

April / May 2020

ECOTEXTILE

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Everything seems normal until, suddenly, it isn't

The coronavirus outbreak is first and foremost a human tragedy, already directly affecting millions of people worldwide. So, it's heartening to see that the immediate focus has been on impending medical needs, with some responsible brands from our industry already taking innovative measures to ease the emergency – at least in the short term (page 4).

Although it's very difficult to do at this moment in time, we must look past the initial phase of this global crisis and think about how to change our industry in a post-corona era. Planetary health and sustainability cannot be jettisoned in favour of any big economic bounce with a 'business as usual' approach. That would be a major mistake.

The speed of the crisis and the change to our everyday existence, as well as the threat to our most vulnerable, has been astonishing. It should have all of us reflecting on our own values, who we want to work with and how we should run our own businesses.

And while it can be viewed as trite to say: 'we need new ways of working', try asking the thousands of workers being laid off now in our supply chains if they agree. And try asking why is it still standard practice for customers to only pay for products once they've been shipped? If an order is cancelled or deferred, the supplier (often a small or medium-sized business), still needs to pay for salaries, running costs and other overheads. Raw materials are usually paid for upfront by most of these supplier companies too.

A move away from this broken business model full of financial and environmental risks and towards more of a stakeholder model should be a major outcome of the current pandemic. And yes, it may still be dark early days, but there are already a few silver linings. As the front cover of this issue highlights ... hope becomes more abundant in a time of crisis.

This hope, for a continuation towards a more sustainable industry, is even highlighted by the virus outbreak, which has underlined the need for a transition to a low-carbon future. Not only has the shutdown of factories in China and Italy dramatically reduced air pollution (page 15), at least in the short-term, but stock market falls influenced by an economic dive – and exacerbated by a move to flood the world with cheap oil – have resulted in the renewable energy sector and other companies moving to be less reliant on fossil fuels being favoured by investors (page 66).

On an organisational level, times of crises can be both threatening and liberating. But we must remember that cultural change is hard for business. What's usually needed is a huge, sharp shock that allows all the old 'rules' to be broken.

This crisis is that moment.

So let's not be afraid to take this opportunity to look beyond the short-term and to make sustainability the new normal for our industry.

Sincere best wishes to you all, your families and your friends – from everyone at *Ecotextile News* and MCL News & Media.



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Image: © Africa Studio | Shutterstock

Cover story

35. Pause for breath

Coronavirus has widespread implications for fashion and textiles.

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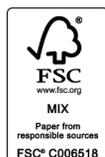
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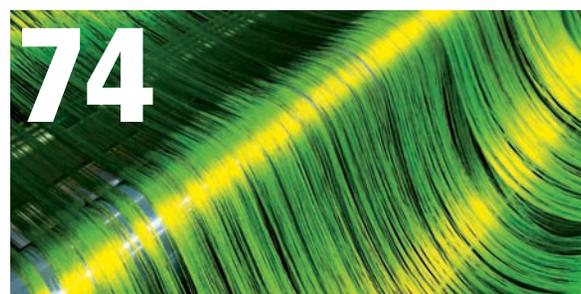
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From fashion to the frontline

Big fashion companies have shared production and logistics operations with authorities to boost the production of personal protective equipment – but can this largesse last?

By John Mowbray

With tens of thousands of desperate textile factories at their disposal, some fashion brands have pivoted away from making clothes and towards urging suppliers to produce personal protective equipment (PPE) in a bid to help frontline workers tackle the coronavirus.

H&M is perhaps the most high-profile brand to do this so far. Working with the EU, which asked the fashion giant to share its purchasing and logistics operations to source supplies, the company will also donate product in the urgent, initial phase of this outbreak.

This comes at the same time as others in the textile supply chain start to take similar steps. Responding to calls from the White House for medical supplies, Hanesbrands, Fruit of the Loom, Parkdale Mills along

with others have built a supply chain virtually overnight in order to fast-track the manufacture of 10 million medical face masks per week.

Similar moves are underway by Inditex in Spain, which has made its factories and logistics teams available to the Spanish government to create and donate surgical masks for medical workers and patients, making a “delivery at least once a week of materials we purchase directly,” to Spanish health authorities. Meanwhile, the Kering Group will purchase and import three million surgical masks from China for the French health service.

Alarm bells about the lack of PPE to fight the outbreak were ringing as early as February 14th, when the Vietnamese garment factory Thai Nguyen switched away from clothes to making 500,000 surgical face masks

per day, but it’s taken over a month for large-scale mobilisation to come into effect following government appeals.

Although this largesse is welcome, it’s still unclear how long this goodwill can last. H&M is already looking at job cuts due to slumping sales after (as we went to press), 68 per cent of its 5,062 stores were closed due to the Coronavirus. Inditex warns that it’s already taken a €287 million hit to inventories (23/03/20). Meanwhile at the same time, over a third of US retail stores have closed or are closing, which represents an estimated 31 per cent of floorspace. The estimated sales hit from March to May will so far be in the regions of US\$76.8 billion, according to analysts.

Smaller companies operate with little margin for crisis compared to the larger firms that have diverse assets and long relationships with investors and banks – but who also act with an eye on the court of public opinion.

So, for them, a misstep in either direction risks either goodwill or survival.

What this shows is that for larger fashion companies leaning on their supply chains in order to help out governments (and therefore regulators) with the global Coronavirus crisis, harmonious relationships with their long-term stakeholders is vital.

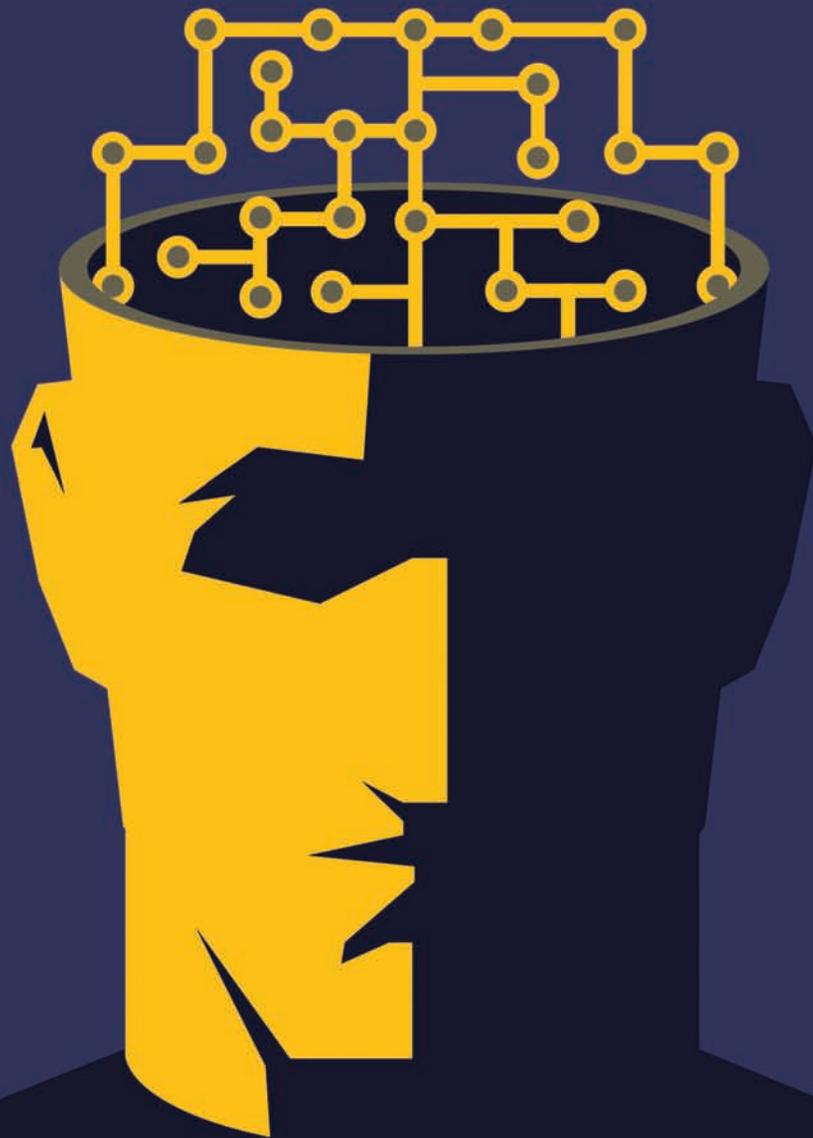
If employees, customers, suppliers and communities can’t be supported, there will be no business for shareholders to own when we all come out of this crisis.

That sounds pretty much like sustainability to me. ■

“
A misstep in either direction risks either goodwill or survival

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ILO: policies needed to ease unemployment

GENEVA – The International Labour Organisation (ILO) estimates that up to 25 million jobs could be lost around the world as a result of the coronavirus pandemic, and has called for an internationally coordinated policy response to mitigate the economic effects of the outbreak.

In its preliminary assessment note, *COVID-19 and the world of work: Impacts and responses*, the ILO urges the standard of response that the global financial crisis of 2008/09 was met with.

The workers' rights organisation believes three

foundational pillars must be addressed to this end: protecting workers in the workplace, stimulating the economy and employment, and supporting jobs and incomes.

The ILO's calculations ballpark that between 5.3 and 24.7 million will be left unemployed due to the coronavirus pandemic based on the impact it continues to have. What's more, it's feared reduced economic activity could plummet between 8.8 and 35 million people into poverty the world over.

"This is no longer only a global health crisis, it is also a major labour market and economic crisis that is

having a huge impact on people," said ILO director-general, Guy Ryder. "In 2008, the world presented a united front to address the consequences of the global financial crisis, and the worst was averted. We need that kind of leadership and resolve now," he added.

Suggested preventative measures include extending social protection; supporting employment retention via short-time work, paid leave, other subsidies; and financial and tax relief, including for micro, small and medium-sized enterprises.

Web: bit.ly/2xjKhGo

WRAP offers £1.5m grants for textile recycling

BANBURY – UK waste recycling charity WRAP is offering £1.5 million (US\$1.75 million) in grants to support projects that provide innovative ways for textile waste to be recycled or re-used.

Grants of between £20,000 and £170,000 are available to organisations of any size, both commercial and not-for-profit, for schemes which keep more textiles out of landfill or incineration.

Beneficiaries will need to put up match funding – 10 per cent from not-for-profit and 50 per cent from commercial organisations - towards successful projects which will also need to demonstrate "innovation beyond normal practice".

The money is part of the £18m Resource Action Fund set up by the Department for Environment, Food and Rural Affairs (DEFRA) to support key priority policy areas. WRAP says that increased textiles collection and reprocessing is needed in the UK to help deliver the Government's Resource and Waste Strategy (R&WS) and Circular Economy Package (CEP) objectives. New legislation will require separate collections for textiles by 2025, however the charity says existing markets for recycled textiles are small scale and traditional, with little innovation or growth potential. WRAP director Peter Maddox said: "We're looking for really imaginative solutions to the barriers to textile recycling and re-use, such as new technologies, interventions or equipment that hasn't been tried and tested before."

Web: bit.ly/2UtWO1T

Fashion for Good unveils latest batch of innovators

AMSTERDAM – Global sustainability initiative Fashion for Good (FFG) has unveiled the latest batch of innovators to join its Accelerator Programme following an improv virtual selection process.

Some 21 innovators were whittled down to 13 via an online webinar, after the Dutch organisation decided to cancel its ritual selection day event due to the coronavirus pandemic.

"In this challenging time, our important work goes on," said FFG's managing director, Katrin Ley.

As with previous batches, the group of 13 will benefit from

The latest batch of innovators will embark on an extended nine month programme.



tailormade mentoring, guidance on impact assessments and market validation with help from programme partners: Adidas, Stella McCartney, Bestseller, Kering, Target and Zalando, amongst others.

The latest batch is as follows: Bear Fiber, NTX: Cooltrans Technology, Dryfiber, Eonic, Fairbrics, Full Cycle Bioplastics, Galy, Hydrocotton, Imogo, NREL, Oritain, Recycrom, Tinctorium.

This selected few will benefit from the guidance of FFG and its corporate partners for nine months, extended from just 12 weeks.

"The extended programme provides more opportunities with programme mentors and bespoke coaching, better preparing them for growth and eventual wide scale implementation," the initiative says.

Web: bit.ly/33GdYxw

Updated cotton guide launched

The new 160-page updated version of MCL News & Media's authoritative **Inside Guide to Cotton & Sustainability** is out now.

Researched and written by cotton expert Simon Ferrigno, and edited by *Ecotextile News* editor John Mowbray, it provides in-depth, expert analysis and guidance on how to tackle the issue of sustainability in global cotton supply chains and how doing so is time-critical to mitigating otherwise irreversible environmental damage.

First published in 2012, the Guidebook is considered a seminal reference source for apparel brands, retailers and the whole textile supply chain, providing expert analysis and guidance on how to tackle environmental and social issues in global cotton supply chains.

In his introduction to the new edition, Ferrigno explains how the cotton industry is facing a pivotal

moment, saying: "Cotton is a complicated crop with an ancient history and a very uncertain future.

"We now have a decade to stop runaway climate change, and global soil degradation is worsening. Nor does cotton operate in isolation. It sits in an agricultural economy under multiple pressures: environmental, social, commercial and political. Humankind will need to be very fleet of foot to stave off serious problems in future."

Ferrigno adds that sustainability claims for different types of cotton have been complicated by the use of poor or misleading data and a lack of consistency in how impacts are assessed and asks if existing cotton standards and schemes are still fit for purpose: "They are, after all, a decades old response in a world that is



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“
We now have a decade to stop runaway climate change

now fully digital, which makes a more flexible due diligence approach possible,” he says.

Completely updated to include the latest, accurate production data on cotton, a brand-new section on technology has been developed that looks at the role of blockchain, robotics and artificial intelligence in cotton farming. Ferrigno has produced a thorough analysis of the cotton sector that will help retailers and brands to navigate their way through complex challenges.

He outlines potential pitfalls of current and future global cotton sector strategies and addresses how cotton fits into the circular economy, examining cotton's perceived 'bad reputation' in terms of pesticide use, water conservation and other challenges, including the misuse of statistics and data, as well as the latest regulatory responses that impact on cotton.

There is a dedicated chapter on what exactly 'sustainable cotton' actually means – and gives independent progress reports on organisations and standards in this space.

Other topics covered include a brief history of cotton, cotton and modernisation, global production, the new regulatory and monitoring environment, due diligence and rounds off with various sector recommendations.

Meanwhile, case studies delve into the issues of textile microfibre pollution and reported forced labour within the Xinjiang region of China. ■



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Primark wins fashion's first Vegan Mark

DUBLIN – Fast fashion retailer Primark has become the first in the global industry to be awarded vegan certification for its clothing, shoes and carrier bags.

Global inspection services firm TÜV Rheinland awarded Primark with its 'Vegan Mark' certification that its products are free of animal-derived materials including silk, wool, leather, pearls, feathers, down, bone, skins and fur.

Tests are based on legal labelling requirements for textiles and shoes as well as verification based on a Bill of Materials (BOM).

All materials are either checked by microscopic analysis, fibre analysis or other appropriate test methods. Suppliers of process chemicals are required to provide a declaration of conformity, stating that their products are manufactured without any raw materials of animal origin.

"Growing concern about the global climate crisis and the role played by fast fashion means attitudes to consumption are changing fast, particularly among young people," a TÜV Rheinland statement said.

"As consumers pursue sustainable lifestyles, especially with regards to consumerism, sustainability, environmental protection, and animal welfare, they are changing their expectations for manufacturers and brands."

Web: bit.ly/3aeHE7j

Microplastic fibres linked to changes in fish

NORTH CAROLINA – Chronic exposure to microfibres has been linked to serious respiratory and reproductive changes in fish, according to a new study by scientists at Duke University in North Carolina and Zhejiang

University of Technology in China, which found evidence that microfibres cause serious damage to fish gills and increase egg production in female fish.

"Past field studies have shown that many fish eat large quantities of the fibres every day but have

protective mechanisms within the gut that seem to be preventing damage," said David Hinton, Professor of Environmental Quality at Duke University.

"But when you extend your study down to the tissue and cellular levels, as we did, harmful changes are observed."

Melissa Chernick, a researcher in Hinton's lab at Duke's Nicholas School of the Environment, added: "In addition to the fibres that fish eat, hundreds of thousands of microfibres also pass through their gills each day, and we find that this is where much of the damage occurs."

To conduct the research, they placed 27 breeding pairs of healthy Japanese medaka fish (*Oryzias latipes*) in water tanks with high levels of suspended microplastic fibres.

After 21 days, they examined the fish's tissues to see what changes, if any, had occurred.

"There were severe changes, and a lot of them. And each change can affect respiration," Chernick said. "If you're a fish in the wild with gill damage and you're in a low-oxygen environment or being chased by a predator, you're in trouble. The same goes if you're competing with other fish for food. Just having these damages would cause you to be less competitive."

Web: bit.ly/3afaqEK

The effects of microfibre exposure were identified at cellular level.



Chanel announces climate change targets

PARIS – Luxury brand Chanel has pledged to reduce its greenhouse gas emissions by 50 per cent across its own operations, and across its entire supply chain by 40 per cent per unit sold, by 2030. The company has made four commitments, as part of its Chanel Mission 1.5° commitment, aimed at reducing its carbon footprint across its own operations and its supply chain, which it says have been approved by the Science Based Targets initiative (SBTi). They include reducing emissions across Chanel's operations by 50 per cent by 2030, equivalent to a 66 per cent reduction per unit sold, and reducing supply chain emissions by 40 per cent per unit sold by 2030, compared to 2018 levels.

To meet these reductions, Chanel says it will focus on the responsible sourcing and production of natural raw materials, while revisiting the way it designs, manufactures, transports and distributes its products, in partnership with suppliers.

Chanel also plans to switch to 100 per cent renewable electricity in its own operations worldwide by 2025 and has joined the RE100 coalition, a group of influential businesses committed to the use of renewable electricity. Chanel is also looking to offset unavoidable emissions by investing in nature-based solutions, such as projects to protect and restore forests, mangroves and peatlands.

Web: bit.ly/3994DPP

ZDHC welcomes new contributors

AMSTERDAM - Three new companies - including Uniqlo owner Fast Retailing Co Ltd - have signed up to the ZDHC Roadmap to Zero initiative to replace hazardous chemicals with safer ones in textiles and clothing production.

Fast Retailing becomes a ZDHC signatory brand, while speciality chemicals company, the Bozzetto Group, and textile producer Century Rayon have become ZDHC contributors. Meanwhile, fashion giant Ralph Lauren has become an official friend of the programme.

A ZDHC statement said: "We are delighted to announce more of the biggest names in the industry as ZDHC Contributors.

"This rapid growth in our community is set to continue, as organisations from all facets of the industry join our mission to transform the industry. Together we are gaining momentum, and making a difference," ZDHC says.

Web: bit.ly/3adhFNF

Nordstrom revises human rights targets

SEATTLE – American fashion retailer Nordstrom has unveiled new 2025 human rights targets for the supply chain of its private-label brand, Made.

Whilst continuing work alongside Business for Social Responsibility (BSR) to deliver on its HERproject, Nordstrom has announced a new partnership with global non-profit CARE which will accelerate efforts to ensure 100 per cent of workers at its Nordstrom Made strategic suppliers are paid a living wage.

Almost 70 per cent of Nordstrom's workforce are women. That said, the retailer says it will "double down" on its commitment to the human rights of this group.

Nordstrom has set out four ambitious targets to strive to meet by a deadline of 2025. It hopes to have 90 per cent of Nordstrom Made products produced in factories that invest in women's empowerment, and that it will be possible to trace 90 per cent of its private-label products back to the factory of origin.

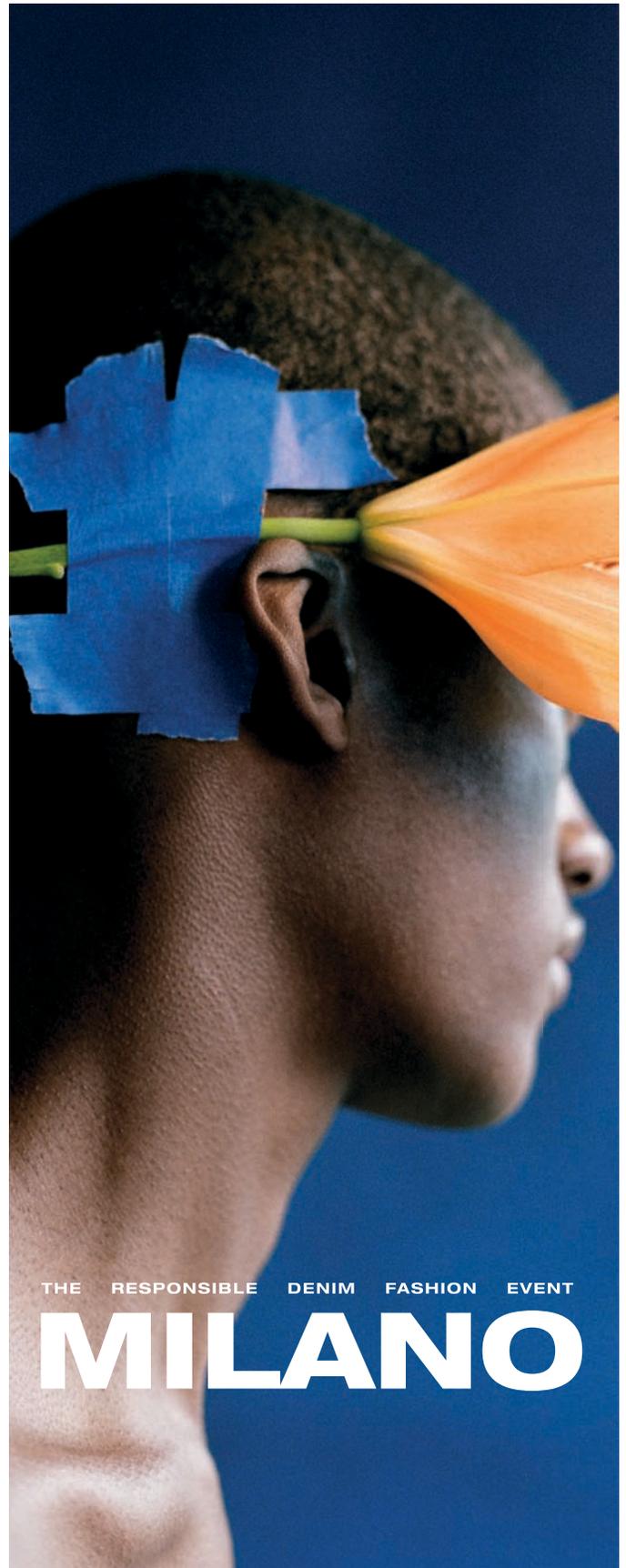
The firm has also set its sights on ensuring all of the workers at its Made strategic supplier factories are paid a living wage, stretching across countries such as China, Vietnam, India and Bangladesh.

Finally, Nordstrom says it will continue to invest in organisations that support women's empowerment to create training opportunities and resources within its global supply chain.

Web: bit.ly/39buwi5

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Fears raised for Bangladeshi garment workers

Fresh fears have been raised for garment workers in Bangladesh with the publication of a new US Senate Foreign Relations Committee report.

Simon Glover reports

Seven years on from the Rana Plaza factory collapse, a new US Senate report into the garment industry in Bangladesh concludes that, although factory safety has improved, serious concerns remain – while workers face widespread abuse.

The report admitted that safety had improved significantly since the disaster but expressed fears over whether those improvements would be maintained once the new RMG Sustainability Council (RSC) takes over from the Bangladesh Accord on Fire and Building Safety later this year.

And it claimed that factory owners were implicated in the widespread sexual harassment and abuse of workers, most of whom are women, while the government of Bangladesh had failed to hold the perpetrators accountable.

Entitled *Seven Years After Rana Plaza, Significant Challenges Remain*, the report was commissioned by Senator Bob Menendez who, as the son of a New Jersey

garment factory seamstress, takes a personal interest.

It noted that safety had improved in 2,300 RMG factories, due to the joint efforts of internationally-led initiatives such as the Bangladesh Accord on Fire and Building Safety and the Alliance for Bangladesh Worker Safety, as well as trade unions, industry and government.

However, with the Accord about to hand over its role to local hands, in the shape of the RSC, and with the Alliance's successor organisation Nirapon at loggerheads with the new body, there were fears this progress might not be sustained.

"Today's report shines a light on the struggle of workers in Bangladesh not just for safer conditions, but for dignity and respect for their rights as workers," said Menendez at the launch of the report.

"Despite improvements in building safety over the past seven years, we found that the workers inside are not necessarily safer. Abuse unfortunately remains widespread, and workers'



▲ Garment workers protesting.



“American consumers will simply not accept clothes stained with the blood of those who made them”

Senator Robert Menendez

rights are often sacrificed for the sake of meeting quotas in a relentless fashion industry.

“As I said in 2013, when I held my first hearing on labour rights and factory safety in Bangladesh, American consumers will simply not accept clothes stained with the blood of those who made them.”

Commissioned by Menendez as a follow-up investigation to Senate Foreign Relations Committee hearings after Rana Plaza, the new report also says that labour rights in Bangladesh have declined in recent years, with trade union rights coming under increasing pressure.

Menendez added: “I know how difficult this work can be, but it should never be fatal. The work environment should never be hostile. And the right to organise and collectively bargain should never be trampled on. All of us must live up to these values.”

The report's key recommendations include: ■ Investigations by both the Bangladesh government and the United Nations

into factory owners accused of abusing workers and violating labour laws

- More government recognition for trade unions in Bangladesh
- Equal power for workers' representatives, with the BGMEA and brands, on the new RSC safety organisation
- More pressure from brands on supplier factories to ensure safety standards are maintained
- An inquiry by the UN's International Labour Organisation into restrictions on trade unions
- The suspension of Bangladesh's trade benefits with the US until it implements a 16-point action plan
- Possible US visa bans for government officials and factory owners implicated in violence against union organisers

However, Menendez's report was quickly challenged in a lengthy and strongly-worded letter by Rubana Huq, the president of the Bangladesh Garment Manufacturers and Exporters Association (BGMEA).

Huq said the US Senate report was largely based on generalisations, newspaper stories and emails which she insisted should not be regarded as a "primary source of information" without proper verification.

Answering concerns over the new safety body, the RSC, Huq said it would be a tripartite body, made up equally of representatives from labour, brands and industry, which would focus on issues like workers' rights



“**I promise you that the industry will engage with you actively to make things better**

*BGMEA president
Rubana Huq*

as well as building safety.

And she complained that case studies, in which garment workers talked about suffering abuse, were almost impossible for the BGMEA to defend without further details.

"The global perception of workers being abused is overarching and most unfortunately supersedes the picture of the workers wearing the badge of pride and honour while they walk into the factories every morning," she said.

Huq wrote about initiatives rolled out for the benefit of workers, including the setting up of anti-sexual harassment committees and mental health awareness programmes in factories, and a project to help garment workers attend the Asian University for Women.

She concluded: "Bangladesh has come a long way... sustainability can never be prescribed. It has to be a homegrown process. Thus, in the RSC, we have brands, unions and industry together inking and sustaining chapters of progress made so far.

"Senator, I, on behalf of the manufacturers of the industry sincerely request you to be a partner in Bangladesh's progress and support our journey of correcting the labour narrative.

"I promise you that the industry will engage with you actively to make things better and the industry would also like to work with you, in close cooperation to spread the good stories that this industry takes pride in and the stories that are rarely heard and applauded in the western world."

However, days after the publication of the US Senate report, Bangladesh came under more pressure when the US Trade Representative's office said the country needed to do more to protect workers' rights if it wanted to expand trade with the US.

And another new report, carried out by the Bangladesh Centre for Workers Solidarity (BCWS) and the FEMNET organisation in Germany, also alleged that the abuse of garment workers was widespread.

Entitled *Break the Silence, Stop the Violence*, it found that 76 per cent of workers had suffered gender-based violence in the workplace. Sexual harassment was the most common form, but physical abuse, including slapping, beating, kicking and punching, were also said to be widespread.

The report, based on interviews, focus groups and other sessions with a total of 642 garment workers, said the Bangladeshi government, factory owners, and also brands shared the blame for the abuse.

It said: "To address gender-based violence in the supply chain, brands need to understand and recognise their own role in the dynamics that lead to gender-based violence.

"Recent studies show that buyers increasingly use their leverage over suppliers to demand lower prices, shorter lead times for higher quotas, and sudden changes to orders. As a result, suppliers increase workers' production targets which lead to an increase in violence and harassment towards workers when targets are not met." ■



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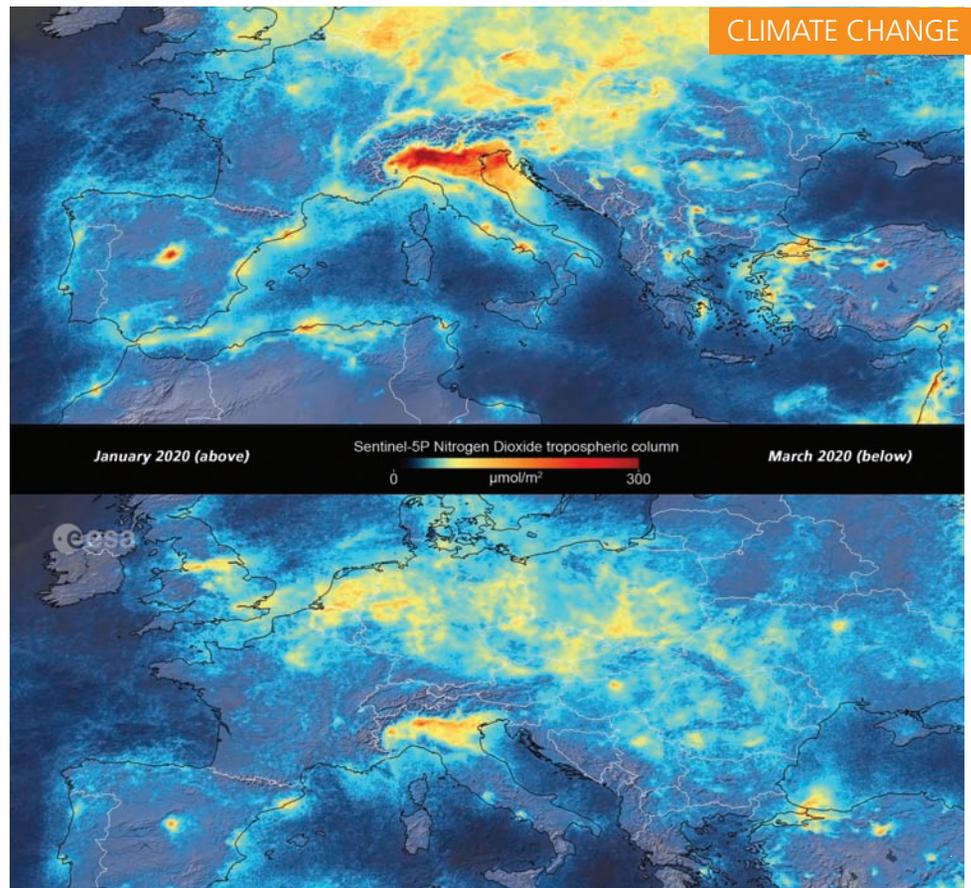
GHGs slide as COVID kicks in

Levels of air pollutants and greenhouse gases (GHGs) over many cities and regions are showing significant falls as the coronavirus outbreak impacts work, travel and global industrial output.

Researchers in New York have shown that carbon monoxide – mainly from cars – is down by nearly 50 per cent compared with last year, with CO₂ levels also down sharply. But there are warnings that levels could rise rapidly after the pandemic is over.

Scientists say that by May 2020, when CO₂ emissions are at their peak due to the decomposition of leaves (known as the Keeling curve), the levels recorded might be the lowest since the financial crisis over a decade ago.

An analysis carried out for the climate website *Carbon Brief* suggested there had been a **25 per cent drop** in energy use and emissions in China over a two-week period in late February.



▲ Nitrogen dioxide levels over northern Italy and Europe drop after COVID-19 outbreak.

Source: European Space Agency.

NO₂ is both a serious air pollutant and a powerful warming chemical.

This is likely to lead to an overall fall of about 1 per cent in China's carbon emissions this year, some experts believe.

Both China and Northern Italy have also recorded significant falls in **nitrogen dioxide**, related to both reduced car journeys and industrial activity.

A range of gas emissions are likely to fall as millions of people transition to working from home and as industrial output declines.

"I expect we will have the smallest increase in May to May peak CO₂ that we've had in the northern hemisphere since 2009, or even before," said Prof Róisín Commane, from Columbia University, who carried out the New York air monitoring work.

Although this view is now being echoed by others in the same field, others say it will depend on how long the pandemic lasts, and how widespread the slowdown is in the economy particularly in the USA.

What's likely to make a major difference to the scale of carbon emissions and air

pollution is how governments decide to re-stimulate their economies once the pandemic eases.

One warning though is that back in 2008–09, after the global financial crash, carbon emissions shot up by five per cent as a result of stimulus spending that boosted fossil fuel use.

In the coming months, governments will have a chance to alter that outcome. They could insist, for instance, that any bailout of airlines would be tied to far more stringent reductions in aviation emissions.

Any similar bailouts for and within the textile and fashion supply chains could come with similar carbon reduction caveats. However, some say that if the pandemic goes on for a long time, any stimulus would more likely focus on promoting economic growth regardless of the impact on the environment. ■



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Completing the circle

The European Commission's new Circular Economy Action Plan aims to transform product design, manufacture and waste across a range of industries.

By Simon Glover

The Circular Economy Action Plan – just one of the building blocks of the €1 trillion European Green Deal – will assess the entire lifecycle of products to identify means to reduce waste and the need to produce virgin raw materials.

Looking to establish measures for sustainable progress in sectors where the “potential for circularity is high”, textiles is a key focus of the plan, along with the plastics, packaging, electronics, batteries, automotive, construction and food industries.

“We only have one Planet Earth, and yet by 2050 we will be consuming as if we had three,” said commissioner for the environment, oceans and fisheries, Virginijus Sinkevičius. “The new plan will make circularity the mainstream in our lives and speed up the green transition of our economy.”

For the textiles industry, a new EU Strategy for Textiles will strengthen competitiveness and innovation in the sector, as well as boost the European market for reuse.

Whilst some firms are already pioneering this transition to circularity, and creating the supply chain infrastructure to provide new life for what would

otherwise be waste, the action plan puts out the expectation that all businesses should strive to adopt such a model.

Frans Timmermans, executive vice-president for the European Green Deal, noted: “Today, our economy is still mostly linear, with only 12 per cent of secondary materials and resources being brought back into the economy.

“Many products break down too easily, cannot be reused, repaired or recycled, or are made for single use only. There is a huge potential to be exploited both for businesses and consumers.”

Timmermans said he wants the action plan to “transform the way products are made and empower consumers to make sustainable choices for their own benefit and that of the environment”.

It could lead to new legislation to ensure items are manufactured to be reused, repaired or recycled. Single use will be restricted, premature obsolescence tackled, and the destruction of unsold durable goods banned.

Empowering consumers is also a high priority, as it's hoped better education on issues surrounding durability and pollution can



sway buyers into making more responsible purchasing decisions.

Finally, mitigating waste will be the last of the EC's focus areas. In line with its ambition to encourage circular design, it's believed that waste could substantially be cut by ensuring durability is designed into the product and bolstering the recycling infrastructure.

Euratex, the European Apparel and Textile Confederation which represents the European textile and clothing industry, has welcomed the action plan but said it was “not a wake up call” as many companies were already investing in research and innovation in these areas.

Euratex director general Dirk Vantyghem said: “This plan can be the starting point for a new structural dialogue with the EU and partners of the value chain. All the actors need to agree on what has to be changed and how to unleash circular textile products.”

Europe's Circular Economy Action Plan also has implications for manufacturers and exporters in other parts of the world, such as China, who may need to adopt its requirements if they want to continue selling to the EU market. ■

“
We only have one Planet Earth, and yet by 2050 we will be consuming as if we had three

Wool study draws surprise conclusion

Microfibres from machine-washable wool biodegrade more than three times faster than untreated wool in water, according to a new study.

Simon Glover reports

Machine-washable wool biodegrades much quicker in an aquatic environment than untreated wool, according to scientists at New Zealand's AgResearch, which serves the country's agriculture industry.

In a study funded by Australian Wool Innovation, the corporatised state research institute wanted to find out how much wool contributed to microfibre pollution in bodies of water.

Researchers discovered that both untreated wool and machine-washable wool biodegraded readily in a marine environment compared to synthetic fibres.

But they found that machine-washable wool biodegraded much faster than untreated wool and found no evidence that treated wool's polyamide resin coating added to microplastic pollution.

The AgResearch report compared the biodegradability of machine-washable and untreated merino wool, as well as viscose rayon, polyester, nylon and polypropylene, in water.

Scientists used electron microscopy (SEM) and

energy-dispersive X-ray spectroscopy (EDX) to measure the biodegradation of the fibres in the aquatic environment, and study the residues produced.

The fabrics were washed repeatedly, to simulate a partial garment lifetime, before being immersed in water. The rate of biodegradation was then compared to that of a substance known to biodegrade readily, kraft paper pulp. Scientists found that untreated wool biodegraded at 20.3 per cent the rate of the pulp, but that machine-washable biodegraded more than three times as quickly, at a rate of 67.3 per cent.

By contrast, viscose rayon biodegraded at a rate of 64.5 per cent, compared to paper pulp, while polyester achieved a rate of just 6.3 per cent, nylon 0.8 per cent, and polypropylene 1.8 per cent.

"The treatment that makes wool machine-washable, preventing felting by applying a thin film to the fibre surfaces, actually caused the wool to biodegrade more rapidly than untreated wool," said report author Stewart Collie.

"This is probably because the treatment process



“**The treatment that makes wool machine-washable actually caused the wool to biodegrade more rapidly**

Stewart Collie

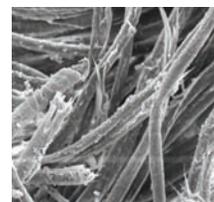
removes some of the fibre's cuticle, rendering it more susceptible to microbial degradation."

The study also investigated concerns that the polymer resin, Hercosett 125, commonly-used to coat machine-washable wool might break down as the wool fibre degrades, adding to microplastic pollution.

But it said that the composition of fragments from the residue of the machine-washable wool - was found to be consistent with the composition of the wool, and not the resin.

The report added that the polyamide resin used in the treatment of machine-washable wool was "very different" from common commercial polyamides, being initially water soluble so that it swelled in water to more effectively mask the fibre scales. "This swelling potentially means that it presents a much-reduced barrier to microbial access," he added. Dr Richard Blackburn, of the University of Leeds, agreed: "The Hercosett process could open up the wool fibre to the action of bacterial enzymes and help with the biodegradability of wool." ■

▼ Machine-washable wool was found to biodegrade much faster in water than untreated wool



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New Look hailed for reducing carbon footprint

British retailer New Look has become the first global fashion company to achieve a gold standard through the UN Climate Neutral Now programme.

Simon Glover reports

Budget fashion chain New Look might just raise a few eyebrows at the COP26 environmental summit in Glasgow in November when it will be showcased for its work to reduce the size of its carbon footprint.

The fast fashion company has succeeded in achieving carbon neutrality in its direct greenhouse gas emissions (Scope 1 and 2) by a combination of switching to renewable energy and offsetting unavoidable emissions.

It worked with non-profit One Carbon World, a resource partner with the UN Climate Neutral Now initiative, to first measure its carbon footprint over the last 12 months, then reduce those emissions and finally, offset the remainder.

In an agreement with Scottish Power, New Look switched 98.6 per cent of its

energy use to renewables. Of the remainder, 90 per cent is being offset through a reforestation project in South America.

It has committed to contributing to a 20,000-hectare scheme in Uruguay – verified by the Rainforest Alliance, VERRA and the Forest Stewardship Council (FSC) – for at least the next four years. The remaining unavoidable emissions are offset by buying UN certified carbon credits.

Antonio Roade, New Look's senior sustainability manager, said he was delighted that New Look had become the first fashion company to achieve a gold standard and was to be held up as a positive example at COP26 for its work to address climate change.

"It's really great," he said. "I'm especially proud that New Look, which is not always in the big conversations about sustainability

▲ Uruguay forestry project.

“If we're able to become carbon neutral quickly and within our resources, let's do that now

Antonio Roade, senior sustainability manager, New Look



and does not have huge financial resources, is seen to be doing the right thing."

Roade said New Look had decided to join the UN Climate Neutral Now initiative, rather than the UN Fashion Industry Charter for Climate Action for example, because it spanned all of industry rather than just one sector.

"We're not independent of the rest of industry, we all face the same problems. We also liked the immediate impact. If we're able to become carbon neutral quickly and within our resources, let's do that now," he added.

"We want to look at our Scope 3 emissions next but that will be much more complex. We need to calculate emissions arising from the production of raw materials, then transportation and distribution."

Offsetting has become contentious in some



quarters, with critics saying it can give companies carte blanche to carry on emitting carbon dioxide providing they pay for enough trees to be planted.

However, Roade insisted: “We’ll always try to limit energy consumption as much as we can but I think that offsetting will always have to play a part for a company like New Look.”

As well as reducing its carbon footprint, New Look’s four year forestry commitment in Uruguay would offer significant social benefits for disadvantaged local communities, including jobs, training and medical care.

“I understand the scepticism about offsetting. However, if your offsetting is accredited by FSC and VERRA, and has such a positive impact in social terms locally, then it has positive value. It’s very important for us,” he said.

Andrew Bowen, CEO with One Carbon World, which worked with New Look to calculate, reduce and offset its emissions, said the company had shown a great example to others by becoming carbon neutral (Scope 1 and 2).

“They are a great blueprint,” he said. “We hope they will mobilise more organisations to take accountability for their carbon footprint rather than waiting for the political landscape to come up with a legislative solution. It’s fantastic to see fashion take an active lead like this.”

Bowen explained that UN Climate Neutral Now signatories had to do all they could to reduce their

emissions first and, only then, offset the remainder. They are still expected to carry on reducing emissions into the future. He suggests by at least 7.5 per cent per year.

The initiative has two levels – ‘participant’, for companies which have had their carbon footprint measured and started work on addressing it; and ‘gold’, for companies, such as New Look, which have succeeded in becoming carbon neutral.

Offsetting is achieved through obtaining UN certified emission reductions (CERs), a type of carbon credit vetted by the United Nations Framework Convention on Climate Change (UNFCCC) to provide a high level of credibility.

As well as working to reduce the impact of climate change, projects are located in developing countries and bring sustainable benefits to local communities, such as improved air and water quality, improved income, better health and reduced energy consumption.

Offsetting projects are strictly audited. For example, companies can claim CERs for only one year’s tree growth at a time – not its entire life. And 10 per cent of credits have to be earned by investing in renewable energy infrastructure to reduce the global reliance on fossil fuels.

Bowen said: “It’s a three part process – measure, reduce, offset. We look at emissions over a 12-month period. Next, we look at a reduction strategy, which can include switching to renewable energy, reducing travel and avoiding single use plastics. And then we



encourage offsetting any unavoidable emissions to become net-zero.

“New Look has become the first global fashion retailer to achieve the gold standard. All of their Scope 1 and 2 emissions are now carbon neutral. We are now looking at their supply chain (Scope 3) which is more complex.

“It is a very high standard. It’s a fantastic accolade and we’re very happy to have helped them on this journey. It’s really important that individual organisations, like New Look, are not just aware of their carbon footprint but do something about it by accounting for their unavoidable emissions.

“Every organisation can make a difference, they just need to start by stepping on the scales to measure the size of their carbon footprint.” ■

“
It’s a
fantastic
accolade and
we’re very
happy to
have helped
them on this
journey

Andrew Bowen, CEO,
One Carbon World

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Forced labour spreads in China

XINJIANG – A new report estimates that 80,000 Uyghur workers, suspected to be victims of forced labour, have been transferred from the Xinjiang region of China to work in brand supply chains throughout the country over the past three years, as part of a government-led scheme called 'Xinjiang Aid'.

Based on public supplier lists, media reports and data obtained from factories, research from the Australian Strategic Policy Institute (ASPI) indicates that 83 global brands source from implicated sites, with fashion brands Nike, Adidas, H&M, Gap, Zara and Puma amongst the high-profile names.

Since 2017, ASPI has leveraged open-source Chinese documents, satellite imagery, research and on-the-ground reporting to unearth what's feared to be the introduction of a

new phase to the regimented lives of this oppressed minority.

The ASPI has identified 27 factories across nine provinces, thought to have taken on Uyghur workers. It's believed the government-led programme, has facilitated the alleged forced movement of this group throughout the country.

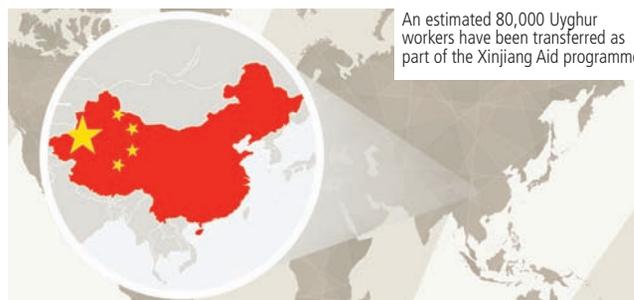
The treatment of these people even in brand supply chains is compared to "military-like management". In a recent case study of Nike supplier Qingdao Taekwang Shoes Co. Ltd, it was highlighted that the workers' curriculum "closely

mirrors that of Xinjiang's 're-education camps'."

"At the factory, the Uyghur labourers make Nike shoes during the day. In the evening, they attend a night school where they study Mandarin, sing the Chinese national anthem and receive 'vocational training' and 'patriotic education,'" the report says.

The ASPI has outlined actions that brands, governments and consumers should look to take considering these findings. The Chinese government has been urged to give multinational companies unfettered access to investigate their suppliers.

Web: bit.ly/39NmVak



H&M offers rivals access to its supply chain

STOCKHOLM – Swedish fashion giant H&M is opening up access to its global supply chain to rival companies in a B2B service aimed at reducing the industry's environmental impact. H&M says it launched the service, called Treadler, to enable clients to benefit from the company's expertise, long-term supplier partnerships and strategic sustainability work. Gustaf Asp, managing director of Treadler, said the commercial B2B service would help its

clients overcome initial business barriers and accelerate sustainable change.

"We see the opportunity to utilise the full potential of H&M Group's extensive investments and progressive sustainability work by catering to clients' needs and contributing to driving long-term growth for H&M Group, while driving change in our industry," he said. Treadler will initially work at small scale and provide a service that is tailored to suit the needs of each

client, covering all steps from product development to sourcing, production and logistics. It will charge a service fee to clients based on the set-up provided. "By offering access to H&M Group's supply chain to other companies we can work towards a more sustainable fashion future together. Creating a win-win-win-win for Treadler's clients, suppliers, H&M Group and the wider society," H&M says.

Web: bit.ly/3aG2uwd

Vaude and eBay launch upcycling store

TETTANG – European outdoor brand Vaude has joined forces with eBay to launch a new online store for the German market which enables it to offer high-quality waste materials from its own textile supply chain for upcycling.

The aim is to get as many companies as possible, especially from the textile industry, to participate and offer their residual materials for upcycling. Proceeds from sales on the platform will go to the Save the Children charity.

Materials to be made available by Vaude include high-quality, robust and environmentally friendly PVC-free materials, mainly from bicycle bag production, which the company says "are suitable for everyone who would like to sew, tinker and be creative". Remnants and offcuts from Vaude's factory at the German company's headquarters in Tettang will be available in pre-packed boxes which it is hoped will appeal to social facilities, schools, kindergartens and DIY enthusiasts. The venture is the latest co-operation between Vaude and eBay which previously saw the launch of the Vaude Second Use Shop, where used Vaude products can be resold privately, in 2015. "We are pleased to have eBay as a strong partner for the upcycling store at our side," commented Antje von Dewitz, managing director of Vaude Sport.

Web: bit.ly/2VXcOfi

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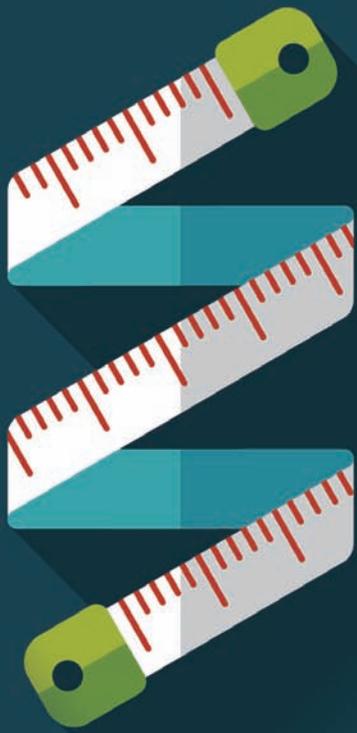


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Measured progress

The Sustainable Apparel Coalition (SAC) will launch the latest edition of the Higg Brand and Retail Module (BRM) in early April, which replaces the beta version of the tool, which debuted back in 2018.

Clothing companies of all sizes can now use the Higg BRM to measure the environmental and social impacts of their operations – by tracking performance across 16 social and 11 environmental impact areas.

Speaking to *Ecotextile News* prior to its launch, Amina Razvi, CEO of the SAC said: “The Higg BRM now features additional high-level entry-point questions, so SMEs can begin to measure the impact areas most relevant to them ... more specifically, we’ve expanded the social impacts within the assessment and solidified questions to address operations that often

influence social conditions such as responsible purchasing practices.”

In practice, brands and retailers get asked a series of questions about the complexity of their value chain to determine their environmental impacts and risks. Companies earn points for assessing how they are addressing them and what steps they are taking to improve or manage them. “If a company doesn’t show it’s taking any steps to improve in a particular area, it won’t receive points, but users will never lose points,” explains Razvi. “The Higg BRM score is based on an additive equation. As companies build out and enhance their

management practices, we want to encourage them to focus on improvements.”

Critics of the Higg Index often cite that its major weakness is a lack of ‘pass or fail’ criteria, which promotes ‘business as usual’. “But sustainability isn’t pass/fail; it’s about progress, not perfection,” Razvi responded. “The industry has tried for decades to use a pass/fail system through auditing, and it doesn’t drive sustainable performance as it doesn’t recognise or incentivise the right behaviours.”

Setting a higher bar and focusing on continual improvement is a fundamental SAC philosophy, according to Razvi, and the reason it was founded. This, along with a commitment to providing consumers with ways to identify the environmental impact of the clothing they wear. “We also want to provide companies with tools to support an honest and authentic assessment ... communicating sustainability impacts to consumers to help them make more informed decisions is another key reason the SAC was founded,” she said.

Currently, the SAC is developing communications toolkits for each of the Higg Index tools that outline what users, including brands and retailers, can communicate to their business partners and to consumers. “We launched a market test this month that is exploring how to best communicate Higg Index data to consumers,” Razvi revealed. “We’ll have more information to share later this year.” ■

Environmental Impacts Assessed:

- 1. Animal Welfare
- 2. Biodiversity/Land Use/Habitat loss
- 3. Deforestation
- 4. Energy/Fuel Use (or Fossil Fuel Depletion)
- 5. Greenhouse Gas (GHG) Emissions
- 6. Air Emissions/Air Pollution (non GHG)
- 7. Solid Waste
- 8. Hazardous Waste
- 9. Chemical Hazard/Management
- 10. Water Use/Water Scarcity
- 11. Wastewater/Water Pollution/Eutrophication

Social Impacts Assessed:

- 1. Forced Labour or Human Trafficking
- 2. Child Labour
- 3. Wages and Benefits
- 4. Working Hours
- 5. Freedom of Association and Collective Bargaining
- 6. Health and Safety
- 7. Access to Water and Sanitation
- 8. Decent Work
- 9. Discrimination, Harassment and Abuse
- 10. Sexual Harassment and Gender-Based Violence
- 11. Bribery and Corruption
- 12. Right to Health
- 13. Right to Privacy
- 14. Right to Security of the Person
- 15. Minorities’ and Communities’ Rights
- 16. Land Rights



How COVID-19 hit the world's garment workers

Brands are being urged to act quickly to minimise the impact of the coronavirus crisis on the health and livelihoods of the 40 million garment workers in their global supply chains.

Simon Glover reports

The COVID-19 pandemic has already seen thousands of factories in garment-producing countries, including Bangladesh, Cambodia and Vietnam, close

due to a shortage of raw materials from China or declining orders from western brands.

And, with quarantine and self-isolation measures now being imposed by

governments around the world, the wide-scale closure of thousands more factories seems inevitable in the days and weeks ahead.

Workers' rights groups, such as the Clean Clothes Campaign (CCC) and Labour Behind the Label, are calling on brands to do more to protect the garment workers who make their clothes. They don't just mean action to limit their exposure to the virus – equally concerning is the economic impact on vulnerable workers who were already struggling to survive on poverty line wages.

"Due to their low wages and widespread repression of freedom of association rights, garment workers already live in precarious situations and the economic fallout of the pandemic is having far-reaching consequences," said the CCC in a statement.

"We urge all clothing brands to take immediate proactive steps in their due diligence to protect workers who make their goods in the face of this global pandemic.

"Brands must take responsibility for workers throughout their supply chains and ensure that the garment workers who have made their profits possible do not carry the industry's financial burden during this pandemic."

Widespread factory closures have been seen across countries including Cambodia, Myanmar, Vietnam, Sri Lanka and Bangladesh, and similar issues are now being reported in countries in Africa and Central America.

"Garment workers already earn poverty pay, with wages barely covering their

Recommendations

The Clean Clothes Campaign is calling on brands to ensure that:

- Supplier factories close factories as appropriate to protect the health of workers and their communities, while maintaining contracts and full wages
- Workers sent home because of a lack of orders or raw materials are compensated at their full regular wage
- Workers who contract the virus, or suspect they have the virus, can take sick leave on full pay without negative repercussions
- Deadlines for orders are reassessed to protect workers from mandatory overtime to make up for delays when factories reopen
- Workers receive accurate and current information and that measures to fight the virus do not restrict their freedom of movement or to organise

basic needs, let alone leaving anything extra to cover emergencies or periods without work," continues the CCC.

"These factory closures, whether temporary or permanent, are hitting low-paid garment workers hard – especially migrant workers who might not have local social networks to rely on and could face additional restrictions or xenophobia."

The CCC is being supported in its call by workers' rights organisations in many of the worst affected countries.

Kalpona Akter, president of the Bangladesh Garment and Industrial Workers Federation, said: "Garment workers live hand to mouth. If workers lose their jobs, they will lose their monthly wages that put food on the table for them and their families. If workers are laid off, brands should ensure immediate payments to factories so that workers receive their full legally-owed severance."

Tola Moeun, executive director of the Center for Alliance of Labor and Human Rights, added: "Apparel brands have been profiting from the labour of Cambodian workers. These brands now need to step up in this time of crisis, and ensure protection for workers' lives and livelihoods.

"Workers should be allowed to stay at home until the situation is manageable – and the brands need to ensure they are paid their full regular wage, attendance bonus, and room/transport allowance during this period." ■

“**Brands must take responsibility for workers throughout their supply chains**

Clean Clothes Campaign



Worst affected countries

Bangladesh

The Bangladesh Garment Manufacturers and Exporters Association (BGMEA) said orders totalling US\$2.04 billion have been cancelled by brands and retailers, impacting on 738 factories and about 1.42 million workers, at the time of going to press.

Factories are still open despite calls from the Bangladesh Garment Sramik Sanghati workers' welfare organisation for an immediate shutdown to protect workers from the virus.

A meeting of union leaders, factory owners and government leaders agreed that factories could stay open with safety measures, including masks, to protect workers from COVID-19. "Workers come first. And then us. Global scene is killing us. Without export, we will be facing tough uncertainties. We support 4.1 million people and their families. Pray so that we can continue doing that," BGMEA president Rubana Huq said on WhatsApp.

Vietnam

Some 2.8 million workers in the garment and textile industry have been affected by reduced shifts and stopped overtime. An estimated 15 per cent of manufacturing companies in Vietnam have been forced to cut production, with clothing and textiles among the hardest hit.

Cambodia

More than 10,000 garment workers have been laid off after 27 factories closed their gates because of a lack of raw materials from China, due to the COVID-19 outbreak. One third of all garment workers – more than 200,000 people – could be temporarily laid off as mills close their gates, it's feared. The government had promised affected garment workers will receive 60 per cent of the minimum wage – two-thirds from the state and one third from employers.

Myanmar

Around 10 per cent of garment factories in the Yangon region of the country are closed, with thousands of workers laid off without pay. Workers are owed severance pay if the factory closure lasts beyond three months; however, this only amounts to half a month's salary per year employed.

India

In India, all textile and garment factories have closed their gates after Prime Minister Narendra Modi announced a complete country-wide lockdown for at least 21 days. Factories will not reopen until April 14, at the earliest.

Pakistan

The Pakistan Textile Exporters Association (PTEA) predicts "a significant fall in exports and an unmanageable level of unemployment". Unions are calling for free testing and medicine for garment workers, and for wages to be maintained if they are laid off.

Sri Lanka

Garment workers face a range of issues from being forced to report for work, even though the government requested they be given leave, to factories declining to give them paid leave after brands withdrew orders.

Picking up the slack

Automated system sorts 900kg of post-consumer waste an hour.

Chris Remington reports

A new cutting-edge autonomous technology, brought to commercial scale at the site of Dutch firm Wieland Textiles, could represent a true breakthrough in providing vast quantities of material feedstock for recyclers.

Under modification for more than a decade, it deploys robots equipped with cameras and scanners leveraging **near infrared (NIR) technology** to enable the accurate processing of tonnes of textile waste per day, which is rapidly segmented based on colour and fabric composition.

Wieland worked with machinery specialist Valvan Baling Systems from the very start to improve the technology's efficiency whilst refining its attention to detail. "The textile stream is very diverse and can have all sorts of colours and blends of textiles which makes the job very complex. It's been a really challenging project," Maurits Vandeputte of Valvan recalls.

"The automated feeding system replaces the manual sorter that was needed on the previous version of the machine. So now we have

two robots on the line which have cameras to see where the textiles are and a big arm of two metres in length to pick up all the textiles."

When handled, an image of each garment is taken before being diverted down the relevant stream. The process then entails stripping the textile waste of buttons, zips and other accessories, before it's ultimately shredded and can be baled for shipping.

"Some dreams have come true," Vandeputte continues, "like the fibre prediction of the machine, colour scanning and sorting of the machine [perform well]. We still see opportunities to make it better, faster, larger scale," he continues. "In five years' time it will still be improving. It's a learning curve. We want to build this machine so that it has more than two robots that can further push the capacity of the production."

The dream

The year 2016 marked a turning point for the aspiring innovators, funding from Interreg North-West Europe (NWE) – a European Territorial Cooperation



▲ The Fibersort system.

The work that Fibersort has done has been absolutely pivotal to a circular economy

*Keith Wiggins,
CEO of Worn Again*

Near-infrared technology: NIR instruments use infrared light to analyse materials quickly. In this case, it's able to determine fabric composition.

Programme funded by the European Commission – coincided with the formation of a consortium of companies, ranging from textile collectors to sorters and recyclers, all keen to see the concept through to commercial scale.

Leger des Heils ReShare is a textile collector and responsible for kickstarting the movement of around 26 kilo tonnes of apparel at its end-of-life in the Netherlands annually. Smart Fibersorting, sister company of Wieland, is a sorting company and works through an estimated nine kilo tonnes of material per year. Impact organisation Circle Economy will work to rally industry stakeholders in garnering support for the automated solution. Recycling partners meanwhile, which stand to

benefit most from this innovative technology, include both Procotex Technologies – which serves industries including automotive, geotextile and homeware – and Worn Again, which in January launched its first pilot-scale facility that can separate, decontaminate and then extract polyester (PET) and cellulose from mixed fabric waste.

This pair are the first of what is expected to one day be a raft of recyclers capitalising on the consistent supply of feedstock that Wieland's facility can now provide.

What's crucial in this fight – and it is a fight – is that Fibersort is focusing on **non-rewearable textiles** given that it's these that are most likely to end up in landfill. For re-wearable clothes, there's still hope on the secondhand market.

"Of course, there is a demand from the textile industry, they all see that pollution is only growing and they also want to reduce their footprint," noted Hans Bon, CEO of Wieland Textiles. "That demand hasn't been there for many, many years."

The relentless consumption of fast fashion and the subsequent unsustainable disposal practices has left the fashion and textile industries in dire need of assistance to facilitate the recycling of greater quantities of textile waste.

Keith Wiggins, CEO of Worn Again, hailed the groundbreaking development, saying: "The work that Fibersort has done has been absolutely pivotal

“ Now we have to step into the market

*Hans Bon, CEO of
Wieland Textiles*

to a circular economy, where Worn Again plans to be at the centre.

"Our product is based on engineering better solutions for the market. We use a solvent-selective enhanced recycling process aimed specifically at end-of-life textiles. Our textile captures the existing polymers and reverts them back to their original form."

He continued: "We're moving towards a better engineered solution of what is a very tough, heterogeneous market. This is applying science to be able to get to defined products which can then be addressed through various technologies which are out there."

At present, what has

proven difficult for the development team is that of specifying desired outputs for the textiles it sorts and shreds, though it's hoped greater clarity can be found with greater industry collaboration.

Along these lines, Bon concluded: "Let's say that the stage we're at is step number one. Of course, we need the market, we need the producers of all these garment producers with us. My dream is not here at Wieland Textiles anymore, those dreams are fulfilled. Now we have to step into the market, the market has to see that we can't go on creating a larger footprint. We have to reduce our footprint." ■

Non-rewearable textiles: At present, Wieland Textiles has the capacity to sort around 10,000 tonnes of textile waste a year, 40 per cent of which is deemed non-rewearable.

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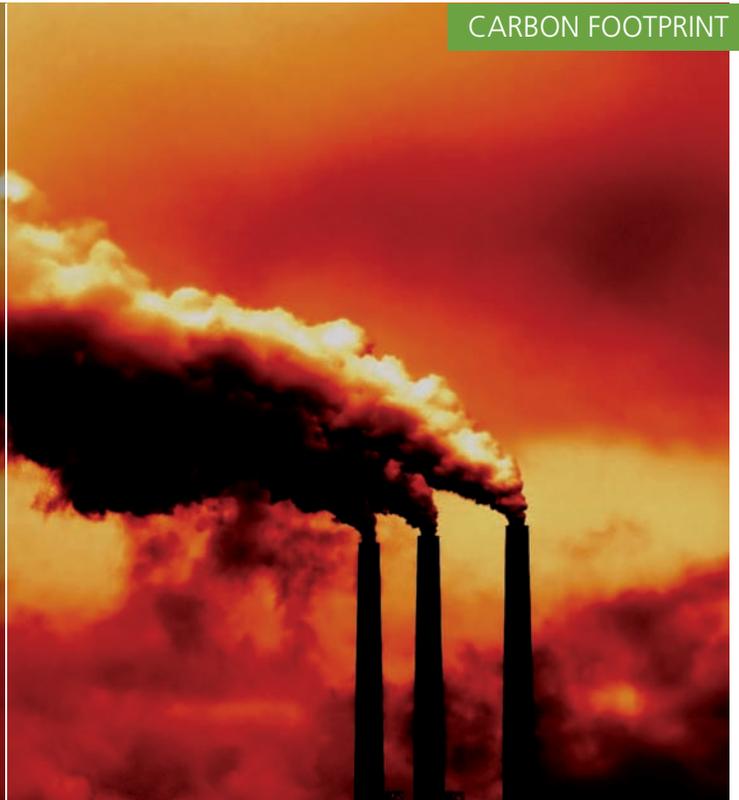
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Carbon footprint reduction – a user's guide

Most brands are keen to address climate change but the array of options is bewildering – and the terminology can be confusing. Simon Glover attempts to explain the the difference between 'offsetting' and 'insetting', and between 'carbon neutral' and 'net zero'.



Ecotextile News recently debunked the myth that the fashion and textiles industry is responsible for more greenhouse gas emissions than flights and shipping combined – but there is no escaping the fact that climate change is an urgent threat that demands swift, decisive action.

Companies are under huge pressure – from shareholders, customers, employees and environmentalists – to reduce carbon footprints. But they can perhaps be forgiven if they are unsure where to start.

One reputable source is the Science-Based Targets initiative (SBTi) which offers advice on how best to meet **the goal of the 2015 Paris Agreement**.

SBTi provides resources for companies to set science-based targets, as well as independently assessing and approving them.

The first step is to measure the company's carbon

To limit the increase in global average temperatures to below 2 °C above pre-industrial levels, and ideally to 1.5 °C.

footprint – the volume of greenhouse gasses (GHG) it emits over a period of time, generally a year, to get a comprehensive picture of the size of the problem.

Emissions inventories cover three areas of a company's operations – scopes 1, 2 and 3. Scope 1 covers direct emissions from a company's owned or controlled operations, while scope 2 is indirect emissions from the generation of purchased energy.

Scope 3 – often the part responsible for the most emissions – covers a company's value chain. This ranges from the production of raw materials and the assembly of products in supplier factories, to transport and distribution.

This can be particularly challenging given the complex global supply chains of today's fashion and textile industry. Many companies consequently begin by targeting a reduction in their scope 1 and 2 emissions,

leaving scope 3 for further down the line.

The WRI recognises the size of the challenge and is looking to help companies trying to reduce the size of their entire carbon footprint by creating a gold standard for reducing scope 3 emissions by the end of this year.

Once emissions have been measured, work can finally begin on a plan to reduce them. The first question will be by how much should they be reduced? Confusingly, there is more than one approach to determine this.

The most used method is the absolute-based approach, a simple percentage reduction in emissions. Other recognised methods include the sector-based approach, which is linked to a sector's contribution to overall emissions, and the economic approach, based on a company's profits.

Whichever method is employed, a company will **1**

be given a set time, between five and 15 years, to achieve its target.

When it comes to the means of reducing emissions, there is a wide range of options but, with burning fossil fuels to make electricity the biggest source of CO₂ emissions, energy efficiencies will be right at the top of the list.

These include finding ways to manufacture the same amount of goods with less energy, manufacturing less – by reducing waste, reducing surplus energy use and switching from fossil fuel-based energy to renewables, such as solar and wind power.

For companies with a lot of emissions from purchased electricity, purchasing renewable energy products is a common practice.

The Greenhouse Gas Protocol, created by the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI), **offers guidance** that companies should follow when purchasing these products.

Other tactics to reduce emissions range from replacing fleets of fuel-guzzling lorries with electric vehicles, to introducing energy-saving technologies such as more efficient boilers, lighting and thermostats.

Many businesses will want to go further than their science-based targets to proudly declare they have become carbon neutral. This is usually achieved by offsetting unavoidable emissions through sequestering.

Offsetting generally

“**One of the reasons for the popularity of net zero targets is that the term itself carries a promise of strong action**”

*Andie Stephens,
Carbon Trust*

Such advice includes the need for companies to purchase renewable energy products in the same markets where they operate. For example, they shouldn't buy a renewable energy certificate from a US provider to reduce emissions from a facility in Thailand.

involves investing in, or purchasing carbon credits in, schemes designed to counter the effects of global warming, such as reforestation projects, as trees absorb carbon dioxide and help reduce climate change.

Offsetting has become something of a controversial tactic, with some critics claiming it can give less scrupulous companies carte blanche to carry on as normal, so long as they can afford to plant enough trees.

However, most experts cautiously encourage offsetting – so long as it is through a credible, verified organisation. But it does not count towards reducing emissions under the Science-Based Targets initiative, which insists the main focus should be on reducing emissions.

Another term that has become increasingly used in the climate change debate is insetting. This refers to carbon sequestration projects within a company's own value chain, for example, a cellulosic fibre company planting more trees in its own forests.

Insetting is regarded as more credible than offsetting in some quarters. However, the World Resources Institute does not favour the distinction.

Another term that is becoming increasingly popular among companies wanting to boast their green credentials is net zero. Other similarly impressive sounding expressions, including climate positive and climate neutral, are

used pretty much interchangeably.

Unfortunately, there is a lack of clarity as to their definition. Some take them to mean the same as carbon neutral, others link them to being on track to meet the goals of the Paris Agreement.

The Carbon Trust, which works with businesses and other organisations to accelerate the move to a low carbon economy, addressed this issue in a recent article by its associate director Andie Stephens.

“One of the reasons for the popularity of net zero targets is that the term itself carries a promise of strong action, openly embracing the need to halt global emissions, and is seen by many as the hallmark of climate leadership,” Stephens said.

Describing net zero as an “ambition in search of a definition”, he went on to propose the term be used only for organisations pursuing a 1.5°C-aligned science-based target – for all three scopes – with unavoidable emissions offset through certified greenhouse gas removal (GGR) projects.

“Net zero is certainly a viable and desirable goal for businesses, provided it demands a reduction target aligned to a 1.5°C science-based target and is limited to specified GGRs,” continued Stephens.

“We have an opportunity to ensure that this is the case and, in doing so, we will be ensuring that the current enthusiasm for net zero targets results in meaningful outcomes for the planet.” ■

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20 Years Ahead

A lot has happened in the last 20 years. Steve Jobs unveiled the iPhone. Facebook launched its social platform. The last 20 years were witness to technologies which changed communication and information sharing as we know it today.

However, there is a general consensus that not enough has happened to move the textile and fashion industry into the environmentally and socially responsible position that has been demanded for by consumers. The current industry demands are pushing players to implement sustainability policy reaching throughout their supply chain, while increasing traceability, transparency, and accountability. Brands especially find themselves under pressure to provide this "radical transparency".

A 2019 report produced by Suston demonstrated that no retailer was ranked as an expert in material sustainability. How then, can brands be expected to implement the sustainability initiatives they are promising consumers.

While data transparency can appear as a challenge for the industry, in the current global climate where data is king, transparency can instead offer a competitive advantage for a company. In our globalized world, "out of sight, out of mind" no longer exists. As consumers take stock of their global footprint, they will make active decisions to reduce their negative impacts on the environment and society.

With its extensive expert base, Bluesign has created a service-based solution that combines sustainable practices with economic benefits. What sets Bluesign apart is its Input Stream Management approach. 20 years ago, this approach was a revolutionary idea. The Bluesign Input Stream Management has created a sleek assessment process, in which the globally accepted standards are integrated to establish the industry benchmark. While previous solutions tested a finished product and allowed for little flexibility, this holistic approach encompasses the entirety of the needs throughout the value chain.



Today the idea of a transparent supply chain is moving towards the norm. However, with supply chain transparency comes the need for industry tools to simplify the communication along the many horizontal and vertical levels of the supply chain.

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with the Bluesign mindset, this software suite and measurement tool can generate Environmental Key Performance Indicators (eKPIs) which are of unparalleled value in creating reports for stakeholders. Data measures in reduction of emissions, discharge, and increases in resource efficiency creates the ability for sound data driven business strategies.

Two key points need to be taken into consideration in 2020:

First, 2020 will be big data driven. Moreover, this data will have to be verifiable. Transparent data generation throughout the supply chain is the most fluid and efficient way in which verified data can be established.

Secondly, 2020 will continue to be purpose driven. Both the fashion and textile industry suffer from a lack of trust from consumers. They must be conscience of how they move in the world around themselves. Companies who are the first movers in transparent data sharing will be at the forefront of consumer trust and consumer loyalty.

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Pause for breath

Global trade continues to grind to a halt with the quickfire spread of the coronavirus. How then, has it impacted the textile industry? We assess its widespread impact and the subsequent implications for stakeholders the world over.

Chris Remington and John Mowbray report

Since the turn of the decade, the spread of the coronavirus has avalanched at such an unprecedented rate that no one could have foreseen the impact it's had on our industry. And with good reason, looking back, it was only January 20th when the first case surfaced outside of mainland China – for much of that month rhetoric had focused on “containment” within the country – affecting South Korean, Thai and US nationals.

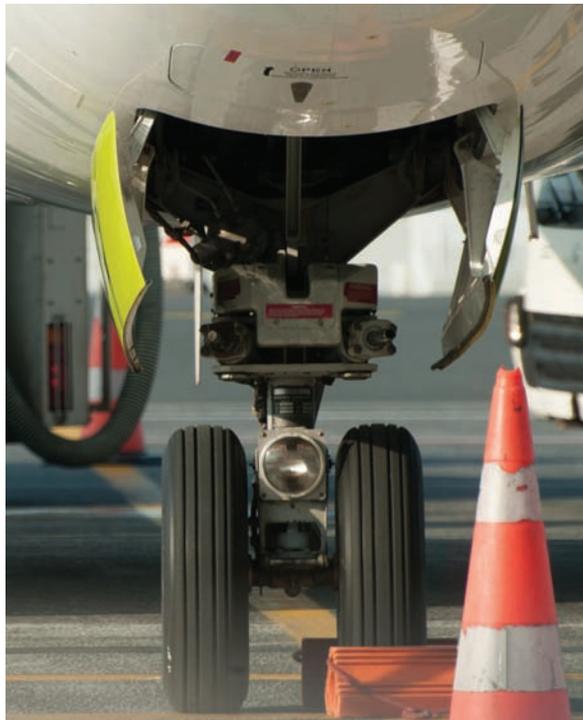
Without the reactive stringent travel guidelines we've now come to see deployed by governments the world over, the number of cases has since snowballed immeasurably, prompting businesses to make tough calls. It's quite literally been a question of risk vs reward.

As the number of cases has risen and spread in tandem, some of the world's

“ Practise common sense

*Andrew Olah,
founder of Kingpins*

▼ From January 23rd, the city of Wuhan prohibited transport by planes, buses and trains as it looked to contain the virus.



biggest fashion brands and events have been defiant in establishing a position on whether they'll hold their ritual runway shows and get-togethers.

Already, luxury brands Giorgio Armani, Burberry, Chanel, Gucci, Prada, Ralph Lauren and Versace (to name but a few) have either announced the cancellation or postponement of various collection debuts and cruise shows, whether it be due to location concerns or merely as a precaution given the diverse crowds such gatherings can bring.

Along these lines, a number of Paris Fashion Week events were called off, and Japan's Rakuten Fashion Week has been entirely cancelled.

Meanwhile, organisers of Shanghai Fashion Week took a different approach and partnered with Chinese e-commerce heavyweight Alibaba to explore the potential of an online platform on which designers and brands could still debut new clothing lines.

Given that the technology is now available to host these virtual events, connecting delegates around the world online, and factoring in recent research from space agency NASA which has reported exponentially less carbon emissions in China **due to less travel**, is it perhaps time to consider these options as the new industry norm and not just a worst-case scenario?

Textile trade events have similarly been stripped from what is typically a

rigid calendar of sustainability conferences and trade shows. The Copenhagen Fashion Summit, Kingpins (both in Amsterdam and Hong Kong), and the Sustainable Apparel Coalition's general members' meeting being amongst the latest omissions.

Andrew Olah, founder of Kingpins, stressed that whilst “the world cannot stop over this virus”, he'd acted in-line with the latest scientific data and urged others to “practise common sense” when deliberating over whether shows could still be feasibly held in the current climate.

Organisers mustn't give the go ahead solely on the grounds of government advice in their home nations or cities but must assess the broader landscape – particularly as the contagion seems to have been kickstarted in new countries off the back of people taking trips internationally.

The brands

Away from the events, how have brands performed? Analysis from financial services firm UBS sheds light on the impact the coronavirus outbreak has had on leading fashion firms. Based on an assessment of each company's shares of sales in China, H&M and Inditex - whose Zara brand has now shut around 3,785 stores globally - have been in the firing line for the most collateral damage. It's said that 50 per cent of H&M's total value of products comes from China – where it pays more for items which it sells on for a higher price.

Inditex, on the other hand, sources just 10 per cent of the total value of its goods from the country, but due to higher rates of inventory turnover has in this case been caught out due to the abrupt nature in which business-as-usual halted.

On the ground, Nike has released a statement saying that it will close stores across the US, Canada, Western Europe and Australia. Fellow sportswear giants Adidas and Reebok also say they'll close directly owned stores in key markets.

Under Armour stands to lose upwards of an estimated US\$60 million this financial quarter in a case which embodies the rocky waters of mass markets post-coronavirus outbreak. The brand insists that it could "be further materially impacted" given the escalation of cases around the world.

Supply chains

Unsurprisingly, the multi-faceted implications of the virus have had a knock-on effect for workers in brand supply chains too, which have been strained by restricted access to their Chinese suppliers.

Cambodia – which counts China as a key vendor of raw materials – is just one example having sounded the alarm early in relation to the potential impact China's lockdown could bare on future trade.

Its Ministry of Labour and Vocational Training warned that as many as 10 per cent of the country's garment manufacturing sites could be forced to close during the month of March

– when resources would start to dwindle.

"If Cambodian citizens lose their jobs, they lose their income, the turmoil will happen," Rong Chhun, president of the Cambodian Confederation of Unions feared.

The country's Prime Minister, Hun Sen, was forced into action on the grounds of damage control. He called on micro-financial institutes to stall the loan repayments that upwards of two million residents use a year.

Meanwhile, Cambodia's General Department of Customs and Excise (GDCE) has instructed travel officers to be more lenient and help facilitate shipments of raw materials where possible.

For now, concern has been alleviated with the highly anticipated arrival of 60 containers of textiles, buttons and zips from China. "Such a response from our ironclad friend China reaffirms strong ties that interest the peoples of both nations," said Ek Tha, spokesman for the Office of the Council of Ministers.

Ken Loo, general secretary of the Garment Manufacturers Association of Cambodia, wasn't so optimistic but insisted it's "better than nothing". Many of its industry stakeholders are reluctant to believe business will now resume as hoped due to the twists and turns the coronavirus has thus far thrown their way.

China

In China, which is now reporting a decline in daily coronavirus cases despite the extent of escalation



▲ For now, concern has been alleviated with the highly anticipated arrival of 60 containers of textiles, buttons and zips from China.

across much of Europe and the US, it's hoped business will soon be back up and running.

Whilst this could be the salvation many stakeholders have counted on, from an environmental standpoint there are concerns.

Li Shuo, a senior policy adviser for Greenpeace Asia, has said that in the past, China's factories have tended to ramp up production in the wake of temporary shutdowns or disturbances, a practice he calls "retaliatory pollution".

"Controlling the outbreak and maintaining economic growth are now going to be China's top priority," Shuo told the *New York Times*. "We've seen in the past, whenever economic growth needs to be prioritised, the environmental agenda takes a back seat."

Here's to hoping that business leaders will pause for thought before blindly re-commencing trade. ❶

Impact on textile workers

As retailers and brands cancel or suspend orders with sales nosediving and inventories piling up in the wake of the virus outbreak, the livelihoods of textile and garment workers in developing regions are being shattered.

As it temporarily shuts its UK stores, sources in Bangladesh say the clothing retailer Primark has cancelled all new clothing orders from suppliers but will continue to honour orders already shipped or delivered to Primark warehouses or stores.

However, as we went to press, Primark did not answer our requests for what will happen to orders already produced but that are not yet shipped and goods in the work in progress or supply chain.

"This is huge loss for manufacturers and a lot of factories will be out of business if no support is provided to them," said Mostafiz Uddin, owner and managing director of Denim Expert Ltd, which is based in Dhaka, Bangladesh. "Such unilateral decisions are extremely bad for the industry."

Another problem is what happens to the mountains of stock that are likely to remain unsold? In many factories, this could become a potential fire hazard as warehouse and storage spaces become overfilled.

Uddin has now set up a LinkedIn page 'COVID - 19 & the Global Apparel Industry' to give people an insight of what the impact the coronavirus is having on the



ground in Bangladesh's textile manufacturing sector. It's well worth a look.

In order to assess and mitigate these types of issues, Better Buying, the textile industry initiative that allows manufacturers to anonymously rate their customers, invited textile suppliers to take part in a survey about the impacts the coronavirus is having on businesses and workers.

"Through our **short survey**, we aim to get a pulse on how suppliers globally are being impacted – both by Coronavirus itself and by their customers' resultant purchasing practices," Marsha Dickson, co-founder of Better Buying told *Ecotextile News*. "By highlighting these issues and their social, business, and environmental sustainability impacts at an industry-wide level, we will help persuade brands and retailers to re-examine their approaches."

Using the data from this survey the aim is for Better Buying to build out evidence-based guidelines for brands and retailers, so their purchasing practices support sustainable partnerships with

▲ "Work in progress is piling up as brands cut and cancel orders."

Image: © 2020 Marsha Dickson.

We aim to detail the results on our website at: www.ecotextile.com

“Your customers are suffering too – work with them”

suppliers during these challenging times.

Suppliers in the textile sector already faced significant downward price pressure before the virus outbreak, but since then *Ecotextile News* has become aware of a rise in bad practise in apparel sourcing regions where buyers are not paying in time, not paying in full and even not paying their suppliers at all.

"Any practices that further impact their cash flow or margins will be devastating – most just don't have any type of buffer to absorb additional pressure," she noted.

In terms of advice for suppliers, Dickson says that continued partnership is the key right now. "Your customers are suffering too – work with them, your raw materials suppliers, civil society, government... everyone has a role to play right now. It will take full supply chain partnership to get through these challenges."

She says that open dialogue with between retailers, brands and clients is "now more critical than ever" and that although the textile industry faces continued and significant disruption in the present, "brands and retailers need to be thinking of long-term social, business, and environmental sustainability impacts of their current decisions."

"Asking your suppliers to absorb the impact of this disruption is not only unfair, but it will almost certainly ensure that when the dust settles and it's time to rebuild your supply chains, those business relationships will no longer exist." ■

Standing tall

Canopy report rallies industry to save forests

By Chris Remington

It was in Davos, the picturesque Swiss town encapsulated by vast stretches of mountain and woodland, that quite fittingly hosted the unveiling of environmental NGO Canopy's new action plan, *Survival - A Pulp Thriller: A Plan for Saving Forests and Climate*.

With an ambitious 2030 target of saving 30 per cent of the world's forestry by scaling the utilisation of **'next generation' materials**

to replace 50 per cent of conventional wood pulp, the NGO embarks on a mission that in just 10 short years will be reflected on as either a career-defining success, or an opportunity sorely missed. The latter, as we know, will have far reaching implications for the biodiversity conservation and climate change.

And yet, executive director Nicole Rycroft stood unwavering when addressing delegates at the World Economic Forum in January.

These solutions enable a radical reduction in the use of raw resources, optimise the efficient use of materials, lead to better product reuse, and shift the use of conventional high-impact fibre sources to alternative, less damaging fibre sources or regenerative feedstocks for manufacturing.

“We are eroding the very foundations of our economies

“This is an action plan to shift global production of pulp, paper, packaging and viscose textiles out of ancient and endangered forests and help us secure the scale of conservation that's needed,” she said. “We're thinking big, because there's no point doing anything less. Now is not the time for climate despair, but for transformative action and ultimately, hope for our forests, climate, and people the world over.”

Approximately 6.5 million tonnes of viscose are produced each year, leaving in its wake around 150 million trees from forests globally. Of this, it's reported that 3.5 million tonnes of viscose is produced from pulp sourced at ancient and endangered forests – despite these landscapes being incredibly rare and most critical to the lives of a breadth of wildlife.

“The health of ecosystems on which we and all other species depend is deterio-

rating more rapidly than ever,” warns Sir Robert Watson, Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, in the report. “We are eroding the very foundations of our economies, livelihoods, food security, health and quality of life worldwide. Through transformative change, nature can still be conserved, restored and used sustainably.”

A price worth paying

In its report, Canopy stresses the science behind why such sweeping changes are required to the sourcing of viscose, paper and packaging. Described as “a sobering challenge to humanity” by the NGO, achieving the widely-cited 1.5°C climate target looks a bleak prospect following last year's United Nations *Emissions Gap Report*, which found that we're closer to a 3.4°C annual average.

Surely, this only reaffirms **1**

the importance of Canopy's undertakings, as it struggles to protect the very lungs of this planet. Forests, including their soils, are the largest and most effective terrestrial **carbon** stores.

Original forests are said to be 40 times more effective at sequestering CO₂ e/hectare than plantation forests.

A projected US\$69 billion is the eye-watering sum calculated by the NGO that would be needed to replace conventional wood pulp with 'next gen' materials by 2030.

Broken down, it's said that US\$40 billion would be needed to establish 200 agricultural fibre pulp mills, US\$21.4 billion for 107 recycled paper pulp mills, US\$4.5 billion to plant 7.5 million hectares with trees for forestry, and a final US\$3.4 billion for 17 recycled cotton and microbial cellulose dissolving pulp mills.

"We calculated how much it would cost to build average commercial scale agricultural residue pulp/paper mills, recycled paper mills, alternative feedstock dissolving pulp mills and how much to plant the required replacement forests," Rycroft tells *Ecotextile News*.

"For cost projections, we used a 150,000 tonnes/year capacity mill costing US\$200 million – based on our research of the cost of the Columbia Pulp mill [North America's first modern commercial scale straw pulp mill in Washington State] – projections of next gen textile innovators and new recycled paper mills being



Carbon is the main component of soil organic matter and helps give soil its water-retention capacity, its structure, and its fertility. Retaining this enables forests to stand for thousands of years, supporting biodiversity and improving air quality.

“
Ten years from now is too late

constructed in 2019," she continues. "Tree planting costs were averaged between US\$325 and US\$750/ha with the cost differing significantly between tropic and temperate zones and industrial or agro-forestry management."

Backing the best

What's of course important in mobilising work to this end is that of getting support and what will have to be substantial investment. In its report, Canopy makes this seem like short change drawing comparison to the sale of the Botox brand – which equated to US\$63 billion – though it will be well aware of the significant work that needs to be done if it's to help scale the operations of Re:newcell, Tyton Biosciences, Evrnu, Worn Again and many more.

Innovative fibre types from these, and other like-minded start-ups, are increasingly prevalent in the fashion industry. Notably, such interest has enabled both Worn Again and Infinited Fiber to scale their respective solutions, based on separating, decontaminating and then extracting polyester (PET) and cellulose from mixed fabric waste; and yielding fabric from cotton, cardboard and agricultural waste, respectively. Worn Again commissioned its first pilot plant in the UK recently, whilst Infinited Fiber has launched a new pre-industrial scale site in its homeland of Finland.

Meanwhile, apparel

giants Adidas and Stella McCartney partnered with US firm Evrnu to develop a new hoody made from the latter's NuCycl fibre, a range comprising just 50 prototypes. Soon after, however, Adidas drew criticism after saying the premise could be a "stride in the continued drive to solve the problem of 92 million tonnes of global textile fibre waste".

Simply put, Evrnu's technology – which repurposes discarded clothing – isn't at the capacity that you'd expect for the German sportswear firm to be making such claims, even if such a solution is promising.

It's here where fibre producer Lenzing draws the line. While collaborating with Canopy, it has yet to become a signatory of the NGOs new action plan. Lenzing chief commercial officer, Robert van de Kerkhof, told us: "I can only underline the support we give to Canopy, but I think the vision they have published is a little bit too vague. There are a lot of assumptions in there when you are talking about technologies – and we have been working on recycling technologies for a long time – but we cannot say that any new alternative technology is anywhere near what you'd see in the paper industry today, for example.

"The other thing for me is that Canopy is striving for the industry to be free of using wood from endangered forests by 2030 as part of this vision. For me that is way too late," he

continues. “If you look at the whole purpose of Canopy, then ten years from now is too late. You have big players that can do it. If you want strong leadership then you cannot wait ten years to claim that the viscose supply chain is going to be free of endangered forest.”

Rycroft defended the action plan, insisting “this is the turn-around decade”.

“Given the scale of change that’s needed to meet 2030 climate and biodiversity goals, we felt it was imperative to set the fashion sector on an ambitious track early in 2020 to meet the global challenge. Turn around for this initial cadre of vision supporters was tight. Given the strides the [textiles] sector is making and with producers that represent 85 per cent of global viscose production formally committed to Canopy, we expect many more brands and producers will join in this collective vision over the coming months.”

At present, **26 companies** have committed to Canopy’s ‘Vision for Viscose’.

“The brands and producers that have supported Canopy’s vision also have CanopyStyle policies which outline each company’s commitments, with timelines, to eliminate ancient and endangered forests from their supply chain,” Rycroft tells us. “We only offered sign-on to the producers that had both Green Shirt ranking in our *2019 Hot Button* report and that have already produced commercially available next generation man-made cellulosic fibre (MMCF).

“Canopy will measure

individual producers across the sector as part of our ongoing work to transform the impact that the MMCF supply chain has on the world’s forests, climate and biodiversity. Through our collaborations with brands, producers and next gen tech innovators, Canopy will be tracking which companies are developing next gen MMCF textiles and amplifying their successes as these come to market,” she adds.

To this end, Rycroft insists no company can afford to coast by, simply signing on and leaving others to pick up the slack. “Visions only succeed if they reflect a collective ambition. This vision was built together with CanopyStyle brands. There is no ‘rank and spank’ or quid pro quo in our work overall or for signing (or not) onto the vision,” she continues.

Bridging the gap

What will be integral to achieving the ambitions of the viscose vision and broader action plan will be that of attaining the recycling infrastructure that’s essential to scaling the production of next gen materials.

The NGO is quick to point to the 20 million tonnes of cotton waste produced annually, or six million tonnes of viscose fabric waste as untapped potential for recycling, but it will take a consolidated effort to utilise this in the most effective manner possible.

“It is a gap that is solvable,” Rycroft assures us. “We expect the systems for collection, cleaning and separating fibres will

‘The European Commission’s new Circular Economy Action Plan addresses product design, manufacture and waste in industries including textiles, plastics and packaging.’

H&M, Inditex, Esprit, Stella McCartney and Marks & Spencer are amongst the firms to have shown their support.

- Material efficiency: adopt strategies for reducing the total amount of wood a company uses.

- Maximised recycled content: communicate preferences with suppliers, including ambitious targets for recycled content.

- Innovative alternatives: collaborate with burgeoning brands to trial new solutions.

- Investments: Contribute to R&D, trials and commercialisation.

- Off-take agreements: Arrange to sell a portion of upcoming goods.

develop quickly over the coming couple of years. This will be driven partly by markets creating a business case for doing so, the commercial development of technologies and mills to process it, and legislative measures similar to last week’s **EU New Circular Economy Action Plan**.”

It’s hoped such measures instilled at government-level can therefore provide reinforcement for Canopy and its band of industry partners. Ultimately, how the value chain of business evolves in the coming years will dictate the pace of change.

Meticulous in its research, Canopy has of course detailed the ‘role of the corporate buyer’ amidst this transitional phase.

“Corporate customers play a critical role in incentivising conventional producers to change their fibre sourcing and in drawing the supply of innovative alternatives into the market,” its report reads.

The organisation has subsequently outlined **five action categories** for companies to turn “textile preferences into business realities”.

“We mustn’t forget the goal of this work is to protect forests,” Rycroft concludes. “That’s why the next gen vision statement has clear milestones en route to 2030 – specifically 2021 and 2025. We have already witnessed impressive shifts with a jump of Green Shirt producers from 28 per cent of global production in 2018 to 42 per cent in 2019’s *Hot Button* report.

“Business as usual is shifting.” ■



Phil Patterson
Correspondent,
Chemistry & retail

Dark Waters run deep

With impending EU legislation and the spectre of class actions in the USA, it's consumers we'll soon have to make do with less effective, but less harmful fluorocarbon-free alternatives for textile finishes, says **Phil Patterson**.

Dark Waters, the film that tells the story of a lawyer, Robert Bilott, and his long struggle to hold DuPont accountable for leakages of perfluorooctanoic acid (PFOA) into the environment, and more disturbingly, its alleged attempts to cover up information relating to serious health issues caused by it, is a film worth watching.

In the film, a West Virginian farmer, Wilbur Tennant, notices that after DuPont starts dumping chemicals in a nearby landfill facility, his cattle start dying and he discovers enlarged organs, tumours and other physical deformities which he believes are due to chemicals seeping into the stream from which his animals drink.

Bilott takes on the case and discovers that humans are affected too: those exposed to chemicals in the environment and those exposed to the chemicals in the DuPont factory where PFOA was used. Additionally, he uncovers evidence of birth defects in children born to workers who had been exposed to PFOA in the DuPont facilities.

Chillingly, he also discovers that there was evidence from animal studies that exposure to PFOA caused very similar health issues and birth

defects in rats, and that this information had been suppressed.

In the film it alleges that by the time Bilott filed a lawsuit on behalf of Wilbur Tennant in 1999 DuPont, and possibly other chemical companies, had known about the dangers of PFOA since 1962.

The finale shows DuPont being fined huge sums of money after an epidemiological study completed in 2015, presumably, found PFOA responsible for the health issues.

We all know that Hollywood has a tendency to spice up fact with fiction when dramatising real life events, so it can be difficult to ascertain what's accurate and what's embellished so I'd point readers in the direction of a BBC documentary called Poisoning America which tells the same story – in a less dramatic fashion.

The timelines in the film and documentary are interesting because, thus far, DuPont has admitted no responsibility and, in the early 2000s, was telling influential people in the textiles and fashion industry that there were no known health effects associated with PFOA.

I was told this myself and it informed my thinking and, in ~ my previous professional life, my policy making.

EU policy

On July 4th 2020 it will become illegal to use, or place products that are chemically treated with water repellents based on C8 telomers on the EU market – with some exceptions for critical end uses.

These chemicals, based on fluorinated 8-unit carbon chains, are the most effective water and stain repellents available but it is known that a very small amount of PFOA is produced as an unintended by-product during the manufacture of the C8 telomers.

PFOA may be detected on finished fabrics in parts per billion and this can wash off and enter the environment. There is also the theoretical chance that the telomers used in the finish can convert to PFOA at some stage in the future.

Fluorocarbon chemistry is quite complex and in a typical C8 telomer finish formulation there is the actual water-repellent finish, PFOA and smaller quantities of other related 8 unit fluorocarbons... and species with shorter and longer chain lengths (8 is just the average).

Since PFOA and related fluorocarbons are persistent (not biodegradable) and bioaccumulative there is the likelihood that, over time,

levels will build up in our tissues and the environment.

It can be argued that the amounts released from textiles are very, very low but textiles are not the only source of PFOA and the epidemiological studies referenced in Dark Waters indicate that prolonged exposure to PFOA at very low levels is more problematic than previously thought.

PFOA was deliberately used in much larger quantities in the manufacture of polytetrafluoroethylene (PTFE), the substance used in the coatings for non-stick frying pans, and the problems suffered by the communities near the DuPont factory in West Virginia were allegedly related to dumping of large quantities of PFOA-contaminated waste from PTFE production.

PFOA is also present in many fire-fighting foams and in non-stick food wrappers and these are believed to be significant contributors to the environmental loading.

Armed with 'knowledge' that there are no known negative health effects of PFOA and the knowledge that the amounts entering the environment from textiles are very, very small it's easy to get grumpy and moan about the loss of the best water and stain repellent we'll ever have.

Armed with the knowledge that PFOA could be responsible for a range of very nasty health issues then it's a different story and the 4th July deadline is just the end point of a long legal process, during which there has been a wholesale transition towards short chain fluorocarbons (a chain of six or less carbon atoms in a fluorocarbon molecule) and fluorocarbon-free alternatives.

Net is closing

Even before the ban on C8 telomers comes into force, the net is closing in on C6 telomers and PFOA's 6-chain analogue PFHxA. At the time that C6 telomers emerged, I for one was puzzled that C8 production would cease if there were 'no known health effects' associated with the problematic by-product. I was also extremely puzzled why you would make something that was significantly less effective to the point where you had to use 1.5 times the amount of C8 to achieve inferior performance.

Initial reports suggested that C6 telomers, by-products and related compounds were less persistent than the C8 family and the *reduced* levels of PFOA in the formulations (there can be C8 species present in a notionally C6 formulation) distanced the industry from a chemical that had been stigmatised.

At the time that I was asking about C6 performance, others were asking about safety – and whether the reduced *volumes* of bad news regarding C6 and its family of by-products meant they were actually safer or simply just less well studied than C8.

So, as soon as the industry transition from C8 to C6 began, the legal process to restrict C6-based species kicked off and we now have an EU legal proposal that will come into force in 2023 unless there are strong arguments to the contrary.

This will ban the deliberate use of C6 telomers and place a very tight restriction on PFHxA and 'related substances' on finished products placed on the market – with some temporary allowances for some specific, critical end uses.

Any strong arguments that may be put forward to challenge the restriction will have to contend with emerging evidence from the US FDA that short chain fluorocarbons (<C8) are more harmful than previously thought – and that they are very similar to C8 species in terms of bioelimination (basically how quickly you expel them from your body once they've got in there).

There is also a concern that studies focus on the headline C6 species PFHxA, when the reality is that there is something of a cocktail of chemicals that should be studied both individually and as a group. Related chemicals such as fluorotelomer alcohols were first brought to our attention by Bluesign when it expanded its list of C8 chemicals several years ago and there are concerns over the C6 analogues which, according to the US FDA studies, are a cause for concern in relation to bioelimination.

Bearing in mind the higher add-on of C6 required to achieve inferior repellency performance, the transition to C6 chemistry is starting to look like a regrettable substitution but, for the next couple of years, it remains the best technical option that remains legal.

It does present a moral dilemma, it's legal, it's the best technical option and, as with C8, the textile industry may be a minor contributor to global emissions – but there is growing scientific evidence that, from a safety and environmental perspective, it's in the same ball park as C8.

ZDHC restriction

The ZDHC has indicated that all fluorocarbon based water-repellent **1**

finishes will be included in their MRSL at the next revision and the writing is probably on the wall as far as applications in textile finishing are concerned.

The fundamental fact is that the molecular bonding between carbon and fluorine is incredibly strong and therefore not designed to break down – hence the persistence – but the characteristics of that bond are also what makes the species so repellent.

There may be clever approaches that manage to harness the benefits of the bond without negatively impacting the environment, or methods may be developed based on zero losses to the environment, but the likelihood is that we'll have to make do with less effective, but less harmful fluorocarbon-free alternatives for textile finishes.

There are genuine environmental problems associated with making less effective, less durable products but the lessons revealed in *Dark Waters* understandably pushes people towards safer chemistry.

And maybe that push is about to get a bit stronger.

Robert Bilott is currently pursuing a class action on behalf of a fire fighter who has been exposed to PFOA in foams throughout his professional life and this time he's taking on a much wider slice of the chemical industry.

All the major fluorochemical manufacturers (3M, Dyneon, Archroma, Arkema, AGC, Daiken, Solvay and a company called Chemours, a DuPont spin-out) are targeted and so are all 'PFASS', perfluoroalkyl substances, including GenX, the chemistry



The transition to C6 chemistry is starting to look like a regrettable substitution

developed by Dupont/Chemours as a safer alternative.

Bilott presumably believes the other companies were complicit in withholding information about PFOA and the harm it can do and this time he's not pushing for fines per se. Instead, he's pushing for the companies to fund extensive, independent research into fluorocarbons with the anticipation that there will be full transparency of the findings.

I'm not a huge fan of the evangelical precautionary principle – I think it is almost impossible to prove something is definitely safe in absolutely every single circumstance – and logically we would have to ban chemistry because everything is toxic above a certain concentration. And then we'd have to ban life. However, I am a fan of caution and openness and this class action, successful or not, will send a shot across the bow of companies who think it's OK to withhold any toxicological data from the wider world. As the outcome of the first trial showed, a chemical doesn't have to be illegal for a judge to determine that it has likely caused problems in

the wider community and the current action conceivably takes culpability to a new level of being brought to justice for knowing what people knew.

It also brings into question the concept of exemptions in law for 'critical' end uses – in the case of fluorocarbons this can be for protective clothing, bullet-proof vests and fire fighting foam. We are now possibly looking at a situation where someone sues you for exposing them to a chemical whilst protecting their life... what does the less-effective-but-chemically-safer option look like? It's a minefield.

Only the executives at DuPont know what really happened in their factory, and the factory locality, but the impending bans are certainly influenced by a desire to get some payback for the historical lack of openness.

I'm not a lawyer and don't fully understand the differences between being found responsible for probably causing harm versus admitting you knew you were causing harm but going forward we have to foster an environment of openness.

An evangelical pursuit of the precautionary principle runs the risk of cover-ups (although there was no hint of this in the DuPont case) but failure to observe caution runs the risk of ruining lives.

Knowing what is in formulations and knowing the properties and tox data of the components is vital. Avoidance of complacency or vindictiveness is equally vital and those making decisions on that data have to remain objective – even those, like me, who feel they have been deliberately misled in the past. ■



x



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Unreported world

Despite some purported progress of late, environmental reporting mechanisms aren't reliably making apparel supply chains more transparent. But why is this?

David Styles reports

Unfounded sustainability claims are constantly bandied around by companies looking to steal a march on competitors, without any fear of the damage this hollow rhetoric can do. Until reliable, consistent and transparent reporting can be implemented industrywide, no meaningful progress can be proclaimed.

Even those firms who have achieved certifications and are heralded 'sustainability leaders' should be viewed with a healthy dose of scepticism, says Emma Foster-Geering, head of sustainability at Vivobarefoot. "In an industry where control over our manufacturing supply chains is messy, certificates can be bought and regulation is often sparse and overlooked. Any sustainability claims just aren't a given," she said.

The past three decades have transformed fashion supply chains beyond recognition. Today's sector produces goods that pass through globalised labyrinths which are – by coincidence or design – often impossible to trace from end to end. Some brands and retailers can't even talk you through their own supply chain without doing some research first.

Having been swept along through the tide of 'growth at all costs' economics in the 1990s and 2000s, many clothing companies slid into "vertical disintegration and outsourcing of the production function to a global network of independent subcontractors", according to a recent paper by UK academics Patsy Perry and Steve Wood from the Universities of Manchester and Surrey, respectively.

The cheap, stylish

garments which were meant to democratise fashion have simply driven down standards on workers' rights and environmental provisions; leaving the industry with a dearth of culpability and transparency.

The supply chains of brands such as Gap and Nike, which have allegedly snaked through Chinese internment camps, have been labelled by New Jersey senator Bob Menendez as "unacceptable for products in US markets". American consumers would, he added, be outraged to learn their apparel was made in such "tainted" locations.

Across the Atlantic, the picture is very similar. "The longer the supply chain, the more blind eyes can be turned and the more exploitation can happen," notes Mary Creagh, the former MP who led the UK's landmark inquiry into fast fashion as



chair of the **Environmental Audit Committee**.

Barring France and its highly progressive environmental law making of recent months, political leaders have repeatedly shirked their responsibility to act.

Foster-Geering, who worked in the sustainability team at Primark prior to joining Vivobarefoot, believes interventions such as those being proposed by Emmanuel Macron's government are long overdue. "How this industry has gone on for as long as it has without regulating decentralised supply chains or truly incentivising environmental and social improvements in business is beyond me," she told *Ecotextile News*.

"Even some of the 'super sustainable' products and materials brands are winning accolades for are full of tiny percentages of 'sustainable' material

The committee published *Fixing Fashion: Clothing Consumption and Sustainability* – a report which proposed initiatives such as a one penny charge per garment to raise £35 million for investment in recycling. Every one of its environmental and social recommendations was dismissed by the UK Government.

compositions and have passed through opaque supply chains," she adds.

"Until the industry gets on the same page with the climate and ecological crisis we are in, agents within the supply chain will continue to charge more for anything with an environmental claim and that will continue to be passed on to the customer."

After years of inaction, the sector began to look introspectively at self-regulation measures at the beginning of last decade. Coalescing around a single, centralised platform through which all reporting – whether environmental or social – should be processed and published became the apparel sector's holy grail.

The Sustainable Apparel Coalition's flagship Higg Index is probably the closest the industry has got to achieving this utopian vision. Version 1.0 of the Higg launched in 2012, with Jason Kibbey, then the SAC's executive director, saying the tool represented "the most thorough and complete attempt at measuring environmental performance data from material sourcing through end of life" the sector had ever seen.

While this has undoubtedly yielded some progress as it's been upgraded, and succeeded in bringing many big brand names on board, reporting across fashion supply chains still remains sketchy at best after early problems with its supplier modules.

For now, the Higg tool also appears to have shelved its plans for developing a consumer-

facing environmental label – a key original objective.

Reticent reporting

To assess the current situation and propose guidance to deliver much needed change, a new large-scale research project is diving into the murky waters of environmental reporting. The largest study of its kind, the three-year Alliance for Corporate Transparency project has examined sustainability reports submitted by 1,000 companies under the EU Non-Financial Reporting Directive.

When the directive launched in 2018, its authors asserted that "further improvements in the quantity, quality and comparability of disclosures are urgently required to meet the needs of investors and other stakeholders". This was despite the caveat that "corporate disclosure of climate-related information has improved in recent years".

This is a very hard task indeed. Yet it certainly hasn't improved enough. The Alliance's investigation found that while 90 per cent of companies report on climate change, only 47 per cent specify with any degree of clarity what their policy has been designed to achieve and how it will do so.

Nearly all the 110 apparel and textiles companies included in the research, which was led by specialist CSR law firm Frank Bold, depend on outsourced production located in regions with systemic natural resources abuse – especially deforestation. 1

Despite this, only 17.3 per cent of these firms explain how their business model and strategy might have adverse impacts on natural resources.

Further, just 3.6 per cent of apparel companies had board oversight of environmental risks and opportunities, with 23.6 per cent evidencing engagement with upstream and downstream value chain to reduce impacts described in reports.

In a sector accustomed to tightly guarding their intellectual property, the main problem compiling trustworthy environmental data remains the disparity in information sharing from company to company. Are the figures being published correct, and are they being measured in the same way from one firm to the next? As yet, these questions can seldom be answered conclusively.

One certainty is that “existing EU legislation is not meeting its objectives,” according to Filip Gregor, head of responsible companies at Frank Bold. The only way to address this, he notes, is to “specify what companies should be reporting.” This prescriptive approach falls in line with the aforementioned

POLICIES AND PROCEDURES OF 110 APPAREL COMPANIES



Source: www.allianceforcoetatransparency.org

approach being taken by the French government.

While acknowledging going too far and over-regulating firms is in no way desirable, Gregor believes there is “a clear space and need for very targeted sector-specific clarifications on mandatory requirements for reporting.”

Even when firms are successfully reporting on environmental issues, the Alliance found this is scarcely ever conclusive. Water use, pollution and waste are regularly recorded by diligent firms, but other large factors such as pollution generated by

“**Just 3.6 per cent of apparel companies had board oversight of environmental risks**”

transportation and biodiversity often receives much less, if any, attention.

This lack of quality and consistency in reporting not only leads to less sustainable production, the researchers found, but also hinders efforts to scale up sustainable finance – with investors unsure what data to use when making fiscal decisions.

There is no longer an option, reporting across the sector “must improve”, asserts Tim Mohin, chief executive of the Global Reporting Initiative. While he also broadly concurs with the idea that further stipulations should be placed on the process, Mohin adds that it “must not reinvent nor move backwards” if the EU Directive is to achieve its primary goal.

“We need to support the global common language for reporting, backed by strong policy and oversight,” he concludes. “This will unlock trade and investment that is aligned with sustainable development.”

Why should companies report?

In the European Commission’s Guidelines on reporting climate-related information, it details benefits for firms who engage with the process as:

- Increased awareness and understanding of climate-related risks and opportunities within the company, better risk management and more informed decision-making and strategic planning
- A more diverse investor base and a potentially lower cost of capital, resulting for example from inclusion in actively managed investment portfolios and in sustainability-focused indices, and from improved credit ratings for bond issuance and better credit worthiness assessments for bank loans
- More constructive dialogue with stakeholders – in particular investors and shareholders
- Better corporate reputation and maintenance of social licence to operate

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Bottom line

Australia divided in defining 'non-mulesed' wool

Chris Remington reports

A ruling on revisions to the Australian Wool Exchange's (AWEX) National Wool Declaration (NWD) 2019 hangs in the balance after three contested rounds of consultations.

An attempt to subcategorise definitive terms on mulesing – the controversial practice of removing wool-bearing skin from a sheep's breech to prevent parasitic infection – or rather its opposite has faced backlash since the turn of the year.

Provisional changes included the introduction of NM1 – which referred to non-mulesing as it's currently recognised – and NM2, which classified the

utilisation of an alternative practice as also non-mulesing. Sheep breeders Mark Murphy and Norm Smith were against the changes from the very start, stating that such an idea would be advantageous to providers of alternative practices and would scupper work to eradicate the practice entirely. They circulated a petition soon after.

"Our initial thoughts were that common sense had been shown the door," Murphy recalls, speaking with *Ecotextile News*. "Support for our petition ramped up very quickly which we were not surprised at. It was in January during the school holidays with many families having a

break of sorts, so keeping one eye on their emails is not necessarily a priority. I had a few animated phone conversations with some very disgruntled producers extremely agitated with the thought that AWEX was even contemplating any changes."

A contingent of wool growers has been the driving force behind opposition to the changes, stating that the use of NM1 and NM2 could only serve to "muddy the waters".

"The debate for us is that the world wants non-mulesed wool and Australia as the biggest supplier needs to change our genetics and management to supply this demand," adds Smith. "Wool has so many great attributes

90%

of wool used in the apparel industry comes from Australia



“We need to address the root cause of the problem, not continue to throw our money at band aid solutions”

which fit in with a more sustainable society and the mulesing debate is only detracting from these.”

Middle ground

The review of the NWD kickstarted back in May of last year, with the suggested changes to definitions prompted later down the line by various stakeholders. “The feedback from the supply chain was they wanted more information regarding animal welfare practices to make an informed purchasing decision,” AWEX director, Mark Grave, says.

“The challenge was how to provide that level of information and differentiation,” he continues, “the proposal of NM1 and NM2 was drafted for comment and a way of testing the market on one way that this could be achieved. It must also be stated that when the NWD was introduced in 2008, the alternatives available today were not conceived over a decade ago.”

A well-supported, passionate opposition forced the decision into a second round of consultations. The outcome of which saw NM1 and NM2 scrapped in place of a middle ground measure, AM (alternate method).

For the wool growers, this was a welcome change, reinstating the clarity that non-mulesing is exactly that.

Alternative solution providers however felt it was a setback for them, discrediting work to develop technologies which are far

less intrusive than mulesing. That said, Smith insists: “The jury is still out on the concept of **freeze branding** [the most widely adopted alternative], both in terms of the procedure and the animal welfare implications.”

The sector awaits the results of trials to assess the pain afflicted on sheep during freeze branding. The outcomes of which may well implicate AWEX and its decision.

Nevertheless, “we need to address the root cause of the problem, not continue to throw our money at band aid solutions”, Smith continues. “For us the AM classification would be fine, however the integrity of the whole system needs to be monitored.”

Building a bridge

In its third round of consultations, it’s not yet known which way the outcome will go. “Whilst there is no deadline to meet, now that we have concluded this last round of consultations we are working towards concluding the review as soon as possible,” Grave tells us.

For the wool growers, a transition to mulesed, non-mulesed (NM) and alternate method (AM) provides a timely update to the NWD, encompassing new technologies whilst not purporting that such practices are as ethical as not using mulesing at all.

For the alternative solution providers, they’ll feel it’s been a bum decision

Developed by John Steinfert, freeze branding uses liquid nitrogen in a cryogenic treatment of a sheep’s breech to prevent flystrike/ infection.

given efforts over recent years to make ground on the animal welfare front. Any result at this stage simply will not appease all parties.

That said, Murphy has rallied the entire sheep industry to “build a bridge and get over” the mulesing debate which has engulfed the sector for so long.

“The best alternative to mulesing is already available. It is a type or strain of merino that is being bred in all different climatically varied areas in Australia. It is much more productive than the traditional merino, ticks all the boxes on animal welfare, requires very low if any chemical input, and wears infinitely better, but alas does not look like the traditional merino we’ve grown up with.

“These sheep we’re breeding look very much like what **Elizabeth Macarthur** was producing back in the first half of the 1800s just a bit bigger with higher wool fibre density,” Murphy continues. “If we can get them as tough as her flock, we’ll have it made. I’m sure she would greatly approve of the direction we are headed.”

Whilst stakeholders in Australia undoubtedly have a huge say in what part mulesing will play in the country’s future, the outcome must ultimately balance both ethics and economics. Customers will need to signal the changes that breeders are so eager to see on a national scale. ■



Elizabeth and husband John Macarthur were the first people to export quality wool in commercial quantities. In 1822 they exported 7,000kg of wool to England.



Why the world's worst paid garment workers have had enough

The chase to the bottom by fashion brands to find the lowest wages paid in global supply chains may have bottomed out in Ethiopia. Simon Glover reports on a country where fed-up garment workers are walking out.

Ethiopia was very clear about its USP when the country decided to reinvigorate its struggling economy by developing a garment industry that would produce apparel for western brands. It advertised that its workers would settle for the lowest wages in the world.

The government offered the promise of a workforce prepared to work for as little as US\$26 a month – less than a third of the US\$95

paid to garment workers in Bangladesh which had itself created a vast industry by undercutting its rivals.

But, just a few years on from inviting the global garment industry to set up shop in the East African country, it seems things are not quite going to plan with many of these 'affordable' workers – most of them women – giving up their factory jobs and returning to their villages.

So what is going wrong?

▲ ENOUGH: Ethiopia's garment workers revolt with monthly pay equating to just US\$26.

A number of leading brands, including H&M, Inditex, PVH, Primark and Decathlon, were drawn to Ethiopia by newly-built industrial parks and a range of financial incentives, including cheap labour.

But many of the workers have found that their wages do not provide enough for them to make even the most basic living and have returned to their family homes where their prospects might be no brighter but where they at least have a roof over their heads and food to eat.

Dorothee Baumann-Pauly, research director at the NYU Stern Centre for Business and Human Rights, and director of the Geneva Centre for Business and Human Rights, was part of the team which last year produced the report, *Made in Ethiopia: Challenges in the Garment Industry's New Frontier*.

She says the low wages are not the only problem facing the burgeoning industry. Brands also failed to anticipate the disruptions caused by ongoing ethnic conflict in Ethiopia, while difficulties in accessing the port at Djibouti from the landlocked country remain despite a huge, yet still uncompleted, project to build a rail link.

However, Baumann-Pauly is in no doubt that the low wages paid to Ethiopian workers, together with factory floor clashes with non-African supervisors, are to blame for the fact that many factories are experiencing staff turnover in excess of 100 per cent each year.

“It so clearly affects the very high turnover, people just can’t survive on those wages. There are other issues too, it is a very stressful work environment for them, supervisors from other countries, such as India and Sri Lanka, yell at the workers which is totally unacceptable in Ethiopia,” she said.

Workers had reportedly complained of being branded as “slow” or “lazy” for failing to keep pace on the production line. Some said they had even been dragged back onto the factory floor from bathrooms by their managers who accused them of taking too long to answer nature’s call.

“So there is a very high level of stress, which as well as the low wages makes for a complex set of factors. Ethiopians are attracted by the promise of jobs in modern factories but they often leave just as quickly,” said Baumann-Pauly.

“They come from rural areas where they have big families which can’t all survive on the income from one small farm. They are used to having no running water or electricity, so they will initially accept poor living and working conditions for the lack of an alternative.

“The first generation, who lived near the factories, could still live at home and survive. But now, they come from as far as 300 kilometres away. Once they pay rent, there’s nothing left for food and transport. We call them the working poor, they are left with too little to live on.”

The high staff turnover is affecting factory efficiency,

which is often far below brands’ expectations. So is the Ethiopian government’s social and economic experiment doomed to failure?

Baumann-Pauly sees grounds for optimism in the progressive approach of one brand, Decathlon, which has committed to working as a partner with Ethiopian factories in a long-term project which includes investing in better training and conditions for workers.

The idea is that this will lead to a significantly reduced staff turnover. Workers will become more skilled and better trained, meaning that production goes up and factories can pay higher wages.

“This is the right way to go. They commit to working together as partners for five years. It highlights what brands can do to create decent jobs and help develop the industry. It’s the best approach I’ve ever seen,” Baumann-Pauly added.

The NYU Stern Centre’s report focused on the flagship Hawassa Industrial Park, a vast and still only partly-filled facility which employs 25,000 workers about 140 miles south of the Ethiopian capital, Addis Ababa. It is one of 30 such parks Ethiopia has pledged to build by 2025.

The report said: “The problem is that US\$26 does not cover workers’ basic needs, even in Hawassa. On an annual basis, this entry-level salary comes to only US\$312, or 40 per cent of the average per capita income of US\$783 in Ethiopia.

“Given relatively little training, restive employees have protested by stopping

work or quitting altogether. Productivity in the Hawassa factories typically is low, while worker disillusionment and attrition are high.”

It urged Ethiopia to follow China’s lead by developing its own supply chain, creating more wealth which could lead to better pay and conditions for workers, rather than that of countries like Bangladesh’s model of putting together clothing from imported components.

“A first step would be making sure that its workers are well trained, motivated, and paid enough to afford basic necessities,” the report concluded.

Baumann-Pauly is also encouraged by a project involving the United Nation’s International Labour Organisation (ILO), which is working with the Ethiopian government to introduce a minimum wage.

The ILO has embarked on a US\$5 million programme to promote decent work and inclusive industrialisation in Ethiopia, supported by the UK, Germany, Switzerland, Norway, France, Sweden, the Netherlands and the EU, which is due to run until 2023.

Its initial focus is on the garment and textile industries, which the Ethiopian government ambitiously hopes will create 300,000 jobs and a US\$30 billion export industry.

“The overarching development goal of the programme is to see improved respect of workers’ rights leading to greater incomes and compensation, enhanced safety, equality, voice, and representation,” says an ILO report. ■

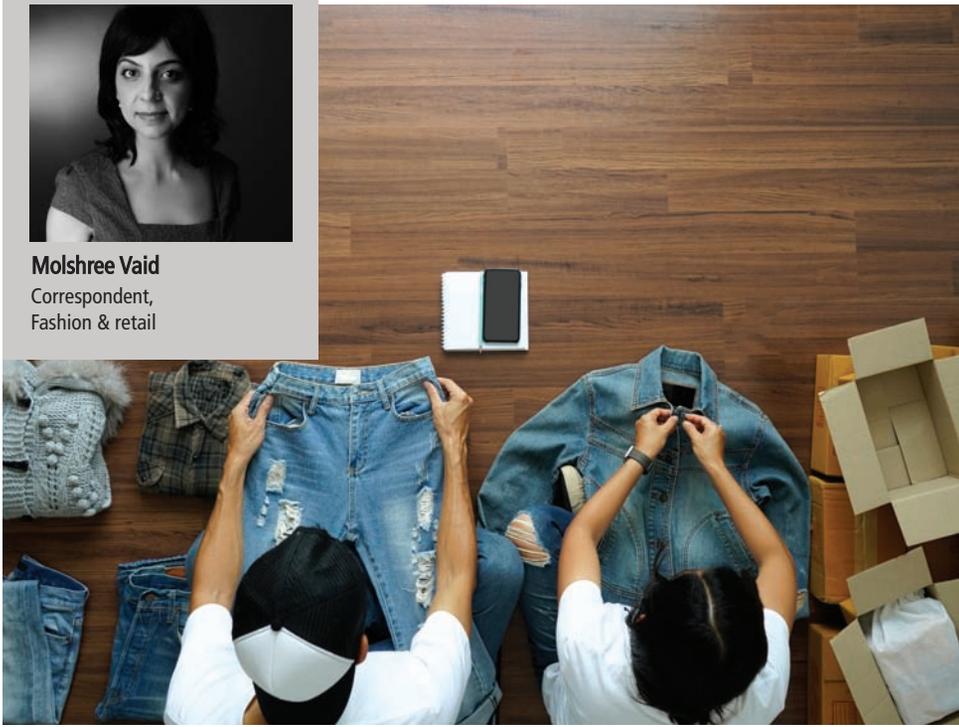


“**People just can’t survive on those wages**”

Dorothee Baumann-Pauly, NYU Stern Centre for Business and Human Rights



Molshree Vaid
Correspondent,
Fashion & retail



A new action plan

The Earth Logic Action Plan, a new report written by academics, with input from business leaders and analysts, urges global fashion brands to reduce their use of resources by 75 per cent within the next decade. Molshree Vaid examines the radical proposals.

“**E**arth Logic isn’t concerned with making a business case for working with sustainability. Rather its starting point is the sustainability case for business.” A mic drop quote from Kate Fletcher who, along with fellow author and researcher Mathilda Tham, has released a new blueprint for the fashion industry.

The Earth Logic Action Plan is a clarion call to rethink the fashion system by placing the Earth before profit. It aligns with the focus of the 2018 Intergovernmental Panel on Climate Change (IPCC) report on

resource reduction as the key to averting the devastating effects of climate change.

With no time to waste, Fletcher and Tham have offered a recipe and ingredients – read that as six interconnected fashion landscapes mapped out for investigation.

Steering clear of long drawn out peer-reviews, they are rooting for a dynamic research process – one that generates insights – continuously shared and served by a feedback loop – with participation from corporations, communities, media, non-profits and academia.

▲ Could models like rental and resale slip back into the ‘growth logic’ zone?

The growth logic trap

However, at the outset, the authors throw caution to the wind and pull no punches. They call out the limitations of the industry’s current sustainability strategies.

If solutions like AI (artificial intelligence), synthetic biology and lifecycle assessment are geared to producing and selling more, they cannot help the fashion industry re-fashion itself during a climate emergency. In fact, they “pose the risk of deferring radical change by instilling a false sense of progress” akin to “arranging deck chairs on the Titanic”, they say.

Likewise, the authors challenge the circular economy, described as the industry’s go-to route to solve all problems, which they say promises resource efficiency but chimes with business-as-usual.

Says Tham: “The circular economy is optimised to grow the circulation of materials, irrespective of whether this goal supports total systems improvement and the ecological reality of genuine biophysical limits.”

Author and consultant, Catherine Weetman agrees that the circular economy is at risk of being hijacked to drive growth. She refers to research on a ‘circular economy rebound’ effect by Roland Geyer and Trevor Zink, whereby the benefits of product and material reuse are offset by increasing consumption.

For example, whilst new sharing economy models like rental and resale are welcome, they may still slip back into the growth logic

“**Earth Logic isn’t concerned with making a business case for working with sustainability**”

zone, further fuelling consumption and hence negating the environmental benefits of community use.

Weetman argues: “Corporates might be experimenting with circularity, but they are pressured for constant growth by investors and shareholders”, and she wonders: “Could we change that by pushing for different employee or co-ownership models with customers and suppliers? How can we push for system-level policy drivers such as taxing virgin resources and waster?”

From growth to less

The concept of degrowth has its origins in the 1970s but currently finds more support in the wake of the climate change crisis. People are beginning to experience unease at living with too much. Decluttering expert and author Marie Kondo’s cult following serves as evidence of this.

Although, the scenario of less stuff and a smaller fashion economy makes business leaders uncomfortable, that’s when techno-fixes and sustainability measures with incremental reductions kick in. Here, the authors ask all stakeholders to tackle the reality of ‘less’ head-on.

In an Earth Logic-driven industry, fashion is accessible through means beyond the buying machinery and emphasis moves towards product care, on-going use and sharing through the community.

One of the pertinent impacts of ‘less’ is on all who make a living from fashion, and the authors invite researchers to investigate

further. Fletcher continues: “In an Earth Logic world, employment won’t be the same as it is now. But this will not mean that there are necessarily fewer jobs. New roles can emerge, situated within or outside fashion.”

To that point, studies by the **European Commission** suggest that a majority of the new circular economy jobs (across sectors including textiles) will be created in waste and resource management, repair and maintenance sectors.

In the pursuit of less, the authors also favour localism – the use of nearby resources, place-specific knowledge and community self-reliance; the antithesis of globalisation. This mechanism influences both what and how much is made.

It’s claimed that when locals take responsibility for their actions, chemicals don’t get dumped into communal rivers and locally-sourced raw materials are consumed more responsibly.

Sustainable luxury brand, Elvis & Kresse aligns with the same approach. The UK-based B-Corp upcycles local reclaimed waste into bags and accessories. Co-founder Kresse Wesling explains: “We solve the universal waste problem. But if we were to tackle leather waste coming out of India, we would ship our expertise to do an Elvis & Kresse India (rather) than bring tonnes of material to the UK.”

Reboot along the trajectory

Learners, and unlearners, for the Earth Logic fashion industry also include

customers as they transition into garment-caring citizens, untethered from the manufactured anxiety-driven buying culture. To accelerate that shift, suggested areas of research include an Earth Logic curriculum for fashion schools and open-sourced learning platforms.

The authors also want a more precise fashion communication landscape, devoid of greenwash. They add that sustainability communication has been dry, technical and needs to be replaced with the language of relationship and care.

Furthermore, Earth Logic needs to be set free of the ‘Western dominant’ cast to bring in marginalised voices. Tham says: “We can imagine fashion for hitherto unprioritised clients, and for example challenge ‘ablebodyism’, ‘ageism’, ‘sizeism’ in fashion. We can train the focus of fashion on supporting race and gender equality.” Diversity also includes bringing a range of stakeholders to the table, including those at the bottom of the pyramid. An Earth Logic landscape seeks integration of new models of governance and decision-making structures.

Fletcher and Tham imagine a scenario where “the company ceased selling garments in some places, instead providing fashion services – rental, styling, skilling, sharing”.

Fletcher concludes: “Growth logic models have had big investments. New models outside growth logic need support and tenacity to work.” ■

See our piece on page: 17.

“Corporates might be experimenting with circularity, but they are pressured for constant growth by investors and shareholder



Back to the future

Cellulosic fibre manufacturer Birla Cellulose is aiming to create the industry's first ZLD (Zero Liquid Discharge) plant at the company's original viscose factory which dates back nearly 70 years.

Simon Glover reports

Retrofitting the very latest 21st century water reduction technology at Birla Cellulose's first viscose factory – the origins of which go back to Indian independence in 1947 – has proved every bit as challenging as it sounds.

But after overcoming several hurdles, the project to install the 4R – reduce, reuse, recycle and regenerate – system is well underway and the company, part of the

▲ N1 dam (left) and Jalwal reservoir.



Under the ZLD system, 96 per cent of water will be recovered, with zero effluent produced.

“Water stress is the second most important issue facing the planet after climate change

*Dilip Gaur,
business director,
Birla Cellulose*

Aditya Birla Group, confidently expects the **ZLD system** to be commissioned by early 2021.

Water scarcity has always been an issue at the plant since it opened at Nagda, then a remote village on the banks of Chambal River, a tributary of the Ganges, in the central Indian state of Madhya Pradesh, in 1954.

The Indian government had invited the industrialist and philanthropist G D Birla to establish a viscose fibre facility there after much of the country's cotton-growing land, on the banks of the Indus River, was lost to Pakistan during partition.

The factory has subsequently gone from a twin line producing 15 tons of fibre a day to one with 11 lines and a daily capacity of 400 tons. Nagda itself has prospered on the back of this success, becoming a prosperous town with a population of 100,000 people.

But this rapid growth took up more water than the River Chambal could provide. Birla Cellulose set about building a series of dams and reservoirs to harvest water during the rainy season, as well as focusing on minimising its own water use.

The company's business director Dilip Gaur explained: “Scarcity of water

led to a series of innovations which have created the most water efficient factory in the global viscose industry - with the current project to install ZLD technology being another ground-breaking step.

“Water stress is the second most important issue facing the planet after climate change and as a leader in sustainability practices, we must commit to advancing the technologies in this area, and consider water stewardship as the critical part of our operations.”

The reservoirs now actually hold more than three times as much water as the factory uses and act as a primary local water source, providing clean drinking water to about 200,000 people as well as irrigation for agriculture.

Mukul Agrawal, Birla's head of sustainability and strategic projects, added: “By creating a water positive ecosystem in the region, the whole area has been converted from a totally uninhibited barren land to a thriving town.

“The Nagda site has taken this challenge head on and had a very interesting journey on water, which not only supported its own growth, but has been the single most important factor in the socio-

economic growth of the surrounding region.

“The site not only optimised its own water consumption but also created massive infrastructure to harvest water which supports more than 30 villages around it.

“This is even more important as the groundwater in the area is not suitable for drinking due to high levels of fluoride. The water is also used for irrigation upstream of the dams making positive impact on agricultural productivity in the region.”

Meanwhile, **water reduction innovations** at the Nagda plant, including closed loop technologies, wastewater mapping, water flow meters and sewage water recovery facilities, reduced the amount of water required to produce viscose by 70 per cent in just five years.

But, despite these achievements, Birla decided to embark on the uncharted path towards achieving ZLD, a water treatment process in which all wastewater is purified and recycled, leaving zero discharge at the end of the treatment cycle.

“A ZLD system for the viscose industry has never been developed and requires some special challenges which are unique. The effluent has high inorganic and organic content, with a high hardness, all of the components that membrane systems hate,” added Agrawal.

“On top of that, the site has not been designed for installing the ZLD system and the current

“ A ZLD system for the viscose industry has never been developed

Mukul Agrawal, head of sustainability and strategic projects, Birla Cellulose

Less than 20 cubic metres of water is currently required to produce one ton of fibre – just 40 per cent of the lower limit of the European Union Best Available Technology (EU BAT) target range of 35-70 cubic metres of water per ton of fibre.

▼ Construction site of the ZLD system.



infrastructure and ETP (Effluent Treatment Plant) processes need to be retrofitted at several places in order to have a smooth running ZLD system.

“Industry leaders were invited to design the systems including the world’s top three companies in membrane technologies. This was a challenge as no such ZLD system existed today that can handle all the nuances of viscose effluents.

“Finally after months of deliberations with these companies, a state-of-the-art ZLD system was designed which will be built on highly energy efficient technologies. The new system will allow the recovery of 96 per cent of the total wastewater feed.”

The new system would incorporate a pre-treatment section where all effluent

would be collected and treated to make it suitable for processing by membranes which had been specially designed to treat water with high inorganic and organic content.

Agrawal continued: “There are several remarkable technologies being applied at one place and by the first quarter of 2021, the viscose industry will witness another new technology which will set new standards within closed loop production processes and circular technologies in the viscose industry, making a step change in chemicals and water recovery.

“The complete scheme is fully automated and is also designed to minimise energy and chemical consumption. Post membrane separation there is a mechanical vapour compression system that recovers water from the concentrated brine solution.

“This is designed in a highly efficient manner. The next two stages recover the salts that can be used in several applications. The remaining highly concentrated brine is sent to a crystalliser to recover the remaining water.

“The best part of this design is that the whole process is designed in a way that maximum salts are recovered as usable and only a small solid waste is generated.

“The challenges were enormous but the results should be equally gratifying. The site will recover 96 per cent of the water from waste. There will be zero effluent and the site’s environmental impact on the river will also become zero.” ■



Burkina Faso sees a future in organic cotton

Less than 20 years ago, Burkina Faso was Africa's largest cotton producer. Now it trails behind rivals like Mali and Benin. Simon Glover reports on how the West African nation is aiming to turn the tide.

Until recently, Burkina Faso's organic cotton farmers were quite literally at the back of the queue – but a recent ambitious investment in West Africa's first organic cotton ginning plant looks set to change all that.

The US\$12 million facility, designed to process 125 tonnes of cotton per day, was funded by backers including the United States Department of Agriculture (USDA) and the RECOLTE (Revenue through cotton livelihoods, trade and equity) project of the Catholic Relief Services (CRS) NGO.

It means that organic cotton farmers will be able to have their crop ginned as soon as it is harvested

whereas previously they had to wait until the end of the season, until all of the conventional cotton had been processed.

This ensured their organic cotton was not contaminated but also meant that farmers had to wait months for their cotton to be ginned before they were paid. It also meant they did not always get back their seed in time for planting for the next season.

The new ginnyery, at Koudougou, west of the capital city, Ougadougou, is operated by the Organic Cotton Ginning Company (SECOBIO), a joint venture 51 per cent funded by the National Union of Cotton Producers of Burkina (UNPCB) and 49 per cent by the Burkinabe Company of Textile Fibres (Sofitex).

▲ Cotton farmers attend the opening of the new organic ginnyery

“Potential to reach these motivated farmers and give them a fair revenue for their hard work is great

Ecos senior project leader Tobias Meier

▼ Inside view of the new ginnyery.

Yacouba Koura, vice-president of the National Union of Organic Cotton Producers, said: “Each year, we first had to wait until we finished ginning conventional cotton before having a place to gin organic cotton. Faced with delays, the UNPCB appealed to its partner CRS to remove this bottleneck.”

The 5,000 square metre plant aims to dramatically increase the market share of organic cotton in Burkina Faso, which currently stands at just 0.2 per cent of total cotton production, to five per cent by 2030.

The project is also intended to empower women farmers who make up 58 per cent of the organic cotton industry in Burkina Faso. There are also spinning facilities locally while a new spinning factory for ring-spun yarn, to improve the quality of locally spun yarn, should be completed later this year.



Organic cotton farmers are being given intensive training and the government is guaranteeing them fair prices for the cotton they grow. This season they are receiving slightly more than the Fairtrade minimum price for organic cotton.

The decline in cotton production in Burkina Faso has been attributed to a number of factors, including farmer boycotts over unfair treatment, insecurity resulting from terrorist attacks and bad weather.

The country may no longer be the continent's leading producer. However, cotton still represents 65 per cent of the income of rural households, supporting about two million people. It produces around 550 tons of organic cotton, out of a total cotton production of 500,000 tons.

Burkina Faso President Roch Marc Christian Kaboré, who officially opened the plant, said the lack of support for organic cotton had been holding back the potential of "white gold" to create economic growth and jobs.

He told the inauguration ceremony for the ginners: "Cotton plays a major role in most of the economies in West Africa, because its contribution is important in the formation of their gross domestic product and it contributes strongly to the fight against poverty in rural areas.

"This is why we must quickly start the process of cotton transformation on the spot, through industries in phase with adapted technologies, in order to benefit from



▲ The first bale of cotton comes off the production line at the new ginners



▲ Crowds attend the opening in Burkina Faso

“**Cotton ... contributes strongly to the fight against poverty in rural areas**”

*Burkina Faso
President Roch Marc
Christian Kaboré*

these effects induced by this transformation.”

Trade Minister Harouna Kaboré added: “The construction of the ginning plant will put an end to the late harvest of production which leads to the late ginning of organic cotton, delays in the marketing of organic cotton fibre, late payment of producers, risks of contamination linked to ginning in non-dedicated facilities by subcontracting, late introduction of seeds for the start of the agricultural season, discouragement of producers and abandonment of organic cotton production.”

Swiss consultancy firm Ecos, which has long been working to promote Burkina Faso's cotton industry, has launched a one-off project to promote the quality – and sustainability – of the organic crop.

In partnership with Swiss fashion brand Nikin, it is selling a transparent and traceable 'treeshirt' made from organic cotton grown in Burkina Faso and spun in Greece.

The cotton is DNA-marked by tracing technology pioneers Haelixa so customers can see for themselves where it was grown, following its journey

from farm to their home. Nikin have promised to plant a tree for each t-shirt that is sold.

Ecos senior project leader Tobias Meier said the eventual goal was to build up an organic cotton textile industry in West Africa, including ginning, spinning, weaving and ready-made products, to access global markets across Europe and Asia.

“We want to show to the world that it is possible to build up value-chains from West Africa to Europe – Spain, Greece, the Balkans, Turkey and Morocco – and we want to show the positive impact of organic cotton farming from small farmers in West Africa,” he said.

The fact that the ITC's Ethical Fashion Initiative, which aims to connect local brands, such as Xoomba and François 1er, with international fashion houses, has already interested the likes of Vivienne Westwood in Burkina Faso's organic cotton, suggests this might not be an impossible dream.

Meier, who has worked with the country's organic cotton farmers for 20 years, said that organic cotton was the ideal crop for the hundreds of thousands of smallholders in West Africa.

He added: “The potential to reach these motivated farmers and to give them a fair revenue for their hard work is great.

“If the reasonable target of producing 40,000 tons of organic cotton fibre by 2030 is reached, then 80,000 cotton farmers and their families, nearly one million people, will gain a good revenue in a healthy environment.” ■

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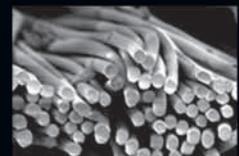
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Core focus

Australian innovator Nanollose signs milestone agreement with Aditya Birla's fibre producer, Grasim Industries.

Chris Remington reports

Less than two years ago, Nanollose CEO Alfie Germano took to the stage at the ninth annual Planet Textiles sustainability conference, held in Vancouver, having just produced the very first sample garments made from its proprietary microbial cellulose Nullarbor-branded fabric.

Like an increasing number of bright-eyed, aspiring innovators selling hope to an industry under the cosh, the start-up has made exponential progress since.

The Aussie firm's 'tree-free' microbial cellulose – made via fermentation between six and 18 days – represents just one of many commercially viable textile alternatives in this sector, promising that, comparative to conventional cellulosic fibres, it does not lean on deforestation, pulping or even the use of pesticides... only low levels of energy, land and water.

A five-stage process, waste feedstock is first liquidised before being fermented, purified and spun into fibre,



▲ Indonesia produces around 18 million coconuts each year.

before yarns and fabrics can be made.

Thus far, the company has capitalised on coconut waste streams from both Indonesia and the Philippines to retain an adequate supply of feedstock, which needs to contain carbon, for the fermentation process.

These waste streams – which Germano says could one day encompass beer, soft drinks and dairy products – are inoculated using the bacterium, *Acetobacter xylinum* to convert solutions of organic materials into nanocellulose pulp for extrusion into fibres.

Levelling up

Having seen potential in the scalability of this solution – often the Achilles heel for many burgeoning tech firms – fibre manufacturing heavyweight Grasim Industries, of the US\$48.3 billion Aditya Birla Group, has forged a partnership that's set out to produce two to five tonnes of Nanollose's microbial cellulose each and every month.

The company's current raw material inventory of 500kg will first be leveraged to prove the efficacy of this idea. "In short our roadmap is around refining, optimising

and trialling towards initial pilot scales of hundreds of kilograms that moves towards tonnes," Germano tells *Ecotextile News*. "There is still much development work to be done to go from kilo to tonne scale but like all journeys it begins with a first step."

These initial steps will home in on tailoring production to Grasim's site. Once successful pilot scale production at Grasim has been achieved, Nanollose and Grasim have set out to enter an exclusive agreement to produce tree-free fibres from microbial cellulose on a commercial scale, the pair insist.

"The combination of Nanollose's fibre technology, along with Grasim's sustainability initiatives, has the potential to make this union one of the most eco-friendly and sustainable fibre offerings on the market," the partners insist.

Germano concluded: "We feel this is a natural joining of forces that creates an alliance that will pioneer a new bio-material supply chain along with ticking many large sustainability boxes and increasing market demands." ■

▼ 150 million trees are chopped down each year to make cellulose-based fibres.





Simon Ferrigno
Correspondent,
Cotton & agriculture



Cotton Horizons

GM cotton - insects adapting in India

An article in *Nature Plants* by Kranthi and Stone in March 2020⁵ reports on long term changes and impacts of Bt cotton in India in the context of other changes in agriculture over the same period.

The paper suggests that BT cotton adoption is not a good indicator of yield but does correlate with initial insecticide use reduction. Changes in yields are however linked to changes in other inputs such as fertiliser.

However, the development of resistance in pink bollworm and the growth in secondary pests mean the costs of inputs are now higher than before the introduction of Bt cotton.

The authors however caution against simplistic arguments for and against Bt cotton, dubbed “technological triumph or abject failure”.

Evidence itself is contested.

The authors here however focus on a long-term perspective rather than the short term perspective of many other studies. They have data on 17 years of Bt cotton growing and the three preceding years of non-Bt production.

As can be expected, this picture is much more nuanced, showing Bt cotton does resist the American bollworm (but

which may also be explained partly by the use of newer insecticides) but suggesting yield rises are better explained by ‘other technological trends’, e.g., rising use of fertiliser. But this has also led to the rise of secondary pests which along with pink bollworm resistance is increasing spending on insecticides.

Problems however began before the introduction of Bt cotton with a move to growing hybrid cottons. Bt cotton did not arrive in a vacuum so its failings and successes cannot be analysed in isolation either. For example, farmer suicides were a problem before Bt. Likewise, real yield effects as opposed to studies with ‘selection bias’ show that many other factors could have had greater yield impacts, including weather patterns in study periods. The authors note: “while these studies find common ground on modest annualized yield effects in the 4-5 per cent range, we note that, with the vagaries of weather and pest populations, India cotton yields often rise or fall by over 10 per cent per

year, even without major technological change.”

They also note the likelihood of what they call ‘cultivation bias’, that is, seeds which may be expensive or are the container vessel for high hopes will be treated with extra care (and fertiliser) and even planted in the best plots, reinforcing the likelihood of apparent yield increases and comparing favourably to other varieties planted in worse locations. There is also a risk that something with the expectations of Bt will be studied on short time horizons and with less important outcomes in mind, which can lead to the aforementioned extreme interpretations for or against Bt.

The long-term study makes up for this, according to the authors.

One of the findings is however one that has already been made several times over the years, namely that much of the yield increase in Indian cotton predates the widespread adoption of Bt cotton that began in 2005 and increased rapidly over the next three years. But Bt contributed by controlling American and Pink Bollworm in the early years. However, yields stagnated from 2007 onwards and in fact by 2018 were lower than in the years of rapid Bt cotton growth. The authors’ study of state level data shows again that yield rises cannot be explained by Bt cotton.

They explain yield trends through other factors including irrigation infrastructure (noting that this improved dramatically in Gujarat, which accounted for a lot of India’s yield improvement), rising fertiliser use, and the (albeit likely temporary) effects of new insecticides, notably the now much contested neonicotinoids. Again, with regards to

Organic cotton without GM: blockchain

A meeting at the Bremen Cotton Exchange in February this year set out to examine the possibilities of organic cotton without GMO contamination.

The ‘Blockchain for GMO Mediation’ project, funded by the European Fund for Regional Development is a cooperation between Bremen Cotton Exchange and Impetus Bioscience.

As well as using Blockchain for documentation and data, it also uses DNA analysis of any traded organic cotton. However, one critical area is the need to have sufficiently robust DNA tests for arbitration of disputes. Arbitration is what Bremen specialises in – and organic cotton has plenty of need, given several cases of fraud in recent years.

It is hoped that this project will deliver reliable tests, although there are still gaps at present. But developments in traceability, testing and other forms of marking are welcome. ●

insecticides the long-term data shows that any use reductions have not been sustained as new pests emerge and the pink bollworm developed resistance.

The conclusion is that benefits from Bt cotton were ‘modest’ and ‘ephemeral’. Indian cotton yields have not improved in 13 years. Insecticide costs are now higher than before Bt cotton’s adoption. Cotton has become more capital intensive while farmers remain exposed to market and climatic vagaries.

The present economic shock from the global Covid-19 outbreak could have severe impacts yet for Indian cotton farmers with rising costs and stagnating production already making them less resilient. ●

Kellogg and glyphosate

In a sign of things to come perhaps in cotton, food company Kellogg has announced it is to phase out the use of glyphosate for applications including pre-harvest desiccation of grain crops. Acknowledgement that the chemical may not be as safe, as many have previously claimed, may well open the doors to alternatives, not just chemicals but also automated weeding and other approaches.

Glyphosate is a widely used herbicide in cotton ●

Wake up call

With the spread of the Coronavirus (Covid-19), there has been some price fluctuations on cotton markets, but countries like India says it expects cotton exports to continue. It is still too early to say what effect Covid-19 may have on the overall cotton sector, or sustainability in general, there is certainly disruption ahead. USDA reports lower demand and falling prices in March 2020. Cotton events are also being cancelled.

A good reminder for sustainability in the cotton sector is that incidents like this global pandemic always have a strong link to poverty and inequality. Beginning in a market where bush meat is mixed with more conventional produce, the coronavirus is now wreaking havoc in the global economy. This is disruption. Yet in a more equal and equally well-regulated world, such events might have a more limited impact.

It reminds me of a case a few years ago which traced a US food poisoning event to workers in Latin America whose workplace practices and relative poverty meant those packing soft fruit for US retailers could not wash their hands after using the toilet.

The price of cheap. The price of poor coordination and cooperation across borders.

This is a massive wake-up call and one that we’ll look at in detail shortly on the ecotextile.com website as events continue to unfold. ●

Carbon sequestration

An article in *Nature Sustainability* in March 2020 (<https://doi.org/10.1038/s41893-020-0491-z>) highlights once again the severe crisis of agricultural soils but also the great opportunity there is to increase carbon sequestration by investing in soil.

The paper argues that agricultural soil would represent 25 per cent of the 'potential of natural climate solutions' (i.e., using nature to reduce emissions through 'conservation, restoration, and improved land management actions,' according to an earlier 2018 study¹), particularly through rebuilding carbon stocks. Half the potential is in agriculture and grasslands.

Cotton has various techniques at its disposal to help with this, including the use of compost, as well as low and no till options. However, all too often there is no local soil testing and so no knowledge of what specific actions are needed in a given area, which would allow the development of strategies to build and protect stocks.

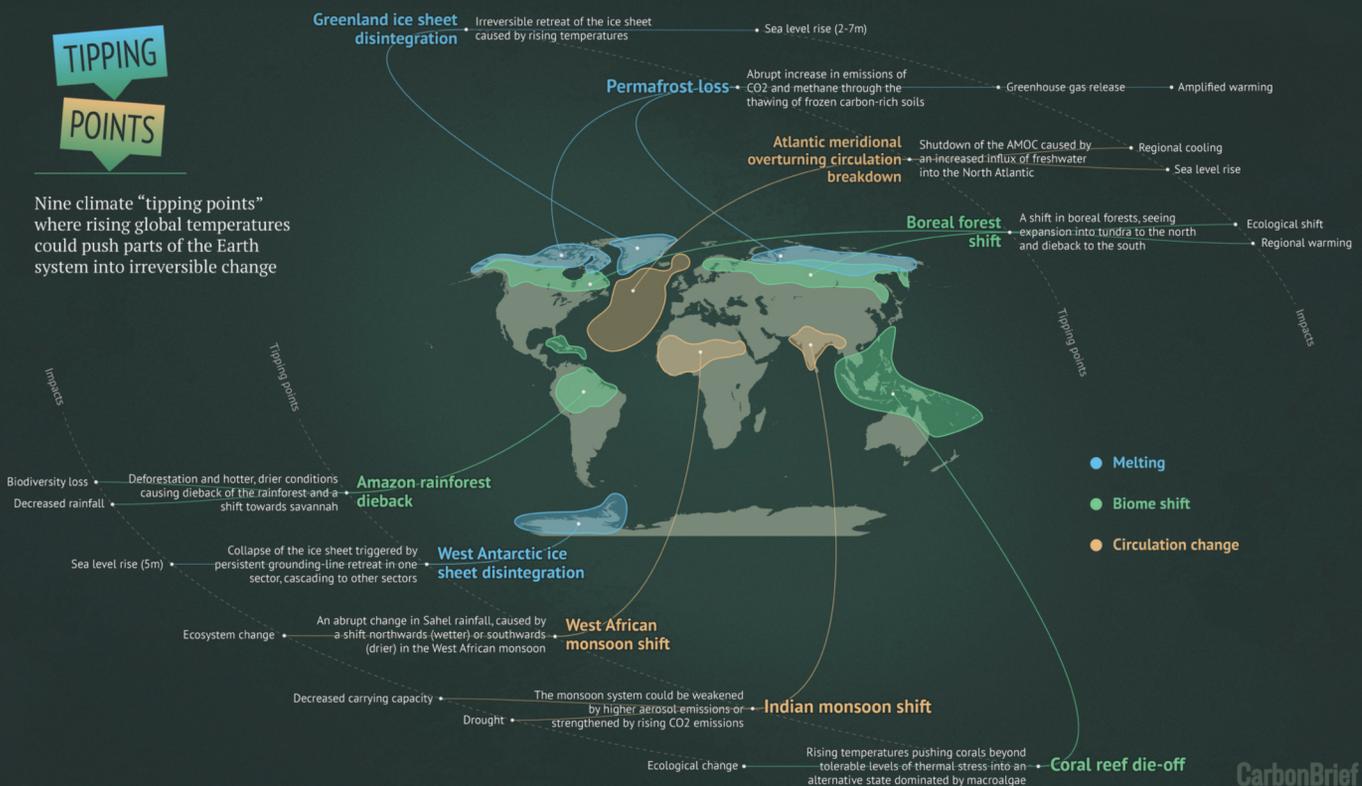
But overall, we do know that soils are frequently degraded with low levels of carbon. And we know that more carbon in soils equals better productivity, perhaps significantly better.

Cover crops are one of the techniques recommended in the study, and this technique is used in cotton. However, this is not preventing low carbon levels in cotton soils.

Tillage, soil compaction, erosion and poor fertilisation remain major problems that need to be addressed and should be if cotton is to contribute to climate change mitigation and maintain productivity into the future.

Carbon

Carbon Brief has produced an infographic on nine tipping points that could be triggered by climate change. Among the tipping points by Carbon Brief is a shift in the West African monsoon. We are familiar with this, having observed it and heard farmers reporting increasing variability and unpredictability in when the rainy season arrives. It's already happening. The results range from insufficient rain to excess and a difficulty in planning for farmers, including cotton farmers, who are rarely covered by insurance and may struggle to get replacement seed in a crisis. There is little comfort in the article on how climate change will affect the Sahel in future especially if we fail to act on climate change. Infographic by Rosamund Pearce/Tom Prater <https://www.carbonbrief.org/explainer-nine-tipping-points-that-could-be-triggered-by-climate-change>



Agricultural soil, well managed, could lock up much of the carbon presently warming the planet at an increasing pace², and doing this would reduce the high GHG impact of agriculture.

Biochar

Biochar is another suggested option. However, concerns were raised back in 2012³ by the Union of Concerned Scientists, who pointed out that Biochar can only be effective if the carbon remains in the ground and is not released. A range of approaches is needed to ensure this and studies over time to test the effectiveness of the solution.

The IPCC in 2018 however did mention the use of Biochar in climate change mitigation⁴, and a study in Environmental Research Letters (Biogeochemical potential of biomass pyrolysis systems for limiting global warming to 1.5°C) cited in this suggests three ways the techniques used to make Biochar can be used to sequester carbon, of which the resulting Biochar is one. The yield increases are highlighted as of great benefit, including on reducing pressure to bring new land into production from areas currently under forestry or too poorly fertile to be of great value.

However, this paper also highlights that without reduced fossil fuel demand such measures remain insufficient. Side-effects of such technologies such as impacts on moisture in soils also need to be taken into account.

The study notes three carbonaceous outputs from 'pyrolysis' (thermal treatment of biomass at 350 to 9000C), the process which gives Biochar, the others being bio-oil, which can be pumped into old coal and oil seams and 'permanant-pyrogas,' which can be stored as CO₂.

Biochar is shown to improve soil fertility and increase yields, but uncertainty remains over the total mitigation potential of Biochar and the available feedstock that is sustainable. ●



Insect apocalypse

A paper in the Journal *Biological Conservation* (February 2020, 'Solutions for Humanity on How to Conserve Insects') focuses on insects – and their possible disappearance, which could have devastating impacts on agricultural sectors such as cotton.



Yes, we are used to focusing on the damage from insect pests, but many other creatures are essential, because they eat pests, they pollinate and because they help balance ecosystems.

We have written many times here about the impacts of disturbing ecosystems, notably through the poor use of insecticides, as new pests will always fill the gap. We also hear more calls for us to eat more insects to meet food needs. In agriculture, protecting insects isn't just about reducing chemical use; it's also about providing habitats (including aquatic areas), protecting them, and providing food for them.

Farmers practising IPM already know this: they provide refuges for beneficial insects. But other problems remain more intractable, with the continued dispute over the role of neonicotinoids in bee colony disorder.

This paper advocates the 'protected area' approach, going beyond agro-ecology. It describes organic farming as the closest best agro-ecological approach (organic farms are on average 30 per cent 'richer' in insects), and the use of agri-environment schemes incentivising set asides and protected areas on farms, which can surround agro-ecological farming.

The paper also points to research in France that has shown it is possible to reduce pesticides use by 42 per cent while not affecting yields.

It is well worth a read, as it gives a broad overview of how insect populations have been declining since the rise of modern agriculture in the 19th century,

It also highlights gaps, including in our knowledge of insect species, distributions and value, even as many are being wiped out. ●

1. <https://www.pnas.org/content/114/44/11645>
2. <https://phys.org/news/2020-03-soil-absorb-billions-tonnes-carbon.html>
3. <https://www.ucsusa.org/resources/biochar-climate-change-mitigation-strategy>
4. <https://www.ipcc.ch/sr15/chapter/chapter-2/>
5. <https://www.nature.com/articles/s41477-020-0615-5>

Investors back industry-first green bond issue

Fashion giant VF Corp, which owns brands including Timberland and North Face, is celebrating after its industry-first green bond issue was hugely oversubscribed amidst strong investor interest.

Simon Glover reports

The challenge of funding the fundamental changes needed to reduce the fashion industry's impact on the environment seems that bit more achievable following VF Corp's success in raising €500 million (US\$457 million) in a green bond issue.

The money raised from the offering – the first ever green bond issued in the apparel and footwear industry – will be used to fund programmes within the company's recently announced Made for Change sustainability strategy.

Jeannie Renné-Malone, VP of Global Sustainability with VF Corporation, told *Ecotextile News* that the company was delighted with the appetite shown by the green investment community for the offer.

She said: "We are extremely happy with that. It was our inaugural green bond and the first in the entire apparel and footwear industry. We attained a very favourable interest rate and attracted interest from quite

a diverse group of investors, geographically speaking."

On a possible future green bond issue, Renné-Malone added: "I think it could be a consideration, we have developed the framework and if we deem it appropriate, we have the flexibility for further issues in the future."

VF will use the proceeds to support projects in three key areas that align with the United Nations' Sustainable Development Goals (SDGs) – increasing its sourcing of sustainable products and materials, reducing the carbon footprint of its own operations and supply chain, and investing in natural carbon sinks such as forests.

Projects relating to the company's sourcing of sustainable products and materials will support a commitment to source 100 per cent of its top nine materials from regenerative, recyclable or renewable sources by 2030. It will also invest in circular economy initiatives including chemical and mechanical recycling technologies.

“Our inaugural green bond is an important step in advancing our sustainability journey for the betterment of people and the planet

Jeannie Renné-Malone, VP of global sustainability, VF Corporation

The company will look to install renewable energy infrastructure, such as solar panels, in its own operations and help its supply chain partners do the same by helping them access finance, as well as liaising with them on energy reduction programmes.

And VF Corp will invest in natural carbon sinks including reforestation conservation projects – such as a Timberland project to plant 50 million trees globally, and investments in regenerative farming, grazing and ranching practices.

However, these will not be offset against the company's greenhouse gas emissions.

Steve Rendle, VF's chairman, president and CEO, commented: "At VF, we believe that delivering on our commitments to environmental and social responsibility is equally important as meeting our financial commitments to shareholders.

"The overwhelming interest in our green bond serves as an endorsement from the business community for our purpose-led agenda and focus on connecting business success with actions that improve lives and our planet."

Renné-Malone said that the decision to issue the green bond was taken because the company was planning a conventional bond issue at the same time and saw an opportunity to progress its sustainability strategy.

The green bond would not address social factors, such as the use of forced labour in the Xinjiang region of China, as this was not part of its purpose. However, the

company was not ruling out the issuing of a broader bond in the future which could have a wider remit.

She added: "Our inaugural green bond is an important step in advancing our sustainability journey and our business purpose of supporting projects for the betterment of people and the planet.

"Elevating our focus on, and investment in, circular and sustainability projects allows us to leverage our scale for good and achieve our ambitious SBTs."

Before being awarded money raised through the green bond issue, all projects will have to be assessed and approved by the VF Global Responsible Sourcing and Sustainability Team.

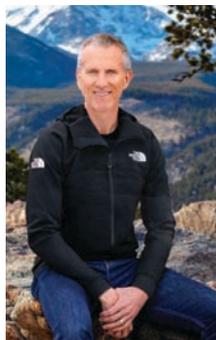
VF Corp's green bond issue has been independently assessed and approved by Dutch company Sustainalytics which rates the sustainability of companies based on their environmental, social and corporate governance performance.

It concluded: "Sustainalytics is of the opinion that the VF Corporation Green Bond Framework is credible and impactful and aligns with the four core components of the Green Bond Principles 2018."

Green bonds, also known as climate bonds, have become an increasingly important way for companies, banks and governments to raise finance for climate change solutions. They allow investors – which are often pension schemes, governments and private funds – to invest in areas politically important to their stakeholders. ■

“
The interest
in our green
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as an
endorsement
for
connecting
business
success with
actions that
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*Steve Rendle,
chairman, president
and CEO,
VF Corporation*



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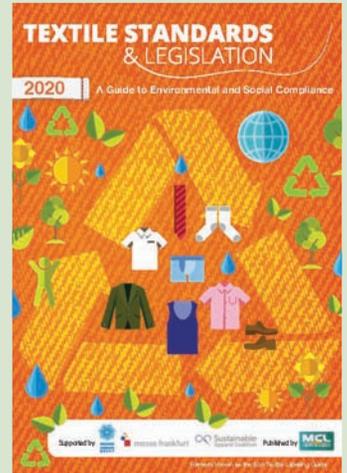
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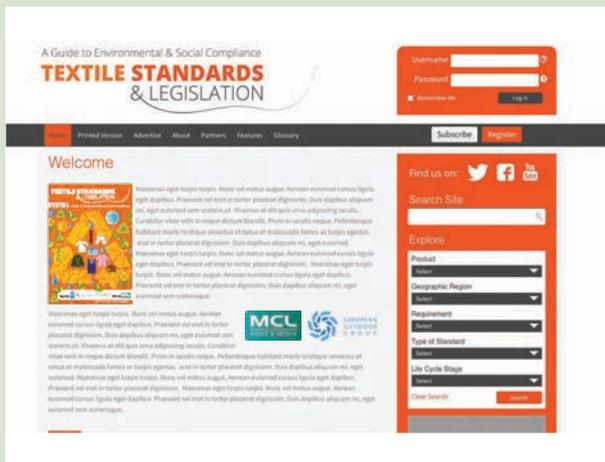


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Recycling association slams waste dumping

MAIDSTONE – The UK's Textile Recycling Association (TRA) has reiterated that there should be no waste within shipments of clothes sent to African retail markets, after an investigation by British broadcaster *ITV* spotlighted how countries like Ghana are now

dumping grounds for apparel not fit for reuse.

Images of 30-foot heaps of high street-labelled garment waste, which spill over from landfill sites into the sea, highlight the need for urgent action within the fashion and textile industries as cities on the Ghanaian coast are

devastated by the effects of mass apparel consumption and waste.

Though Africa's retail markets welcome new shipments every week – creating business from UK fashion's cast-offs – they face an influx of cheap, unsalvageable garment waste which only serves to pollute the environment.

The TRA has published a statement off the back of an exposé of life in Ghana's fashion retail market, which highlights the extent to which garment waste is consuming the city's coasts and landfill sites.

Footage from a location in the country's capital of Accra shows workers tiding through mountains of mixed garment waste not fit for reuse. It's estimated that, due to the growth of fast fashion and sale of low-quality garments, the value of what is subsequently sent to Ghana values at just £100 per tonne, half of what it was just a year ago.

Alan Wheeler, director of the TRA, says it "highlights how crucial the used clothing industry is for the economy of Ghana", as the main market in Accra employs 30,000 people alone.

It's thought more stringency is needed from customs both in UK and receiving countries to ensure shipments aren't made purely to dump surplus stock.

Web: bit.ly/39x3Aky

Zalando label "fully dedicated" to sustainability

BERLIN – Fashion retailer Zalando says its private label Zign will from now on be "fully dedicated" to sustainability, which will first be demonstrated with the launch of a spring/ summer 2020 collection comprising garments made with either 50 per cent or more 'sustainable' materials or a minimum of 20 per cent recycled content.

"We are very excited to launch Zign's first-ever collection that is fully committed to sustainability and with this extend our more sustainable assortment by over 800 new pieces," Zalando's VP category women, Sara Diez said.

The firm says all Zign products will be manufactured by the top 50 per cent of its supply base to ensure social, as well as environmental, sustainability is addressed in Zign's supply chain. Zalando requires these factories to submit environmental data to the Higg Index to help track and improve areas such as greenhouse gas emissions, water use and waste.

"With this commitment, we support our customers in making more sustainable choices while acting as a role model for other brands on our platform," added Diez. Zalando hosts the apparel of more than 2,000 brands on its e-commerce site, reaching more than 29 million users in 17 countries.

Web: bit.ly/2Tzpx62

Consumers can use Clean Out bags and labels to return stock.



Gap launches new resale platform

SAN FRANCISCO – Apparel firm Gap Inc. has partnered with consignment company ThredUP to encourage customers to return unwanted garments in exchange for shopping credits to be redeemed at Gap, Banana Republic, Athleta or Janie and Jack.

With the launch of the Resale-as-a-Service (RAAS) programme, Gap hopes to capitalise on growing consumer appetite for second-hand apparel – a ThredUP report estimates this market will double its value of US\$24 billion within the next five years.

"ThredUP's Resale-as-a-Service platform was built with consumers and retailers in mind," explains James Reinhart, co-founder and CEO of ThredUP. "After spending the past decade

building the backbone of resale on the internet, we are thrilled to partner with the iconic brands in the Gap Inc. portfolio to deliver a convenient, responsible clean out service to their customers. By working together, we can pave the way for a more circular fashion future."

According to ThredUP's *Resale Report*, 56 million women bought second-hand products in 2018, a scale comparable to almost half of the USA's female population. "Our customers are diversifying their closets, whether with new clothing, rental pieces, or second-hand goods. We're thrilled to partner with ThredUP in offering a sustainable and innovative way to shop for the closet of the future," Reinhart concluded.

Web: bit.ly/39BZ9hG



Let down

Cambodia's Everything But Arms trade benefits 'partially suspended'

Chris Remington reports.

The Southeast Asian nation of Cambodia has been stripped of some of its trade perks by the European Union (EU), following a 12-month fact-finding mission which reported "serious and systematic violations of human rights principles", despite ongoing communications which presented every opportunity for reform in the country.

These trading privileges have enabled Cambodia to export goods into Europe both tax- and quota-free for over 20 years, as per the Everything But Arms (EBA) agreement which is afforded to the 48 poorest countries in the world.

From August 12, however, Cambodia is set to lose 20 per cent of these benefits based on findings that there has in fact been no significant progress, regarding civil and political rights, since the launch of an EBA withdrawal procedure in February 2019. This means a 12 per cent standard tariff could soon be placed on exported garments, the industry for

which makes up 75 per cent of Cambodia's total merchandise exports and an estimated 90 per cent of exports to the EU.

"The duration, scale and impact of Cambodia's violations of the rights to political participation and to the freedoms of expression and association left the European Union with no other choice than to partially withdraw trade preferences," insisted vice president of the European Commission Josep Borrell.

"The European Union will not stand and watch as democracy is eroded, human rights curtailed, and free debate silenced. This decision reflects our strong commitment to the Cambodian people, their rights, and the country's sustainable development. For the trade preferences to be reinstated, the Cambodian authorities need to take the necessary measures," he added.

What's happened?

The EU's work has focused largely on political reform in the country. Since

“ The end of true democracy in Cambodia

*Mu Cochua,
CNRP politician*

▼ Prime Minister Hun Sen played a role in the banning of opposition MPs, it's claimed.



November 2017, Prime Minister Hun Sen – whose reign has spanned 32 years to date – has been without credible opposition following the dissolution of the Cambodia National Rescue Party (CNRP).

The CNRP had garnered growing support across the country with a manifesto focused on freedom and human rights. This momentum all came to a rather abrupt stop following the arrest of leader Kem Sokha, which seemingly pre-empted the party's demise.

Shortly after the arrest in November 2017, the government accused the CNRP of "plotting to overthrow" Prime Minister Sen, charges it denied. Still, soon after, more than 100 party members were banned from political activity for five years – many of whom believed Sen had leveraged his close relations with the supreme court to all but seal its fate and retain a parliamentary majority.

At that time, senior CNRP politician Mu Sochua, who has fled the country along with dozens of other MPs, told the *BBC* that the ruling marked "the end of true democracy in Cambodia".

Garment exports

The EU has reiterated the need for the government of Cambodia to "re-open the political space in the country, to create the necessary conditions for the re-establishment of a credible opposition and to initiate a democratic process of national reconciliation."

Until then, the country's garment manufacturing industry stands to lose the

most from all this. It is the lifeblood of a growing economy, and big brands have long-standing relations with supplier partners in the country, which are now at risk.

In the immediate aftermath of the EU's announcement to partially suspend Cambodia's trade privileges, Swedish fashion giant H&M said that it would review its sourcing strategy in the country.

The brand told *Ecotextile News* in a statement: "Cambodia is an important production country for H&M. We have been present in the country since the 90s and have worked for many years together with local and global stakeholders to

improve working conditions and labour related issues. Therefore, we want to be transparent and clear on what kind of change is necessary for the industry to become modern and effective."

The **Garment Manufacturers Association in Cambodia (GMAC)** has urged the EU to rescind the decision, suggesting it could damage the infrastructure its EBA scheme has been so instrumental in developing.

"Employment in these sectors supported by EBA trade preferences now exceeds 750,000 and has contributed to lifting millions of Cambodians out of poverty," the GMAC says. "The partial withdrawal

will lead to nothing more than job losses."

GMAC secretary general Ken Loo tells us that the organisation will work with government to make the improvements needed to reverse this decision. "We are one of the main sectors in Cambodia," he said. "We want to mitigate any potential impact that this could have on our members.

For now, it's a scramble to change the minds of EU leaders. Prime Minister Sen may claim to have the best interests of his people at heart with the affordance of tax exemptions to manufacturers in these unruly times. A long-term solution from the man in charge looks far more bleak. ■

The GMAC represents around 600 companies across the country.

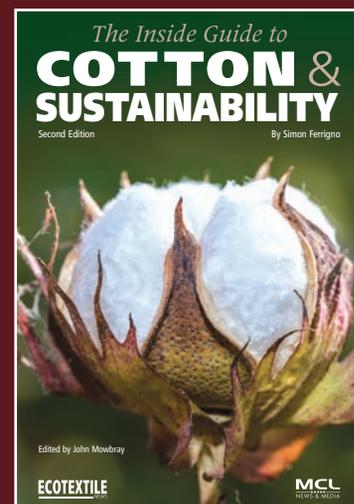
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AAFA releases latest restricted substance list

WASHINGTON DC – The American Apparel & Footwear Association (AAFA) has released the latest edition of its Restricted Substance List (RSL) of banned or restricted chemicals and substances for finished apparel, footwear, and home textile products. The trade body says the 21st edition of its chemical management resource listing, which aims to identify the most restrictive regulations worldwide, reflects recent changes in the global regulatory environment. The RSL is an open-industry resource available to both AAFA members and the global industry. It is produced by AAFA's RSL Task Force, which reviews and updates the list regularly to reflect the latest global regulatory changes. "The AAFA's RSL task force is focused on maintaining a resource that not only ensures safe chemical management, but ultimately protects our consumers," said Steve Lamar, president and CEO of the AAFA. "Chemical management is an important part of a responsible and compliant supply chain. As such, we continue to provide our RSL as an open-industry resource to the industry." **Web: bit.ly/2PYwewD**

IKEA decreases environmental impact

LEIDEN – The climate impact of Swedish homeware conglomerate IKEA decreased in fiscal year 2019, according to its latest Sustainability Report.

IKEA maintained steady sales growth of 6.5 per

cent whilst its footprint decreased by 4.3 per cent to level FY2016 results.

The company cites a rapid uptake in renewable energy sources and the utilisation of more recycled and 'sustainable'

materials as core contributors to this feat.

With regards to how the firm sources and uses its materials, IKEA has increased its utilisation of recycled wood and wood derived from FSC-certified (Forest Stewardship Council) forests.

Recycled polyester usage has more than doubled in the past year, jumping from 24 per cent in FY2018 to 59 per cent. The ambition is that 100 per cent of IKEA's range will use only recycled content by FY2020 – a target set out last summer that has seemingly been at the forefront of its vision given such progress.

Meanwhile, the firm has continued along similar lines with regards to cotton. Since 2016, the company has ensured all of the estimated 142 million tonnes it sources comes from sustainable sources.

The Swedish firm undertakes numerous projects the world over with local communities and their farmers to ensure sound practices are used. Projects have homed in on the wetlands, technology, crop production practices and, broadly, agricultural best practice.

"IKEA is committed to making a positive difference," said the IKEA Group's CEO, Torbjörn Lööf. "This is the only way forward to achieve the big changes we want to see and that need to happen." **Web: bit.ly/38f0DeB**

The assessment tool enables companies to address leakages in their supply chains.



Plastics assessment tool plugs leakage gap

LAUSANNE – Sustainability consulting group Quantis and ecodesign centre EA has developed and released a methodology for brands and manufacturers that it says will address plastic leakage, on both a macro and micro scale, in corporate value chains. Developed over the past 12 months with support from 35 partners – including the likes of Adidas, Decathlon, RadiciGroup and Sympatex Technologies – this four-stage approach will enable companies the world over to combat plastic pollution within their supply chains. This is said to be the first tool of its kind to map, measure and forecast plastic leakage within the supply chain of a business. This assessment will enable companies to move from commitments to science-based plastic strategies and actions to mitigate their impact on the environment.

The four-stage approach starts by identifying plastic leakage hotspots across a company's supply chain. From there, an evaluation of where the company stands on the issue of plastic is undertaken and compared against those of peers in the industry. Step three consists of defining a plastics strategy underpinned by metrics and aligned with any broader sustainability strategy. Lastly, an action plan is established to counter any leakage. "Through the Plastic Leak Project, we've taken the latest science and built consensus among key sectors on a shared method for calculating plastic leakage," concluded Julien Boucher, director of EA. "This actionable metric is a major step forward — it is the tool companies need to design better products and data-driven strategies to stop plastic pollution along their value chains." **Web: bit.ly/38lmGSC**

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Reducing the Carbon Footprint in Textile Manufacturing

It is well known that the textile industry has a sustainability problem. It is projected that by 2030 global clothing consumption will increase by 63% which is the equivalent of 500 bn new T-shirts¹. Over recent years the industry has come under the microscope, examining the human and environmental impact of its practices. If things do not change this continued growth will cause untold harm to the planet and the people already exploited by the supply chain.

Fortunately, efforts are being made to bring about positive change. Of critical focus in recent years has been addressing the unsafe working conditions faced by employees, particularly following the tragic Rana Plaza disaster in 2013. In terms of environmental impact, several initiatives, such as ZDHC and Bluesign, aim to remove hazardous chemicals in the supply chain and reduce the vast quantities of water required to manufacture fabrics. These globally recognised standards enable sourcing agents and consumers to confidently make more sustainable decisions.

One aspect of sustainable textile production that is perhaps less prominent, is the global warming impact of the industry. The current greenhouse gas emissions from textile production already stand at 1.2 bn tonnes annually, more than the total output of some industrialised nations. Based on our current population and consumption trajectory, textiles could account for more than a quarter of global CO₂ emissions by 2050². If we are to limit global warming and its devastation on the planet, we need to redirect our current path.

Several full life-cycle assessments of garments and other textiles have been undertaken, and they demonstrate that attention must be paid at every stage of the supply chain, to reduce the total environmental load. This includes how fibres are grown or synthesised, how fabric is spun, treated and dyed, how the garments are constructed and delivered and then how they are used, washed and finally disposed of. Everyone, from farmers to manufacturers, to designers and consumers can contribute to change.

WeylChem Catexel has been working with the textile industry to enact positive change since the launch of our WeylCat[®] Pegasus catalyst in 2011. We recognise that significant change requires true innovation and collaboration in the supply chain. WeylCat[®] Pegasus is a powerful catalyst that enables cotton to be bleached at reduced temperatures. The bleaching of cotton is required to remove the wax, seed, dirt and natural colour of the crop and this process traditionally takes place at high temperatures (up to 110°C) under highly alkaline conditions using hydrogen peroxide.

WeylCat[®] Pegasus works with the hydrogen peroxide, activating this powerful oxidising agent, so that the bleaching can take place in a much shorter time, under milder conditions. The bleaching temperature can be reduced by, typically, 25°C and the processing time by more than half. In 2019, approximately 500,000 tonnes of cotton were bleached using a WeylCat[®] Pegasus based process.



Assuming a 25°C temperature reduction was realised; this translates to more than 118 tonnes of CO₂ emissions saved.

This calculation is a conservative estimate; it only considers the reduction in temperature of the bleaching liquor. Further CO₂ savings

will have been realised due to the shorter processing time; which critically improves asset utilisation in the textile factory. Furthermore, the milder conditions produce a softer feeling fabric with fewer creases. A softer fabric at this stage can require fewer finishing chemicals later, reducing further the environmental impact and greenhouse gas emissions in the fabric production cycle.

The milder process conditions also lead to a higher yield of cotton. WeylCat[®] Pegasus does not harm the cellulose chains in the cotton and the lower temperatures mean less fibre damage vs. traditional processing. Higher yields means more profitable textile production but also better usage of the cotton crop that has been painstakingly grown. Producing higher quality cotton is crucial for producing higher quality garments and extending the clothing life. Extending clothing life by just nine months can reduce the carbon, waste and water footprint of a garment by approximately 20-30%³.

Though the pre-treatment of the cotton is just one stage in the long production cycle, we see that our innovation has already helped to reduce the environmental impact in the supply chain. This is in line with our ongoing commitment to deliver real, sustainable, game-changing technology across industries. To critically change the trajectory of the textile industry we will need collaboration across the supply chain and to re-think many facets of our current model. WeylChem Catexel is committed to facilitate this process, wherever it can.

For further details please contact **Liz Manning** at liz.manning@weylchem.com

¹ Global Fashion Agenda and Boston Consulting Group, 2017, 'Pulse of the Fashion Industry', https://www.globalfashionagenda.com/wp-content/uploads/2017/05/Pulse-of-the-Fashion-Industry_Executive-summary.pdf. Accessed 26th July 2019

² Ellen MacArthur Foundation, 2017, 'a New Textiles Economy; Redesigning Fashions Future', https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Summary-of-Findings_Updated_1-12-17.pdf. Accessed 26th July 2019

³ WRAP, 2015, 'Extending the life of Clothing', <http://www.wrap.org.uk/content/extending-life-clothes>. Accessed 26th July 2019



◀ Traditional silk weaving at Como-based Taroni, one of Italy's leading silk fabric mills.

Image: © Taroni

Silk 2.0: High-quality, resource savvy, agile

Silk represents just 0.2 per cent of global textile fibre production. This, together with the fact that it is seen as probably the luxury fibre par excellence, has rarely brought it onto the sustainability radar. Pam Ravasio reports on how things are changing.

Sustainability innovators are looking at silk with fresh eyes, and coming up with diverse and far reaching visions of what the ultimate luxury fibre could become. While it's still early days, there's little doubt the silk industry is entering a new age, where its old paradigms will be replaced by a new *modus operandi*.

Silk is a natural, 'spun on demand' - rather than grown like wool - protein fibre; some forms of which can be woven into textiles. Its protein fibre is composed mainly of fibroin - an insoluble protein - which is produced by insect larvae to form the cocoons required

for their metamorphosis.

The best-known silk is obtained from the cocoons of the mulberry silkworm (*Bombyx mori*) which are reared in captivity (sericulture). Other organisms, such as spiders, produce their own varieties of silk. Spider silk is seen as the gold standard for textile fibre attributes, due to its strength, toughness and elasticity.

Most might consider this natural fibre to be sustainable. However, life cycle assessments (LCA) reveal that industrially produced silk has a surprisingly high environmental impact. This is largely down to the silk rearing, de-gumming and

reeling processes, which require large quantities of heated water.

According to one LCA study of Indian silk, by academics at Oxford University and published in the *Journal of Cleaner Production* (Vol 81, p. 158, 2014), the overall impact of Indian silk is around 10 or more times higher than the impact of conventional cotton, wool or nylon.

Water availability and related stress - which vary depending on the region and production methods employed - as well as the total carbon footprint also need to be taken into account.

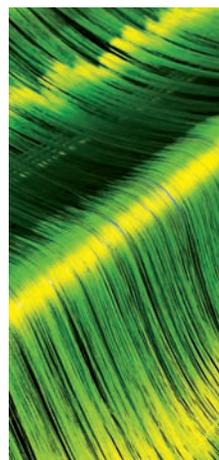
The demand for premium silk remains high, and is said to be rising, but only about 10 per cent of global production is of sufficient quality - grades 5A and 6A (see box) - to be used in the high-end textile sector. Manmade alternatives, such as Cupro and Naia, bridge the supply gap.

China accounts for by far the most silk reared globally. But export quotas have been falling since the early 2010s, and are expected to continue to do so, in line with increased domestic consumption, particularly in regard to the high quality silk required for luxury goods.

So, with the challenges of producing more high quality silk, while at the same time seeking to reduce the impact of silk production on the environment, a number of start-ups have been looking at new ways to produce this traditional fabric.

They are looking to create more geographically diverse raw material supply chains, increase yields of high-

▼ Dyed silk fibres in Como, Italy. Image: © Taroni



grade silk per cocoon, improve the physical qualities of silk and expand its application areas, while finding ways to reduce its impact on the environment.

Some companies, such as Californian start-up Bolt Threads, are looking to develop technology to replicate the production of silk fibres at large scale. Its 'Microsilk' aims to mimic the strength, elasticity, durability, and softness of spider silk, yet with the potential to biodegrade at the end of its useful life.

Other innovators take what might be called a 'bio-based' approach by dissolving silk cocoons into a 'protein soup' which can then be further processed into liquids, gels and solid fibres identical to, or even better than, premium cocoon reeled silk.

Two start-ups which have taken the 'bio-based' route are Cocoon Biotech Inc, and Spintex Engineering Ltd, a University of Oxford spinout.

Both of these approaches fall broadly into what, in circular terms, would be seen as 'chemical processing'. They push the door ever so slightly open to a future where both pre- and post-consumer silk materials could become a raw material.

Cocoon Biotech Inc's vision is to leverage the material properties of silk to replace petrochemical materials across a multitude of industries, starting with healthcare. It also has plans to develop textiles, and has scaled manufacturing to produce sufficient material to support a product launch in 2020.

Ailis Tweed-Kent, CEO of

Cocoon Biotech Inc, said: "Silk is a versatile and sustainable material with unique physio-chemical attributes. We have worked diligently in recent years to ensure the quality, sustainability, biocompatibility, and scalability of our silk fibroin as we approach our consumer product launch this year. Our technology has diverse applicability and tremendous potential to impact many markets including textile and human health applications."

The founders of Spintex Engineering Ltd, meanwhile, are motivated by the potential of Aquamelt technology (see diagram) – inspired by the processing of fibres by spiders – to produce low-energy and high-quality fibres.

They developed a spinning process that allows production of 6A, or greater, grade silk fibres, without waste or harsh chemicals, to precise specification from an Aquamelt silk solution. These fibres can be put to use not only in luxury-fashion, but wherever premium silk fibre quality is needed, such as in medicine or for technical applications.

Spintex CEO Alex Greenhalgh said: "At a fundamental level, the silk industry has not drastically changed in thousands of years, with today's processes being largely recognisable to a silk cultivator from 2000BCE China.

"Despite this, the cultural and economic value of silk has never dwindled, and large-scale research into this amazing material has uncovered a wealth of potential and fundamental knowledge that will influence

multiple disciplines.

"Changing silk from a harvested, natural product into an energy efficient, controlled and compliant material will reduce the impact of silk, not only in fashion, but in new advanced markets for silk, with great benefits to business, customers and, most importantly, the environment." ■

Silk fibre comes in varying lengths and qualities. Various quality grading schemes are employed. The Chinese system, one of the most commonly used, reaches from 1A Grade (low quality) to 6A Grade (highest quality). But what do the numbers and letters mean?

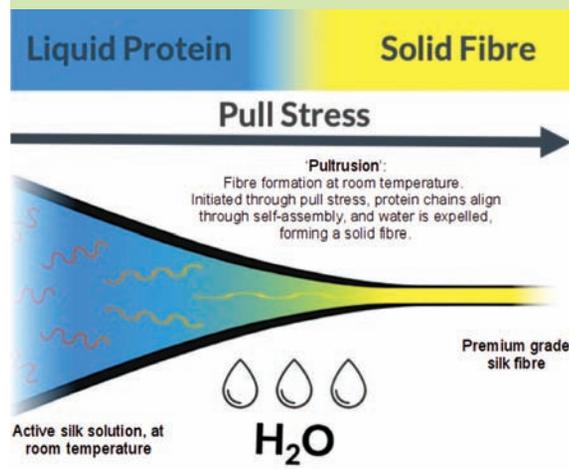
■ Letters A, B, C: Grade A silk, is top grade, has long strands, contains almost no impurities and has a pearly white colour with a healthy sheen to it.

Grade B silk has shorter strands, some impurities and clumps, and requires chemicals to make the silk look pearly white. Grade C silk stems from the most inner layer of the Cocoon, has short strands, lots of impurities and a cotton-like texture featuring a yellowish colour.

■ Numbers 1 to 6: The numbers are indicators of the expected length of the fibre. The higher the number the longer the fibre length, and hence the higher the fibre quality.

■ 2A or 3A are nice enough qualities to make a necktie or a scarf, but not suitable for something as fine as crepe de chine. In contrast, 6A Grade Silk is made from the longest silk fibres available. It is the highest grade that exist, is relatively rare, and the most expensive to produce and buy.

The Aquamelt approach: A biologically-active liquid feedstock is produced at room temperature from raw silk materials. A pultrusion process then expels the H₂O whilst the silk protein microfibrils align via self-assembly. The result is a consistent high-grade fibre, as well as major energy savings compared to conventional silk production.





Taiwan EcoTextiles - eco.textiles.org.tw

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Microfibre pollution could be 'underestimated'

TORONTO – New scientific research out of the University of Toronto has looked into the effect of microplastics on ocean life and suggested that the damage caused by microfibrils from plastic-based textiles could have been underestimated.

The results, published in the *Journal of Applied Ecology*, reveal that while there is plenty of evidence that macroplastics, those greater than 5mm in size, are harmful to marine life, the impacts of microplastics, those smaller than 5mm are less clear.

Results are clouded by the fact that research has, to date, looked at a number of effects of different microplastics on many forms of marine life. They also found that the bulk of research into microplastics had focused on tiny plastic spheres and fragments rather than microfibrils from plastic-based textiles such as polyester.

When they looked at the research that had been done on microfibrils, they found that the evidence of harm to ocean life was much stronger.

Of the nearly 200 laboratory tests evaluating the impacts of plastics on animals, just more than 10 per cent used microfibrils, even though microfibrils are the most common type of microplastic in nature.

Assistant Professor Chelsea Rochman and PhD student Kennedy Bucci, who led the research, found that negative impacts were detected in a majority (62 per cent) of the tests conducted using microfibrils, but in less than half of tests that used plastic spheres, and just 21 per cent of the tests using plastic fragments.

They concluded that scientific research would be likely to detect more evidence of the damaging impacts of plastic pollution if they focused on microfibrils instead of spheres or fragments.

Web: bit.ly/3aaAa4H



Image © Greenpeace

PFAS chemicals 'threaten textile workers'

OSLO – Research from Norwegian NGO Future in Our Hands claims that exposure to high levels of PFAS chemicals is having a devastating impact on the health of factory workers in China who produce textiles for western markets.

PFAS, which are often used to make outerwear water resistant, build up in the human body over time and have been linked to various cancers, reduced birth weights and damaged immune systems.

The *Future in Our Hands* report says that communities working in and living near manufacturing sites across Asia face serious health risks as a result of exposure to PFAS.

It says the "world's highest levels" of PFOA, which is set to be banned in the EU by July 2020, were found in

groundwater at a Chinese factory which supplies PFAS substances for textile production.

Agricultural products and drinking water in the area surrounding the factory were also investigated, and levels of PFOA which pose an unacceptable health risk – especially to children – were found.

Anja Bakken Riise, from Future in Our Hands, said retailers and brands should take "responsibility for workers in the factories where they produce their goods".

She added: "While they are benefiting from countries in the south with inadequate environmental regulations and low salaries, factory workers and local communities are left paying the cost of health and environmental pollution."

Web: bit.ly/2VuNihj

Lee Jeans to launch compostable denim

KANSAS – Denim brand Lee Jeans is set to launch a range of fully biodegradable jeans which can be put in the compost bin when the user no longer wants them.

Lee's 'Back to Nature' collection is made of compostable linen-cotton yarns, with no rivets. When they are no longer needed, the buttons can be unscrewed to be reused and the rest thrown into the compost, where it will biodegrade and return to the Earth.

Unlike much modern denim it includes no polyester, which has often been added to enhance performance, stretch and thermoregulation.

"The most critical emerging environmental problem that our industry is going to face is pollution due to the increased amount of synthetics in denim products and the creation therefore of microplastics," said Roian Atwood, director of sustainability for Lee Jeans and Wrangler.

The recent launch forms part of Lee Jeans' wider sustainability initiative, called 'For a World That Works', which was recently launched at the Copenhagen International Fashion Fair (CIFF).

As well as 'Back to Nature', it focuses on sustainable production and finishing processes, like using naturally derived dyes, dyes created from agricultural waste, laser cutting to distress jeans, rather than environmentally damaging chemicals, and a foam dyeing process.

Web: bit.ly/3a5EQJb

New project to create circular textile industry

NEW YORK – A new apparel industry collaborative project has been launched in a bid to accelerate the move from a linear to a circular textile industry.

Called Accelerating Circularity, it is being funded by the Walmart Foundation, Gap Inc., Target and VF Corporation.

Phase one of Accelerating Circularity will focus on researching, mapping and identifying opportunities to pilot circular supply chains via the mechanical and chemical recycling of cotton, viscose and polyester textile waste.

That work is expected to be completed by May or June when it will move into a second phase which will aim to capitalise on the information gained by setting up pilot plants through project partners and establishing further research in other parts of the world.

Project leader Karla Magruder said: "We have started this project because a lot of people are looking at waste and a lot of people are looking at recycling but we wanted to put all of the pieces together."

Investors Gap Inc., Target and Walmart Foundation will lead a working group. Also involved are technology providers, fibre manufacturers and experts in textile waste and supply chains.

Web: bit.ly/2VF9c11

Migrant workers 'treated like slaves' in Mauritius

MAURITIUS – Bangladeshi migrant workers employed at some apparel factories in the 'paradise' island nation of Mauritius are being forced to work as modern-day slaves, according to migrant rights activists.

The Ovivashi Karmi Unnayan Programme (OKUP) NGO, which works with Bangladeshi migrants, said it was sharing its information with Bangladeshi officials in a bid to prevent more workers being mistreated.

It stressed workers should be made aware of their rights before being sent to the island nation. At least 24,500 apparel workers from Bangladesh

have migrated to Mauritius since 2016, according to the Bureau of Manpower, Employment and Training.

Supriya Shahnewaz, OKUP's project manager for modern slavery, told local newspaper *New Age*: "During (our) visit to Mauritius we found that our workers in some factories were denied their rights and were forced to work as modern-day slaves."

OKUP had prepared a pre-departure training module for Mauritius-bound migrant apparel workers, to warn them of what was happening, which it was also sharing with Bangladeshi officials.

Mauritius, a major tourist destination which has a government system modelled on Westminster, is highly ranked for democracy and for economic and political freedom. It was ranked among the safest countries by the Global Peace Index 2019.

Slavery was abolished in 1835, but this led to a large number of indentured labourers being brought in from India. Between 1834 and 1921, around half a million indentured labourers were on the island, working on sugar estates, in factories, transport and on construction sites.

Web: bit.ly/3a1XoP

Shanghai set to introduce reusable face masks

SHANGHAI – Shanghai's government has announced that two textile manufacturers in the city are producing new nanotechnology-enhanced face masks that can be disinfected and reused as many as 20 times.

The Shanghai Economic and Information Technology Committee says the production of KN95 masks is expected to reach upwards of 300,000 per day, due to greater demand in light of the coronavirus outbreak. Shanghai Juchen Infant and Children Garment Company

KN95 masks can be reused up to 20 times.



and Shanghai Hanpu New Material Hi-Tech Company are undertaking production. It's said that the masks retain a high degree of air permeability and waterproofness even after being disinfected by users via boiling water, alcohol or any other adequate disinfectant. A thin nanofibre membrane lines the inside of the mask, filtering particles as small as 0.075 micrometres. It's therefore thought the reusable

alternative provides adequate protection from the novel coronavirus (at 1mm). Though the mask is believed to be reusable even after 20 washes, developers suggest users dispose of masks after 10 washes to stay on the safe side. They will be available on China's Pinduoduo e-commerce platform and retail for as little as 15 to 25 yuan (less than US\$4).

Web: bit.ly/32Q5xiS

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Smart thinking...

The growing Smart Creation area of the Première Vision trade show in Paris featured both new and existing environmental innovations – but most of all served as a hub for exchanging new ideas.

Sustainability adds up with Abacá

Swiss backpack brand Qwstion says it's made good progress with its 'Bananatex' brand of bags and pouches made from Abacá leaves – a species of banana native to the Philippines that requires no pesticides or irrigation.

Speaking to *Ecotextile News* at Première Vision in Paris, Hannes Schoenegger, co-founder and CEO of the company told us: "We first presented the bags one year ago, but we are now in the process of expanding the range given the increased interest from our boutique retail partners."

The company also has its own stores in Zurich, Vienna, Copenhagen and Lausanne.

Originally, it worked with organic cotton but couldn't achieve the required density of spun yarn needed for its 500 gsm weight textiles: "So we then started to use hemp with a supplier in Belgium

until we discovered a technical weaving mill and yarn spinner in Taiwan which produced a suitably heavy yarn from the leaves of a banana plant," said Schoenegger.

He describes Abacá as "the hemp fibre of Asia", adding that, "there's already a processing industry available because paper is produced from banana fibre in this region".

It's not possible to weave fibre from **Abacá** – it's too rigid and therefore needs a 'softening' process, "but although it's classed as a cellulosic yarn, the fibre remains a paper component



- Extracted from banana leaves
- Grown in Philippines
- Processed in a similar way to sisal
- Steps include: homogenisation, paper and then slitting.
- More elastic than sisal and hemp
- Also used in ropes and cords

... it's not like regenerated cellulose such as viscose/lyocell – it still has the original properties of the natural banana fibre. These have not been lost," claims Schoenegger.

The company applies 24 per cent beeswax and also natural wax to give it water repellent properties to "make the fabric natural and biodegradable", he adds.

Originally available in undyed white only, the company now offers yarn-dyed in black and grey fabric colourways, which are Oeko-Tex 100 certified.

Grown within a natural ecosystem of sustainable mixed agriculture and forestry, Abacá is sturdy and self-sufficient, requiring no pesticides or extra water.

"These qualities have allowed it to contribute to reforestation in areas of former Philippine jungle eroded by soil damage due to monocultural palm plantations, whilst enhancing the economic prosperity of its farmers," he concluded.

Infinite expansion 'on track'

Plans are on track for Infinite Fiber to launch its new pre-industrial scale facility in Finland, which will allow it to make ten times more textile fibre from cotton, cardboard and agricultural waste than it currently produces at its pilot plant.

Located in Valkeakoski in southern Finland, the new facility is anticipated to go live in the second or third quarter of this year, according to Infinite Fiber's chief marketing officer Ann Sarimo in a conversation with *Ecotextile News* at *Première Vision*.

"Earlier this year we completed our first continuous production run over 24 hours, which was very successful – we're on track, and planning to launch the new facility this summer with a commercial roll out of fibre production sometime in 2022," she told us.

The new facility will have an annual fibre capacity of 500 tonnes – up from the current 50 tonnes of fibre the company is currently making at its pilot-scale facility in Espoo as it looks to increase volumes for sampling with its partners prior to the roll out of commercial-scale fibre production.

The company showed a range of new fabrics made with its fibre – including denim – at the Paris trade show. In the past, its fibres have been described as halfway between cotton

and viscose in terms of their properties.

Working with H&M, along with Finland-based investors Virala and Fortum, the company has also had crucial backing from Singapore-based Royal Golden Eagle (RGE), which itself owns pulp and viscose giants such as Indonesia-based Asia Pacific Rayon (APR), Bracell (Brazil) and Sateri which has viscose mills in China.

"Not only are we in the process of scaling up production, we're also looking to get our fibre classified as a completely **new generic type** of fibre compared to viscose and lyocell," Sarimo told us.

The carbamate process does give the staple fibre some very specific properties such as a cool hand similar to cotton and it's claimed there are similar levels of dye uptake. It's also claimed the fibre has some anti-bacterial properties.

At *Première Vision* the company debuted a new collection of garments dyed in a range of bright oranges, greens and blues all with a matt finish – and it even



Infinite Fiber process

- Uses a 'carbamate' wet-spinning process using urea to help to 'dissolve' waste cellulosic materials.
- Traditional viscose wood pulp is treated with carbon disulphide (CS₂) and then dissolved with sodium hydroxide solution (NaOH), both of which are potentially hazardous chemicals.

revealed a collaboration with Turkish denim mill Kipas, showing a woven twill indigo-dyed fabric in 100 per cent 'carbamate fibre' as it was labelled on its booth at the show.

Although urea is claimed to be a more 'responsible' chemical to use in terms of the **carbamate process**, there are still questions over its use by some in the industry. "There's the issue of high concentrations of ammonia (from urea) in the solution process and the subsequent release of nitrogenous emissions to air and wastewater," one chemical industry specialist told us. "It can combine in the atmosphere with sulphates and nitrates to form secondary fine particulate matter. There is no LCA or other scientific data to support claims the carbamate process is preferential," he noted.

However, carbon disulphide used in traditional viscose production has been previously associated with negative impacts on textile workers.

Originally developed by the VTT Technical Research Centre of Finland which worked with Helsinki Metropolitan Area Reuse Centre Ltd to collect and pre-process cotton textiles thrown away by consumers, in 2015 it became the TEKI project after *Ecotextile News* first reported on early development of this process back in August 2014.

The idea is that Infinite Fiber – which was spun out of VTT – will lease or sell its technology for retrofit at existing fibre and /or fabric suppliers to scale up the solution as soon as is possible.

Printed denim uses fewer resources

For the first time, Debs Corporation from Japan has used its 'AirDye' sublimation transfer printing process to create a washed down, denim aesthetic on a recycled polyester jacket that's certified to the Global Recycled Standard (GRS).

The company notes that its technology can print or dye on both sides of the fabric at the same time to give a wide range of design possibilities – such as imitating denim, but without the use of indigo-dyeing and the associated conventional water and chemical intensive process steps.

The technology is not new. *Ecotextile News* first reported on 'AirDye' back in 2009, "but the concept is gaining new traction as it evolves, and as interest in sustainability continues to grow," Carly Giammona, the US representative for Debs, told *Ecotextile News*.

"It is a sublimation



▲ This sublimated print 'denim' jacket from Debs was 86 per cent recycled polyester and 14 per cent polyurethane

“We don't need to work on high pressures to drive the dyestuff into the fibre

printing technique but with modified machines that are not under pressure," she explained. "We don't need to work on high pressures to drive the dyestuff into the fibre ... normally sublimation works by printing the pigments on the surface of the fabric. But this technique drives the pigment deep into the polyester fibre so it's more durable and longer lasting."

"The jacket is GRS and Oeko-Tex Standard 100 certified," she said.

Although sublimation transfer printing does use less water and energy than traditional coloration techniques (including indigo dyeing), in the past it has been limited in terms of substrates/fibres that it can be applied on. This method basically uses low energy disperse dyes that are suitable for application from printed papers onto textiles using heat – so dyes have also had low fastness to subsequent heat treatments.

Also, its main use has been on polyester and for printed effects rather than solid colours, so its range of applications has been very limited, but Debs says its proprietary technology can now circumvent some of these previous limitations.

Residual dyes used for ceramics

A quirky environmental development that stood out at *Première Vision* in Paris came from Japanese functional sportswear fabric supplier Komatsu Seiren, which is using residual dyehouse waste and surplus press cake to make microporous ceramics materials that are being used to grow plants.

Speaking to *Ecotextile News*, the deputy general manager of the Ishikawa-based company noted: "We've been working on environmental issues since 1999 and managed to reduce chemical use in our fabric dyehouse by 80 per cent from a 2005 baseline. We also have a 98 per cent recycling rate for our waste, which is where the new development comes in."

Essentially, Komatsu takes the biomass cake from residual dyehouse waste, mixes it with clay and local diatomaceous earth and then fires it at 1,000°C to produce a microporous ceramic-like biomass material that retains significant amounts of water. But this is no gimmick. The resultant tiles are being sold commercially to green rooftops by growing plants within them as well as being used for external flooring and sound-proofing applications.



Komatsu Seiren is one of Japan's largest textile mills and claims to account for 15 per cent of all Japanese textile production. "As part of this overall environmental strategy we also use natural dyes from onion skin waste that are then blended with waste from other foodstuffs such as olives, grapes, rice and bamboo charcoal to produce a wide-ranging, rich pallet of deep shades for synthetic textiles."

At the show it was showcasing this colour pallet on a range of woven and warp-knitted recycled polyamides and polyester with its 'Onibegie' range.

Protein brews up trouble for synthetics

Japanese biotech firm Spiber revealed an interesting range of 3D fabrics at Premier Vision in Paris that were made from its proprietary 'brewed protein' fibres derived from the microbial fermentation of sugars.

"By modifying the DNA sequences, we can change the diameter and properties of the fibres to produce spun yarns that have a variety of textures and diameters," Chen Wei-Ting from Spiber's corporate planning office told *Ecotextile News*. "This allows us to produce these interesting prototype 3D fabric shaped textiles that have already caught the attention of the technical and outdoor apparel sectors."

The Yamagata-based company makes these synthetic structural protein filaments by dissolving microbial-derived protein powder into a solvent and then extruding the mixture through spinnerets.

Such is its confidence in the new technology, it's now

building a high-tech **structural protein** facility in Thailand. Initiated in 2018 with a paid in capital of US\$24 million – it's due to open in 2021 and with a capacity of 'several hundred tonnes' per annum. The plant is expected to be the world's largest structural protein fermentation facility upon completion.

The company, initially set up in 2011 using microbial fermentation to produce protein biopolymers to make textile yarns that mimic spider silk, has since expanded its focus and is now working on protein-based fibres including delicate filaments with a silky sheen, through to spun yarns that have a 'cashmere-like softness' or the thermal

- Protein biopolymers formed from straight-chain assemblies with up to 20 types of amino acids
- The characteristics of any one protein result from the sequence of these amino acids
- Some proteins, such as enzymes and antibodies, are responsible for a variety of physiological functions
- Others, such as those found in the cytoskeleton of cells or in spider silk, play a more structural role
- Examples include keratin, found in hair, wool and collagen
- Synthetic structural proteins are those designed or selected from within a limitless pool of possible amino acid combinations and then produced via microbial fermentation

and moisture-wicking properties of wool – a (natural) protein-based fibre.

Technical textiles and outdoor apparel are obvious markets for these bio-synthetic materials, which Spiber claims can also be sequenced to give hydrophobic or elastic properties while at the same time offering varying degrees of biodegradability depending on how the product is engineered.

The company has already worked closely with The North Face over the past 12 months collaborating on an outershell layer for the outdoor brand's 'Moon' parka as well as its 'Planetary Equilibrium' tee shirt made of 82.5 per cent cotton and 17.5 per cent 'brewed protein' that retailed for a cool US\$250 in Japan.

These two garments were developed with the help of Japanese sportswear supplier Goldwin as part of a joint research and development initiative over the last four years as they look to realise the industrialisation of synthetic protein materials in areas outside textiles such as the automotive, construction and aerospace industries. It's thought that fermented structural proteins could become a basic industrial material in future for lightweight components.

"Our synthetic structural proteins are biological, biodegradable and can help the apparel industry move away from microplastics and animal-derived raw materials," said Wei-Ting. "We are now conducting more tests with the aim of environmental certification."



Mango joins Sustainable Apparel Coalition

BARCELONA – Fashion brand Mango has joined the Sustainable Apparel Coalition (SAC) initiative to measure the environmental and social impacts of brands and improve practices in supply chains. It joins more than 250 companies and organisations in 35 countries in the international alliance which aims to promote sustainable production within the textile, footwear and clothing industry.

"At Mango we believe that the textile industry needs to transform to become sustainable and, therefore, we are working to promote social and environmental improvements that will lead us towards that sustainability," says Beatriz Bayo, director of Mango's CSR. At the end of 2019, Mango joined the Fashion Pact, a global coalition consisting of 56 companies and 250 brands that aims to boost the environmental sustainability of the textile and fashion sectors. It is also a member of the Better Cotton Initiative programme. It recently announced plans to ensure that by 2025, 100 per cent of the cotton it uses will be sustainably grown and that 50 per cent of its polyester will be recycled.
Web: <http://bit.ly/2QnYQQ5>

'Least sustainable' brands most popular, survey suggests

LONDON – Findings from a new British consumer survey indicate that sustainability isn't high on the agenda of shoppers, as the brands they believe to be least sustainable boast the highest sales growth.

Consultancy firm GlobalData surveyed a total of 2,000 shoppers, asking them to rank a handful of high street brands and retailers based on which they reckon to be overall the most and least sustainable.

Whilst the likes of Marks & Spencer and John Lewis topped the charts, these

businesses have failed to register sales growth of more than five per cent in the past year.

Meanwhile, the likes of Boohoo and JD Sports go from strength to strength despite their perceived inaction in this space.

GlobalData's survey of found that British shoppers believed Marks & Spencer, John Lewis, Sainsbury's and Clarks were the most sustainable. On the other hand, fast fashion firms Boohoo, JD Sports, Primark and Sports Direct were deemed to be the least sustainable.

A chart correlating these rankings with the sales growth of each brand and retailer in the past 12 months – suggests the latter batch are still finding the greatest success on the UK fashion scene. Whilst 'sustainable' brand M&S has seen sales decline over the past year, Boohoo's sales have risen by close to 15 per cent.

GlobalData concludes that price, product choice and fit continue to take precedence over sustainability in the minds of the majority of shoppers.

Web: <http://bit.ly/38QOheE>

Puma collection uses repurposed plastic waste

BOSTON – Sportswear brand Puma has partnered with social impact network The First Mile to create a new training collection, each item in which integrates a minimum of 83 per cent recycled polyester yarn.

The First Mile is an initiative which spans Taiwan, Honduras and Haiti, focusing on collecting plastic bottles for reuse and reducing pollution. These bottles will now be mechanically recycled and utilised in Puma's latest athletic apparel collection and will support local communities exponentially. Whilst the social benefits are plain to see, this partnership has also been formed on the basis that it can tackle the effects of plastic pollution across these

Each item contains a minimum of 83% recycled polyester.



nations. It's estimated that 40 tonnes of plastic waste have been expelled from landfill sites and the oceans through their use in the apparel which Puma will sell this year alone.

"This roughly translates into 1,980,286 plastic bottles being reused," estimates Stefan Seidel, Puma's head of corporate sustainability. "The pieces from this co-branded training collection range from shoes, tees, shorts, pants and jackets — all the apparel is made of at least 83 per cent to even 100 per

cent from the more sustainable yarn sourced from First Mile." The Puma x First Mile training collection is now available. "We hope that whoever buys this collection feels good about this purchase, not just in terms of choosing something that uses sustainable material, but knowing that those entrepreneurs in the First Mile are being connected to this product because it's their material going into it," said Kelsey Halling, head of partnerships at First Mile.

Web: bit.ly/38Y26ln



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Intertextile Shanghai Apparel Fabrics Yarn Expo | Home Textiles

Shanghai, China

<https://intertextile-shanghai-apparel-fabrics-spring.hk.messefrankfurt.com/>

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<https://apparelcoalition.org/>

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www.fespa.com/en

POSTPONED UNTIL 6-8 OCTOBER 2020



Denim by Première Vision

Milan, Italy

www.denimpremierevision.com/

NO UPDATE AS YET



Outdoor Retailer Summer Market

Colorado, USA

www.outdoorretailer.com/

23-25 June 2020

MONITORING SITUATION



Neonyt

Berlin, Germany

<https://neonyt.messefrankfurt.com/berlin/en.html>

30 June – 2 July 2020

NO UPDATE AS YET



TEXWORLD USA, 30 June – 2 July 2020

Jacob Javits, New York, New York, USA

www.texworldusa.com

MONITORING SITUATION



Techtextil | Texprocess North America

Georgia, USA

<https://techtextil-north-america.us.messefrankfurt.com/us/en.html>

POSTPONED UNTIL 15-17 DECEMBER 2020



Dornbirn Global Fiber Congress

Dornbirn, Austria

www.dornbirn-gfc.com/

16-18 September 2020

NO UPDATE AS YET



Although every care is taken over the compilation of this diary to ensure accuracy of the dates, these can sometimes be changed due to local circumstances. It is therefore advisable to check with the appropriate organisers before travel arrangements are made.

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