



# Dirty Fashion

on track for transformation



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## Executive Summary

One year on from the publication of our first *Dirty Fashion* report, this report assesses where global apparel companies and viscose manufacturers stand in the transition towards responsibly-produced viscose. Through detailed scrutiny of clothing brands' transparency and sourcing policies, and manufacturers' responsible production plans, we examine progress to date and gaps in existing commitments and pledges.

This time last year, there was little knowledge of the environmental and social impacts of viscose production within the apparel industry. To the extent that brands and retailers were aware of sustainability problems in the viscose supply chain, they were mostly focused on the sourcing of timber for use in the production of wood-based dissolving pulp, which is the starting material for most viscose. In partnership with the NGO Canopy, many had pledged to stop sourcing pulp from ancient and endangered forests. Through 'Detox' commitments with Greenpeace and other initiatives, such as the ZDHC Foundation's Programme on hazardous chemicals, some had also taken action to curb pollution from wet processing by committing to phase out the use of toxic substances in textiles dyeing and finishing.

However, almost without exception, brands and retailers had neglected to address a key part of the production chain causing significant pollution and taking a heavy toll on the health and livelihoods of communities living in the shadow of viscose factories.

In June 2017, all this changed when we published *Dirty Fashion: How pollution in the global textiles supply*

Our first investigation in 2017 uncovered rampant pollution around viscose production sites (credit - Muhammad Fajar Fauzan)



These clothes are all made of 100% viscose



*chain is making viscose toxic.* Following on-the-ground investigations in India, Indonesia and China, we revealed how companies supplying viscose to the international market were dumping untreated wastewater in lakes and waterways, ruining lives and livelihoods. Toxic run-off into rivers next to factories was destroying subsistence agriculture and had been linked to higher incidence of serious diseases such as cancer in local populations. Communities living near some of the plants spoke of a lack of access to clean drinking water and sickening smells that were making life unbearable.

Some clothing companies reacted swiftly to our findings, expressing shock at the scale of the damage we had uncovered and pledging to take steps to tackle it. In the weeks and months following the publication of our report, many of them voiced their concern to us but seemed uncertain about how to drive the transition towards more responsible production.

As a result of this, in February 2018, we produced the *Roadmap towards responsible viscose and modal fibre manufacturing*, which defined key principles and guidelines for cleaning up manufacturing. In parallel to the Roadmap, we published a follow-up to our first report, *Dirty Fashion revisited: Spotlight on a polluting viscose giant*, which confirmed our earlier findings of pollution in the viscose supply chain but focused specifically on the world's biggest producer, the Aditya Birla Group (ABG).

Following engagement with many brands throughout the past year, this report presents a detailed overview of individual companies' policies and commitments relating to viscose manufacturing, grouping them according to their progress on these fronts. The Roadmap currently has seven signatories, namely Inditex, ASOS, Marks & Spencer (M&S), H&M, Tesco, Esprit and C&A. Next has also communicated that it plans to commit to the Roadmap in the near future.

Roadmap signatories have started engaging with their suppliers, calling on them to commit to closed-loop manufacturing by 2023-25 (defined as ensuring emission controls and chemical recovery rates in line with EU Best Available Techniques or 'BAT' set out in the EU Reference Document on Polymers). Other brands are also starting to take action, some of them working within the ZDHC to develop "a clear framework of guidelines for wastewater, sludge, waste and air emissions." While these leaders have shown great proactiveness in their commitments and engagement, this report also exposes a group of laggards: brands that are still ignoring calls for greater sustainability and transparency from consumers and civil society. This group is made up of an unusual mix of luxury brands, such as Gucci, Prada and Chanel, and low-cost retailers, such as Asda, Lidl and online brands Boohoo and Missguided. This group has failed to respond to any of our letters and there is scant detail about their environmental policies online, with almost nothing on viscose.

While much progress remains to be made, the tide is beginning to turn in favour of more responsible viscose production. Manufacturers are heeding this message: Austria's Lenzing and India's ABG, the two largest viscose producers in the world, have both committed to making all their sites meet EU Ecolabel requirements for viscose production. Lenzing has instituted a Group Environmental Standard which is aligned with EU BAT emissions limits and ABG has committed to an "aspirational" target of making their sites compliant with EU BAT. While welcome, this does not go far enough - we would like to see an explicit commitment to this objective, which is based on emissions values that the best performers in the industry were able to achieve over a decade ago, and which Lenzing has already met at all but one of its viscose production sites.

In China, where the country's ten largest viscose producers have come together to form the Collaboration for Sustainable Development of Viscose (CV), the industry is developing a three-year roadmap. However,

its level of ambition is yet to be determined and most initiatives and standards currently listed as guiding the commitment do not (or not yet) address environmental performance during viscose fibre production.

We also remain to be convinced about manufacturers' commitment to the transparent reporting of complaints and grievances, whether from their own workers or from communities impacted by their activities. We note that Lenzing and ABG appear to be making genuine attempts to improve their handling of grievances, but that internal policies are only as good as the level of external scrutiny companies are willing to allow.

In summary, the future of viscose production is looking a bit greener now than it was this time last year. The welcome change in mindsets on the part of both brands and producers, and some good initial commitments, must now translate into detailed implementation plans and capital investments to put the industry on target for transformation.





## 1. The problem: pollution in the viscose supply chain

Following decades of living in denial, the world is finally waking up to the monumental environmental impacts of the fashion industry. From microfibres polluting the oceans and killing marine life to the reckless use of pesticides in cotton cultivation to the huge volumes of waste produced by a 'fast fashion' system, it's clear that we are on a dangerous track.

Against this backdrop, the industry is beginning to tackle some of the key threats its unsustainable practices have created. In the case of viscose, numerous companies are now working together to stop sourcing wood pulp from ancient and endangered forests through their partnership with the CanopyStyle initiative. By signing up to 'Detox' commitments with Greenpeace, a large group of brands has also demonstrated serious intent to address impacts from the discharge of toxic chemicals at the wet processing stage of textiles production. However, taken in isolation, these undertakings do not prove that a company is sourcing responsibly-produced viscose. Since the publication of *Dirty Fashion* in June 2017, a steadily increasing number of brands and retailers have taken this message to heart and there is now a common understanding that tackling pollution from the manufacturing of viscose (i.e. its processing from wood pulp into staple fibre and filament yarn) is a vital additional step towards putting the industry on a more sustainable footing.

Viscose and other cellulosic fibres are the third most commonly used fibres in the world, after synthetics and cotton.<sup>1</sup> As a biodegradable fibre, viscose has the potential to be a sustainable alternative to oil-derived synthetics and water-hungry cotton. However, in order to fulfil this potential, production methods and sourcing practices must change.



In 2017 and early 2018 the Changing Markets Foundation worked with local NGOs and investigative reporters to carry out on-the-ground investigations in the top three viscose producing countries: India, Indonesia and China. In all three countries, we found clear evidence of viscose producers dumping untreated wastewater, contaminating local lakes and waterways, and impacting on the lives and livelihoods of local people.



The production of viscose is reliant on a number of highly toxic and corrosive chemicals. With careful chemical management, viscose can be produced in a responsible way where chemicals are maintained in a closed-loop system, reducing discharges to the environment. However, many manufacturers are yet to adopt best practices.

At the heart of viscose production is carbon disulphide (CS<sub>2</sub>), a toxic and endocrine-disrupting chemical. CS<sub>2</sub> has been linked to numerous serious health conditions, most notoriously as a cause of insanity in factory workers but also a wide range of illnesses ranging from kidney disease and Parkinson's-like symptoms to heart attack and stroke.<sup>2</sup> The chemical can be present in both water and air as a result of pollution from viscose factories and can impact health at very low concentrations.<sup>3</sup>

During the spinning process, hydrogen sulphide (H<sub>2</sub>S) is also generated as a by-product. H<sub>2</sub>S is a highly toxic gas which can cause irritation of the eyes, function impairment and neurobehavioural changes.<sup>4</sup> Its presence can be recognised by the distinctive odour of rotten eggs. During our investigations, people we spoke to frequently complained of the foul smells emitted by nearby viscose plants.

Sodium hydroxide (NaOH; also known as caustic soda) and sulphuric acid (H<sub>2</sub>SO<sub>4</sub>) are also used in the production of viscose. NaOH can be highly toxic if absorbed through inhalation, ingestion or skin contact, and is known to cause corrosion, skin burns and eye damage to workers who handle it frequently and without protection. H<sub>2</sub>SO<sub>4</sub> is a highly corrosive, clear, colourless oily liquid. It can result in adverse health effects from inhalation such as a burning sensation and shortness of breath. Evidence suggests that occupational exposure to sulphuric acid mists in combination with other acid mists can be carcinogenic.<sup>5</sup>

Without proper chemical management and treatment, these toxic chemicals find their way into the air and waterways surrounding viscose factories, affecting the delicate natural balance of ecosystems and water bodies, and harming the health of factory workers and local communities. But better production methods do exist, in which viscose is produced in a closed-loop system, limiting emissions to water and air.

## 2. The solution: Roadmap towards responsible viscose manufacturing



The Roadmap towards responsible viscose & modal fibre manufacturing was published by Changing Markets in February 2018

In response to requests from clothing brands and retailers for guidance on tackling the environmental and social impacts of viscose production highlighted in our *Dirty Fashion* reports, and in the absence of an ambitious and comprehensive scheme addressing these, in February 2018 the Changing Markets Foundation launched a *Roadmap towards responsible viscose and modal fibre manufacturing*. The Roadmap provides a blueprint for brands, retailers and producers to move towards responsible viscose manufacturing, whereby chemical inputs are captured and reused instead of being released into the environment.

It is designed to give ownership to retailers and brands to drive the transformation, by engaging with their suppliers to reach ambitious environmental and social targets that go beyond the existing regulatory framework. Committed brands are expected to use their leverage with manufacturers to drive the transition to closed-loop production, defined as a system that ensures emission controls and chemical recovery rates in line with EU Best Available Techniques (BAT) (See Box 1). The Roadmap is a complementary strategy to efforts that many brands are already undertaking on responsible viscose sourcing (CanopyStyle initiative) and responsible chemical management (e.g. through the Greenpeace Detox commitment or membership of ZDHC).

It is important to note that the Roadmap is not a certification scheme but provides a list of principles that retailers and brands should integrate into their own sustainable sourcing policies, namely:

- A. Brands should ensure that their suppliers have all requisite environmental permits and comply with relevant national and local regulations;
- B. Producers should introduce plans for appropriate chemical management systems in line with EU BAT (see Box 1 for more details), with the ultimate goal of moving towards closed-loop production;
- C. Measures should be in place to protect workers and local inhabitants from exposure to dangerous chemicals;
- D. Energy efficiency and greenhouse gas emissions reduction goals should be set;
- E. Environmental damage in the surrounding environment should be remediated.

# THE GLOBAL VISCOSE INDUSTRY – KEY FACTS

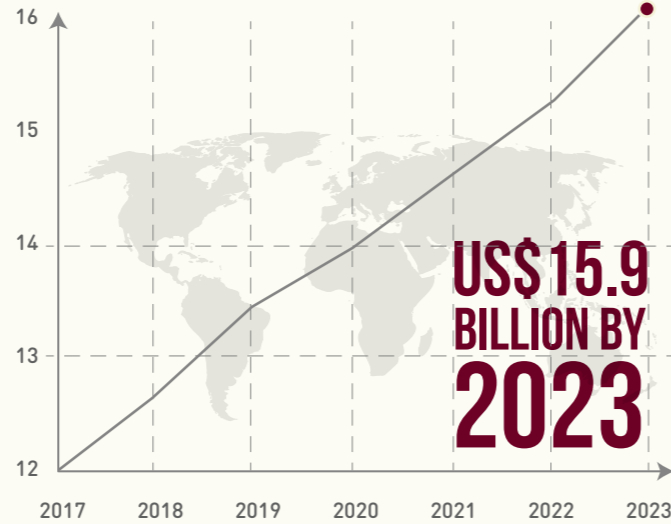
## SIZE OF THE GLOBAL VISCOSE MARKET:



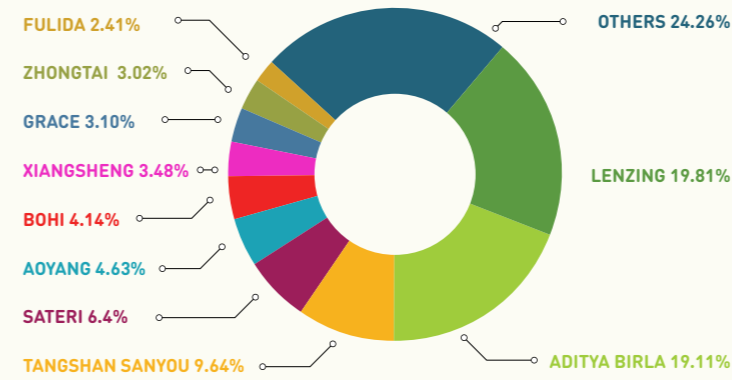
**US\$12**  
BILLION IN  
**2017**

COMPOUND ANNUAL  
GROWTH RATE  
2017-2023:  
**+4.76%**

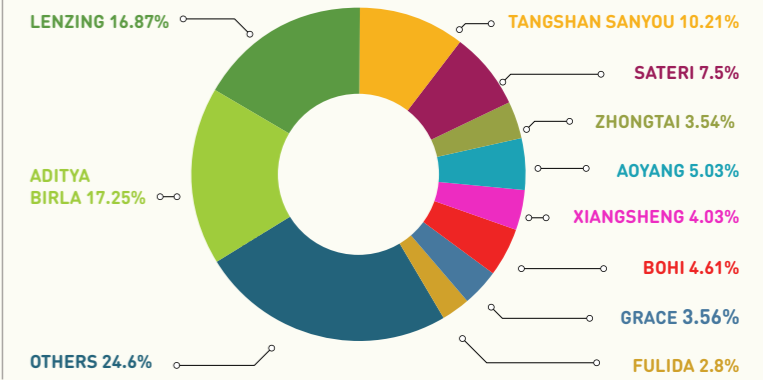
## PREDICTED TO GROW TO:



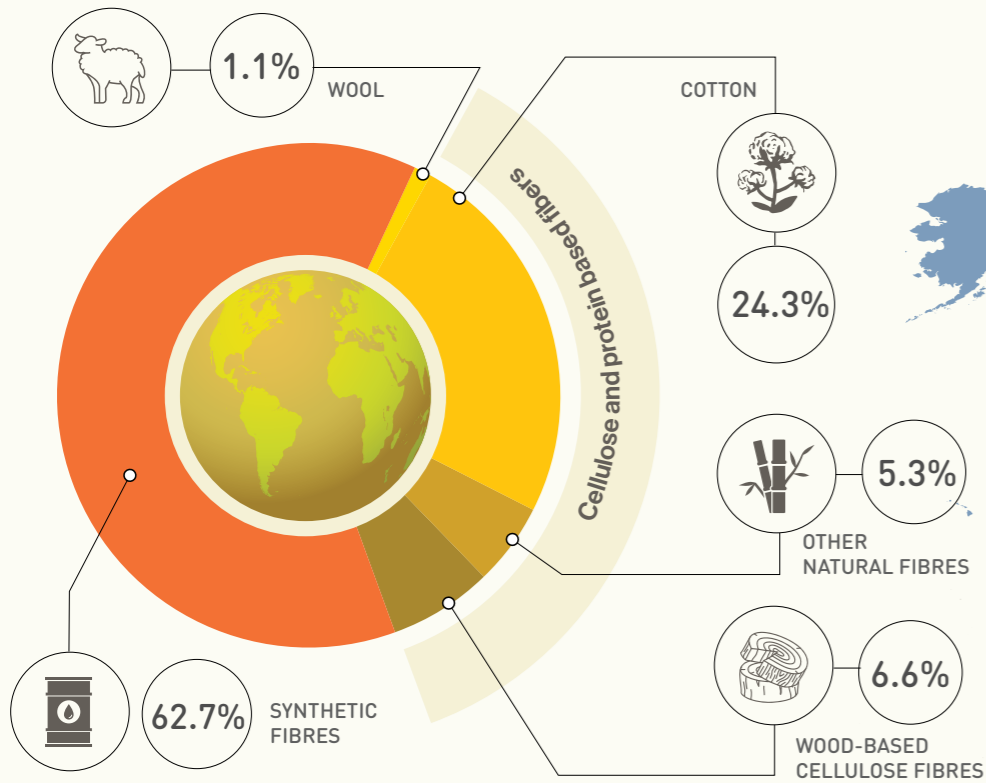
## TOP 10 MANUFACTURERS BY REVENUE (2017)



## TOP 10 MANUFACTURERS BY SALES VOLUME (2017)

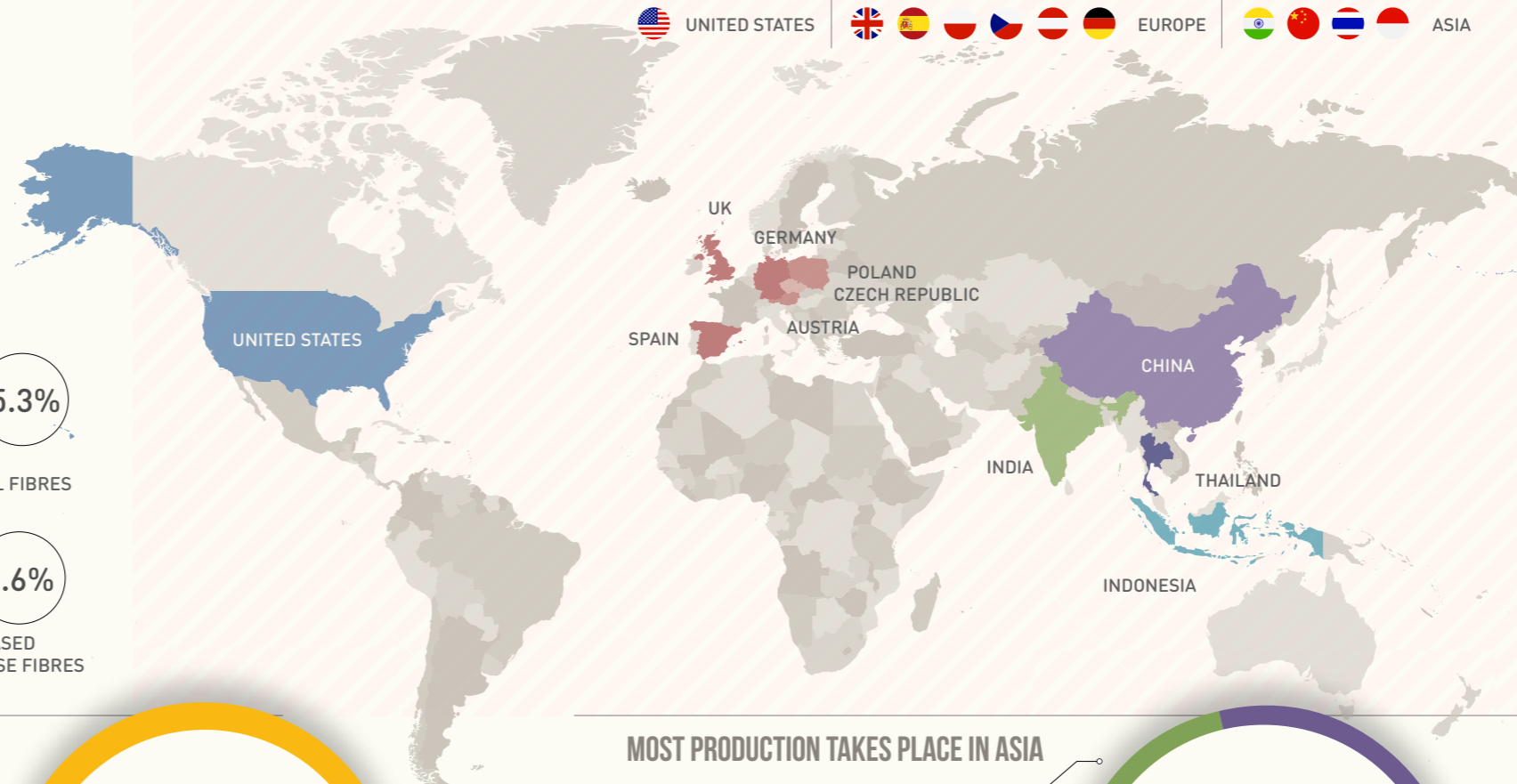


## GLOBAL MARKET SHARE OF VISCOSE COMPARED TO OTHER FIBRES:

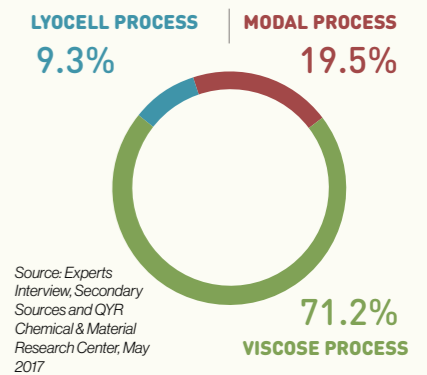


Source: ICAC, CIRFS, TFY, FEB, Lenzing Estimates

## COUNTRIES WHERE VISCOSE (FIBRE AND YARN) IS PRODUCED:



## TYPES AND MARKET SHARES OF WOOD-BASED FIBRES:



Source: Experts Interview, Secondary Sources and QYR Chemical & Material Research Center, May 2017

## VISCOSE STAPLE FIBRE MAKES UP THE BIGGEST SHARE OF THE MARKET:

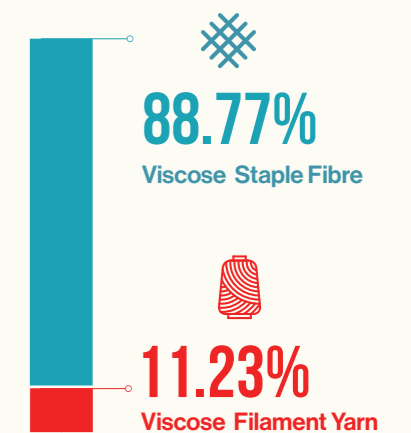
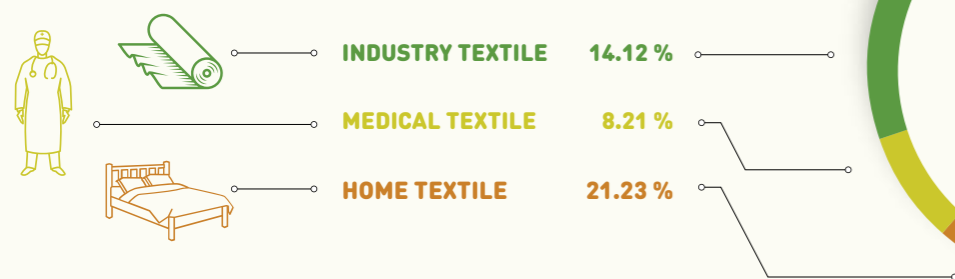


Figure Global Sales Market Share of Viscose Fibre by Types in 2017

Source: Annual report, Press Releases, LP Information Research Team, 2018

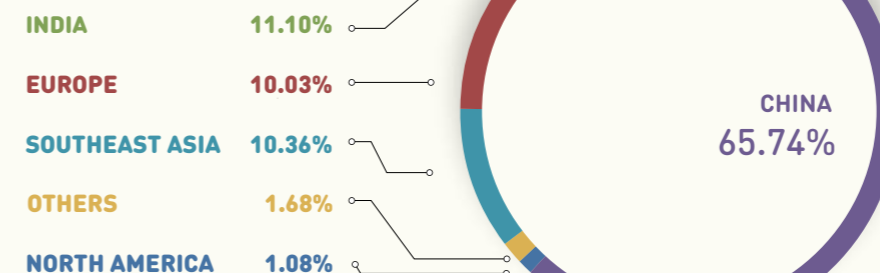
## MORE THAN HALF OF VISCOSE IS USED IN CLOTHING

Viscose Fibre Consumption Market Share by Applications in 2017



Source: Annual Reports, Secondary Information, Press Releases, LP Information research Team, 2018

## MOST PRODUCTION TAKES PLACE IN ASIA



Source: Global Viscose Fibre Market Research Report 2017, May 2017, QYR Chemical & Materials Research Center.

Brands and retailers are required to be transparent about their progress towards these objectives and ensure regular and independent monitoring and verification of how suppliers are addressing the risks and moving towards a closed-loop system.

**Seven major brands and retailers - Inditex, ASOS, H&M, Tesco, Marks & Spencer (M&S), Esprit and C&A - have already publicly pledged to integrate the Roadmap into their sustainability policies, while another - Next - is in the process of signing up. With this commitment, clothing brands and retailers are sending a clear message to viscose manufacturers that they expect the industry to move to more responsible viscose production by 2023-25.**

**Box 1: Best Available Techniques for the Production of Polymers**

The EU's Best Available Techniques (BAT) Reference Document (or BREF) on Polymers was published in 2007 under the scope of the Integrated Pollution Prevention and Control (IPPC) Directive (Article 16(2) of Council Directive 96/61/EC). It defines the most effective techniques for achieving environmentally responsible production of polymeric materials such as synthetics and cellulose-based fibres, including viscose.<sup>6</sup>

The BREF was drafted under the auspices of the European Commission and is based on an exchange of information between the EU Member States, the EU viscose industry and non-governmental organisations (NGOs) carried out between 2003 and 2005. It is based on operating data supplied by EU industry players at the time. The values and techniques set out in the BREF therefore reflect what the best performers in the industry were already achieving over a decade ago and are not theoretical. What is more, techniques are subject to economic assessment and are only accepted as BAT if the environmental benefits of applying them outweigh the costs.<sup>7</sup> Conclusions on BAT are also used as the main reference when issuing operating permits and licences, granted by the authorities in the Member States.<sup>8</sup>

In the Roadmap developed by the Changing Markets Foundation, we identified EU BAT on viscose, as described in the BREF on Polymers, as the most comprehensive and ambitious standard that sets limits on chemicals that are usually discharged from the viscose manufacturing process and that addresses both pollution to air and water.

	Standard	Air pollution	Water pollution			Energy	Solid waste
Viscose staple fibre	EU BAT	<b>Sulphur to air (kg/t) expressed as an annual average</b>	<b>Zinc to water (g/kg)</b>	<b>COD (g/t)</b>	<b>Sulphate (kg of SO<sub>4</sub><sup>2-</sup>/tonne)</b>	<b>Direct energy (GJ/t)</b>	<b>Hazardous waste (kg/t)</b>
		12-20	0.01-0.05	3,000-5,000	200-300	20-30	0.2-2.0

According to Rainforest Alliance auditors, in 2016, six viscose fibre plants owned by Lenzing were either meeting BAT values for viscose or producing man-made cellulosic fibres (MMCF) using lyocell technology.<sup>9</sup> Of the two plants that produced viscose according to BAT, one is based outside of the EU, in Nanjing (China). This indicates that EU BAT have a wider international impact. Indeed, according to the European Commission, BAT were developed 'so that non-EU countries can also reap the benefits of this ambitious work'.<sup>10</sup> As such, they can and frequently do serve as a benchmark for non-EU producers. In fact, according to our engagement with global viscose producers, the Chinese industry is looking at EU BAT for viscose as a reference for developing its own standards (see section 4.3.).

**Table 1: EU BAT emissions standards for viscose staple fibre production**

Source: European Commission (2007)

The EU BAT only cover viscose staple fibre (VSF) manufacturing, but not viscose filament yarn (VFY), which presents a much smaller percentage of production (around 11%).<sup>1</sup> The Changing Markets Foundation has identified some of the ambitious standards relevant to VFY in the Roadmap and plans to do more research in this area at a future stage of the campaign.

<sup>1</sup> Viscose filament yarn is a spun thread ready for weaving into textiles, while staple fibres are cut into short pieces after the spinning bath and can be blended with other fibres into textile yarns or processed into 'non-woven' products later on.





Letter sent to brands and retailers in March 2018

### 3. Where do brands stand on viscose ?

Over the past 18 months, the Changing Markets Foundation along with other international NGOs has reached out to over 50 global clothing brands and retailers to find out more about how they source viscose.

The first letter was sent in March 2017, before the publication of the first *Dirty Fashion* report. It was co-signed by Ethical Consumer, online campaigning organisation SumOfUs and the Changing Markets Foundation, and asked companies for information on their viscose policies, the amount of viscose used in their clothing, and the identity of their viscose suppliers. Around one-third of brands responded to the letter.

After publication of the *Roadmap* another letter was sent in March 2018 asking an even bigger group of brands to become more transparent about their use of viscose and to commit to the Roadmap's principles. The letter was co-signed by Ethical Consumer, WeMove.EU, Fashion Revolution and Ecologistas en Acción. Again, around one-third of brands responded to the letter.

The table, presented as an annex to this report, provides an overview of all the information received to date by the Changing Markets Foundation from the brands and retailers we approached. This was provided via letters, emails, phone calls and face-to-face meetings; it also reflects information that is publicly available on brands' and retailers' websites.

In the first *Dirty Fashion* report, we highlighted a 'missing link' in supply chain transparency, as brands were not publicly disclosing their viscose fibre and yarn suppliers (with the exception of a handful). Since then, some brands and retailers have made encouraging progress on mapping their fibre supply chains, yet in almost all cases this has not yet translated into wider public disclosure.

#### BOX 2: The Higg Facility Environmental Module

This box aims to provide some information on the Higg Index, which clothing brands and retailers, as well as the largest viscose producers Aditya Birla Group and Lenzing, often use as a reference when talking about their sustainability performance and transparency.

The Higg Index was developed by the Sustainable Apparel Coalition (SAC), an industry-wide group of brands, retailers, suppliers, NGOs and non-profit organisations.<sup>11</sup> SAC was founded in 2009 by Patagonia



and Walmart. With over 70 brands, and retailers, and over 60 manufacturers (including Aditya Birla Group and Lenzing), it claims to represent more than 40% of the apparel industry.<sup>12</sup>

The goal of the Higg Index is to provide tools to enable brands, retailers, and facilities to measure and score a company's or product's sustainability performance.<sup>13</sup> This includes three types of tools:

1. Product tools (Higg MSI (Material Sustainability Index), the Higg Design & Development Module and the Higg Product Module);
2. Brands tool (Higg Brand & Retail Module);
3. Facility tool (Higg Facility Environmental Module - Higg FEM).<sup>14</sup>

The tool most relevant to measuring the sustainability of the viscose fibre production process is the Higg FEM, which scores production facilities according to their environmental performance. Higg FEM 3.0, launched in 2017, provides tools to evaluate facilities' environmental management systems, energy use, GHG emissions, water use, wastewater, emissions to air, waste management, and chemical use and management.<sup>15</sup> So far, there has been no obligation for facilities to publish their results, likely resulting in a reporting bias in which only companies with good environmental performance communicate their scores. However, the Higg Index Roadmap to Transparency has set an objective of achieving 'full transparency' by 2020, by releasing the Higg data.<sup>16</sup>

While the Changing Markets Foundation welcomes SAC's move towards enhanced transparency, the concern remains that the Higg FEM 3.0 in its current form does not offer proof of compliance with the requirements set out in our Roadmap. For one, our Roadmap requires that monitoring and verification should take place more frequently than on an annual basis and producers' performance and progress should be transparently and regularly reported for all the companies in the supply chain.

### The frontrunners

The Changing Markets Roadmap was launched in February 2018 with the endorsement of five brands - ASOS, H&M, Inditex, Marks & Spencer (M&S) and Tesco. Esprit also joined the Roadmap at the end of May 2018, C&A joined in July 2018 and Next has communicated that it plans to commit in the near future. In line with the requirements of the Roadmap, the signatories have disclosed their viscose suppliers in varying levels of detail. H&M has provided the most detailed picture of its supply chain, providing us with factory names, and in some cases addresses, for all its viscose suppliers; Next has so far traced 64% of its supply chain.

Signatory brands are also developing viscose production policies and engaging with their suppliers. Inditex has sent a questionnaire to all its suppliers to establish how much progress they have made in terms of implementing the Roadmap. ASOS has been very active in engaging with its viscose supply base. For example, it requested that ABG share with it a concrete plan for addressing the issues highlighted in Dirty Fashion by June 2018. H&M and Next are currently finalising their responsible fibre policies for viscose and modal, based on the requirements of the Roadmap, while Tesco has consulted with Changing Markets for input on its MMC Fibre policy for its clothing line F&F. M&S has stated that it will not source from any man-made cellulosic fibre suppliers that do not transition to a closed-loop manufacturing system by 2023-2025.

*"M&S will not source from any man-made cellulosic fibre suppliers who do not transition to a closed-loop manufacturing system by 2023-2025. This system should aim to recycle the majority of chemicals used during production and prevent the production process from negatively impacting on human health and the environment"*

*Marks & Spencer*

STELLA  
MCCARTNEY

patagonia

EILEEN  
FISHER

In committing to the Roadmap, these brands have taken ownership of the process of driving more responsible production in their viscose supply chains and made a clear statement to manufacturers that they need to clean up their production methods.

### BOX 3: Eileen Fisher, Patagonia, Stella McCartney

Eileen Fisher, Patagonia and Stella McCartney are three brands that already had the environmental impacts of viscose production in their sights before the launch of our first *Dirty Fashion* report in June 2017. Stella McCartney discloses its entire viscose supply chain on its website, stating that it sources wood from Sweden and filament yarn from Germany (ENKA). In correspondence with Changing Markets, the brand disclosed that it also buys some viscose staple fibre from Lenzing. Patagonia informed Changing Markets in May 2017 that it only uses lyocell, whose production is considered to be more environmentally friendly than viscose or modal. On its website the brand states that it is also using REFIBRA, a type of lyocell produced by Lenzing that is made from recycled cotton scraps. Eileen Fisher states on its website that it is moving away from viscose entirely; in a similar way to Patagonia, the brand states its intention to move towards lyocell.

### Could do better

A number of other brands and retailers have engaged with the Changing Markets Foundation over the past 12 months via letters, email, calls and face-to-face meetings. Many already have viscose policies in relation to the sourcing of wood pulp and have demonstrated a real desire to tackle pollution in viscose production. However, they have stopped short of committing to the Roadmap and still need to demonstrate progress through the establishment of a dedicated viscose production policy and/or enhanced supplier transparency.

For example, in communication with us in March 2018, Gap disclosed that Aditya Birla Group and Lenzing, the two largest viscose producers in the world, are among its suppliers. Similarly, while John Lewis did not disclose its full supplier list, it did state that it is currently in conversation with Lenzing. A number of brands in this category, including John Lewis, Gap and New Look, are working on mapping their viscose supply chain, and we look forward to seeing how this develops.

Considering that many brands in this category do already have a viscose or wood-based fibre sourcing policy, the next logical step for them would be to commit to the Roadmap to ensure that they holistically cover the whole viscose supply chain.

### Trailing behind

The next ten brands on the table have been identified as laggards in the area of responsible viscose production. These brands have either failed to reply to correspondence, do not have a viscose production policy in place or do not provide transparency on their viscose supply chain - or a combination of two or three of these factors.

In this category we find some brands that could and should do much better, as they are rated fairly highly in the Fashion Revolution Transparency Index and in Greenpeace Detox rankings. For example, the Ital-





ian brand Benetton has not yet responded to any of the letters sent and does not have any policies relating to viscose on its website. Lululemon has also so far failed to respond to our correspondence despite its 'green' image and its status as a Canopy signatory. Lululemon does have a viscose sourcing policy, yet this does not cover viscose production.

Viscose makes up 20% of fibres used by Mango, yet the brand has so far failed to commit to cleaning up its viscose supply chain

The UK high street giant Arcadia and US brand Nike have both engaged with us. However, Arcadia (which owns Topshop, Topman, Miss Selfridge and others) does not have any policies relating to viscose, nor does it provide any transparency about its supply chain. Communication from Nike last year stated that the brand is focusing on the labour rights aspect of its supply chain - undoubtedly a worthy focus, but one which should not come at the expense of the brand's environmental performance.

### In the red zone

The worst-performing brands in relation to viscose, shown at the bottom of the table, are an unlikely combination of luxury (Gucci, Chanel and Burberry) and low-cost (Lidl, ASDA) brands. At the low-cost end of the market and deep in the red zone are online retailers Boohoo and Misguided, which have both seen significant growth over the past few years. We have tried to engage with these brands in 2018 but have not yet received a response to our letters.

The Misguided website has one reference to the Modern Slavery Act (which is a legal requirement for all UK businesses) and no mention of sustainability at all. The Boohoo website is a little more detailed but does not list a single environmental policy relating to manufacturing, beyond compliance with EU and international regulations on hazardous chemicals. Forever 21 is another example of a low-cost retailer that has no transparency on its website yet is clearly using a large amount of viscose (an online search on its website brought up 450 products containing the fibre).

At the other end of the market, the luxury clothing sector has also largely refused to respond to the Dirty Fashion campaign. The latest Greenpeace report, which highlighted commendable action by brands in detoxing the fashion industry, also criticised luxury retailers for not making progress on chemical management or on transparency.<sup>17</sup> Our own research on brands' websites also revealed minimal detail on sustainability policies. Chanel is the only luxury brand that has responded to our letters, but even then it has refused to disclose any information about its sustainability policies, suppliers used or the percentage of viscose used in its clothing.

### BOX 4: ZDHC pilot on man-made cellulosic fibres

The Zero Discharge of Hazardous Chemicals (ZDHC) Programme is an industry-led initiative aimed at eliminating hazardous chemicals from the textile, leather and footwear industries by 2020. The initiative has over 90 members, 24 of which are brands and retailers (including Adidas, H&M, C&A, Esprit, Inditex and many others).<sup>18</sup> So far ZDHC's work has been largely focused on driving better chemical management and innovation in the dyeing and finishing of textiles, apparel, leather and footwear.

In 2018, ZDHC announced its plan to expand the scope of its work to raw material production, starting with MMCF, including viscose, modal and lyocell. The aim is to provide a framework of guidelines for wastewater, sludge, waste and air emissions specific to man-made cellulosic fibre production and define expectations to achieve closed-loop commitments. ZDHC hosted its first multi-stakeholder roundtable on the issue in March 2018, gathering 80% of MMCF producers (including Birla Cellulose, Lenzing Group and the Collaboration for Sustainable Development of Viscose), clothing brands, multi-stakeholder initiatives such as the Partnership for Sustainable Textiles and NGOs.

According to ZDHC, the first draft of the guidelines is expected at the end of 2018, with pilots scheduled to start in early 2019. The industry - brands, retailers and fibre producers - will be able to publicly demonstrate performance via ZDHC's recently released public disclosure portal.<sup>19</sup>

The Changing Markets Foundation encourages ZDHC to keep the level of ambition in the upcoming guidelines high; more specifically, they should be in line with EU BAT standards and the principles set out in the Roadmap.





## 4. What measures are viscose producers taking to transition to closed-loop production?

The following section assesses the actions that some of the biggest global viscose producers have taken to move towards more responsible viscose production, following the publication of the June 2017 *Dirty Fashion* report. Our analysis provides an overview of plans, commitments and actions taken by Lenzing, the Aditya Birla Group (ABG) and the Chinese producers to align with the principles set out in our Roadmap (see section 2).

The analysis focuses on measures and commitments by viscose production sites investigated in both the *Dirty Fashion* and *Dirty Fashion revisited* reports; specifically, Lenzing's South Pacific Viscose (SPV) plant in Purwakarta, Indonesia, and ABG's units in Nagda, India and Purwakarta, Indonesia.

The information is based on publicly available documents and information shared by viscose producers at the request of the Changing Markets Foundation.



### 4.1 Lenzing

#### **D. Environmental permits and compliance with relevant national and local regulations**

According to Lenzing's code of conduct,<sup>20</sup> the company is committed to "operating its sites worldwide in compliance with all applicable local environmental laws" including all applicable safety, health and legal requirements, external and internal standards.

Lenzing shared an overview of permits for operation of its SPV plant in Purwakarta, Indonesia, which include permits for its air emissions, waste water pollution, coal stock pile, etc.

A safety, health and environmental (SHE) compliance programme to audit all Lenzing locations was launched in 2017, through which independent local experts check whether the company operates in line with all local legal regulations and the Group's internal guidelines. Any findings are documented and processed. The company reports that in 2017, there was no non-compliance with environmental laws and regulations.<sup>21</sup>

#### **E. Appropriate chemical management systems, with the ultimate goal of moving towards closed-loop production**

Lenzing has developed a Group standard for the production of viscose and modal, which is in line with EU BAT values. Its production sites in Lenzing (Austria) and Nanjing (China) already meet EU BAT and have

also been awarded EU Ecolabel certification. The SPV plant in Indonesia does not yet perform in line with EU Ecolabel requirements or EU BAT.

In its 2017 Sustainability Report, Lenzing sets a target of meeting the EU Ecolabel standard at all of its sites by 2022, including SPV in Indonesia, but lacks an equally strong commitment to reach EU BAT. While Lenzing states that it “*aims to implement a voluntary and ambitious Lenzing Group standard for the production of viscose at all sites*”, this is set solely as an aspirational internal guideline.

Lenzing production sites	Lenzing, Austria	Nanjing, China	Purwakarta, Indonesia
In line with EU BAT values	✓	✓	✗

Lenzing’s Group targets for reducing air and water emissions include; 50% specific sulphur emission reduction and 20% chemical oxygen demand (COD) reduction by 2022 (on a 2014 baseline).

According to a Lenzing press release in July 2018,<sup>22</sup> Lenzing plans to invest over €100 million by 2022 in more sustainable production technology. The focus of the investment will be to expand sulphur recovery systems and further improve effluent treatment units for the Group’s water management. It also plans to green up the energy mix through construction of a gas boiler at its site in Nanjing, China.

Currently, the SPV plant in Indonesia only meets BAT wastewater limit values for emissions of zinc to water, but not sulphur to air, or COD and sulphate to water. Lenzing has shared a list of specific projects the company plans to implement at its SPV plant with the Changing Markets Foundation, which include:

- Reducing sulphur emissions by investing in extending the sulphur adsorption plant to produce viscose in line with the ECOVERO standard.<sup>ii</sup>
- Upgrading of Wastewater Treatment Plant in order to achieve COD levels set out in the Lenzing Group Standard.
- Reducing sulphur dioxide (SO<sub>2</sub>) in power plants and investing in more efficient technology to reduce excess landfill of sludge.<sup>iii</sup>

**F. Measures to protect workers and local inhabitants from exposure to dangerous chemicals**

According to Lenzing’s 2017 sustainability report, all of its fibre production sites operate according to a certified environmental management, and occupational health and safety system (i.e. ISO 14001,<sup>iv</sup> OHSAS 18001<sup>v</sup>).

To address the risk of injury and fatality for employees and contractors working for Lenzing, the group has developed “Heartbeat for Health & Safety” program, which includes inspections of factories, trainings

ii Lenzing’s ECOVERO branded viscose fibres are produced with minimised environmental impact and certified with the EU Ecolabel. They also provide traceability by making fibres identifiable in the final product.

iii According to Lenzing, SPV currently incinerates the sludge generated in the WWTPs in full compliance with government regulations.

iv ISO 14001:2015 specifies the requirements for an environmental management system that an organisation can use to enhance its environmental performance.

v OHSAS 18001:2007 is an Occupational Health and Safety Management Certification which provides a framework to identify, control and decrease risks associated with health and safety within the workplace.

and workshops. Lenzing has also established health and safety committees at every site, which the company says meet regularly to define common goals, strategies and specific programmes.

Lenzing also has a ‘Whistleblowing Directive,’ through which employees can report potential violations of code of business, laws, regulations and internal policies.

The company’s fibre production plants in Lenzing, Austria and Purwakarta, Indonesia have their own outpatient clinics for quick treatment of acute conditions. According to Lenzing, in Indonesia, the company operates two hospitals - one on the company premises and one in Purwakarta, where most employees live. The group also states that it provides employees at all locations with an in-house primary care system.<sup>23</sup>

**G. Energy efficiency and greenhouse gas emissions reduction goals**

Currently, renewables (biomass, wind, solar, hydro, waste etc.) represent almost 50% of Lenzing Group’s energy sources. Much of this is accounted for by the Lenzing site in Austria, where renewables make up 80% of the site’s energy source and where pulp production is increasingly producing surplus energy that is also used to power fibre production. The rest is covered by gas and coal power. The two sites in Asia - at Purwakarta, Indonesia, and at Nanjing, China - are predominantly dependent on coal. While Lenzing disclosed that its Nanjing plant in China is in the process of shifting from coal to gas power, its Indonesian SPV site remains powered by its own coal-fired power plant.

Lenzing has a corporate strategy target of 75 % own pulp production. At the stage of fibre production Lenzing aims to implement high and increasing use of bioenergy and renewable electric power, energy efficiency improvements, shifting from coal to natural gas, and integrated pulp and fibre production. No measures or timeline are set for these objectives.

In addition, Lenzing is contributing to setting clear science-based targets for carbon dioxide (CO<sub>2</sub>) emissions reduction under the framework of apparel guidance for science-based targets (SBT) coordinated by the World Resources institute (WRI). According to WRI, the guidance developed in collaboration with apparel sector companies, will provide clarity on credible approaches for setting SBTs for company operations (scopes 1 and 2), and emissions deriving from the value chain (scope 3).<sup>24</sup>

**H. Actions to remediate environmental damage in the surrounding environment**

According to Lenzing’s sustainability report, in 2017 a number of complaints regarding noise emissions, unpleasant odours, and environmental pollution related to production were registered at Lenzing’s sites in Indonesia and China. Lenzing states that appropriate measures were implemented to deal with them but provides no further detail. According to the company, as of 2018, there were no pending legal disputes relating to conflicts between local residents and Lenzing companies.

The company also reports that at annual meetings, the Lenzing Management Board engages with representatives of farmers and forest owners to discuss current projects that could affect the company’s neighbours.

Former CSR projects in Indonesia include providing medical care to residents of two villages adjacent to SPV: Desa Cicadas and Ciroyom.<sup>25</sup> Lenzing’s SPV site has a procedure for recording and responding to



Environmental, Health and Safety (EHS) complaints received from employees or interested parties requesting a response or remedial action, or otherwise worthy of response. Complaints are reported and recorded on an EHS complaint and incident log sheet, and a corresponding Environmental Complaint and Incident Action Form is completed by a line manager or the EHS Manager. All documents are kept only in the company's private domain and are not publicly available.

### Transparency & Independent audit

In discussion with Changing Markets Foundation, Lenzing revealed that in response to the *Dirty Fashion* report, an independent audit was conducted at SPV in 2017 by Environmental Resources Management (ERM). The details and results of the audit were not shared. Lenzing did however provide a list of ISO audits in the previous year, which indicate that the SPV plant was scheduled to be audited in July 2018 for compliance with the ISO 14001:2015 standard. An audit to check compliance with OHSAS 18001:2007 is also planned for the second half of 2018.

Lenzing aims to improve transparency by implementing the Higg Facility Environmental Module (FEM 3.0) at all sites by 2019. As noted above, our concern with the FEM is that it is not yet adequate for measuring sustainability impacts and performance of viscose fibre production processes and that the audits take place only once a year

## 4.2 Aditya Birla Group

### A. Environmental permits and compliance with relevant national and local regulations

ABG disclosed that at its Nagda unit in India, regular monitoring of air and water quality takes place, which is already or in the process of being connected to the Pollution Control Board (PCB) Server.

With regard to its Indo-Bharat (IBR) unit in Purwakarta, Indonesia, the company states that the unit has all the valid permits and that the plant's entire environmental management system, including legal compliance, has been audited.

### B. Appropriate chemical management systems, with the ultimate goal of moving towards closed-loop production

Based on a public statement in April 2018,<sup>26</sup> Birla Cellulose aims to minimise sulphur to air emissions to meet its commitment of achieving the EU Ecolabel standards at all of its viscose production sites by 2022. According to communication with the Changing Markets Foundation, ABG only has an "aspirational" target of achieving sulphur to air emissions in line with EU BAT and has an "expectation" that it will meet all EU BAT parameters. The reason ABG gave the Changing Markets Foundation for this is that the company has not been able to demonstrate these values so far. However, it states that it is committed to work towards them. ABG has so far not communicated where its different factories stand with regard to the EU BAT parameters.

ABG disclosed that it plans to commit an investment of US\$ 170 million (approximately €146 million) over the next 4 years to implement EU BAT technologies at all seven of its existing viscose fibre producing plants, which are located in India, Indonesia, China and Thailand.



Both its Nagda and IBR units have installed exhaust systems to collect waste gas and direct it to chimneys or gas treatment systems. There is a gas collection system installed at the regeneration process, collecting all the gases.

### C. Measures to protect workers and local inhabitants from exposure to dangerous chemicals

The company claims that both the Nagda and IBR units are OSHAS 18001 certified; at IBR the certificates were issued in May 2018. Nagda has also been awarded SA8000 certification.<sup>VI</sup> IBR recently received ISO 14001 certification, and a Gold level for national chemical management standard SMK3,<sup>VII</sup> which according to ABG covers storage, usage and disposal of all the chemicals used in the process *inter alia*.

According to ABG, the operators who work in the process area exposed to gases are equipped with proper respiratory protection, in addition to the gas exhaust systems. The company also states that all workers go through a comprehensive annual medical check-up by a reputed hospital (including inspection of heart, eye sight, hearing, urine and blood tests, dental, lungs etc.). The results are investigated by doctors for any work-related symptoms. In 2017, ABG reported no work-related abnormalities. At IBR, the company says it also provides medical camps twice a week where free medicines are made available to the villagers.

According to ABG, in February 2018 three online ambient air quality monitoring systems (i.e. Continuous Ambient Air Quality Monitoring System or 'CAAQMS') were installed around the Nagda unit in India. They are linked to the Central PCB and State PCB for continuous monitoring but ABG states this is still in the process of being connected to the server. An LED Display Board has also been installed at the factory gate for displaying ambient air quality results to the general public. For water quality monitoring, an online monitoring system was set up in October 2017 and connected to the PCB server. The monitoring system also connects to the camera recording effluent outflow at the Nagda unit. ABG says it also plans to display effluent parameters at the factory gate.

ABG also shared data about its monitoring programme at IBR, whereby an independent government-approved lab monitors air every three months in 12 villages surrounding the unit. The parameters measured include CS<sub>2</sub> and H<sub>2</sub>S. Monitoring of water quality is done by analysing water from the village wells, which according to ABG takes place every six months for two villages and is completed for all villages in rotation. While water is measured for a number of parameters, including zinc and sulphate to water, these are measured in mg/l and not kg/t or g/kg of viscose fibre, and are therefore hard to compare to EU BAT values.

### D. Energy efficiency and greenhouse gas emissions reduction goals

ABG stated that over the past three years, the company has reduced specific energy consumption related to VSF manufacturing by more than 5% at its Nagda and IBR units. Based on the interim report resulting from a third-party audit that was underway at the time of writing of this report, ABG aims to set GHG emission reduction targets for each of its units based on the product mix and energy mix.

VI SA8000 standard measures social performance in eight areas important to social accountability in workplaces and reflects labour provisions contained within the Universal Declaration of Human Rights, International Labour Organization (ILO) conventions and national labour laws.

VII Management System Occupational Health and Safety (SMK3) is an Indonesian national standard which is a part of an enterprise management system to control the risk associated with work activities.

### E. Actions to remediate environmental damage in the surrounding environment

After the publication of the *Dirty Fashion revisited* report, IBR discontinued the practice of giving semi-finished fibre to villagers in Purwakarta. According to ABG, IBR has now instituted a facility to process the semi-finished viscose within its factory, where it is washed and decontaminated. The fibre tested as Grade C fibre is sold as such, while that which does not qualify as Grade C is handled as hazardous waste and accordingly given to a third party with adequate facilities and a license to handle such material.

ABG also claims to have implemented a number of clean-up actions in the villages surrounding IBR and Nagda. At IBR, the area that was filled with waste fibre was cleaned up with support from the village community. The company also shared photos with us showing the discharge point of IBR, where foam no longer appear to be present. According to ABG, a clean-up of land which had been contaminated with coal is in progress in cooperation with the authorities. The plan is to utilise the coal in boilers and decontaminate the land in line with local regulations. At Nagda, cellulosic waste is being used in the factory's boiler or sent to the cement industry for energy recovery. According to ABG, no waste fibre leaves the plant premises and the fly ash dumping site has been cleaned and capped with soil since our *Dirty Fashion* reports.

IBR has also commissioned a community need assessment survey from a university. The stated aim of the survey is to capture the needs of the community and the problems it faces.

At IBR, health initiatives include doctor's visits and the provision of medication to the community. The company claims that since October 2017, mobile health camps have been organised on a fortnightly basis in seventeen villages downstream of the Nagda unit. Medicines are provided free of cost and serve 7,885 villagers.

ABG states that in Indonesia it provides about 1,000 m<sup>3</sup> water/day to the houses which surround the IBR boundary wall. According to ABG, its Nagda unit has been supplying drinking water to at least sixteen villages, including Parmarkhedhi and Ninawatkhedha, featured in our reports. The company reports that two check dams have been restored in Kilodia and Ninawatkhedha villages and work is underway in two other villages, Parmarkhedhi and Jhanjhakhedi.

The company shared with us their grievance procedure for handling complaints and concerns from external stakeholders, deriving from operation of their Nagda unit in India. The complaints are lodged in a Grievance Register and Grievance Lodgement Form. The plant's Stakeholder Officer is responsible for investigating the grievance and recording meetings, discussions and activities during the investigation. However, none of the records, including grievance forms, investigation notes, interviews and minutes of meetings, are in the public domain.



Above: ABG shared this photo with Changing Markets, which purportedly shows that its Indonesia plant has cleaned up since February



Photos submitted to Changing Markets by ABG in June 2018



ABG claims that since October 2017, mobile health clinics have visited villages close to its Nagda plant on a fortnightly basis

### Transparency & Independent audit

Following the *Dirty Fashion* report, ABG engaged a third-party agency - Sustainable Textiles Solutions (STS, Singapore) - to audit units on chemical management. Based on the audit findings, ABG plans to develop an improvement plan and share this transparently. In parallel to this, an independent environmental audit is being conducted at ABG sites by Environmental Resources Management. ABG stated that the action plan will be developed according to the findings of the audit and transparently shared.

In conversation with the Changing Markets Foundation, the company disclosed that the first audit reports should be uploaded by the end of July 2018, with others to follow. Like Lenzing, ABG plans to verify all its units using the Higg Index FEM 3.0, but the timeline was not shared.

### BOX 5: Why the EU Ecolabel doesn't go far enough

With the world's two biggest viscose producers, ABG and Lenzing, stating their commitment to the EU Ecolabel, this box aims to explain its strengths and weaknesses and the reason why the Changing Markets Foundation decided to select EU BAT as the standard viscose manufacturers should aim towards.

The EU Ecolabel is a voluntary scheme that was introduced in 1992 by the EU and is awarded to products and services which have a reduced environmental impact. These have to meet specific criteria, developed and revised through a multi-stakeholder process, and adopted by the European Commission. The EU Ecolabel covers different types of textiles and takes into account the whole life cycle of a product - from raw material to disposal. The results are third-party verified.<sup>27</sup>

The label, which is identified by the European Commission as a 'label of environmental excellence',<sup>28</sup> according to the environmental NGO EEB covers the top 10-20% of the most environmentally friendly products within their category.<sup>29</sup> Certification is open to any company that sells products within the European Economic Area, whether or not it is based in the EU.<sup>30</sup>

In the case of viscose, the Ecolabel should include all stages of production: wood sourcing, dissolving of pulp, viscose fibre manufacturing and wet processing. However, on viscose staple fibre production, it only limits sulphur emissions to the air - and even then, sets less ambitious levels than those defined by the EU Reference Document on BAT in the Production of Polymers.<sup>31</sup> This is confusing; given that the EU Ecolabel covers the top-performing products on the market, it should, in principle, be broadly aligned with the EU BAT levels.<sup>32</sup> Unlike the EU BAT Reference Document, the EU Ecolabel does not set limits on emissions to water, which is of serious concern in light of our findings in the *Dirty Fashion* and *Dirty Fashion revisited* reports that water pollution is one of the main environmental risks linked to viscose production sites. For example, emissions limits for zinc to water were dropped during the revision process in 2013 'to minimise the number of criteria.'<sup>32</sup> Hence, the EU Ecolabel also lags behind other European national ecolabels, such as the Blue Angel (Germany), Bra Miljöval (Sweden) and Nordic Swan, which cover emissions to water.

VIII The European Commission statement accompanying the last Ecolabel criteria revision made specific reference to opportunities to reflect BAT limit values (Dodd et al., 2013).



Revision of the EU Ecolabel takes place roughly every four years or so to reflect technological advances and, by raising the bar for eligible products, improve environmental performance.<sup>33</sup> The EU Ecolabel for textiles is slated for revision in 2020. The Changing Markets Foundation urges the European Commission

		EU BAT	Blue Angel	Nordic Swan	Bra Miljøval	EU Ecolabel
<b>Emissions to Air</b>	Sulphur to air (kg/t) expressed as an annual average (VSF)	12-20	20	30	25	<b>30</b>
<b>Water pollution</b>	Zinc to water (g/kg) (VSF)	0.01 - 0.05	0.16	0.3	0.2	⊗
	COD (g/t) (VSF)	3000 - 5000	20.000	⊗	⊗	⊗
	Sulphate (kg of SO <sub>4</sub> <sup>2-</sup> /tonne) (VSF)	200-300	⊗	⊗	⊗	⊗

to revise the standard for viscose fibre production so it aligns with EU BAT, and more broadly with our *Roadmap towards responsible viscose and modal fibre manufacturing*.

**Table 3: EU Ecolabel emissions standards for viscose staple fibre production in comparison to EU BAT, blue Angel, Nordic Swan and Bra Miljøval**

Sources: *The Blue Angel*,<sup>47</sup> *Nordic Swan*,<sup>48</sup> *Bra Miljøval*<sup>49</sup>

### 4.3 Chinese producers

Strengthened enforcement of pollution norms by the Chinese government since 2017 has greatly affected China's manufacturing sector. Tens of thousands of factories have been shut down, fined or accused of criminal offences after a series of inspections by the Chinese Ministry of Environmental Protection. This wave has also hit the textile industry.<sup>34</sup>

Increased government scrutiny, combined with the pressure from clothing brands and retailers and greater transparency arising from initiatives such as Chinese NGO IPE's Blue Map Database, are also putting pressure on the viscose industry. Some of the biggest Chinese viscose producers are currently in the process of developing their own industry-led initiative for sustainable viscose at the time of writing this report.

The initiative, which was launched in March 2018 in Shanghai, is called the Collaboration for Sustainable Development of Viscose (CV) and brings together China's ten largest viscose producers (which collectively account for more than 50% of the world's VSF production) in partnership with China Chemical Fibre Association and China Cotton Textile Association. In addition to this, CV also lists Lenzing as a member.

The CV requires its members to adopt industry best practices and certification standards in a time-bound framework. It is currently developing a three-year roadmap that, according to communication with Sateri, will be launched in the summer of 2018. The CV roadmap will include a basket of standards to address impacts at different stages of the viscose supply chain, including during the manufacturing process.



MEMBERS OF CV ( IN NO PARTICULAR ORDER )



The Collaboration's level of ambition is yet to be determined. Most initiatives and standards currently listed by the CV initiative do not address environmental performance during viscose fibre production (e.g. STeP by OEKO-TEX, The Higg Facility Environmental Module, ZDHC, Programme for the Endorsement of Forest Certification (PEFC) and Forest Stewardship Council (FSC)).<sup>35</sup> However, according to discussions with Sateri, the CV roadmap will include a Chinese standard that takes EU BAT on viscose as a reference to align with.

The Changing Markets Foundation encourages Chinese producers to apply principles and standards in line with those set out in the *Roadmap towards responsible viscose and modal fibre manufacturing*. On the positive side, IPE has included viscose factories in its Blue Map database, which means that their performance and compliance with different standards can be monitored by their customers around the world.

### BOX 6: OEKO-TEX

With the Chinese Collaboration for Sustainable Development of Viscose (CV) highlighting OEKO-TEX as one of its preferred standards for the certification of sustainably-produced viscose, the following provides some analysis of the OEKO-TEX STeP process.

OEKO-TEX is a union of 18 independent textile-testing and research institutes. It comprises seven certification schemes and services:

- STANDARD 100:** for finished textile products;
- MADE IN GREEN** and **LEATHER STANDARD:** product labels;
- STeP** and **DETOX TO ZERO:** for production facilities;
- ECO PASSPORT:** for textile chemical suppliers;
- MySTeP:** a supply chain database for brands, retailers and manufacturers (OEKO-TEX, n.d.-a).

OEKO-TEX states that its STeP ('Sustainable Textile Production') certification system covers production facilities 'at all processing stages of the textile chain' (textile production; spinning mills; weaving mills; knitting mills; finishing facilities; manufacturers of ready-made textile items).<sup>36</sup> As part of STeP, OEKO-TEX also offers a 'DETOX TO ZERO' module, which enables manufacturers in the textile chain to assess the status of their chemical-management systems and the quality of their waste water and sludge and to have these documented through independent verification. The result of DETOX TO ZERO is a status report that can confirm compliance with Greenpeace's Detox campaign.<sup>37</sup> A STeP label is not meant to be displayed on products; rather, it is for use in business-to-business communication. Once approved, a company can use the STeP label for a period of three years.

While at first glance STeP appears to cover impacts across the entire textile production chain, a closer look reveals gaps. Taking viscose as an example, STeP has a questionable approach to covering all stages of viscose fibre manufacturing, such as 'xanthation' - the treatment of dissolving pulp with the harmful carbon disulphide (CS<sub>2</sub>). It is not possible to produce viscose without CS<sub>2</sub> using current technology. However, the latest two versions of STeP Manufacturing Restricted Substances List (MRSL) explicitly ban the intentional use of CS<sub>2</sub>. Confusingly, the 2017 standard also states: "[c]hemicals mentioned in this MRSL which cannot be eliminated from processes or substituted due to current technology may be used as long as no substitution product is available, provided that all efforts are made to minimise exposure of workers and environment and residues in the produced article."<sup>IX38</sup>

STeP requires this to be described and documented by a relevant authority, without setting out further requirements on how the chemical needs to be managed or restricted.<sup>39</sup> This has enabled viscose producers, such as Chinese manufacturer Sateri to be certified by SteP and MADE IN GREEN labels in 2017 for its Fujian facility<sup>40</sup> without having to exclude CS<sub>2</sub> from its production processes or even setting limit values on this dangerous chemical.<sup>41</sup> It also demonstrates that STeP does not really apply to all stages of production and that its MRSL is not uniformly driving ambition towards better chemical management. As set out in the Roadmap, CS<sub>2</sub> should instead be managed in a closed-loop production process, in line with EU Best Available Techniques (BAT) on the Production of Polymers, which OEKO-TEX does not address.

Instead, OEKO-TEX classifies limit values for wastewater effluents according to the BAT for Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector.<sup>42</sup> These do not include key parameters covered by the EU BAT for viscose such as wastewater limit values for zinc or sulphate. What is more, OEKO-TEX STeP limit values for COD are subdivided into three categories: minimum, advanced, excellent. Only one of these categories ('excellent') falls below the upper limit value for COD of 100 mg/l defined in the BREF for Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector. The other two ('minimum' and 'advanced') are not even compliant with this.

IX The 2018 edition of STeP standard appears even less strict than the 2017 edition: it does not apply exclusion criteria only to chemicals that 'cannot' be eliminated or substituted but more broadly stipulates that if "chemicals mentioned in the MRSL of STeP by OEKOTEX® are used in the facility, any exposure of workers and environment to these chemicals is not permitted" (OEKO-TEX, 2018B, p.130).

		EU BAT	EU BAT	OEKO - TEX STeP		
		Productions of Polymers (2007)	Waste Water and Waste gas Treatment	minimum	advanced	excellent
<b>Effluents to water</b>	Chemical oxygen demand (COD)	3,000 - 5,000 g/t	100 - 30 mg/l	200 mg/l	125 mg/l	50 mg/l
	Zinc	0.01-0.05 g/kg	0.3-0.02 mg/l	Internal review		
	Sulphate	200-300 kg of SO <sub>4</sub> <sup>2-</sup> /tonne	⊗	⊗	⊗	⊗

This table shows limit values for COD, zinc and sulphate in effluents to water according to EU BAT on the Production of Polymers, EU BAT for Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector and OEKO-TEX STeP (note: OEKO-TEX advises against comparing the Polymer BREF's product-based limit values with the Waste Water and Waste Gas BREF's limit values for emissions to a water body - they are provided here solely on an indicative basis).

In June 2018, OEKO-TEX informed Changing Markets that STeP limit values for air emissions are currently under internal review. The BAT for viscose fibre producers will be considered during their review of the STeP Standard and of their internal guidelines. However, no timeline was specified for this process.

Nor does STeP seem to cover raw material sourcing; it merely vaguely stipulates that: 'When sourcing raw materials, such as fibres, companies should make sure to source only from suppliers that can prove they work responsibly and sustainably.'<sup>43</sup>

		EU BAT	OEKO-TEX STeP		
			minimum	advanced	excellent
<b>Emission to air</b>	Sulphur to air (kg/t) expressed as an annual average	120-20 kg/t	⊗	⊗	⊗

OEKO-TEX's MADE IN GREEN scheme offers a traceable product label for different textile goods (e.g. yarn, fabric, garment), which must be Standard 100 certified (i.e. free of harmful chemicals) and produced by STeP-certified facilities (i.e. environmentally safe and socially responsible workplaces). Each item with the MADE IN GREEN label features a unique product ID and/or QR code<sup>X</sup> allowing consumers to trace how the article was produced and including details on the various stages of production, as well as the countries in which textiles were manufactured.<sup>44</sup>

Despite possessing several certification modules, OEKO-TEX certification currently fails to address environmental impacts specific to viscose manufacturing. OEKO-TEX should move swiftly to fill the gaps identified above and ensure that its standards drive a transition to cleaner, closed-loop production based on EU BAT for viscose as set out in the Roadmap.

X A Quick Response Code is a readable bar code used to provide access to information.



Paying a higher price for luxury products doesn't appear to guarantee superior quality viscose



## Conclusion

After many years of complacency from fashion brands and producers regarding viscose manufacturing, the tide is finally beginning to turn towards more responsible viscose. This effort is being led by a group of front-runner brands which have signed up to our Roadmap and started engaging with their suppliers to move them towards closed-loop production and other recommendations within the 2023-25 timeframe set out in the Roadmap. This shows how rapidly the sector can achieve significant progress and commit to improvements which (if properly implemented) will have significant benefits for the environment and the well-being of local communities and workers.

Despite the leadership being demonstrated by a few big brands and retailers, many still lag behind and are refusing to engage with civil society on more responsible production, or even disclose who their suppliers are. Surprisingly, many brands identified as laggards are part of the 'luxury' sector, where a near-total lack of transparency and sustainability credentials calls into question their performance on protecting the health of our planet and the well-being of people affected by garment production. As things currently stand, paying a higher price for luxury products doesn't guarantee superior quality viscose with better treatment of the environment and workers. It is also striking that most of the luxury brands find themselves in the same group as discount retailers and low-cost clothing brands - Asda, Lidl, Burberry, Gucci, Chanel, Boohoo and Missguided make unusual companions but, when it comes to viscose, they seem to have much in common!

Somewhere in the middle we found brands that perform well on other aspects of sustainability, or at least claim to do so. For example, Benetton, Fast Retailing and Primark have all committed to Detox to Zero and their progress on this front has been recognised by Greenpeace. However, on viscose they are lagging behind and refuse to recognise the problem, let alone move towards a solution. Some brands, such as Lululemon and Mango, have viscose policies that fail to acknowledge that there is a problem with manufacturing. Many of these brands could do better by joining others in the commitment to more responsible viscose and greater supply chain transparency.

Our reports elicited very different reactions from producers. While Lenzing was quick to admit, following our first *Dirty Fashion* report, that it has a problem with its factory in Indonesia and moved to implement corrective actions, ABG at first denied our findings; however, following publication of the second *Dirty Fashion* report, it also admitted issues at its factories, and started working on a plan to move towards closed-loop production. While both companies have committed to reach the standards set out in the EU Ecolabel by 2022, this report highlights the need to go further and also address water pollution indicators. Both companies have prepared plans on how to achieve the requirements laid down in our Roadmap

and have committed to significant investment to make improvements at their factories. While Lenzing is already meeting the emissions parameters set out in our Roadmap at its factories in China (Nanjing) and Austria (Lenzing), ABG has yet to communicate on the actual performance of its factories. In addition, both producers still need to resolve several issues, such as transparency of audits and grievance mechanisms and ensure that reporting on performance happens more often and in a more transparent way than currently required by the Higg Index.

Chinese viscose producers are still a bit of a black box. While they have come together in the Collaboration for Sustainable Development of Viscose (CV) at the time of writing we have still not seen what standards they will sign up to or their level of ambition. We evaluate that most of the standards currently listed as guiding the commitment do not yet address environmental performance during viscose fibre production. One positive development in China is the fact that viscose factories have now been included in the IPE Blue Map database, so that brands and retailers will be able to monitor their commitments and their performance against Chinese environmental regulations in real time. CV is also part of the ZDHC viscose project, which aims to develop “a clear framework of guidelines for wastewater, sludge, waste and air emissions”<sup>45</sup> by early 2019. The level of ambition of this initiative also remains to be seen.

While substantial progress has been made in a relatively short time, much will depend on the implementation of the plans that have been put forward by the two biggest viscose producers and the upcoming CV commitment. The welcome change in mindsets by both brands and producers and their good initial commitments must translate into concrete market transformation. Brands will continue playing a key role in this process by pursuing their engagement with producers and tracking progress. Civil society also has a role to play by maintaining pressure on the industry to be transparent and accountable across its entire supply chain.

Last but not least, policy-makers should also play a role by putting into place ambitious regulations. The European Commission must review its EU Ecolabel in 2020 and bring it in line with the parameters set out in EU BAT. The European Parliament has also called on the European Commission to propose legislation for a due diligence system based on the OECD guidelines on Responsible Supply Chains in the Garment and Footwear Sector. France has already adopted such a law, and it will be interesting to observe how retailers and investors change their practices in light of increased knowledge of risks and liabilities across garment supply chains.

Given the global nature of the fashion industry, tackling environmental and social violations in its supply chains requires an approach that goes beyond national borders and voluntary industry-led initiatives. It has been demonstrated, not least in our report *The false promise of certification*,<sup>46</sup> that voluntary initiatives do not drive the highest level of ambition and often only capture a small part of the market. Water and air pollution scandals can no longer be ignored by companies - they must be tackled decisively in order to ensure the continued existence of any industry in an increasingly resource-constrained world.





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