



TextileExchange

Preferred Fiber Market Report 2016

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(Elkline)

Introduction

Welcome to the third edition of Textile Exchange's Preferred Fiber and Materials Market Report (PFMR). This report is the result of extensive exploration and consultation with all sectors of the textile supply chain. It will provide 2015 updates on preferred fiber and materials development, growth, standards, and innovative trends and news.

The goal of the PFMR is to help brands, retailers, educators, NGOs and everyone participating in the textile supply chain understand the preferred fiber and material market. Our long-term mission is to encourage the growth and development of a verifiable preferred material supply chain from fiber to finished product that supports a clear message to pass on to the consumer.

This year we have good reason to believe that we are heading in the right direction. Governments, industry groups, suppliers and brands are striving for continuous improvement by creating circular economies. There is a broad base of industry efforts, including exciting developments in technologies that make fiber from used clothing and textile waste, to blocking imports from suppliers who don't meet industry standards. For instance, Tangshan Sanyou Group is no longer allowed to sell in the United States because of their use of convict labor in the production of their products.

There are sectors within the preferred fiber and materials market that Textile Exchange (TE) cannot cover in this report. At this stage, TE does not have access to detailed information on pricing and volumes from manufacturers. However, TE will share any information that has been approved for publication or that our research has uncovered. An overview of preferred cottons is provided in its own section to clarify a robust field of options. Textile Exchange's 2015 Organic Cotton Market Report has been simultaneously released for an in-depth look at that market segment.

Governments are becoming increasingly involved with sustainability through setting goals (e.g. U.N. Sustainable Development Goals) that sustainability standards can assist in accomplishing and verifying.

“The industry won't and can't change overnight, but sourcing executives are starting to think differently and I'm sure we'll start to see more brands announcing sustainable business strategies in the future.”

A quick glance at the numbers tell me that it's clear Sourcing Journal readers know business needs to change, and the leaders are responding. Change is needed, whether it's improving the manufacturing process so it's more sustainable or finding new fibers that leave behind less of a negative impact. PVH, for instance, has built a socially-responsible vertical facility in Ethiopia that's slated to start production this summer, while H&M recently announced that it made some 1.3 million of its pieces using closed-loop materials last year. Plus, more brands are looking into fibers that are not only made from recycled materials (like plastic bottles or reclaimed clothing) but that are also recyclable, so that they can be recovered and reused at the end of a product's life.

- Edward Hertzman, Founder,
Hertzman Media Group/Sourcing Journal Online

1. The industry is making progress both environmentally and socially.
1. Just Style News & Insights 31 March 2016

Executive Summary

What You Will Find In This Report

To shine a light on the many positive developments in preferred fiber and materials, we present in this report a mix of data, informed insights, and vignettes from a wide range of industry players. Many of the innovations are so fresh that it's too soon to expect hard data on outcomes – in these cases you will find statements of intent and project plans. In addition, there are initiatives that have had time to mature where we have collected hard data about the results.

Our report starts with a quick overview of the some great collaborations in the industry and then we explain the terms we use. We then examine the Preferred Fiber and Materials Market, giving the latest developments in:

- Recycled Polyester (rPET)
- Lyocell/MMC
- Biobased Synthetics
- Recycled Wool
- Recycled Cotton
- Down
- Chemicals
- Preferred Cottons – a Special Report

The report then focuses on Integrity and the Standards landscape, plotting a course through the many ways that product claims can be backed up, and detailing the new Standards which are now available or in development for fibers such as wool, and down and cashmere.

We close with a look towards the future – the global context created by initiatives such as the Sustainable Development Goals and the increased involvement of governments in setting goals.

Responsible Wool Standard International Working Group



In February 2014, H&M contacted TE about addressing their wool supply issues. Together, we decided to involve a wider range of stakeholders to explore the idea of developing a standard for the entire industry. The International Working Group for the Responsible Wool Standard was born. Following ISEAL's Code of Good Practice for sustainability standards, the Working Group represented the broad spectrum of interested parties in the wool industry.

TE started the project by reaching out to farmers, animal welfare groups, land conservation experts, supply chain members, and industry associations, as well as apparel, home brands, and retailers. The Working Group members joined forces to develop a standard to guarantee the ethical treatment of animals, ensure the protection of land, and track materials through a reliable chain of custody.

The standard was developed with expertise from all major wool-growing regions through an open and transparent process. TE's highest priorities were to include representation from all potential stakeholders and to create a tool that balances effective requirements with realistic and auditable criteria. Brands expressed their need for assurance that animal welfare was protected and land management ensured. Animal welfare groups and farmers advised on best practices in animal welfare and sheep husbandry respectively. Land management experts and farmers in at-risk ecological regions shared their expertise in practices to protect against land degradation.

After pilot audits in countries around the world and two public stakeholder review periods, the final standard was released in June 2016.

The European Clothing Action Plan (ECAP)



The European Clothing Action Plan is a unique project with the aim of creating a circular approach to fashion across Europe. It has ambitious annual targets to:

- Reduce waste by 90,000 tons.
- Save 1.6 million tons CO₂ equivalent.
- Save 588 million cubic meters of water.

Delivered by WRAP, MADE-BY, Rijkswaterstaat, Danish Fashion Institute, and London Waste and Recycling Board, the European Clothing Action Plan full lifecycle approach encompasses sustainability in design, production, public procurement, consumption, collection, recycling and reprocessing.

Different types of fiber are recognized to play a significant part in the overall environmental footprint of a garment, therefore 50 brands and retailers will be supported by MADE-BY in understanding, measuring, and reducing the environmental footprints of their fiber mix. Nine companies will pilot products made from recycled fiber, supported by Rijkswaterstaat.

Find out more at: ecap.eu.com.

The CanopyStyle Initiative



Today over 65 brands are working with not-for-profit Canopy representing over \$100 billion in annual revenues. The top 10 viscose producers are also engaged with 9 of them having pulp sourcing policies in place.

The goals of all partners in CanopyStyle are to:

1. Eliminate sourcing from the world's ancient and endangered forests by 2017
2. To increase the use of alternatives like recycled clothing or left-over straw as feedstock for man-made cellulotics
3. To support innovative conservation solutions and forward protection of Coastal Temperate Rainforests like Vancouver Island, Boreal Forests in Canada and Russia and in tropical rainforests such as the Amazon and Indonesia.
4. To avoid controversial sourcing such as illegal logging or logging in areas where free, prior, and informed consent of indigenous communities has not been given.
5. Where points 1-4 have been met, to use Forest Stewardship Council (FSC) Certification as a tool to ensure sustainable forest management in areas where wood sourcing is acceptable.

Learn more here, <http://canopyplanet.org>.

Cotton 2040 – A Collaborative Initiative



Cotton 2040 aims to catalyze current sustainability initiatives in the global cotton industry by integrating and focusing the activities of different players to create a systemic shift across the sector. It enables industry stakeholders to align the work of different initiatives in key areas needed to take sustainable cotton from niche product to mainstream choice.

Over the past months, Forum for the Future has been scoping the key issues and crucial levers for creating systemic change for a more sustainable cotton industry and has developed proposals for four cross-industry work streams. Once in operation, these work streams will be pre-competitive, action-driven collaborations, bringing together a number of organizations across multiple sectors to work together to support implementation. The four proposed work streams are:

1. Building demand for sustainable cotton.
2. Cotton recycling and circularity.
3. Traceability.
4. Upskilling for resilience.

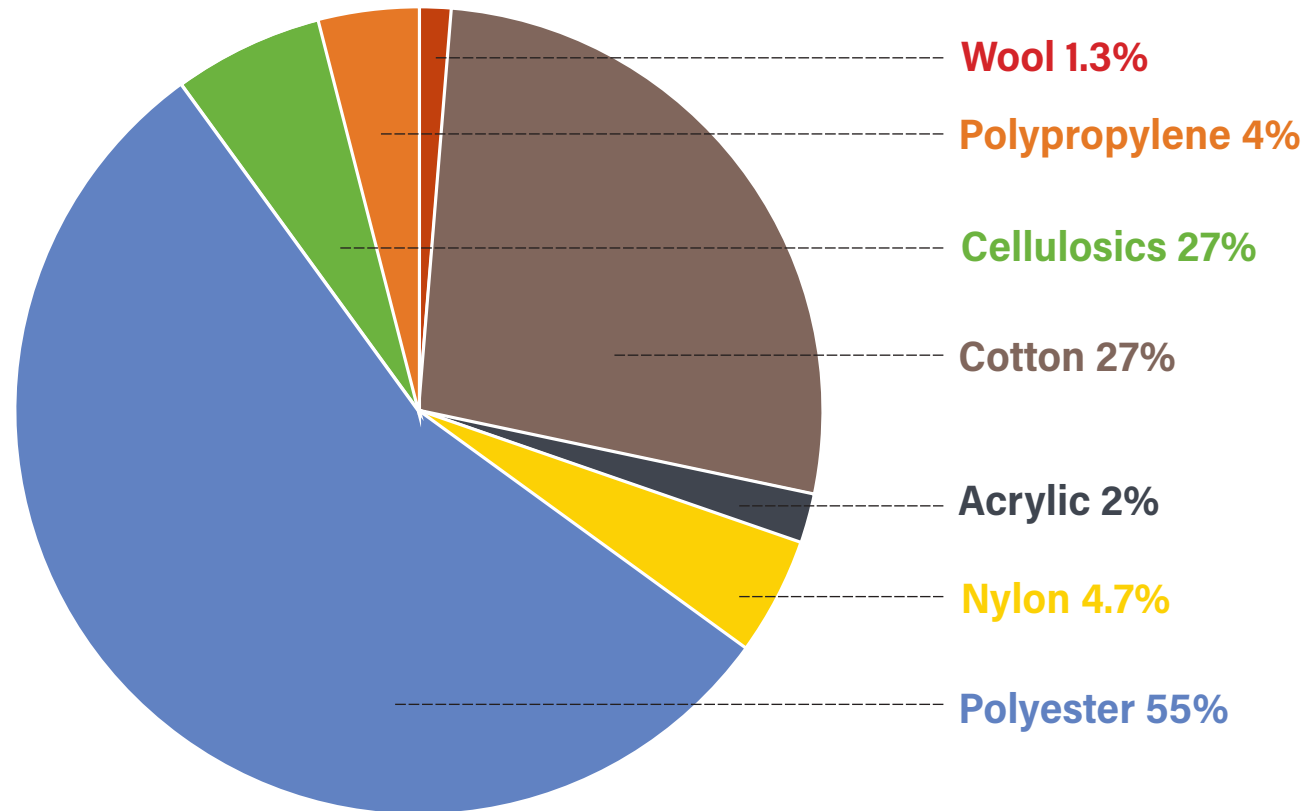
For more information and to join us on this journey: <https://www.forumforthefuture.org/project/cotton-2040/overview>

Voluntary Social & Environmental Standards



(Giotex Mexico facility)

Global Mill Consumption Share Of All Major Fibers For 2015²



As the chart shows, polyester consumption in 2015 is more than double that of its nearest rival - cotton. Polyester is the only fiber that has gained market share since 1990.

Oil prices are effecting the fiber market³:

Asian polyester raw material falling **41%**

(since Feb 2016 there has be slight upward movement)

Staple and filament prices reducing on average **34%**

Nylon 6 raw material has fallen **49%**

Polyester prices have reduced the price of cotton by **25%**

2. PCI Wood Mackenzie

3. Lenzing report, source ICAC, CIRFS, Fiber Economics Bureau, National Statistics, The Fiber Year, Lenzing Data

Forward

“ 2015 was a busy year for Textile Exchange. We saw the team refine strategies for each platform; Fiber & Materials, Integrity & Standards and Supply Chain. This has allowed the team to be focused and deliver useful content to our members and the sustainable textile community. It was exciting to see the work of the Responsible Wool Standard International Working Group, new Material Snapshots released and benchmark reports delivered. I applaud Textile Exchange for all their hard work.

- Elayne Masterson
Textile Exchange Governance Board Chair, Esquel Apparel



Letter from Textile Exchange's Managing Director



Welcome to our 2015 Preferred Fiber and Material Market Report. This year, more than others, events in the world at large have affected our textile and apparel community. Collective action continues to be at the core of driving transformational change, and for this reason, our industry has made progress through collaborations on several fronts. The team at Textile Exchange has also left their mark leading, connecting, and informing in our focus areas. Let's take a look back at 2015.

- There was a 70 percent decline in oil prices from July 2014 to January 2016, according to PCI Wood Mackenzie. For 65.7 percent² of textiles made of synthetics, prices for virgin polyester and nylon are lower than anyone anticipated even a year ago. This has affected both recycled and biobased fiber developments as costs are less competitive than anticipated. However, chemical prices have actually gone up due to the pressures of environmental regulations and companies exiting the business.
- On the oceanfront, a red flag has been raised about the high level of micro plastics from garment laundering in our precious seas. Studies are now underway to better understand this issue.
- Continued unrest on the Syrian border is disrupting farming activities in both Syria and Southeastern Anatolia in Turkey. This has impacted cotton production in the region, including the production of organic cotton.

There is still a lot that needs to be done.

TE's mission is to inspire and equip people to accelerate sustainable practices in the textile value chain. We focus on minimizing the harmful impacts of the global textile industry and maximizing its positive effects. To that end, our team has been busy.

Our 2015 conference in Mumbai, India had 300 people attending from more than 30 countries. We have led workshops, given presentations at industry events, and attended tradeshows in the United States, Europe, and Asia. Additionally, we launched standards, released a new collection of Material Snapshots, and delivered our first Benchmarking Report to members. My thanks to the team for their incredible hard work.

At this time of year, we're mid-stream in planning our 2016 Textile Sustainability Conference in Hamburg, Germany. The conference will, once again, deliver compelling content and bring together thought leaders and innovators from around the globe. I invite you to come, participate, and learn. Attendees will leave as active members of new working groups, carrying a network of connections and tools back to the office to support new sustainable textile and materials initiatives.

In the past year, our activities, like the preferred fiber round tables, kept us focused on our 2015 Call to Action. We were glad to see growth in participation of the sustainable fiber and materials community, not only in our efforts, but also many of our partners. This year our Call to Action is asking each person, company, and organization to "Create Material Growth." This has two meanings to TE:

- First, and most importantly, the industry needs to significantly grow the use of preferred fiber and materials by specifying them for new products and to transition conventional products to include preferred fibers.
- And secondly to continue to research, educate, and develop the ability of the

entire textile and apparel industry to create verifiable sustainability. We see the keys to verification as the use of third party standards, along with a goal toward a transparent supply chain. This needs to be at the core of a preferred fiber and materials portfolio.

At TE, we believe our role is to provide the industry with the necessary tools for preferred fiber and materials growth. To that end, our teams (Integrity & Standards, Fiber & Materials, and Supply Chain) are working diligently developing standards, Material Snapshots, and learning modules as stepping stones to deliver on this year's Call to Action. This year's events have made it easier to see Our Vision of a global textile industry that protects and restores the environment and enhances lives. We've seen work towards a world where brands and retailers can specify products that are circular in nature, suppliers in the textile supply chain that are developing processes that leave no trace, and fibers being grown and developed that heal the land and use waste as feedstock.

This vision is at our core and the guide to the essential activities that will create transformative change for our entire community. Join us in our efforts to Create Material Growth!

La Rhea Pepper
Managing Director, Textile Exchange

SigNature - T

Applied DNA Sciences appreciates the importance of transparency in supply chains. Most companies rely on information they have been provided by their suppliers. Very few have enough resources to visit their suppliers, let alone personally inspect the site or the manufacturing process of their raw materials. SigNature® T DNA system provides information about your product from point-of-sale all the way back to point-of-origin.

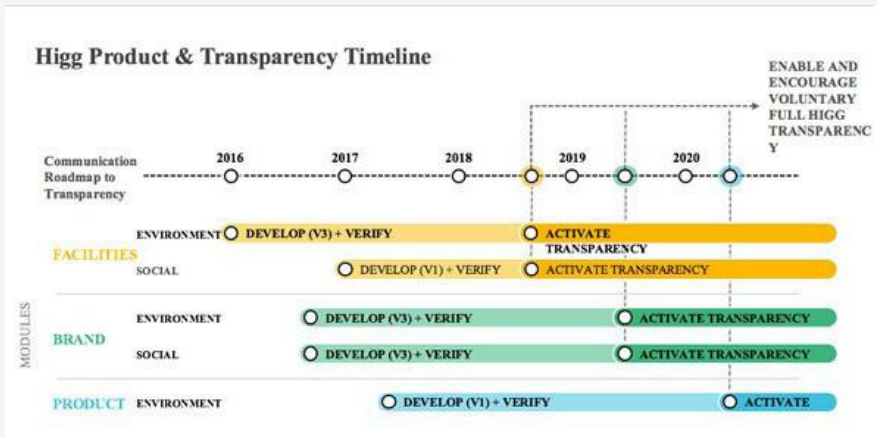
It is all about keeping textiles real and safe; specifically, by using botanical DNA molecules to tag, track and trace textiles. In so doing, it helps to provide end-to-end traceability of products from source to shop, transparency in supply chains, and, most importantly, it means you can trust in knowing where your product is coming from and where it is going.



Sustainable Apparel Coalition



Sustainable Apparel Coalition (SAC) has created a roadmap for the transparent release of all Higg data. The Higg facilities data will be released by mid-2018, while the brand and product tools will be released afterward, with 2020 as the final cut-off date for the full public release of the Higg Index. Facilities modules are first because of their growth in numbers: 2013 had 405 modules posted; in 2014 there were 1,936 modules posted; up to May 2015 where there has been 10,826 modules posted to Higg.



“ Eventually everything connects – people, ideas, objects. The quality of the connections is the key to quality per se.

- Charles Eames ”



100% Recycled Polyester Mojo Shorts (prAna)

Basics

Preferred Fiber and Materials Market

The preferred fiber and materials market continues to develop and grow. TE sees an exciting array of fibers, processes, and technologies in development. At the same time, there will be new challenges to address, such as the sustainability profile of materials with electronics, lab grown fibers, and questions on chemicals contained in fabrics used for recycling into new yarns. It will also lead to new terminology and definitions.

TE will engage with all fibers based on our strategy, industry needs and brand requests. The entire supply chain is invited - from raw material suppliers and mills, to brands and retailers - to work together to drive sustainable growth.

Here are some of the terms Textile Exchange uses.

Preferred - A choice made in selecting better ecologically and socially progressive options through the consideration of impacts and organizational priorities.

More sustainable - Conveys a message similar to that above; that a fiber, material, or product has been selected based on a comparison to another option.

Transparency - The Global Reporting Initiative, in their Sustainability Reporting Guidelines, defines transparency as “the complete disclosure of information on the topics and indicators required to reflect impacts and enable stakeholders to make decisions, and the processes, procedures, and assumptions used to prepare those disclosures.”

Traceability - The United Nations Global Compact defines traceability as “the ability to identify and trace the history, distribution, location, and application of products, parts and materials, to ensure the reliability of sustainability claims, in the areas of human rights, labor (including health and safety), the environment and anti-corruption.”



Recycled Polyester (Threads International)

Standard - A set of defined requirements that are achieved to be awarded certification. A sustainability standard is a set of criteria defining good social and environmental practices in an industry or product.

Certification - The provision by an independent body of written assurance (a certificate) that the product, service, or system in question meets specific requirements.

Chain of Custody - A system to document and verify the path taken by a defined input material through all stages of transfer and production to the final product. The chain of custody preserves the identity of the input material.

Pre-Consumer waste - Material diverted from the waste stream during the manufacturing process. Excluded is the reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.

Post-Consumer waste - Material generated by households or by commercial, industrial, and institutional facilities in their role as end-users of the product that can no longer be used for its intended purpose. This includes returns of materials from the distribution chain.

Lead fibers are those that already:

- Have preferred fiber credentials, including Life Cycle Assessment data.
- Have the biggest impact on a sustainable future. The impact can be from the perspective of volume or impactful advancements over conventional forms of the fiber or material.

Connect fibers are those that:

- Have significant potential but there's still work to be done to confirm preferred fiber status. TE's long term plans include supporting the industry's drive to confirm the preferred credentials of these fibers.
- Have their own organizational body supporting their development.

Inform fibers are those that:

- May have credentials, but in small volumes.

Preferred Fiber and Materials

TE describes preferred as a choice made in selecting better ecologically and socially progressive options through the consideration of impacts and organizational priorities.

Lead Fibers



Organic Cotton - Organic cotton was our primary fiber focus and continues to be a strategic priority. It was selected to improve the ecological and social profile of cotton and support a healthy environment.



Recycled Polyester - Polyester is the most-used conventional fiber in the textile industry. Recycling "waste" plastics to create a new textile product is preferable to drawing on more natural resources.



Preferred MM Cellulosics - Rayon/viscose is the third most used fiber in the textile industry. Alternatives presenting less negative impact on the environment hold opportunities to replace more harmful options such as lyocell.



Bio-Synthetics - Biobased fibers are currently a small category with opportunities for conventional synthetics replacement.



Certified Down - Driven by industry and consumer demand to improve the welfare of ducks and geese raised for food and fiber. The Responsible Down Standard (RDS) guides industry best practice.



Responsible Wool - Driven by industry and consumer demand to improve land management and the welfare of sheep raised for food and fiber. The Responsible Wool Standard guides industry best practice.

Connect Fibers

"Preferred" Cottons
(BCI, CmiA, e3, REEL, Fairtrade etc)

Inform Fibers

- Other PFMs including:
- Organic - wool, linen, silk, leather
- Recycled - wool, cotton, nylon
- Hemp etc

Preferred Fiber and Materials Chart 2015/16

The preferred fiber and materials chart is expanding. This year TE received information on new suppliers and sadly lost a few. Overall preferred fiber and materials capacity is growing.

		Fiber	Brands	Feedstock	MFG Process	MFG Locations	Volume	Suppliers	Growth Expectation	Voluntary Standards	LCA
Man-made or Manufactured Fibers	Petroleum Based	Recycled Polyester (Lead)	Repreve	Post consumer waste	Mechanical recycling	US, China, Brazil, El Salvador, Taiwan, Turkey, Italy, Sri Lanka	N/A	Unifi	↑	Global Recycle Standard (GRS), SCS Recycled Content Standard	Yes
			Repreve Hybrid	Minimum 35% post consumer waste, balance is pre-consumer waste	Mechanical recycling	US, Brazil, El Salvador	N/A	Unifi	↑	SCS Recycled Content Standard	Yes
			Repreve Performance	Post consumer waste with additional technology (Dope/solution dyeing)	Mechanical recycling	US, China, Brazil, El Salvador, Taiwan, Turkey, Italy, Sri Lanka	N/A	Unifi	↑	SCS Recycled Content Standard	Yes
			Regen	Post consumer waste	Mechanical recycling	Korea		Hyosung	↑	Global Recycle Standard ()	Yes
			TopGreen™	Post consumer waste	Semi-chemically (ethylene glycol is added to re-polymerize for higher viscosity after mechanically recycled)	Taiwan, Japan	55 KT/year(Taiwan) +35KT/year(Japan)	Far Eastern Textiles	↑	SCS Recycled Content Standard	Yes
			Eco Circle Fiber	Post and pre consumer waste	Chemical recycling	Japan	N/A	Teijin	↑	Global Recycle Standard (GRS), SCS Recycled Content Standard	Yes
			ECOPET	Post consumer waste	Mechanical recycling				↑	SCS Recycled Content Standard	
	Recycled Nylon	Nilit® EcoCare	Post industrial waste	Re-melting to recycled polymer	Israel	N/A	Nilit	↑	SCS Recycled Content Standard	Yes	
		Repreve Nylon	Pre consumer waste	Chemical recycling	US, China, Brazil, El Salvador, Taiwan, Turkey, Italy, Sri Lanka	N/A	Unifi	↑	Global Recycle Standard (GRS), SCS Recycled Content Standard	Yes	
		Econyl	Post consumer waste, i.e. end-of-life products made from polyamide 6 including fishing nets, fluff (the top of carpets and rugs) and rigid textiles	Chemical recycling	Ljubljana, Slovenia	> 10,000T	AquaFil	N/A	Global Recycle Standard (GRS)	Yes	
Mipan Regen		Pre-consumer/virgin	Chemical recycling	Korea	N/A	Hyosung	○	Global Recycle Standard (GRS)	Needs to be Updated		
Polypropylene	CoolVisions	Crude oil refined into naptha	Monomer is polymerized to produce PP, meltspun and drawn	Covington, GA, USA	N/A	FiberVisions	↑	N/A	N/A		

		Fiber	Brands	Feedstock	MFG Process	MFG Locations	Volume	Suppliers	Growth Expectation	Voluntary Standards	LCA
Man-made or Manufactured Fibers	Biobased Sugar	PLA (Lead)	Ingeo	Corn sugar	Corn sugar converted to lactide. Lactide polymerized to produced PLA, extruded, melt spun, drawn	USA	150,000MT	NatureWorks	↑	USDA BioPreferred	N/A
		PTT (Lead)	Sorona	Starch sugar & crude oil refined into naptha	Propane diol from corn sugar and terephthalic acid polymerized to produce PTT, extruded, melt spun, drawn	USA, China (toll)	N/A	Dupont	↑	USDA BioPreferred	Yes
	Biobased Cellulosics	Lyocell	Tencel	Eucalyptus	Pulping, 1 solvent, low toxicity closed loop wet spinning	Europe, Americas	50,000MT-172,000MT	Lenzing	↑	TENCEL® Standard types are certified -100% USDA Biobased (that means 100% from renewable origin) -100% compostable (soil) and biodegradable (soil) -OEKO-TEX Standard 100 product class I (baby). TENCEL® plants operate according to the requirements of the EU Ecolabel	Yes
			Birla Excel	Eucalyptus	N/A	India	N/A	Birla Cellulose	↑	Forest Stewardship Council (FSC)	
Natural Fibers	Animal	Organic Wool	N/A	Sheep	Harvesting, scouring, spinning	Global	N/A	N/A	○	Global Organic Textile Standard (GOTS) Organic Content Standards (OCS)	Yes
		Recycled Wool	Becagli/Calamai	Knit garments	Sorting, carding, spinning	Italy	N/A	Becagli	↑	Global Recycled Standard (GRS)-in works	N/A
			N/A	Textiles	Sorting, carding, spinning	India, US, EU, Africa	N/A		↑	N/A	N/A
		Non Mulesed Wool (LEAD)	ZQ	Sheep	Harvesting, scouring, spinning	Global	N/A	"New Zealand Merino (ZQ)	↑	Responsible Wool Standard (RWS) in development for 2015,	Yes
		Organic Silk	N/A	Silkworm, Bombyx Mori fed mulberry tree leaves	Cocoons are heated (stoving process) and then sorted per size, colors and shapes.	Taiwan, Japan	55 KT/year(Taiwan) +35KT/year(Japan)	Far Eastern Textiles	↑	ICEA Standard for Organic Sericulture and Moriculture	N/A
	Down (LEAD)	N/A	Duck or Geese	Sourcing, harvesting, pre-processing, separating, processing, blending	USA, China, Taiwan, EU, Vietnam	Based on consumption of duck, goose and poultry industry	Allied Feather and Down Downlite Down Décor Kwong Lung Pan-Pacific Primaloft	↓	Responsible Down Standard (RDS), Traceable Down Standard (TDS)	N/A	
	Recycled Cotton	Regenerated Cotton	GIOTEX	N/A	Mechanically regenerated fiber spinning	Mexico	15,000,000lbs	GIOTEX	10%	Global Recycle Standard (GRS)	N/A
		Recycled Cotton	Recover Blue®, Recover Tech®	Post-Industrial cotton clipping waste, RPET as carrier fiber	Mechanical recycling, fiber-color blending, OE yarn spinning	Spain	NA	Hilaturas Ferre	↑	Global Recycle Standard (GRS)	Yes
		Recycled Cotton	Recover R3®	Post-Industrial cotton clipping waste, RPET and Tencel® as carrier fibers	Mechanical recycling, fiber-color blending, OE yarn spinning	Spain	NA	Hilaturas Ferre	↑	Global Recycle Standard (GRS)	Yes

TE honed its preferred fiber and materials strategy in 2015 and defined which fibers fit into the Lead, Connect, and Inform categories. While all preferred fibers are important, some hard choices had to be made on where to focus TE's energies. Please see the chart below which outlines our work categorized by fiber.

TE's Pillars	TE Strategic Offering	Organic Cotton	Recycled Polyester	Bio-based	Preferred Cellulosics	Responsible Down	Responsible Wool	Preferred Cotton*	Other PFMs*
Lead Fibers	Round Table	●							
	Working Groups	●	●	●		●	●		
	Microsite	●				●	●		
	Best Practices	●			●	●	●	◐	◐
	Market Analytics	●	●	●	●	●	●	◐	◐
	Benchmarking	●	●	●	●	●	●	◐	◐
	Supply Network Mapping	●	●				●		
	Industry Standards	●	●				●		◐
	Conference Coverage	●	●	●	●	●	●	◐	◐
Connect Fibers	Supply Chain Visibility	●	●	●	●	●	●		
	Convene	●	●	●	●	●	●	●	◐
	Initiatives & Collaboration	●	●	●	●	●	●	●	◐
	Industry Reporting	●	●	●	●	●	●	●	◐
Inform Fibers	Basic Support	●	●	●	●	●	●	●	●
	Snapshots	●	●	●	●	●	●	●	●
	Website	●	●	●	●	●	●	●	●

a Preferred Cottons include: Fairtrade, Cotton Made in Africa, Better Cotton, Bayer e3, Cleaner Cotton, REEL Cotton

b Other PFMs include: Organic Linen, Silk, Wool etc. and Recycled Materials such as Recycled Cotton, Wool, Nylon, etc.

Under The Canopy Brand Statement - rPET
Statement Provided by Cayla A. O'Connell – Brand Manager

Under the Canopy makes innovative products that are good for the environment and better for you. Our bedding is made from 100 percent certified organic cotton according to the Global Organic Textile Standard, which ensures that the raw materials, manufacturing and distribution of Under the Canopy products are free from harmful toxins. When organic fibers are not an option, we opt for recycled materials to maintain a holistic offering of sustainability in every single product. Each comforter and pillow is filled with Recycled Claim Standard certified polyester recycled from post-consumer plastic bottles in both the fashion and utility collections. In hospitality, our cozy spa robe is certified to the Global Recycled Standard, as it is entirely made of rPET yarn. Comprising about one-third of our overall fiber usage, the addition of rPET to our product assortment upholds the standard of Under the Canopy's mission: Conscious without Compromise.



Shibori Chic Pillows (Under the Canopy)

The World Apparel and Footwear Database (WALDB) Project

The WALDB project builds up one comprehensive database with LCA-data of single processes in apparel and footwear supply chains. The datasets consist of environmental data on the most relevant indicators (carbon, water, ecosystem, natural resources, land use, and human health) for different regions and technologies.

The WALDB LCA-database will contain comparable and fine-grained data. The project will provide tools for brands and retailers to use this database in their own operations. June 2016 was the first release of the dataset.

The database will be organized so data can be used by LCA-frontends like Quantis Textile Suite, SAC Higg LCA tool, the EU PEF, and Ecoinvent, to name a few. After finalization of the project, the datasets will become generic Life Cycle Inventory data.

The first key partners (in early 2016) were Hugo Boss, FOEN – the Swiss Federal Department for the Environment, Legero and BSD Consulting. The project was founded by Quantis, an organization focused on building LCA-databases and calculating LCA data. The company has its main expertise in LCAs and will ensure that the data is scientifically sound and comparable.

The WALDB project will run from 2015 and 2018.



Preferred Fiber Market

The textile industry is working (from fiber through dyeing and finishing) to improve its environmental profile. This year, Textile Exchange has included chemical companies who have developed preferred dye processes and preferred fiber and material companies that are both in development and already commercial. This broader perspective will give us a look at what is on its way and encouragement for the industry to support these new fibers.

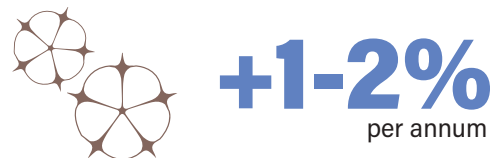
Big initiatives this year include; circular systems, recycling textile waste, biobased polymer developments, and big data's support on collecting and organizing this information through various schemes.

Market Updates

Projected Fiber Growth 2015 to 2020



Synthetics Fibers

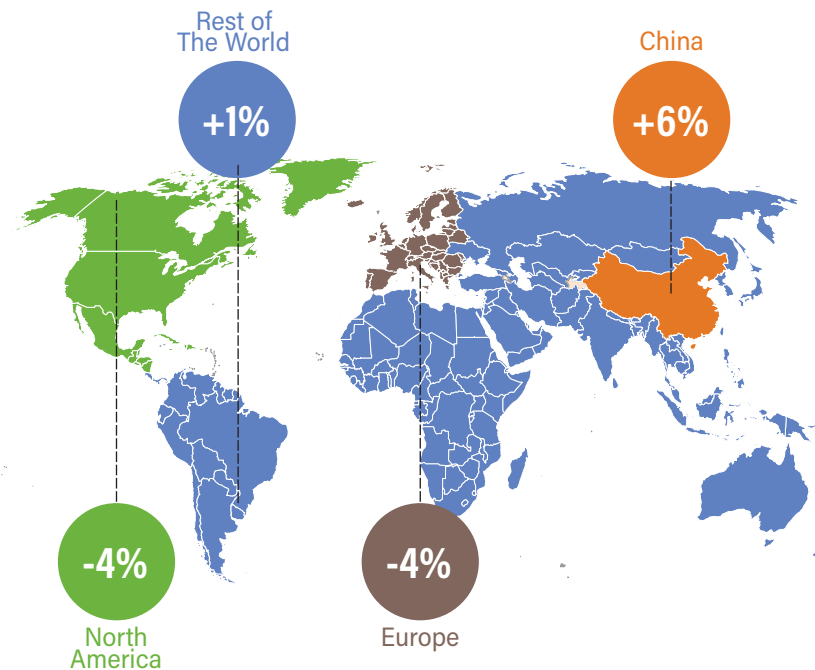


Cotton Fibers



Cellulosic Fibers

Projected Fiber Usage 2013 to 2020



Textile Consumption 2010 to 2020



Trend to high-tech clothing and comfort leading to more use of special polyester and wood-based fibers.

Thanks to the growth of new markets in developed countries and increasing international trade, the global textile industry continues to grow. It has generated sales of approximately U.S. \$750 billion during 2015, a growth of more than 5 percent for the year. By 2019, the value of the global textile industry is expected to reach values of U.S. \$910 billion, although weakening global economic conditions may slow down this growth. (WTIN outlook 2016)

Volcom

Volcom has been using rPET in products for years and uses calculations from our EP&L (Environmental Profit & Loss) analysis which provides a reminder that much of a product's impacts come from fiber sourcing and processing.

This has helped reinforce our commitment to it. Additionally, a strong marketing partnership with our branded fiber partner, Repreve, has made for a more compelling story.

Recycled Polyester was originally used in beanies and surf tees, but has since moved into a majority of the men's boardshort styles, chino pants, and the snow division's first layer program.

At Volcom, we have specifically nominated recycled content in products as a sustainability target with the expectation that 20 percent of synthetic fibers used will be sourced from recycled content by the end of 2020.



Surfers Balam Stack and Nate Tyler in Macaw Mod made with Repreve (Volcom - Photo Credit: Tom Carey)

Recycled Polyester

Market Updates

- Price pressure on rPET due to lower oil prices.¹
- There are a number of successes in rPET fibers where product branding has meant that producers have been able to maintain prices at either a premium or at least at similar prices to virgin fiber.¹
- Demand for polyester continues to result in market share gains and the current athleisure fashion trend has resulted in very strong opportunities for growth.

Supplier Updates

Threads International

- Supports 3,575 income opportunities in Haiti and Honduras.
- All Ground to Good™ polyester fiber is made from bottles collected in the developing world.
- A variety of fabrics have been created in the United States in both wovens and knits in 100 percent and blends with cotton.



Threads Moop messenger bag and 500D rPET fabric (Threads International)

Far Eastern

- Far Eastern New Century (FENC) had opened a new 35,000 ton rPET plant in Japan in 2015.
- Building another new 35,000 ton rPET plant in Taiwan for opening in Q3 of 2016.
- With the two plants listed above, FENC becomes the world's largest food grade rPET resin manufacturer who is also supplying high quality rPET fiber/fabric/garment to customers.
- The trademark of FENC's rPET polyester fabric is TopGreen®.
- Certified SCS Global.

Hyosung

- Offering specialty items unique to Hyosung (world's first filament 100/192 100 percent recycled polyester yarn).
- Process allows for creating whites and bright colors.

Polygenta

- During 2015, Polygenta shifted its product mix heavily towards increased micro-denier filament output.
- Sales operation expanded in Europe and South East Asia, with a tripling of 2014 independent customers.
- The spread of customers and concentration on micro-deniers is expected to continue into 2016.
- Polygenta worked on a number of applications and developments with more demanding technical specifications and finishes for sportswear and European high fashion brands including air textured yarns for apparel, moisture management yarns, flat yarns, and coarse deniers for backpacks.
- Polygenta filament yarn's GRS certification was augmented by the granting of Oeko-Tex Standard 100-Class 1 certification (suitable for infants and toddlers), the latter being consistent with the rigid US FDA standards for food contact being conferred on the ReNEW chemical recycling process that Polygenta uses.



Machinery separating caps and rings from bottles (Polygenta Trommel)

Unifi

- Expanding into Sri Lanka, Unifi Textiles Colombo Private Limited (UTCL), UTCL will provide sales/marketing/distribution of products produced in Sri Lanka through a manufacturing partnership.
- Ford brings REPREEVE to the 2015 F150.
- Unifi expands polyester texturing capacity to support regional growth.
- Unifi celebrates expansion of state-of-the-art REPREEVE recycling center.
- Unifi, through its subsidiary Unifi Textiles (Suzhou) Co., Ltd., will expand global availability of REPREEVE with the assistance of KORTEKS in Turkey, and Sun Chemical in Taiwan (10/7/15).
- REPREEVE kicked off national, multi-stop #TurnItGreen Tour (12/4/15).

Recycled Nylon

Market Updates

- The higher price for recycled nylon makes it more commercially feasible in product ranges where there performance is an inherent value.
- Small volumes of recycled nylon make it difficult to compete with virgin nylon. However, to lower the price, higher volumes need to be run for economies of scale.

Supplier Updates

Aquafil

- Waste is recovered from all over the world; Canada, USA, Norway, Greece, Turkey, Egypt, Pakistan and other countries.
- Working to establish take-back systems with customers.
- Econyl textile yarns avoid approximately 50 percent of CO2 emissions and use approximately 50 percent less energy as does the Aquafil's virgin yarn.

Nilit

- The recycled polymer enables the spinning of high-quality yarns that retain the properties of virgin fibers.
- Excellent color depth and uniformity in regular dye processes.
- No variability in the properties of the recycled yarn.
- Applications in intimate apparel, legwear, activewear and ready-to-wear.

Lyocell/MMC

“ I look toward more sustainable trends — using much less water and chemicals from fiber to finished product. Fiber blends with TENCEL® and Modal® provide the aesthetics and comfort in the styles I create. The denim industry has to adapt processes to have much less impact on the environment. Technology is the real partner of innovation of the industry today.

- Adriano Goldschmied, founder and creative director for Acynetic.



Mui Jumpsuit – Lyocell blend

Market Updates

- 90 percent of the fiber market is in China.
- China drives the demand for rayon with 62 percent of global mill consumption, and they are working hard to clean the processes.*
- Trends^
 - Lower cost fashion.
 - Sustainability, convenience and functionality.
 - End user drives market.
- Several new fibers in development using garment and cotton waste.
- Canopy – Man Made Cellulosic Fibers (MMC) producers who have policies in place and are working with Canopy are at various stages on the Man-made Cellulosic Pathway for Producers to meet the collaborative vision of CanopyStyle. Today producers, representing 35 percent of the global supply, are going through their first independent third-party verification audits against the CanopyStyle Audit Criteria. Canopy is planning a launch in 2016 of a preferred fiber staircase for man-made cellulose. This initiative has been developed with stakeholder consultation, a robust Life Cycle Analysis, brand compliance criteria, and a report on producers' progress, among many other key tools and resources that are part of the initiative.

Supplier Updates

Lenzing

- #1 market position in lyocell.
- 100 percent of Lenzing's wood and pulp supply either certified or from controlled wood sources (controlled according to the standards of wood certifiers and verified).
- Lenzing and Biocel Paskov achieve 100 percent wood utilization by generating pulp, bio-based chemicals and energy.
- Expansion in core markets; denim with Carved in Blue - Denim blog, home and interiors and new applications; footwear, agrotexiles, mobility and filtration.
- 67,000 kilo tons TENCEL® jumbo plant fully sold out.
- Listed in the VONIC Sustainability Index in 2015 for the tenth consecutive year.

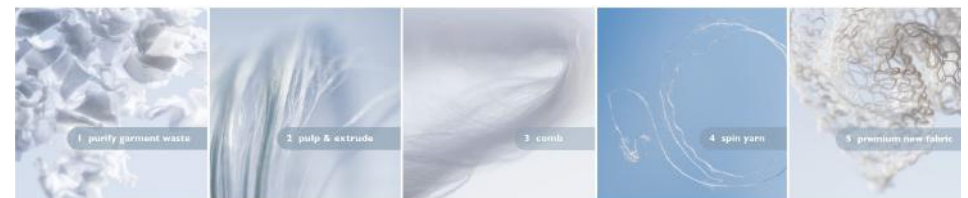
Aditya Birla

- LCA for Pulp units are completed and verified in 2 units of AV group in Canada and Domsjo Unit in Sweden by Control Union.
- LAPFconnect.com launched in India, Biggest online market place for Excel, Spunshades, and other Aditya Birla fibers with a total membership of 250+ members from spinning, weaving, knitting, and processing.

Evrnu (In development)

Last year was a foundational year for Evrnu, poising them for rapid scaling:

- First yarn and fabric made from Evrnu fiber technology.
- Signed on as first Early Adopter, Levi Strauss and Company.
- Created first prototype denim fabric on behalf of Levi's.
- Won Grand Prize for Ashoka Changemakers - Fabric of Change Challenge at Copenhagen Fashion Week.



Re:newcell (In development)

Developed a process capable of recycling cotton and other cellulosic fibers into dissolving pulp. They are now focusing on building a pilot plant at AkzoNobel's facilities in Kristinehamn in Sweden. The plant is expected to be completed during the first quarter in 2017 and is planned to have a capacity of 7000 mt per annum. The initial feedstock will consist of textiles with a cellulosic (cotton, viscose and lyocell) content of above 95 percent.



(Lindex)

Lindex

Anna-Karin Dahlberg, Production Support Manager, Lindex

Sustainability is of great importance for Lindex throughout the entire garment process. By making conscious choices, starting with the design, we work to make a sustainable difference in all parts of the process. To minimize the negative environmental impact of our garments, we are strategically increasing our share of more sustainable fibers and continuously evaluating new fiber options with less environmental impact. We are working towards the goal that 80 percent of our garments will come from sustainable sources by 2020; we have already achieved 42 percent in 2015.

One of the positive steps in this direction has been to increasingly work with TENCEL® when it comes to man-made cellulosic fibers, as it has a less negative environmental impact. We have, over the years, increased our share of TENCEL® in our women's wear and lingerie, and, in 2015, it was 13 percent of all our man-made cellulosic. We continuously work towards taking further steps and increasing this figure to reach our goal and a more sustainable future.

Biobased Synthetics

Market Updates

- Biobased market slowed in 2015 due to low oil prices.
- Market is expected to triple by 2020.
- Nonwovens is key market for biopolymers.
- Market capacity is low compared to other fibers.

Supplier Updates

Bolt (In development)

Bolt is in the process of developing new technology to replace silk production sustainably on a large scale by developing silk like proteins in large quantities through fermentation using yeast, sugar, and water.

Modern Meadow (In development)

Modern Meadow is in the process of making biofabricated leather. This new form of animal product does no harm to animals, nor does it need the water, land, chemical, and energy consumption required to sustain them. One of the first products expected will be lab-cultured leather. Once commercialized, it will be made in a factory and then go through normal product making processes and finally on to the consumer.

DuPont

- Significant growth in comfort stretch applications using Sorona®/PET bicomponent fibers for durable, dyeable, soft-stretch fabrics.
- Growing use of Sorona® in blends with natural fibers such as cotton, wool, rayon and bamboo for exceptional hand feel with the benefits of a synthetic such as wicking, dimensional stability, and stretch.
- Growing market for Sorona® staple fibers for spun yarns. Staple fibers can be made from either Sorona® PTT fibers or Sorona®/PET bicomponent fibers, offering softness and stretch.
- New Sorona® logo and brand identity launching in second half of 2016.

Natureworks

- New developments in textiles: denim and socks.
- As a 100 percent biobased thermoplastic, one of Natureworks goals is to blend with biobased cellulose or natural fibers to provide 100 percent renewable fabrics.
- Asia mills are blending Ingeo with TENCEL® to make underwear or activewear that combines the advantages of soft touch (TENCEL®) and performance (Ingeo).
- Fibers/nonwovens is a strategically important growth platform for Ingeo PLA. It has grown to be one of their largest application segments. Current important application areas include:
 - Hygiene systems – Ingeo in various forms (spunbond, 100 percent carded fiber nonwovens and in blends with natural fibers/naturally derived fibers like cotton and viscose). Applications include baby diapers, feminine hygiene products and wipes.
 - Other applications range from medical fabrics to nonwoven shopping bags to various bedding/home uses.

Far Eastern (In development)

Far Eastern created a 100 percent biopolyester shirt derived from corn sugar with a goal to move to rice straw. The bioPET has the same attributes of conventional PET. Far Eastern's rough estimates are that it has a 60-70 percent carbon reduction as compared to virgin PET. It is currently in the pilot phase.

Recycled Wool

Market Updates

- Indian market is shrinking due to competition from polyester.
- If each person in the UK bought one reclaimed woolen garment, it would save 1,686 million liters of water and 480 tons of chemical dyestuffs⁴.

Supplier Updates

Becagli/Calamai

- There are more lightweight knits compared to previous years with heavier sweaters that are used as raw materials.
- Restricted Substance List (RSL) standards that set limits on the residual chemicals are generally not possible when using textile waste since it's difficult to know what is in the raw material. However, Manufacturing Restricted Substance Lists (MRSL) set parameters on the types of chemicals that can be used in the processing of the recycled materials are possible, as is the case with the Global Recycle Standard (GRS).

4. Bureau of International Recycling, <http://www.bir.org/industry/textiles/>

Recycled Cotton

Market Updates

- Interest in recycled cotton by brands increased. For instance Inditex has developed a recycled cotton program that will be at retail in 2016.
- Fast fashion has increased the amount of waste collected and sorted for recycling. The cost of used clothing has fallen 30-50 percent in the past year (6) (WSJ Fast-Fashion Castoffs Fuel Global Recycling Network article 6.26.16)

Supplier Updates

Giotex

- First North American company to be certified to the Global Recycle Standard (GRS) for recycled cotton.
- Several new yarn blends; w/Ingeo PLA®, wool, linen and TENCEL®.
- Enhanced spinning of novelty effect yarns.
- Extension of spinning range to 30/1NE.
- Enhanced investment in research and development for post-consumer garment recycling.
- Collaboration with brands for closed-loop programs of post-consumer textile waste.

Recover

- Working on new systems for post-consumer textile poly, acrylic, wool in house.
- While recycling all forms of blends, well sorted inputs seem to be one of the largest challenges in achieving the highest value and most consistent quality.
- Generally speaking, in standard coarse count yarns, post-consumer textile composition is kept low (below 10 percent) for quality control and REACH/ZDHC compliance.
- Collaboration with brands for closed-loop programs of post-consumer textile waste.

4. Bureau of International Recycling, <http://www.bir.org/industry/textiles/>

Down

Market Updates

- Responsible down is making progress. The Responsible Down Standard certified 239 units in 2015, while the Traceable Down Standard has five suppliers and manufacturers. Honorable mention for the work that Fjallraven does which provides the Fjallraven Down Promise to deliver ethically-produced down of the highest quality.
- Global costing remains quite stable and low due to generally soft worldwide demand and strong supply. The lack of outside speculation in the market - which contributed to the escalated costs that were seen two years ago - has also reduced upward costing pressure.
- With the softening of down costing, there seems to be less excitement around “blended” insulation materials at this time.
- The Responsible Down Standard, and other third-party down traceability certifications, remain very important with new brands showing commitment to these standards. Global supply has kept pace with increased demand from both the outerwear and home furnishings channels.
- Advances in PFC-free DWR performance seems to have taken over traditional C6 applications.



RDS certified down jacket (C&A)



Down jacket (Fjällraven)

Fjällraven

Fjällraven deserves notice for their Down Promise: ethically-produced down of the highest quality. They are not in the down ranking table, which is based on the use of either the Responsible Down Standard or the Traceable Down Standard.

Fjällräven has spent the last five years setting up and successfully establishing one of the most transparent production processes of down. Fjällräven's Down Promise involves a highly-controlled supply of down from their close cooperation with all levels of the supply chain; from the parent farms, hatcheries, and breeding farms through the slaughter houses and down processors. Fjällräven conducts numerous inspection visits, engages in supplier dialogue, and works with external experts to manage the production for all of their down.

All of Fjällräven's down is a by-product of food production and is never plucked from live birds. Force-feeding is also strictly forbidden and transport and slaughter take place in the best ways possible to avoid the birds suffering from stress. Fjällräven's down is handled in sealed sacks which are checked in repeated tests at different stages of the production process.

Read more about Fjällräven's down handling and follow the production process on site in China at: www.fjallraven.com/downpromise

Chemical

Market Updates

- Environmental regulations have tightened, forcing suppliers out of business.
- Prices are high due to capacity loss and more stringent regulations.

Supplier Updates

Dystar

- Launch of Cadira Reactive for cellulosic fibers for exhaust process. Higher fixation yield, an optimized dyeing process and a special wash-off process, result in reduced costs, reduced waste-water pollution, and reduced energy consumption. Compared to conventional reactive dyeing process at the same liquor ratio, the Cadira concept can save around 30 percent of steam costs and uses 30 percent less water.
- Working on a specially formulated range of Dianix® dyes for the dyeing of polyester using supercritical CO₂, to be launched in 2016.
- Recently gained Cradle-to-Cradle Material Health Certification at the Gold level for selected reactive, vat, and disperse dyes and for DyStar Indigo Vat 40% Solution for denim coloration.

Huntsman

- Huntsman relaunched the AVITERA SE Range of reactive dyes for Cotton fibers adding six new dyes in the range
 - AVITERA SE is designed to reduce water usage in dyeing by 50 percent and more and reduces CO₂ emissions by up to 50 percent.
 - With the additional products, AVITERA can cover all of color space including bright, brilliant shades and blacks.
 - AVITERA SE was the Overall Winner of the 2014 ICIS Innovation Awards recognized for the Best Benefit to the Environment Award.



Berto jean (Carved in Blue)



Tencel shams (Williams-Sonoma Inc)

Top 10 Users of Recycled Polyester

- 1 
- 2 
- 3 
- 4 
- 5 
- 6 WILLIAMS-SONOMA, INC.
- 7 
- 8 
- 9 
- 10 



Recycled polyester outdoor and indoor rugs (Williams-Sonoma Inc)






Top 10 Users of Lyocell

- 1 **INDITEX**
- 2 **H&M**
- 3 **G-STAR RAW**
- 4 **LINDEX**
- 5 **EILEEN FISHER**
- 6 WILLIAMS-SONOMA, INC.
- 7 **patagonia**
- 8 **CONTINENTAL**
- 9 **FJALL RAVEN**
- 10 **C&A**



Tencel Linen Shawl Collar Jacket (Eileen Fisher)

Top 5 Users of Certified Down

- 1 
- 2 
- 3 
- 4 
- 5 



The North Face Youth; Boy's McMurdo Down (The North Face - Photo Credit: Ian Momsen)

Preferred Cotton/Recycled Polyester - Woolworths

Our journey started in 2014, when we developed a yarn made with a special blend of Recycled Polyester and African Cotton. Our next steps included:

- RE ladieswear fashionable tees made from recycled plastic bottles, which we improved upon by moving this on to a 50 percent BCI cotton/50 percent recycled polyester blend.
- RE sustainable men's jeans made from recycled plastic bottles made using the latest in innovative washing technology, resulting in less water/energy/chemicals when compared to conventional washing.

This winter we used close to 90,000kgs of recycled polyester across our Clothing & General Merchandise (C&GM) business – approximately 3,000,000 bottles that were saved from going into landfill. These went in ladies tees, sleepwear, thermals for kids, fill for duvets and pillows, and our re-usable shopping bags.

We intend on growing this going into summer 2016 by extending this offering into menswear tees across brands, with bigger growth planned for winter 2017 and the addition of polar fleece.



T-shirt (Woolworths)

Cotton Initiatives

Collaboration is Key to Success

This year, TE has created this special section for Cotton Initiatives to provide detailed information and updates on this very important preferred fiber.

Over the past 5-10 years, there has been expansion in the preferred cottons landscape, with the Better Cotton Initiative (BCI), Cotton made in Africa (CmiA) and other programs such as Cleaner Cotton, CottonConnect's REEL, and Bayer's e3 joining organic cotton and Fairtrade cotton in the preferred cotton space. Each initiative brings momentum to the movement, and it is important to acknowledge the role of each in helping cotton stakeholders, from farmer to customer, contribute to a continuum of improvement.

Alongside a shared sector vision, TE think it's important to challenge and inspire the industry to keep advancing. This is where the race-to-the-top comes into play and where the sustainability journey takes us from one level to the next. TE invites others to join us in understanding what this looks like for cotton.

To be part of the solution it is crucial for brands and retailers to develop and implement a comprehensive cotton strategy, wherever they might be starting! After all, sustainability is a journey - not a destination.

If you would like support in creating your cotton strategy, please contact us. TE, in collaboration with other key stakeholders, has recently developed a Cotton Strategy Overview presentation for members that provides a high-level introduction to the various initiatives and the reasons why developing a cotton strategy is so important.

In the following page you will find an overview of the key initiatives currently engaged in creating more sustainable cotton.



Senegal (Fairtrade International)

TE believes a place is needed where the entire movement can come together to agree upon a shared vision for the future and build a roadmap on how to get there. Here, we work with Forum for the Future and other initiatives and stakeholders on the Cotton 2040 agenda. Please join us at the Textile Exchange Sustainability Conference in Hamburg, Germany October 4-5, 2016



2014/15

Preferred Cotton	2.2m mt (8.6%) ⁵
Conventional Cotton	23.9m mt (91.4%)

2013/14

Preferred Cotton	1.1m mt (4.4%)
Conventional Cotton	25.1m mt (95.6%)

2012/13

Preferred Cotton	1m mt (3.7%)
Conventional Cotton	25.9m mt (96.3%)

2011/12

Preferred Cotton	0.5m mt (2.0%)
Conventional Cotton	27.2m mt (98.0%)

Objective	To transform the market by making Better Cotton a responsible mainstream commodity.	Cleaning Up Cotton In California	Sustainable African Cotton for a global Textile Industry.	To create a more sustainable American landscape	Ensuring income security and community development	Sustaining the health of soils, ecosystems and people	To create more sustainable, traceable cotton.
Investment Model	Membership fee Donor funding Growth & Innovation Fund	Price differential to producers	Volume based license fee Donor funding Extension delivery partner	Contract growing	Fixed minimum price and social premium	Prices agreed between grower and buyer or traded in the market often with a price differential	Capacity building projects and value chain services covered by brand
Verification / Certification (farm level)	Self-assessment Credibility checks 3rd party verification (through sample selection)	2nd party monitoring	3rd party program verification	Self-evaluation and 3rd party audits	Verification (annual) Certification by 3rd party	Verification (annual) Certification by 3rd party	Verification by CottonConnect 3rd party (at additional cost)
Chain of Custody	Mass-balance from merchant onward Physical traceability at farm and gin	Bale identification system	Mass balance Identity Preserved (option)	Identity preserved to the mill for further content claims use	Identity preserved Mass Balance (new option)	Identity preserved Certification of Supply Chain (GOTS, OCS)	Bale preserved - procurement links to supply chain provided if required.
GMOs excluded	No	Yes	Yes	No	Yes	Yes	No
Land (ha)	2,584,500	324	973,533	101,171	45,031	356,424 (cotton/other crops)	46,644
Fiber (mt)	1,969,700	600	341,536	113,398	15,021	112,488	53,917
Growth (fiber)	↑163%	↑0.2%	↑125%	↑1.5%	↓4%	↓3.8%	↑26%

5. 2014/15 Preferred Cotton includes REEL Cotton.

6. The Textile Exchange Organic Cotton Round Table (OCRT) serves as the industry expert and platform for stakeholders in organic cotton. TE works collaboratively with others in this space.



The Better Cotton Initiative (BCI) is a not-for-profit organization based in Geneva, Switzerland, stewarding the Better Cotton Standard System globally. BCI exists to make global cotton production better for the people who produce it, better for the

environment it grows in, and better for the sector's future. The goal of BCI is to generate transformative, long-term change in the cotton sector, from field to store, by developing Better Cotton as a sustainable mainstream commodity.

BCI Aims to Account for 30 Percent Market Share by 2020

In 2015, 1.5 million farmers were licensed to sell Better Cotton. Together, they produced 11.9 percent of global cotton supply. Thanks to our inclusive approach, working in collaboration with other initiatives and national players, Better Cotton was available from 21 cotton-producing countries. BCI is now entering its defining "Mainstreaming phase," designed to establish Better Cotton as a responsible mainstream commodity, accounting for 30 percent of global cotton production by 2020. In this way, we aim to catalyze positive change throughout the sector and promote healthy cotton production for future generations.



(BCI)



Cotton made in Africa (CmiA) works for an economically, ecologically, and socially sustainable cotton production in Africa. With more than 670,000 smallholder farmers (5.6 million people including family members) from 10 African countries that are part of the CmiA program, the initiative is a major player in the cotton sector of Sub-Saharan Africa. Smallholder farmers improve their living conditions and profit from fair contracts and training in efficient and environmentally sound cultivation methods. The

CmiA certification process also includes the workers in the cotton gins. Together with partners, CmiA additionally invests in community projects that provide school infrastructure and empower women.

Aid by Trade Foundation Introduces its New CmiA Organic Standard

The CmiA Organic Standard is another member of the family of standards from the Aid by Trade Foundation. It builds on the existing organic standards but also includes the social and economic production criteria of CmiA. In this way, CmiA Organic not only adds ecological value in many regions of Africa, but this inclusion of social and economic components in the standard also helps to reduce poverty and improve food security for organic cotton farmers in Africa and to boost the competitiveness of organic cotton sourced from Africa.



(CmiA)



The e3 program is: socially equitable - supporting high standards and practices which allow growers, laborers and the surrounding rural farm community to thrive; economically viable - helping to make farms and families financially competitive enterprises which are consistently profitable year over year; and environmentally responsible - encouraging reduced use of water, land and energy while maintaining productivity.

How is e3 different?

e3 is U.S. grown from superior seed which produces high-quality fiber and yarn. Certified and transparent, the e3 program supports farmers with the latest techniques. e3 also meets the needs of consumers by providing large quantities of sustainably produced cotton. E3 farmers also commit to continuous improvement. Aggregate data are also collected to document improvement.



(e3)



Fairtrade changes the way trade works through better prices, decent working conditions, and a fairer deal for farmers and workers in developing countries. By choosing Fairtrade products, consumers can create change through their everyday purchases, and farming communities can improve their lives and invest in their future.

Fairtrade Launches New Textile Standard

Since the introduction of Fairtrade certified cotton in 2005, Fairtrade's goal has been to extend the Fairtrade approach to the entire value supply chain for textiles to address the challenges in the textile industry. The Fairtrade Textile Standard - launched in March 2016 - focuses on working conditions, wages, and workers' rights. It empowers factory workers and enables them to improve their working conditions collectively. It is the first standard in the industry to require living wages to be paid within a set time period.



(Fairtrade International)



Organic cotton is grown within a rotation system that builds soil fertility, protects biodiversity, and is grown without the use of any synthetic chemicals or Genetically Modified Organisms (GMOs). It combines tradition, innovation and science and it promotes fair relationships and a good quality of life for all involved. Organic cotton is subject to regular organic farm certification and the certification for the product's chain of custody also needs to be in place, which could follow the Global Organic Textile Standard (GOTS) or the Organic Content Standard (OCS). The environmental savings of organic cotton are demonstrated in the Life Cycle Assessment conducted by thinkstep. Results showed that cotton grown organically had the potential to reduce blue water use by 91 percent, energy demand by 62 percent, and could result in a 46 percent Greenhouse Gas reduction, compared to conventional cotton.

OCRT Launches New Innovation Lab to Celebrate New Ideas in Organic Cotton

The Organic Cotton Round Table (OCRT) is a global stakeholder platform that supports and brings together the organic cotton community to be inspired, mobilized, and equipped to act. The 2015 OCRT meeting in Mumbai saw the launch of a new "Innovation Lab" - a celebration of new ideas in organic cotton that aims to seek out and reward groups or individuals with innovative solutions to break through barriers to growth and address issues in the organic cotton supply chain. The 2016 OCRT meeting and Innovation Lab will take place in Hamburg, Germany, on October 6.

See also: The Organic Cotton Market Report 2015



Uganda (Cotonea)



CottonConnect is an enterprise with a social mission to transform the cotton industry for good by working in partnership with leading brands and retailers to develop a transparent and sustainable cotton supply chain. One of CottonConnect's flagship programs is REEL Cotton (Responsible Environment Enhanced Livelihoods), a three year farmer skills training program to drive sustainable cotton farming, covering;

- Environment: reduction of chemicals, water efficiency, improved soil health and biodiversity, intercropping, natural organic fertilizers and pesticides.
- Socio-economic: reducing input costs and increasing yields to improve profitability and livelihoods; alongside decent work practices, health and safety, education and eliminate child labor.
- Financial: focus on farmer finance, business management and gender empowerment.

REEL's Farmer Training Program

In 2014/15, the REEL farmer training program achieved significant results globally, including:

- 16percent increase in yields;
- 16 percent reduction in water usage;
- 20 percent reduction in chemical fertilizer usage;
- 43 percent reduction in chemical pesticide usage;
- 48 percent increase in farmer profits.



(REEL Cotton)

Integrity

Certification to a third-party standard helps ensure that sustainability claims are accurate and that the action behind the claims results in real and meaningful change. In 2015, the number of certified units grew steadily with an increased level of interest in product labeling. Increasingly more brands are seeking tools to back up their product claims.

What's behind a Sustainability Claim?

1. What product or service does the claim cover?
2. What type of claim is being made?
3. What sustainability attributes does the claim cover?
4. How is the claim verified?

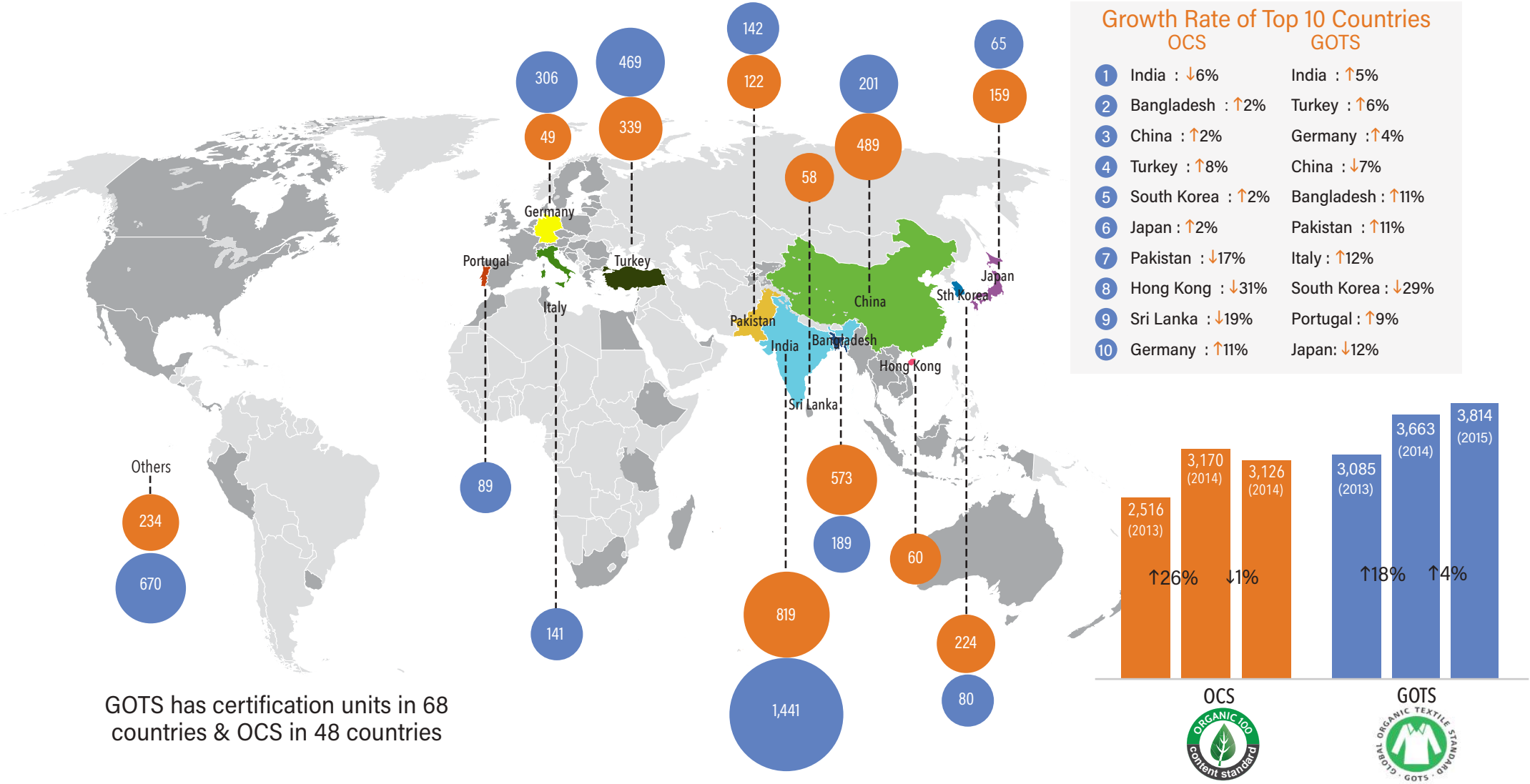
Credible claims should provide answers to all of these questions. For more information, visit: http://www.isealliance.org/challenge_

The Standard Landscape

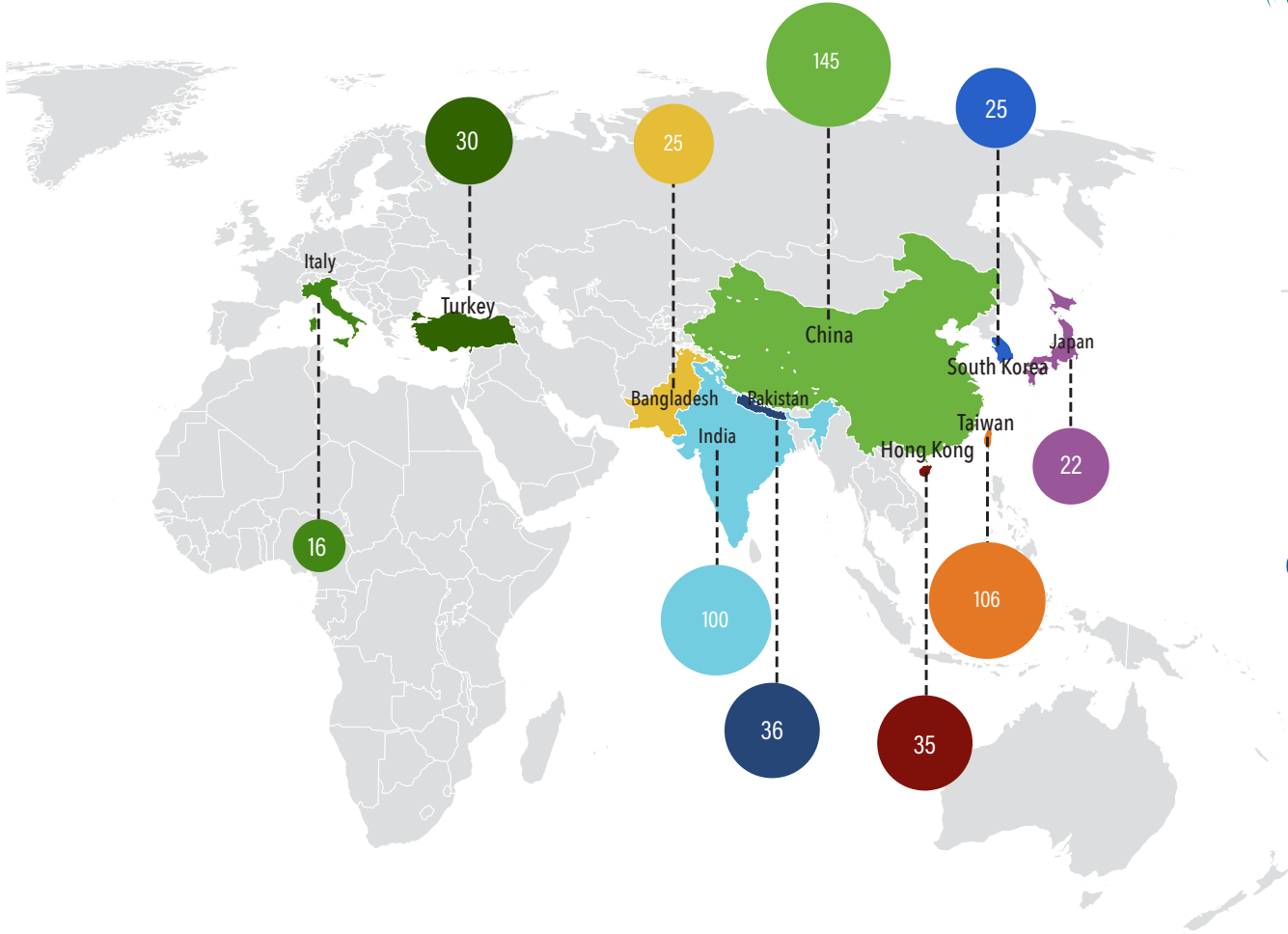
The chart below presents an overview of the standards most used in textiles. For a more detailed description refer to Appendix 5.

	Input Material	Chain of Custody	Processing Requirements	Product Labeling		Input Material	Chain of Custody	Processing Requirements	Product Labeling
	any raw material	yes	no	no		organic material	yes	social, environmental, chemical	yes
	organic materials	yes	no	yes	OEKO-TEX®	n/a	n/a	chemical (final product testing)	yes
	down and feathers	yes	no	yes		n/a	n/a	social, environmental, chemical	yes
	recycled material	yes	no	yes		forest products	yes	no	yes
	recycled material	yes	social, environmental, chemical	yes		bio-based content	no	no	yes
						n/a	n/a	environmental, chemical	yes

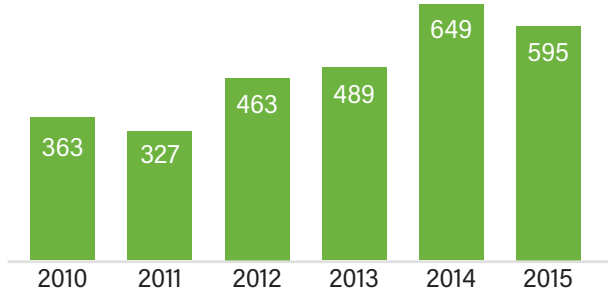
OCS and GOTS Top 10 Countries



GRS Top 10 Countries



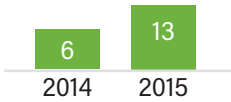
 GRS Facilities Growth Trend 2010-2015



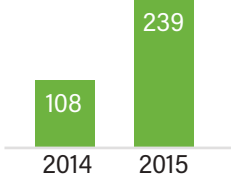
 RCS Facilities Growth 2015



 CCS Facilities Growth 2014-2015



 RDS Facilities Growth 2014-2015



Standards and Certification Update

Animal Welfare and Integrity

Interest in protecting the animal welfare in the production of textiles continues to grow. The past few years have seen a growing awareness of animal welfare issues related to the textile industry and a high level of activity to address these. Collaboration has played a key role in the development of standards.



Cashmere

The Sustainable Fibre Alliance (SFA) is a not-for-profit international organization that promotes global sustainability standards for cashmere production and transforms the complex supply chain of fiber from herders to retailers.

Cashmere production helps support a traditional way of life in some of the world's most challenging terrains. The SFA has set out to address issues in the sustainability of grassland, pasture management including over-grazing leading to long-term environmental issues with an immediate emphasis in Mongolia, though SFA is to stand as an authoritative organization on sustainability of cashmere globally. The SFA is supported and funded by major luxury brands (Johnston's of Elgin, Burberry and Kering Group) and are now looking to widen their partnership and membership across interested funders, governments, manufacturers, brands and retailers.

NOYA Responsible Cashmere

NOYA Fibers was founded in 2013 in partnership with The Nature Conservancy and is currently developing a global standard for responsible cashmere through the empowerment of nomadic herding cultures in Mongolia's Eastern Steppe.

Through the development and implementation of a global standard for responsible cashmere that includes a comprehensive grasslands management program, animal welfare, community development and social programs, NOYA is driving to connect herding cooperatives with the global marketplace in an effort to restore grasslands and preserve the nomadic way of life while producing the world's finest cashmere.

As of 2015, NOYA continues to form partnerships with NGOs, producers, suppliers and other stakeholders within Mongolia and to bring its high-quality, fully transparent and traceable fiber to brands and textile manufacturers looking to lead the future of our industry. To learn more about NOYA or to become a brand partner, please visit www.noyafibers.com.

Down



Down (Fjallraven)

Responsible Down Standard 2.0

Officially launched in January 2014, the RDS is a comprehensive, global, third-party certified animal welfare and chain of custody standard for down and feathers, and is available for use by any company.

The Responsible Down Standard (RDS) ensures that down and feathers come from ducks and geese that have been treated well. This means enabling them to live healthy lives, express innate behaviors, and not suffer from pain, fear or distress. The standard also follows the chain of custody from farm to product, so consumers can be confident that the down and feathers in the products they choose are truly RDS certified.

You can read more about the Responsible Down Standard online at: <http://responsibledown.org/>.

“ We welcome the efforts made through the RDS to achieve higher animal welfare safeguards and full supply chain traceability within the down industry. The RDS has been successful in driving transparency and adoption of traceability across the down supply chain. Our hope is for the standard to continue evolving in order to provide the highest possible guarantees that live-plucking and force-feeding are fully excluded from the down supply chain.

- Nina Jamal, International Farm Animals Campaigner at FOUR PAWS. ”

Traceable Down Standard

NSF International's Global Traceable Down Standard (Global TDS) provides assurance to brands, manufacturers, and supply chains that high levels of animal welfare practices are being carried out. This is accomplished by requiring birds to be present at all sites audited and by maintaining zero tolerance for live-plucking and force-feeding.

The Global TDS provides:

- Greater transparency in the down supply chain due to the depth of auditing.
- Traceability and chain of custody that ensures animal welfare and traceability practices within the supply chain.

By working with retailers, suppliers, and farms last year to ensure that the Global TDS is widely communicated and adopted, NSF International has certified two supply chains and three manufacturers.

For more information, please go to - <http://www.nsf.org/services/by-industry/sustainability-environment/global-traceable-down-standard>

Wool

Madelene Ericsson, H&M

H&M has participated in the development of the Responsible Wool Standard from the beginning (back in early 2014) and we are really impressed by the work that Textile Exchange has done, leading the process forward and bringing the industry together in the International Working Group. For almost two years now, brands and retailers, organizations, manufacturers, wool growers and farmers, and anyone else interested, have been gathered around one table in the IWG discussions which has kept the process really open and transparent. The IWG has also been a great forum to share knowledge and experiences and they have, therefore, been vital parts of the development of the RWS. We, as a brand, have really appreciated both the journey and where this has led us to today. We believe that the RWS will be a really important tool for us to reach our goals on wool and responsible sourcing.



Stuart Adams of Continuum Textiles, Technical Consultant to the RWS (Textile Exchange)

Responsible Wool Standard

A tremendous amount of work took place on the Responsible Wool Standard (RWS) in 2015. The draft standard was written and piloted on farms around the world. These audits provided valuable feedback from both farmers and auditors. The final standard was released on June 22, 2016.

The standard was developed through the RWS International Working Group, which includes animal welfare groups, brands, farmers, supply chain members, and industry associations, as well as apparel and home brands, such as Kering, H&M, Patagonia, Target, Kathmandu, and Marks & Spencer.

The RWS is an independent, voluntary standard, which means that companies can choose to become certified. On farms, the certification ensures that sheep are treated with respect to their five freedoms and also ensures best practices in the management and protection of the land. Through production, certification ensures that wool from certified farms is properly identified and tracked.

The goals of the standard are to:

- Recognize the best practices of farmers around the globe.
- Ensure wool comes from responsibly treated sheep and from farms with a progressive approach to managing their land.
- Build communication and understanding between farmers, consumers, and brands.
- Provide a robust chain of custody system from farm to final product to ensure consumer confidence in RWS products.

For more information on the Responsible Wool Standard, visit: <http://responsiblewool.org/>

Revised Textile Exchange Standards – Organic Content Standard and Content Claim Standard

After a multi-stakeholder review in 2015, the Content Claim Standard (CCS) 2.0 and Organic Content Standard (OCS) 2.0 were released in January 2016. The CCS is used as the chain of custody requirements for all Textile Exchange (TE) standards, and therefore, changes in CCS 2.0 affects all of our standards.



Key Changes in the CCS:

- Exemptions for Post-Production Certification: these changes relieve the burden of certification on brands that have strong control systems in place for their labeled goods.
- Contract warehouses only performing logistics functions are no longer subject to On-Site Audits.



Key Changes in the OCS:

- Recognition of IFOAM Family of Standards.
- Cotton gins and any other post-harvest processing must be certified to the OCS or GOTS
- Inclusion of guidance on GMO testing.
- Labeling language and logo requirements have been moved to the new OCS Logo Use and Claims Guide.

Find the updated documents and support tools online: ContentClaim.org, OrganicContent.org

Certified facilities have remained stable from 2014 to 2015 for OCS and GRS while GOTS has grown slightly.

OEKO-TEX updates



- The newest product, launched this year by the OEKO-TEX Association, is ECO PASSPORT by OEKO-TEX. ECO PASSPORT by OEKO-TEX analyzes textile chemicals, colorants, and auxiliaries in a two-step process that confirms the compounds and individual ingredients meet specific criteria for sustainability, safety, and regulatory compliance.
- More than 60 percent of OEKO-TEX Standard 100 certificates are now issued in Asia.
- Recently, however, many large U.S. retailers have taken an interest in sourcing safe and sustainably produced home textiles. Given this “pull” from U.S. retailers, there has been enormous growth in OEKO-TEX Standard 100 certification for home textiles over the past two years. And importantly, many large suppliers have expressed an interest in certifying their factories with STeP by OEKO-TEX. So, while home textiles may have lagged behind the apparel companies, the industry is coming on with a BOOM!
- OEKO-TEX is perfectly suited to help ensure traceability and sustainability within the circular economy focused supply chain just as in the more conventional virgin material supply chain. The role of the supply chain partner still determines which OEKO-TEX certification and/or label is the appropriate tool. For a material supplier who is taking post-consumer or post-industrial materials into their process, having OEKO-TEX Standard 100 certified materials will help ensure that the raw materials are not bringing in known chemicals of concern from their first life.

bluesign® updates

- Slowly the “bluesign® approved” chemistry gets accepted in a broader area and more important – the chemicals CHANGE management from bluesign technologies in the textile supply chain is a huge success. Tons after tons of black chemicals could be changed in the last years.
- The audits in chemical companies show that improvement is necessary, especially in the Product Stewardship discipline. The implementation of an input stream management in a chemical company is the cornerstone for success. Both together provide Bluesign the basis for a chemical assessment that is the key for sustainable production. That’s the only way if we are talking about sustainable chemistry.
- Growth was steadily at more than 30 percent, but having e.g. Columbia in our system means that the number of products is strongly growing. We are pleased to note that bluesign® approved fabrics are requested more and more and highly demanded from responsible sourcing people, even when the respective brands aren’t a bluesign® system partner.



Pratibha Syntex (Textile Exchange)

Fashion Positive Materials 2015/16

The Fashion Positive initiative created by the Cradle-to-Cradle Product Innovation Institute certified a variety of products in 2015 including:

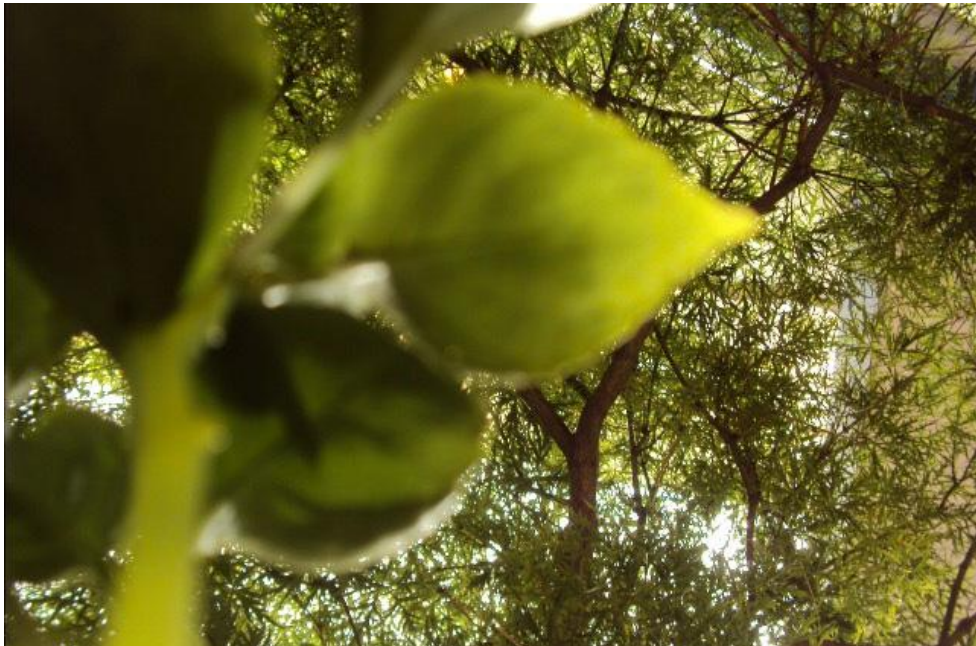
- Sewing yarn.
- Woven linen fabric.
- Cashmere yarn.
- Cashmere/silk yarn.
- S. Café fabric.
- Denim fabrics.
- Organic printed tee shirts.
- Leather tanning agent.
- Ingeo biopolymer.
- Cotton/rPET yarns.
- 100 percent rPET yarns.

Centralized Database System

TE and the Global Organic Textile Standard have initiated a project to create a Centralized Database System (CDS) that collects and manages data on certified sites and products in accordance with their respective standards. This collaboration is unique in that once functional, the CDS will be governed by a separate organization that allows other voluntary sustainability standards to join and make use of the system, regardless of their industry focus. Apart from only certification data, the chain of custody created by TE and GOTS will be used to carry non-certified data from the raw material source to help measure the impacts of a product and its supply chain (e.g. water usage at the farm, premiums paid to farmers, country of origin).

Appendix 1: Acknowledgements

We would like to extend our sincere gratitude to all of the retailers, brands and manufacturers that have contributed to the data included in this report, through completing the online survey or providing data from the market.



AMC Tree (Lenzing)

- Allied Down & Feather
- Anthony Lillore (Restore Clothing)
- Armstrong Spinning Mills (P) Ltd.
- Birla Cellulose
- Canopy
- Control Union
- Downlite
- Dupont
- Eileen Fisher
- Esquel Enterprises Ltd.
- Evrnu
- Far Eastern
- Far Eastern New Century
- Fibervisions
- FOUR PAWS
- GOTS
- GreenroomVoice
- g-star
- H&M
- Hemp Fortex Industries Ltd.
- ICEA
- Inditex
- Ecotextile News
- Kathmandu
- Kjersti Kviseth (2025 Design)
- Lenzing
- MEC
- Natureworks
- Nike
- Pamela Ravasio
- Polygenta
- prAna
- Pratibha Syntex
- Puma
- re:newcell
- Remei AG
- Sodra
- Sophie Mather (Biov8tion)
- Sourcing Journal
- Stanley & Stella
- Target
- The North Face
- Unifi
- Volcom
- Williams-Sonoma

Appendix 2: Methodologies

Introduction

Brands and retailers drive demand for preferred fibers when they decide to include them in their product lines. When they communicate these decisions to their suppliers, the manufacturers purchase preferred fibers or inputs such as yarns and fabrics that contain preferred materials.

This appendix describes the methods used to:

Collect and analyze data about the use of preferred fiber products made and used by brands and retailers in consumer markets around the world in 2015.

Sources of Information

Information contained in this report was derived from:

Surveys and data received from brands and retailers with more sustainable fiber programs, manufacturers, merchants/brokers, and NGOs around the world.

Reviews of publicly available information about companies with preferred fiber programs.

Expert industry resources (promotion bodies, academics, companies, government officials, and individual experts).

Data Collection Process

To create this report TE used a combination of company-specific data and general market information.

Through its work with companies and an annual survey this year, TE collected information about preferred fibers including organic cotton, identify cotton programs, recycled polyester, recycled cotton, recycled wool, lyocell, and biobased fibers. In addition, TE collected data on company-specific sustainable fiber programs from published information sources including company annual reports, corporate responsibility reports, press releases, websites, and media sources. Data was also provided by suppliers and manufacturers. To avoid double counting data from brands and their retailers, TE only included figures for private label products developed by a retailer, not for the total number of private label and branded products sold by the retailer.

Timeframe

The reporting period is the calendar year 2015.

TE collected data used for this report between March 2015 and May 2015.

Researchers re-checked all data and reports in June 2015.

Completeness

As with prior reports, the second preferred fibers report reflects a complex marketplace, as more brands and retailers offer increasingly diverse preferred fiber products to their customers. As such, this report did not try to capture data from all market participants, but rather gather data from retailers and brands with large-scale preferred fiber programs making up the bulk of the market. TE also polled small and medium-sized company activities in major markets such as the United States, Western Europe, South America, and Japan. TE believes the data is a reasonable proxy for retail and brand activity in the consumer market.

Results

Due to rapidly changing market conditions, some data sources, production projects and numbers may have been missed.

The regions with the highest response rates were Europe and the United States.

Disclaimer

The TE Preferred Fiber Market Report rankings are based on a company's self-reported consumption data for each fiber. While TE reviews all data entries, checks calculations, and carries out consistency checks, we do not verify the accuracy of the data. That responsibility remains with the participating company.

Report Production Team

Textile Exchange

Market Survey Team

Liesl Truscott

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Design And Graphics

Evonne Tan

Appendix 3: Definitions

Preferred Fibers – describes a choice made in selecting better ecologically and socially progressive options through the consideration of impacts and organizational priorities.

More sustainable – a way to convey a message similar to that above, that a fiber, material or product has been selected based on a comparison to other options.

Man-Made Cellulosics (MMC) – cellulose or cellulosic fibers are fibers structured from cellulose, a starch-like carbohydrate. They are created by dissolving natural materials such as cellulose or wood pulp, which are then regenerated by extrusion and precipitation.- The chemical processing of short cotton fibers, linters, or wood pulp produce fibers like rayon, acetate, and triacetate (www.rawrdenim.com/dictionary)

Cellulosic Fiber – A fiber composed of, or derived from, cellulose. Examples are cotton, rayon, acetate and triacetate.

Man-made or Manufactured fiber – refers to all chemically produced fibers (acrylic, nylon, polyester, viscose) to distinguish them from truly natural fibers (cotton, wool, silk, flax)

Melt spinning – The process in which the fiber-forming substance is melted and extruded into air or other gas, or into a suitable liquid, where it is cooled and solidified, as in the manufacture of polyester or nylon.¹³

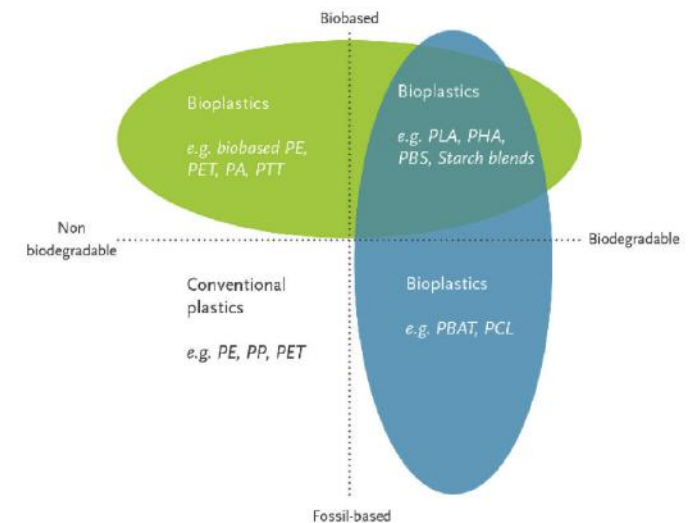
Wet spinning – the process in which a solution of the fiber-forming substance is extruded into a liquid coagulating medium where the polymer is regenerated, as in the manufacture of viscose or cuprammonium rayon.¹³

Bioplastics – roughly divided into three main groups:

1. Biobased or partly biobased non-biodegradable plastics such as biobased PE, PP, or PET (so-called drop-ins) and biobased technical performance polymers such as PTT or TPC-ET.
2. Plastics that are both biobased and biodegradable, such as PLA and PHA or PBS.
3. Plastics that are based on fossil resources and are biodegradable, such as PBAT.¹⁴

*bioplastics are used to make biobased melt-spinnable fibers.

Upcycle - Reuse (discarded objects or material) in such a way as to create a product of a higher quality or value than the original. (<http://www.oxforddictionaries.com>)



(European bioplastics org)

Appendix 4: Abbreviations



(Carved in Blue)

ABSTC	Aditya Birla Science and Technology Centre	PETA	People for the Ethical Treatment of Animals
BCI	Better Cotton Initiative	PFM	Preferred Fibers and Materials
BHAG	Big Hairy Audacious Goal	PHA	Polyhydroxyalkanoate
BSCI	Business Social Compliance Initiative	PLA	Polylactic Acid
CCS	Content Claim Standard	PP	Polypropylene
CmiA	Cotton made in Africa	PTT	Polytrimethylene terephthalate
CSR	Corporate Social Responsibility	RCS	Recycled Claim Standard
DWR	Durable Water Repellency	RDS	Responsible Down Standard
ETI	Ethical Trade Initiative	RDS	Responsible Down Standard
FLA	Fair Labor Association	RPET	Recycled Polyester
FSC	Forest Stewardship Council	RWS	Responsible Wool Standard
FWF	Fair Wear Foundation	SAC	Sustainable Apparel Coalition
GM	Genetically modified	SCS	Scientific Certification Systems
GOTS	Global Organic Textile Standard	STeP	Sustainable Textile Production Standard
GRS	Global Recycled Standard	TDS	Global Traceable Down Standard
ICAC	International Cotton Advisory Council	TE	Textile Exchange
ICEA	Istituto per la Certificazione Etica ed Ambientale	TPC-ET	Thermoplastic Copolyester Elastomer
LCA	Life Cycle Assessment	TRADC	Textile Research and Development Centre
NGO	Non Governmental Organization	USDA	U.S. Department of Agriculture
OCS	Organic Content Standard	WRAP	Worldwide Responsible Accredited Production
PBAT	Polybutyrate adipate terephthalate		
PBS	Polybutylene succinate		
PET	Polyethylene terephthalate		

Appendix 5. Standards Overview

Textile Exchange Standards

Content Claim Standard

<http://textileexchange.org/CCS>

The Content Claim Standard (CCS) provides companies with a tool to verify the content of specific input materials. Each organization along the supply chain is certified by an independent third-party certification body to ensure that they have the necessary controls on the movement of the certified materials. Any type of input material may be claimed. The CCS is the foundation chain of custody system for all of TE's standards.

Organic Content Standard

<http://textileexchange.org/OCS>

The Organic Content Standard (OCS) uses third-party certification to verify that a final product contains the accurate amount of an organically grown material. It does not address the use of chemicals or any social or environmental aspects of production beyond the integrity of the organic content. The OCS uses the chain of custody requirements of the Content Claim Standard.

Responsible Down Standard

<http://responsibledown.org/>

The Responsible Down Standard (RDS) is a third-party certification that covers the animal welfare and chain of custody for animals used in the production of down or feathers. The RDS ensures that down comes from animals that have been raised in an environment that promotes responsible animal welfare practices. It creates greater transparency in farming and processing practices in the supply chain while prohibiting force-feeding and live-plucking of waterfowl.

Recycled Claim Standard

<http://textileexchange.org/RCS>

The Recycled Claim Standard (RCS) is a chain of custody standard to track recycled materials through the supply chain. Input requirements verify that materials were actually diverted from a waste stream, and the standard uses the chain of custody requirements of the Content Claim Standard.

Global Recycled Standard

<http://textileexchange.org/GRS>

Like the RCS, the Global Recycled Standard (GRS) tracks recycled materials through the supply chain. The standard applies to the full supply chain and addresses traceability, environmental principles, social requirements, chemical restrictions, and labeling. Developed with the textile industry in mind, the GRS may also be applied to products from any industry.

Other Industry Standards

bluesign®

<http://www.bluesign.com/>

The bluesign® system addresses the environmental impact associated with processing in the textile supply chain. Facilities work directly with bluesign® to improve environmental production, especially with impacts associated with chemical use.

Chain of Custody Certification

<https://us.fsc.org/chain-of-custody-certification.201.htm>

Forest Stewardship Council (FSC) Chain-of-Custody certification traces the path of products from forests through the supply chain, verifying that FSC-certified material is identified or kept separated from non-certified material throughout the chain.

Cradle to Cradle

<http://www.c2ccertified.org/>

The Cradle to Cradle Certified™ Product Standard guides designers and manufacturers through a continual improvement process that looks at a product through five quality categories — material health, material reutilization, renewable energy and carbon management, water stewardship, and social fairness. A product receives an achievement level in each category — Basic, Bronze, Silver, Gold, or Platinum — with the lowest achievement level representing the product's overall mark.

Forest Stewardship Council/Forest Management Certification

<https://us.fsc.org/forest-management-certification.225.htm>

Forest Stewardship Council (FSC) Forest Management Certification confirms that a specific area of forest is being managed in line with the FSC Principles and Criteria, which addresses issues such as environmental impacts, land use, and community impact.

Global Traceable Down Standard

<http://www.nsf.org/services/by-industry/sustainability-environment/global-traceable-down-standard/>

The scope of the Global Traceable Down Standard (TDS) encompasses animal welfare, including the unacceptable practices of force feeding live plucking, and molt harvesting along with traceability, from parent from to factory, to ensure the compliant down and feather material can be documented as the material used in finished certified goods.

Global Organic Textile Standard

<http://global-standard.org/>

The Global Organic Textile Standard (GOTS) covers the processing, manufacturing, packaging, labeling, trading and distribution of all textiles made from at least 70 percent certified organic natural fibers. The final products may include, but are not limited to fiber products, yarns, fabrics, clothes and home textiles. The standard does not set criteria for leather products.

OEKO-TEX® Association / OEKO-TEX® Standard 100

<https://www.oeko-tex.com/en/manufacturers/certification/certification.html>

Product certification according to OEKO-TEX® Standard 100 provides companies along the textile chain with testing to ensure the environmental health and safety of final products.

Sustainable Textile Production by OEKO-TEX®

https://www.oeko-tex.com/en/manufacturers/concept/sustainable_textile_production_step/step.xhtml

Sustainable Textile Production (STeP) certification may apply to any production facility for textile items. The standards address social and environmental impacts in production, as well as chemical management. From July 2013 on, STeP replaced the previous certification of production sites according to OEKO-TEX® Standard 100.

USDA BioPreferred

<http://www.biopreferred.gov/>

The USDA BioPreferred® program provides verification of Biobased content for products sold in the United States. The certification is conducted directly through the U.S. Department of Agriculture.

Appendix 6: Material Snapshots



About the Material Snapshots

The Material Snapshots are designed for the reader to understand why the choice to use certain materials makes a difference in the textile, apparel, and footwear industry. That choice could result in positive or negative impacts depending on the material and supply chain details. These guides provide a concise look at the agricultural, social, and processing differences that make material sustainability profiles different. The snapshot also provides information on material properties, certifications, and sourcing information since sustainability is only one of the many reasons why a particular material is chosen. The chart on the next page provides a summary overview of the snapshots for some of the materials covered in this report and a full listing of available Material Snapshots is provided below.

The Material Snapshots are freely available as a member benefit but also available for purchase.

Available Material Snapshots

[Material Snapshot: Bamboo Viscose](#)

[Material Snapshot: Better Cotton](#)

[Material Snapshot: Chemically Recycled Polyester](#)

[Material Snapshot: Cleaner Cotton™](#)

[Material Snapshot: Conventional Cotton](#)

[Material Snapshot: Conventional Nylon](#)

[Material Snapshot: Conventional Polyester](#)

[Material Snapshot: Cotton Made in Africa](#)

[Material Snapshot: CRAiLAR](#)

[Material Snapshot: Down](#)

[Material Snapshot: EVA](#)

[Material Snapshot: Fairtrade Cotton](#)

[Material Snapshot: Hemp](#)

[Material Snapshot: Leather](#)

[Material Snapshot: Linen](#)

[Material Snapshot: Mechanically Recycled Polyester](#)

[Material Snapshot: Natural Rubber](#)

[Material Snapshot: Non-Mulesed Wool](#)

[Material Snapshot: Organic Wool](#)

[Material Snapshot: Polyamide 11](#)

[Material Snapshot: Polylactic Acid](#)

[Material Snapshot: Preferred Leather](#)

[Material Snapshot: PTT](#)

[Material Snapshot: Polyurethane](#)

[Material Snapshot: Recycled Cotton](#)

[Material Snapshot: Recycled Nylon](#)

[Material Snapshot: Recycled Rubber](#)

[Material Snapshot: Recycled Wool](#)

[Material Snapshot: Silk](#)

[Material Snapshot: Spandex](#)

[Material Snapshot: Synthetic Rubber](#)

[Material Snapshot: Lenzing TENCEL® lyocell](#)

[Material Snapshot: Viscose](#)

Summary of Material Snapshots

The chart below presents a summary overview of a selection of material snapshots.

Category	Fiber	Material Form	Conventional / Standard Material	Impact Area	Attribute	
Manmade - Manufactured	Synthetics	Mechanically Recycled Polyester	Plastic, Filament, Staple Fiber	Virgin Polyester	Land Use Intensity Energy Use Green House Gas Emissions	Replaces the need for primary extraction of crude oil extraction and reduces the amount of landfill disposal. 58 percent of virgin polyester. 45 percent lower than virgin polyester.
		Chemically Recycled Polyester	Plastic, Filament, Staple Fiber	Virgin Polyester	Land Use Intensity Energy Use Green House Gas Emissions	Replaces the need for primary extraction of crude oil and reduces the amount of landfill disposal. 35-55 percent lower than virgin polyester. 15-40 percent lower than virgin polyester.
		Recycled Polyamide/Nylon	Plastic, Filament, Staple Fiber	Virgin Polyamide/Nylon	Land Use Intensity Energy Use Green House Gas Emissions	Reduced amount of landfill disposal and no need of primary crude oil extraction. Considerable reduction of energy demand. Between 34 percent and 58 percent greenhouse gas emission reduction depending on the Nylon type and recycling technology.
	Biopolymer	Partially Bio-Based PTT (Poly Trimethylene Terephthalate)	Plastic, Film, Filament Fiber, Staple Fiber, Bulk Continuous Filament Yarns	Polyester, Nylon 6	Land Use Intensity Energy Use Green House Gas Emissions	Low land requirement, lower the dependency on petro-chemicals and lower depletion of non-renewable resources. 38 percent less than the original fossil based PDO. 42 percent lower than the original fossil based PDO.
		Polylactic Acid (PLA)	Plastic, Film, Filament, Staple Fiber	Polyester (PES)	Land Use Intensity Water Energy	Low land requirement, lowers dependency on petrochemicals and the depletion of non-renewable resources. Less water required than for polyester and nylon. Lower than virgin polyester.
	Renewable Materials/ Cellulosics	Lyocell, Brand Name TENCEL®	Staple Fiber	Viscose/Rayon	Land Use Intensity Biodiversity Chemistry/Toxicity	Eucalyptus is one of the fastest growing trees. Grows on low grade land, not suitable for food production. FSC certification ensures appropriate plantation management. Substantial reduction of chemicals in wet spinning: 99.5 percent is recaptured in a closed loop system.
Natural	Natural Fiber	Organic Cotton	Staple Fiber	Conventional Cotton	Biodiversity Chemistry / Toxicity Greenhouse Gas Emissions Water	Use of genetically modified seed is prohibited. Agro-ecosystems are self-stabilizing with the help of crop rotation, mixed cropping systems, choice of adapted varieties, and application of organic fertilizers and manures. Synthetic agrichemicals are banned. Avoids energy-intensive processes and the use of mineral fertilizers. The majority (about 70-80 percent) of organic cotton production is rain-fed rather than irrigated.
	Animal Based	Recycled/ Regenerated Wool	Staple Fiber	Conventional Wool	Water Chemistry Greenhouse Gas Emissions	Reduction of waste sent to landfill. No farming or scouring. No methane emissions from animal's digestion process.



We envision a global textile industry that protects and restores
the environment and enhances lives.

www.TextileExchange.org