 Incidence of seed cotton with poor quality is physically monitored for no contamination.</p> <p>1.4.1.4 REEL cotton product flow shall be documented up to ginner level and maintained.</p>

Price and Income Indicators	VSS Requirement
Minimum wage	
Better Cotton	<p>6.13.1 Farmers in the PU are aware of the legally applicable minimum wage/s (statutory national or regional minimum wage applicable to agriculture, collectively agreed wage, industry minimum)—core indicator, small, medium and large farms.</p> <p>6.13.2 The wage rate paid to workers by the Producer is equal to or higher than the applicable minimum wage - payment—improvement indicator, medium and large farms.</p> <p>6.13.3 Employees are paid more than 15% higher than the applicable minimum wage—payment—improvement indicator, large farms.</p> <p>6.13.4 Piece rate or wages adequate for workers to earn the applicable national minimum wage or regional norm (whichever is higher) are provided during normal working hours and under normal operating conditions payment—improvement indicator, large farms.</p>
Organic	<p>9.10 Operators shall pay employees wages and benefits that meet legal minimum requirements of the operation’s jurisdiction or, in the absence of this minimum, the sectorial benchmark.</p>
Fairtrade small-scale producer organizations	<p>3.3.18 Wages: You and your members set salaries for workers according to CBA regulations where they exist or at regional average wages or at official minimum wages for similar occupations whichever is the highest. You specify wages for all employee functions and employment terms, such as piecework—core indicator year 0.</p>
Fairtrade Hired Labour	<p>3.5.3 Hourly wages: For work based on production, quotas and piecework, during normal working hours, your company pays the equivalent to average hourly waged work based on a manageable work load. This is not below a proportionate minimum wage or the relevant industry average, whichever is higher. Information about this pay rate is transparent and available for all workers and worker organizations—core indicator year 0.</p>
REEL Cotton Code	<p>9.6.2 Work—including subcontracted work—is equally remunerated according to the type of work provided and for both genders alike.</p> <p>9.6.2.1 Payment of workers contracted by the farmer shall either be in line with or exceeding sector Collective Bargaining Agreements, or correspond to the regional average and/or official minimum wages for similar occupations.</p> <p>9.6.2.2 Payment shall be in minimum equal to the country or region-specific stipulated benchmark for the living wages.</p> <p>9.6.2.3 Women pay shall be equal to their male counterpart for the same type of work provided.</p> <p>9.6.2.4 The pay rate shall allow subcontracted workers who are remunerated based on production quotas, or piecework, to earn the proportionate minimum wage or relevant industry average (whichever is higher) during normal working hours.</p>

Price and Income Indicators	VSS Requirement
Living wage	
Better Cotton	Not covered
Organic	Not covered
Fairtrade small-scale producer organizations	3.3.23 Gradual salary increase: You and your members gradually increase salaries above the regional average and the official minimum wage—development indicator year 3.
Fairtrade Hired Labour	3.5.4 Wage level increase: If remuneration (wages and benefits) is below the living wage benchmarks as approved by Fairtrade International, your company ensures that real wages are increased annually to continuously close the gap with living wage. The incremental steps and timeline toward the applicable living wage are negotiated with trade union/elected worker representatives—core indicator year 1.
REEL Cotton Code	<p>9.6.2 Work—including subcontracted work—is equally remunerated according to the type of work provided and for both genders alike.</p> <p>9.6.2.1 Payment of workers contracted by the farmer shall either be in line with or exceeding sector Collective Bargaining Agreements, or correspond to the regional average and/or official minimum wages for similar occupations.</p> <p>9.6.2.2 Payment shall be in minimum equal to the country or region-specific stipulated benchmark for the living wages.</p> <p>9.6.2.3 Women pay shall be equal to their male counterpart for the same type of work provided.</p> <p>9.6.2.4 The pay rate shall allow subcontracted workers who are remunerated based on production quotas, or piecework, to earn the proportionate minimum wage or relevant industry average (whichever is higher) during normal working hours.</p>
Equal pay for equal work	
Better Cotton	<p>6.5.1 Equal wages are paid to workers who perform the same job, irrespective of gender—core indicator, medium and large farms.</p> <p>6.5.2 There is no evidence of any policy, practice or customary rule that results in the payment of unequal wages on the basis of gender to workers who perform the same job—core indicator, small farms.</p>
Organic	9.5 Operators shall provide their employees and contractors equal opportunity and treatment, and shall not act in a discriminatory way.

Price and Income Indicators	VSS Requirement
Fairtrade small-scale producer organizations	3.3.26 Equitable remuneration: You and your members give local, migrant, seasonal and permanent workers the same benefits and employment conditions for the same work performed. In cases where equivalent benefits, such as a pension scheme or social security, cannot be made available to a set of workers, e.g. migrant or temporary/seasonal workers, your organization provides an alternative and equivalent benefit through other means—development indicator year 6.
Fairtrade Hired Labour	3.5.21 Equitable remuneration: Local and migrant, seasonal/temporary and permanent workers receive equivalent benefits and employment conditions for equal work performed. In cases where equivalent benefits, such as a pension scheme or social security, cannot be made available to a set of workers, e.g. migrant or temporary/seasonal workers, these workers receive the equivalent or an alternative through other means—core indicator year 1.
REEL Cotton Code	<p>9.6.2 Work—including subcontracted work—is equally remunerated according to the type of work provided and for both genders alike.</p> <p>9.6.2.1 Payment of workers contracted by the farmer shall either be in line with or exceeding sector Collective Bargaining Agreements, or correspond to the regional average and/or official minimum wages for similar occupations.</p> <p>9.6.2.2 Payment shall be in minimum equal to the country or region-specific stipulated benchmark for the living wages.</p> <p>9.6.2.3 Women pay shall be equal to their male counterpart for the same type of work provided.</p> <p>9.6.2.4 The pay rate shall allow subcontracted workers who are remunerated based on production quotas, or piecework, to earn the proportionate minimum wage or relevant industry average (whichever is higher) during normal working hours.</p>

Appendix B. Trade Agreements and the Issues of Concern

Table B1. Analysis of trade agreement provisions and the issues of concern

	Labour	Environment
Asia Pacific Trade Agreement (1975)	<p>Preamble: REALIZING that the expansion of trade could act as a powerful stimulus to the development of their national economies, by expanding investment and production opportunities through benefits to be gained from specialization and economies of scale, thus providing greater opportunities of employment and securing higher living standards for their populations;</p>	<p>Article 35 Exceptions: Nothing in this Agreement shall prevent any Participating State from taking action and adopting measures which it considers necessary for the protection of its national security, the protection of public morality, the protection of human, animal and plant life and health, and the protection of articles of artistic, historical and archaeological value.</p>
South Asian Free Trade Area (2004)		<p>Article 14 - General Exceptions: (...) b) Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the similar conditions prevail, or a disguised restriction on intraregional trade, nothing in this Agreement shall be construed to prevent any Contracting State from taking action and adopting measures which it considers necessary for the protection of: (i) public morals; (ii) human, animal or plant life and health; and (iii) articles of artistic, historic and archaeological value.</p>

	Labour	Environment
India–Sri Lanka FTA (1998)		<p>Article IV General Exceptions:</p> <p>Nothing in this Agreement shall prevent any Contracting Party from taking action and adopting measures, which it considers necessary for the protection of its national security, the protection of public morals, the protection of human, animal or plant life and health, and the protection of articles of artistic, historic and archaeological value, as is provided for in Articles XX and XXI of the General Agreement on Tariff and Trade, 1994.</p>
Pakistan–Sri Lanka FTA (2002)		<p>Article IV - General Exceptions:</p> <p>Nothing in this Agreement shall prevent a Contracting Party from taking action and adopting measures, which it considers necessary for the protection of its national security, the protection of public morals, the protection of human, animal or plant life and health, and the protection of articles of artistic, historic, and archaeological value, as is provided for in Article XX and XXI of the General Agreement on Tariff and Trade, 1994 and WTO Agreement on Application of Sanitary and Phytosanitary Measures.</p>

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