

NL

Netherlands



From Linear to Circular in the Textile and Apparel Industries

Let's make the circular shift together.

“Less waste, less pollution and a longer life span for our clothing: in a circular economy we can make this happen. The Netherlands’ circular textile market has a lot of potential, and to scale up we must seek international collaboration.

In the Netherlands, we are aiming to have at least 30% recycled material in newly produced textile products in 2030. A circular economy can help us reduce carbon emissions and water usage as well as provide as much as 50.000 jobs.”

Stientje van Veldhoven,
State Secretary for Infrastructure and Water Management

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Preface

The Netherlands is aiming at developing a fully circular economy by 2050. An economy without waste, where everything runs on reusable raw materials. This goal brings significant challenges to the textile industry: an industry known as one of the most polluting in the world. This brochure, developed by Holland Circular Hotspot and the Netherlands Enterprise Agency, is dedicated to the opportunities that circular economy can bring to textiles. We have included many circular textile examples from our home base of the Netherlands. There are proven circular best practices in every part of the supply chain. We believe that many of these concepts can work and have the potential to scale in both developed and developing countries. We also believe that they can work today.

The textile industry has a value chain that spans the globe, which is making the industry a complex market with many actors and many challenges. The use of large quantities of water, chemicals and energy, the enormous waste the industry generates, pollution, the well-known poor labour conditions combined with an increase global fiber demand: it is clear that rigorous and systematic changes need to be made to the textile industry. People active in the international field of sustainability often say that “Textiles will be the new plastic” referring to the level of recognition that plastic issues have obtained at consumer level and the support for local and global actions by public and private partners.

We believe that a circular textile value chain is a blueprint to the future, because circular business models contribute to the various challenges within the industry. But the transition to the circular economy requires systemic change and asks for collaboration, above all in the textile value chain that is so spread out over the world. Governments can set the ambition, boundary conditions and nurture experimentation or give the example by circular procurement. Researchers and knowledge institutes can develop new insights and tools, validate ideas and boost awareness. Global brands and retailers, especially after COVID-19, should realise that this is about resilience and about their future markets. To paraphrase former CEO Feike Sijbesma of DSM: “how can you claim to be successful as a company in a society that fails”. Local entrepreneurs have the guts and imagination to take risks, accelerate change and deliver scale. Meaningful participation for

citizens and residents is crucial as they are a driving actor in the world of fashion and apparel. Educating the new generation, the leaders, employees and consumers of the future is crucial, just like boosting and empowering young circular designers.

The Netherlands is at the forefront of many of these processes. The Dutch inhabit challenging terrain, a delta, where successive generations have worked hard to create a vibrant society in a densely populated and early-industrialised country. This environment made us innovative and collaborative: a living lab to pioneer solutions for global challenges.

By joining forces, Holland Circular Hotspot and the Netherlands Enterprise Agency have shared our insights, networks and resources. We would like to thank the many textile experts and entrepreneurs we have spoken to and that have inspired us. With this brochure, we bring their insights and best practices to the international level with the hope that it will inspire to take action in other parts of the world and kickstart circular development. Please don’t hesitate to contact us for further information.

Tjerk Opmeer
Director International Programmes,
Netherlands Enterprise Agency

Freek van Eijk
CEO Holland Circular Hotspot

Introduction

This brochure aims to give a push towards a circular textile industry. Circular economy strategies and business models have the potential to offer solutions for the textile industry: use renewable sources, phase out dangerous substances, increase utilisation, and radically improve reuse and recycling. This brochure highlights Dutch circular frontrunners that make a change. Of course, this brochure includes just a fraction of the initiatives, organisations and technologies out there. We made a selection of those examples that have inspired us and have the potential to be upscaled and implemented in other parts of the world. Hopefully, these examples will also inspire and encourage you to collaborate and make a change.

The textile industry - the impact on our everyday life

Textiles are embedded in our everyday life

Textiles are fundamental to our everyday life. Textiles keep us warm, cool and comfortable. Nowadays, textiles are applied in two main sectors: textiles for clothing (conventional textiles) and technical textiles with numerous applications for nearly all societal needs.

We all have a strong cultural and emotional connection with textiles. Textiles are used to reflect and communicate our personality and vision. This can be applied to the clothes that we wear or for example in our home decor. It shows who we are and how we connect to others.

The textile industry – value chain

The textiles industry is an essential sector for the global economy, representing a 3 trillion dollar industry¹. It is one of the most dynamic, fast-moving and polluting industries in the world. The textile value chain covers a broad range of activities through a long and complicated life-cycle. A simple t-shirt travels (in most cases) thousands of kilometres along the textile

and fashion supply chain before it ends up in your closet. The process starts with the design of the garment. The first step in the production is the growing and harvesting of natural fibres (cellulose), made from plants or animal by-products (such as wool). Man-made-fibres, made from for example wood pulp, is used to extract cellulosic fibres chemically. Synthetic fibres are made from monomers sourced from fossil oil feedstocks, which are subsequently polymerised into different fibres.

Spinning turns the fibres into yarn, and weaving and knitting turn the yarn into fabric. The fabric can then be dyed or printed, washed, cut and sewn into garments. The final step of the production is the finishing of the garment, such as adding a coating, chemical treatment, bleach. Thereafter the garments will be labelled, distributed and transported to the retail stores. The items are then sold and worn by customers. At end-of-life or end-of-use, the garments are reused, recycled, incinerated or sent to landfill.



The rampant growth of the textile industry

More than half of all the textiles produced globally account for clothing. According to the Ellen MacArthur Foundation² clothing production has doubled in the past 15 years, and if growth continues as expected, production will triple by 2050. Clothing and textiles used to be produced mainly domestically. Today significant parts of the production phase are dominated by developing countries predominately in Asia, and above all by China³. This has mostly to do with that the textile industry is historically dependent on cheap labour and on countries that are less stringent on environmental and social standards and regulations.





Why fast fashion within a linear economy has to change

Compared to two decades ago, we possess twice as much clothing as before and on average only wear items 7-10 times before being discarded². Clothing is one of the most underutilised products in the world. The Ellen MacArthur report² states that the average number of times a garment is worn has decreased by 36% compared to 15 years ago. Every year consumers around the world waste around 460 billion worth of clothes. This textile waste often ends up at landfill or gets incinerated.

The “fast fashion” strategy promotes cheap and lower quality materials with a short life span. Within 4 to 5 weeks, big fashion retailers originate a design and have the finished goods in the stores ready for sales. Every week a new collection of garments arrives. These new clothes do not remain on the racks for more than a few weeks, encouraging the desirability of buying something new. The emergence of fast fashion has increased the introduction of short trends leading to premature product replacement and fashion obsolescence. The fast-fashion business model inherently fuels consumerism, leading to overconsumption.

22kg

Textile bought annually

46

Pieces of clothing bought per year

173

Items in closet

40

Items thrown away annually

3

Garments p.p. discarded

The Dutch clothing mountain:
For many people it’s fun to buy new stuff; it brings some variety into our lives. Sadly, this mentality has a huge effect on the planet. Every West European consumer buys on average 22 kg textile annually (Carmichael, 2016). In the Netherlands an average consumer buys 46 new clothing items per year. This results in approximately 173 items in a person’s closet, of which nearly 30 percent is almost never worn. On average 40 items per year will be thrown away. Before even added to the wardrobe, 3 garments per person are discarded in the supply chain. Source: report Measuring the Dutch Clothing Mountain (2017), by Maldini et al

The impact of textile industry on our environment

The fashion industry is one of the most polluting industries in the world⁴. There are many environmental issues noted by the fast fashion system. The textile industry uses large quantities of water, chemicals and energy, as well as generating waste, effluents and pollution. Two third of the environmental impact of clothing is embodied in the production phase⁵.

Furthermore, the textile industry uses an astounding 98 million tons of fossil fuels² and other non-renewable resources every year. These resources include oil to produce mainly synthetic fibres such as polyester, fertilisers to grow cotton. But also for making toxic chemicals to dye textiles, which are the biggest contributor to water pollution. The textile industry causes 20% of industrial water pollution. Factories release these chemicals into rivers in developing countries; polluting the water that the locals drink, bade in and wash their clothes.

Synthetic materials like the popular material polyester or nylon leach chemicals (microplastics) into the earth, and if they're incinerated, they form carcinogenic fumes. Aside from the production phase,

a lot of chemicals are used to wash textile. By washing for example polyester clothes, a half-billion ton of microfibres are ejected into the water, which is equivalent to more than 50 million plastic bottles!

Levi Strauss & Co was one of the first brands in 2007 to conduct a life cycle assessment study, revealing the impact of a pair of jeans during its entire life cycle; from the farm to the end of product life with the customer. Their findings showed that one pair of jeans consumes almost 4000 litres of water and emits 33 kg of CO₂⁶.

The impact of the textile industry on our society

The textile industry affects not only the environment but also the people that work in this industry. Most of our clothes are produced in countries where the working conditions are poor. Developing countries are competing to produce for multinational brands by offering the lowest costs and the fastest and most flexible production. In these countries, most people have no choice but to work for any salary, in any working condition. The European Parliament uses the term “modern slavery” for this.



4000

Liters of water
consumed by 1 pair
of jeans emitting
33kg of CO₂



There are fashion brands that assure their clothes are made by workers paid with “at least the minimum legal wage”. This sounds reasonable, but in most manufacturing countries (like India, Bangladesh or China) the minimum wage represents only between a half to a fifth of the living wage. In addition to the poor salary, the working conditions are often dangerous and unhealthy. Working without ventilation, breathing in toxic substances, inhaling fibre dust while working in unsafe buildings are not uncommon. Accidents, fires, injuries, and disease are very frequent occurrences on textile production sites.

On top of that, clothing workers regularly face mental and physical abuse. In some cases, when they fail to meet their (unreachable) daily target, they are insulted, denied breaks, or not allowed to drink water. The collapse of the Rana Plaza in 2013, killing 1134 garment workers in Dhaka, Bangladesh, has revealed the unacceptable dangerous working conditions of the whole fashion industry to the world.

With the textile industry being low-skilled labour intensive, many children are forced to work in this industry. For example in South India, where thousands of girls are sent far away by their families to work at a textile factory for multiple years in exchange for a minimum wage. These girls are often overworked and live in appalling conditions.

Historically the textile industry, and especially the apparel industry has been one of the most female-dominated industries in the world. The industry holds great power and potential to impact the lives of millions of women in low-income countries and, by extension, their families and communities. Companies can, and do, take individual action to promote women's empowerment within their value chains, that can create lasting, meaningful improvements in the lives of garment workers.



Disruption is needed - the infinite solutions and opportunities of a circular textile industry

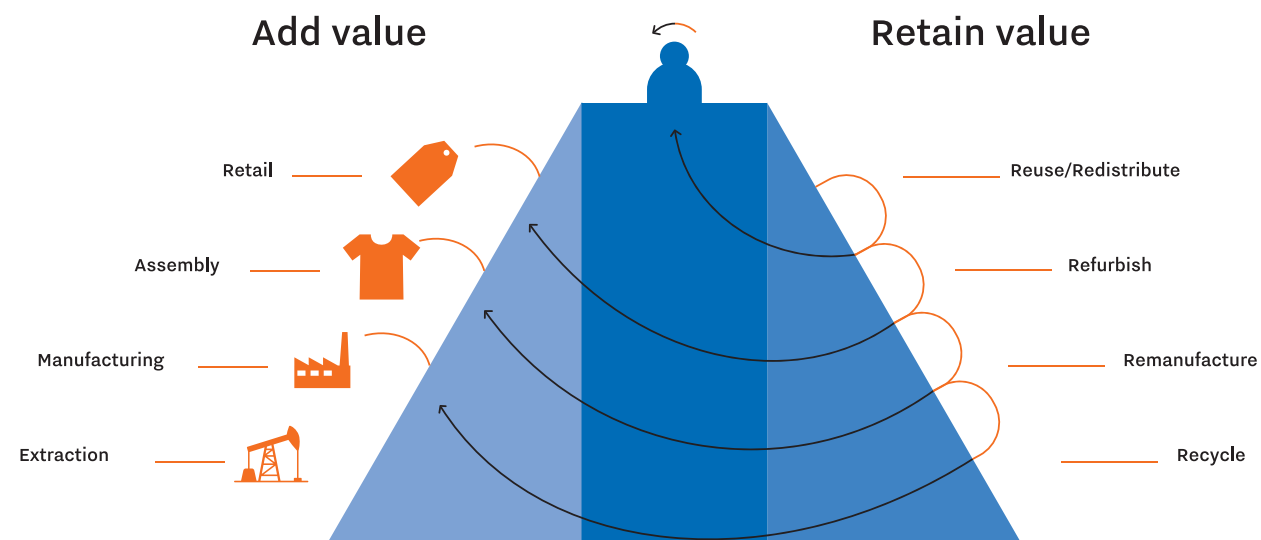
What is a circular textile industry?

Rigorous changes need to be made to transform the linear textile industry into a circular textile value chain. The textile industry must phase out non-renewable resources and move toward renewable, regenerative inputs. The main principles of circular textiles are based on circular economy and sustainable development.

The Ellen Macarthur Foundation, one of the best-known global thought leaders on circular economy, defines circular fashion as:

“Clothes, shoes or accessories that are designed, sourced, produced and provided with the intention to be used and circulate responsibly and effectively in society for as long as possible in their most valuable form and hereafter return safely to the biosphere when no longer of human use or to the technosphere when recycled.”

The Ellen Macarthur Foundation⁷



When implementing circular economy principles into the value chain of textile production, circular textiles and clothing essentially have 4 typical features:

1. Reuse textiles
2. Repair or upgrade textiles
3. Collect and remanufacture textiles
4. All textiles are recyclable

Europe and a circular textile value chain

Europe is after China the biggest exporter of textiles. The Europe Union considers the textile industry as one of the seven priority sectors to reduce its waste by 50 per cent by 2030. As part of the Circular Economy Action plan, the EU will launch a Strategy for Textiles in 2021 to strengthen competitiveness and innovation in the sector and boost the EU market for textile reuse.

Netherlands: a Circular economy in 2050

The Netherlands has set the goal to have a circular economy by 2050. Exactly how this will be achieved is set out in the government-wide programme, the transition agendas and the Implementation Programme. One of the priority topics in the transition agenda is circular textiles. The government has launched a policy programme which aims to use at least 30% recycled material in new clothing by 2030 and have halved the environmental footprint of the textile sector by 2035. In July 2016, the Dutch Agreement on Sustainable Garments and Textile was concluded for this purpose, between the government, industrial organisations, trade unions and nongovernmental organisations.

What is the difference between circular economy & sustainability?

Sustainability is often associated with departing from the linear status quo and trying to do things in a better and more efficient way and 'fixing' the flaws in the current system.

Circularity suggests departing from the idea of wanting to do things well from the start throughout the entire value chain. It really implies a system change while sustainability efforts are often focused on optimizing the status quo.



Iconproject: Collaboration on circular textile

The Dutch Circular Textile Valley has brought together a broad coalition of brands, retailers, manufacturers, their associations, knowledge institutes and government bodies that collaborate on moving to a more circular clothing and textiles value chain in the Netherlands. Four networks in different provinces with both history and future prospects for textiles, focus on a different sub-area of the circular textile issue. Among others Twente, Tilburg, Arnhem and Amsterdam, each with their distinctive focus, respectively: high-quality recycling, corporate clothing, design and business. www.dutchcirculartextile.org



Principles to become part of the circular economy

The essential first step: circular design

In the linear textile industry, many products are deliberately designed to “fail” and/or to “be outdated”. The “designed to fail” method artificially limits the technical lifespan of products, while the “Designed to be out of fashion” strategy is more psychological than rational in nature. Companies respond to unconscious emotions of customers, thereby creating new (redundant) needs and desires.

For a product to be produced in a circular way, it needs to be designed accordingly. On average 80% of a products’ environmental impact is determined at the design stage. This implies that textile and fashion designers should shift their focus from the aesthetics and the end-price to the user-needs, the function and the end-of-life of the product in mind.

Digital design

More and more, our clothes are designed digitally. 3D design software allows fashion designers to work in a more streamlined and sustainable way. The traditional sampling process can be done digitally, reducing waste and CO2. One example of a company that takes digital design a step further is the Amsterdam based company the Fabricant. The company uses visual effects such as motion capture, 3D software and body scanning to create hyper-realistic animations of garments without ever having to touch them physically. The Fabricant collaborates with brands such as Tommy Hilfiger and Puma. They not only design garments digitally but also animate marketing campaigns that replace traditional

photoshoots. The digitalisation of fashion also creates opportunities for “fashion-on-demand”, preventing overstock and allows personification.

Circular design principles

1. *Design with a purpose*
What is the function of the product? Does it satisfy the customers needs?
2. *Design for longevity*
Design in a way that the product lasts, is considered timeless and of high quality.
3. *Design for resource efficiency*
Apply materials in the design that are renewable, produced in a sustainable and fair way, with minimum (fossil) energy.
4. *Design for biodegradability*
Design garments with materials that are biodegradable or compostable within a reasonable timeframe.
5. *Design for recyclability*
Apply textile waste in new designs, but also consider the disassembly of the products so that it can easily be recycled.

One great example of the “Design for recyclability” is the Futurecraft.Loop running shoe by Adidas. This shoe is made out of one material (TPU) that is 100% recyclable. When the shoe is at its end-of-life, the shoe can be returned to Adidas and will be washed, grinded and remade into a new one.



The circular production of textiles

The production of a garment emits a lot of CO₂. This is mainly due to outdated production techniques that waste energy. If the entire fashion world would switch tomorrow to the latest production techniques fueled by renewable energy, it would save one billion tons of greenhouse gases per year. Additionally, by keeping overstock to a minimum, more than 150 million tons of CO₂ can be saved.

The textile fibre

The production of fabric starts with the fibre. A fibre is like a small short piece of “hair”. A filament is a long strand of a single substance. Fibres are made from either natural resources or chemicals. According to Lenzing (a large EU producer of textile fibres), almost two-third of all the textile fibres globally produced are derived from petrochemicals. A quarter is dominated by cotton; a water-intensive crop that requires intensive use of pesticides.

It is clear that increased textile reuse and recycling could reduce the production of virgin textile fibres and therefore limit its environmental impact. Alternatively, one could look at waste products from other sectors, or produce fibres from renewable resources. Examples include applying recycled PET or fishing nets as alternatives to virgin petrochemical fibres or use food waste such as the peels from bananas or oranges to produce Fruit leather by the Rotterdam based company Fruit leather. It is even possible to 3D grow a biodegradable dress from mushroom roots!

MycotEX – 3D produced sustainable textiles from mushrooms roots.

MycotEX creates sustainable fabric from mycelium, also known as “mushroom roots”. Combined with 3D technology, MycotEX creates seamless custom-fit garments for any body, shape and style without the need to cut and sew. The company has no textile waste during the production phase and only grow the mycelium they need. Once worn out, the garment can be buried in the ground to decompose naturally. The possibilities of MycotEX are endless and yet to be discovered. MycotEX has participated in the Fashion For Good program and won several grants, honours and awards, with the Global Change Award (2018) being the highlight. <https://neffa.nl/nl/mycotex/>

Dissolvable yarn – applied in the workwear of Groenendijk.

Groenendijk found a way to overcome their biggest challenge in recycling: the disassembly of double stitched fabrics, zippers or buttons. They therefore decided to apply the Wear2 yarn developed by C-Tech innovation in their workwear. This yarn loses its strength when it comes in contact with microwaves. This technology allows the company to more easily disassemble their garments, ready for the next step in recycling. <https://www.groenendijkbedrijfskleding.nl/>

Yarn production.

Textile yarn is a strand of natural or synthetic fibres or filaments. In textile yarn, individual fibres or filaments are wound together to make threads. The process of making yarn is called spinning. Yarn can be spun by machine or by hand. Energy consumption, spinning waste, spindle oil and dust are the major factors for environmental concern of the spinning process.

Weaving or knitting

Weaving is an important step in the manufacturing process, as weaving is what holds the fabric together. The process of weaving entails the interlacing of threads vertically and horizontally at the right angles to generate a textile. By changing the way of weaving threads, various textile/fabric appearances are created.

After the process of spinning is carried out, the yarns are distinguished in two forms, i.e. weft yarn and warp yarn. Different treatments of weaving are provided to both of these yarns. Then the weaving cycle starts, that includes shedding, picking, beating up, left off and take up.

Enschede textielstad – bring back life into a former textile producing city.

Annemieke Koster started her own weaving mill in Enschede, approximately 5 years ago, without having any experience in that field. The city Enschede used to have a thriving textile industry. At its peak, Enschede was one of the most important textile cities in the world, employing over 50 thousand people.

Besides bringing back the textile industry to Enschede, Koster also wants to retain knowledge by setting up master-apprentice trajectories. With the old looms brought back to life, she and her team weave sustainable fabrics, made from recycled yarn and sustainable natural yarn. Enschede textielstad collaborates with a large variety of brands, companies and stakeholders on various circular initiatives. The company supplies amongst others it's textiles to Dutch Spirit, but also collaborates with Gispen or with the textile designer Roos Soetekouw. <https://enschedetextielstad.nl/>





Dyeing of fabrics

Textile wet processing involves the pre-treatment, dyeing and finishing of the fabrics. There are many types of dyeing, such as cross dyeing, union dyeing and gel dyeing. All of them have their own process. It is estimated that over 10 thousand different dyes and pigments are used industrially, and over 700 thousand tons of synthetic dyes are annually produced worldwide⁹.

In the textile industry, up to 200 thousand tons of these dyes are lost to effluents every year during the dyeing and finishing operations, due to the inefficiency of the dyeing process. Unfortunately, most of these dyes escape conventional wastewater treatment processes and persist in the environment as a result of their high stability to light, temperature, water, detergents, chemicals, soap and other parameters such as bleach and perspiration.

Dyecoo – dye without water

DyeCoo is a Dutch company with more than 15 years of experience in CO₂ technology. DyeCoo's CO₂ technology is the world's first 100% water-free and process chemical-free textile processing solution. No process chemicals, no water, no wastewater and therefore no wastewater treatment is necessary, and the CO₂ used is reclaimed from existing industrial processes, recycling 95% of it in a closed-loop system. DyeCoo's textile processing solutions are applied on an industrial scale. www.dyecoo.com



The increasing impact of online retail on packaging and transport

In the textile industry, not only the production counts. Especially now, with the growing e-commerce, packaging and transport are essential in a circular chain. Brands should consider not only the materials used but also consider the impact of packaging and delivery. How will items be collected and recovered at all points where waste is generated?

There are many applications for plastic in the fashion industry. Plastics are used for the synthetic fibres, buttons, hangars, garment poly bags, e-commerce mailing bags and various filler materials. Approximately 180 billion polybags are produced every year to store, transport and protect garments, footwear and accessories. Less than 15% of all polybags are collected for recycling¹⁰. Fortunately, there are many countries that realise they need to introduce effective measures to tackle this issue, such as a charge for plastic bags.

A truly circular solution for polybags?

In December 2019 Fashion for Good launched The Circular Polybag Pilot which will explore a solution that aims to reduce the use and impact of virgin polybags in the fashion industry. Orchestrated by Fashion for Good in partnership with Adidas, C&A, Kering, Otto Group and PVH Corp., with Cadel Deinking, an innovator from the Fashion for Good Accelerator Programme, the pilot is a first in the apparel industry to trial a truly circular solution for polybags. Using post-consumer polybag waste, Cadel Deinking's innovation facilitates the creation of high quality, recycled content polybags; a solution that brings us closer to creating a truly closed-loop system.

www.fashionforgood.com

Packaging

So far, online retail is only growing and with that the urge to change our packaging methods. In 2019 there was a growth of 12% in online sales¹¹ compared to a year earlier in the fashion industry in the Netherlands. Due to the corona crises, many retailers had no choice but to pivot their sales model to online quickly. The first step towards circularity is to reduce, and take a look at the reduction of the amount of (returned) packages. An innovative way to do this is by the use of body scanning, augmented reality (AR) and virtual reality (VR). These new technologies are giving consumers the possibility to experience clothes, but also furniture online. For example, IKEA's Place app enables customers to place IKEA products in their space virtually. Other pilots and implementation examples include Alibaba's full VR shopping experience and eBay Australia's partnerships with Myer to create personalised stores. This way, consumers will only order the items they are sure about and that fit well, which reduces the number of packages being sent and returned.

The reuse of packaging material is one of the solutions in closing the loop. RePack is one of the main companies in Europe, providing a reusable package. If not being reused, the package of RePack can be returned to the company.

When reducing and reusing packages is not possible, it is essential to inform consumers about the recycling options for the package used. There is an immense opportunity to increase the number of products being recycled

Reusable packing solution

One important player in the reusable delivery packaging is the Finland-based RePack. RePack is a reusable and returnable delivery packaging designed with reuse in mind. It is best suited for soft goods, which makes it perfect for the textile industry. Some of the brands that are using RePack are Weekday, GANNI and Zalando. The reusable packaging is made from recycled material and designed for at least 40 use cycles. The packaging is adjustable and does not ship any air, saving money and nature.

www.originalrepack.com

Sustainable packaging plan for Dutch textile companies

The Netherlands Institute for Sustainable Packages (KIVD) is one of the gateways for Dutch organisations to get the needed information and tools about sustainable and circular packaging. In their 'Industry Plan Sustainable Packaging' stakeholders formulated several goals about 'reduce, reuse, resources and recycle' of the packaging in the Dutch textile industry. The whole plan gives a complete overview of the possibilities and challenges around packaging. More about packaging possibilities can be read in their sustainable packaging plan.

www.kivd.nl



Transport

The 2019 Pulse of the Fashion Industry report, written and published by the Global Fashion Agenda, Boston Consulting Group and Sustainable Apparel Coalition, states that the transportation of the raw materials and final textile products throughout the supply chain only accounts for a fraction (2 per cent) of the environmental impact of the textile industry. This has largely to do with optimisation and increased efficiency.

More and more consumers demand sustainable (last mile) delivery. The Dutch company Brenger found a solution in reducing the number of vehicles by smart connecting. The company founded by Wisse Koedam and Derk van der Have from Amsterdam connects transport requests to vehicles with empty space that are already heading in the same direction. This way, transport becomes way more efficient.

Another typical Dutch option is delivery by bike. Cargo Bikes are becoming more common and are widely used for last-mile delivery. Fietskoerier.nl is one of the fastest-growing logistics companies in the Netherlands and is delivering in 30 Dutch cities. Also internationally there are a growing number of companies that deliver by cargo bikes.

End-of-life options

According to the Ellen MacArthur Foundation, globally, every second around a garbage truck worth of textiles is being thrown to the landfill. In Europe, about 15–20% of disposed textiles are collected (the rest is landfilled or incinerated), whereof about 50% is downcycled, and 50% is reused, mainly through exporting to developing countries¹². The challenge is not only to collect textile waste but also to collect “clean” textile waste that can be recycled at its highest value.

As part of the H2020 funded project REFLOW, the Municipality of Amsterdam¹³ brings together designers, producers, textile collectors/recyclers, policymakers and citizens to understand and transform urban textile flows and to come up with innovative solutions to collect clean textile waste.

Collection & sorting

The first step in the recycling process is the collection of textile. In the Netherlands 75 million kilos of textiles is collected every year. There is a large challenge in preventing people from throwing their household waste in the textile collection container. Approximately 15 percent of the textile collection containers are contaminated, compared to only 8 percent 4 years ago.

Another challenge is to sort the textiles so it can be properly recycled. Fibersort is a technology that is able to automatically sort large volumes of mixed post-consumer textiles by fibre type and/or colour though an infrared scanner. Once sorted, these materials become reliable, consistent input materials for high-value textile to textile recyclers. Fibersort has been developed through the collaboration of a broad range of industry



stakeholders, such as the lead partner Circle economy, through a 4 year EU Interreg trajectory¹⁴.

Transparency and tracking

When you purchase a t-shirt, it is often written on the label, in which country the t-shirt has been produced. However, the supply chain of textiles is very complex – one shirt could include cotton from six different places. Tracing back supply chains to check for exploitation or environmental impact is therefore notoriously difficult. Corporates need to be proactive about checking it's suppliers on the (toxic) material content, resource use, production history, recycling options and the working conditions. Measurement tools can help assess products' content and the negative impacts of individual actors within the textiles industry, as well as their ongoing efforts to transform their practices for a new textiles economy. The Sustainable Apparel Coalition, for example, is contributing to this with the Higg Index. This is a set of tools that aims to help set the right standards for the industry.

However, the information on a garment's label can not always be trusted. Circle Economy¹⁵ concluded that 41% of labels on the Dutch market are inaccurate, after assessing over 10 thousand Fibersorted garments. This has largely to do with that many organisations do not perceive label accuracy as a key priority. .



Fair Wear: the Brand Performance check

The Brand Performance Check is a tool that Fair Wear uses to figure out how our member brands' business practices improve labour conditions. Every year, Fair Wear reviews brands' efforts by measuring how well they have assessed, identified and resolved issues with their suppliers. Fair Wear tackles complex problems by uncovering new solutions and driving step-by-step improvements that create real change for the people who work in garment factories. Four key activities make up the Fair Wear approach: brand performance checks, factory audits, complaints helplines and factory training sessions.

<https://www.fairwear.org/brands/>

Textile recycler Wolkat

Wolkat is a family-owned textile recycler from Tilburg since 1948. Wolkat is one of the few companies in the world that controls the entire process in house from textile waste to new end products (fabrics). The company processes more than 25 million kg of textiles per year.

<https://wolkat.com/>

Recycling

According to Directive 2008/98/EC¹⁶ (European Parliament and Council of the European Union, 2008) recycling means any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations. It is estimated that currently only less than 1 per cent of all textiles worldwide are recycled into new textile.

The textiles to be recycled is often categorised as pre-consumer or post-consumer. Pre-consumer textiles are off-cuts, selvages or rejected fabrics or yarn from the production process. Post-consumer textile waste consists of any type of garments or household textiles that the consumer no longer needs because they are worn out, damaged, or have gone out of fashion. Textile recycling refers to the reprocessing of pre- or post-consumer textile waste for use in new textile or non-textile products. Textile recycling routes are typically classified as being either mechanical or chemical. In many cases, the recycling routes consist of a combination of the different types of processes.

According to research by Dutch consultancy firm CE Delft¹⁷, a potential six to seven jobs are created for every kilo tonne of recycled textiles, making textiles the most job-intensive recycling sector in the Netherlands.

With mechanical recycling, the textile is shredded into small pieces. The carding process is used to extract the fibres, which can then be spun to make yarn for either woven or knitted fabric. Mechanical recycling is used best for the mono-fibre fabric of cotton and rarely viscose due to the fibre structure and higher fibre yield.

Chemical recycling¹⁸ is a series of chemical processes to convert high molecular weight polymers into low molecular weight substances. In contrast to mechanical recycling, the output products of chemical recycling are most often the same in quality as their virgin counterparts, with no loss in physical properties through the recycling process. However, in most cases, chemical recycling requires a lot of energy and hazardous chemicals.

SaXcell, an abbreviation of Saxion cellulose, is a regenerated virgin textile fibre made from chemical recycled domestic cotton waste. SaXcell has set up a pilot programme in a new production facility to create high-grade textile out of used textile. With a production output of 100 kilos of fibre pulp per day, this marks the first time that this process is utilised on a large scale. What makes the SaXcell fibre unique is the fact that it's quality is better than that of the input material, i.e. the cotton fibre.
<https://saxcell.nl>



Loop-a-Life 100% circular and local

Loop-a-life collects textile waste and turns this through their (local) closed-loop system into new garments. First, the garments are sorted into 25 different colours (partly by the Fibersort technology). Due to the sorting in colour, no toxic dyes, other chemicals or water are needed. By recycling, Loop-a-life saves 5 to 10 thousand litres of water for the production of a sweater. After sorting the textile is cut, blended and spun into new yarn, which is then used to make a new garment, like a recycled woollen sweater or Cotton2cotton dress.

What makes Loop-a-life sets apart, is that they not only have a local closed-loop system, they also avoid overstock by allowing their customers to “reserve” a sweater through a crowdfunding campaign. The money is then invested in textile and recycling innovation.
<https://loopalife.com/>

Re:newcell

Re:newcell's technology transforms high cellulosic waste (like cotton and other natural fibres) into pure, natural dissolving pulp. It can then be turned into a textile fibre, fed into the textile production cycle to meet industry specifications. It is an efficient process that reuses chemicals. Re:newcell has a running plant in Kristinehamn, Sweden.

The Kristinehamn plant produces 7 thousand tons of biodegradable Re:newcell pulp per year and runs on renewable energy. This allows Re:newcell to get the experience that will allow the design of full-scale plants, each meant to produce approximately 30, thousand tons of re:newcell pulp per year.

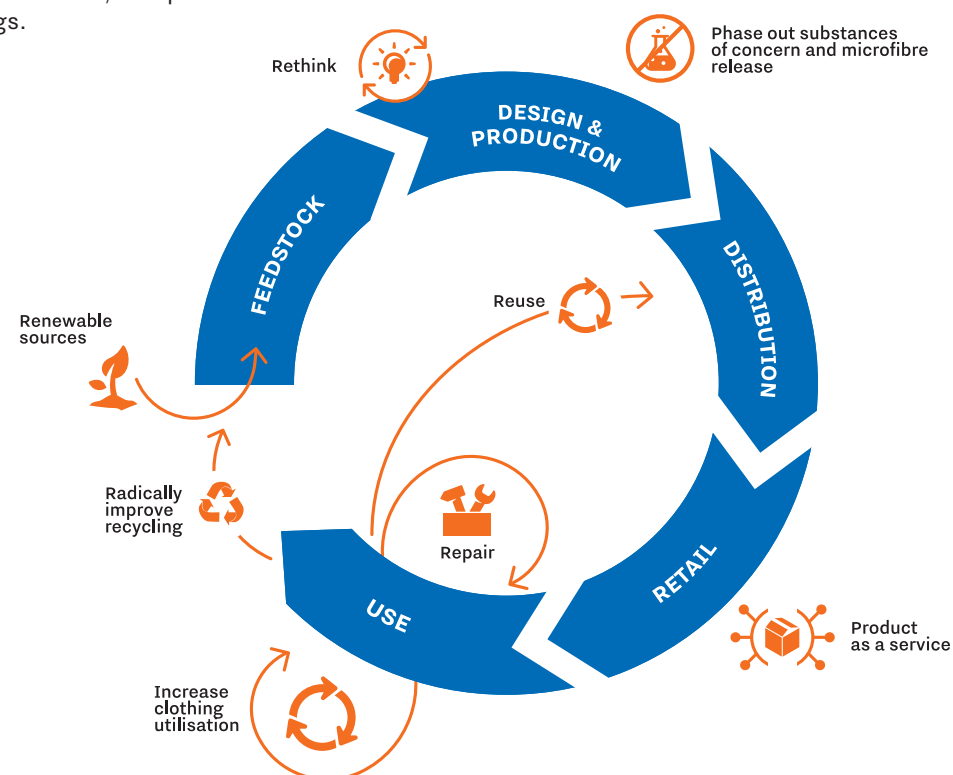
If one kilo of clothing is recycled instead of being produced from virgin sources, it saves thousands of litres of water and decreases emissions of both CO2 and chemicals.

The recycled cotton textile by Re:newcell is applied by the H&M group in the 2020 Conscious Exclusive collection.



Circular business models

Textile companies do not only face environmental and social challenges. They also need to cope with the increasing competitive pressure and digitalisation, while making a profit and keep satisfying the needs of their customers. Many existing business models are based on the assumption that there is an infinite supply of non-financial resources, such as natural, human and social capital. Nowadays, more companies become aware that they should change their current practices and embrace a circular value chain. For many companies, business model innovation is the solution to meet customer needs within the planetary limits, while making a profit. By means of a circular business model, a company can create value by utilising both the economic as well as the resource value retained in products after use, as input for the production of new offerings.



One promising example of a circular business model is the Product-as-a-Service (PaaS) business model; instead of traditional sales, companies deliver the value of the product through integration of products and services offerings. With different forms of services, such as renting, sharing, leasing, subscriptions or pay-per-use, the consumer benefits from the product, without having to own it. Circular business models often come with additional opportunities, such as an intensified customer engagement or the opportunity to collect data on usage habits.

There are several business accelerators and projects that aim to support start-ups in driving innovation. The accelerator programme by Fashion for Good allows 10-15 fashion start-ups each year to join their intensive global programme, designed to drive innovation in sustainability, circularity and transparency in the textile and apparel industry. Switching Gear is an example of a project, led by Circle Economy and supported by the C&A Foundation, that aims to guide 4 apparel brands on a circular innovation process to help them design and launch rental and re-commerce business model pilots by 2021.

Manufactured-to-order fashion

Fashion companies face the constant challenge of having to estimate many months in advance how many and which garments to produce before they are available for consumers to purchase. This speculative nature of the supply chain has led to rampant overproduction and waste, further compounded in the last decade by the fast-fashion phenomenon. One solution is to let customers pre-order a garment before starting the production. Once the minimum number of items is reached, the production process can be started.

One example of a company that has successfully adjusted its business model to a made-to-order concept is the London based brand Paynter. The company designs and produces limited edition jackets in 4 to 5 batches a year. The customers have to pre-order the jacket, which tends to sell out within minutes.

Paynter's disruptive business model is niche and couldn't (for now) be applied to the large majority of fashion companies. It will make production scheduling incredibly challenging. However, the brand is tapping into something the industry has been showing an increasing appetite for in recent years and has become a frontrunner in what many believe is the future: demand-driven manufacturing. <https://paynterjacket.com/>

Tailor-made & “slow fashion”

A few decades ago our garments were locally sourced and produced. People would only buy durable clothing that could serve them for a long time. The slow fashion movement encourages to buy less and invest in higher quality garments produced in a sustainable way. The movement also emphasises the art of tailoring, clothes making and celebrates the skills of the craftspeople who make them.

Tailor made bra - Arí van Twillert

The Dutch designer Lidewij van Twillert developed specialised technology and software that combines 3D printing with traditional sewing to make the ultimate bra that fits so perfectly that it is accurate to 0.1 mm. With a 3D personal scan, it takes 20,000 measurements of the body to determine exactly how each element of the bra should be applied.
<https://arivantwillert.com/>

The end of ownership

With a subscription and/or rental business model, the company maintains the ownership of the product and sells “the use of it”. However, renting a garment is not something new. For decades we have been renting and sharing clothes, in particular for special occasions. Nowadays, rental is transforming from an outdated to a modern way of consuming fashion. This innovative business model is part of the “sharing economy” and gives clothing a longer shelf life, and at the same time, also reduces material use and carbon emissions. This market is driven by fashion tech companies with expertise in reverse logistics and inventory management.

Support on accelerating circular business models

The global fashion rental market is expected to double in value from 0.9 (2017) to 1.9 billion dollars by 2023. One of the leading companies in this market is the American company Rent-the-Runway¹⁹, valued at 1 billion dollars in 2019. Rent-the-Runway is a (mostly online) service that allows women to rent rather than buy high-end clothing. According to Jennifer Hyman²⁰, co-founder of Rent-the-Runway, industry leaders keep underestimating the fashion rental market. She believes the company can grow to a 100 billion dollar company and become the “Amazon Prime” of rental.

In China, within the last 5 years, there has been a huge uptake of clothing rental services and libraries²¹. For example MSParis²², the first Chinese fashion rental platform with over 7 million subscribers. Another example is Y-Closet²³ which is more focused on the higher-segment. At Y-Closet customers first rent clothes through a subscription model and then have the option to try and purchase the item. The company has so far raised over 80 million dollar in funding, through multiple rounds from amongst others the Alibaba group.

Despite the huge potential, there are currently only a handful of European fashion companies that have adopted a rental, leasing or subscription model. Finding out the right rental-business models and reverse logistic system that suits the product, customer, and the location isn't easy. Lizee²⁴, based in Paris, offers fashion brands the validation of different circular business models and support in the piloting of different forms of rental/subscription models by their 9 months program.

Collaboration - the Switching gear project

The Switching Gear project aims to accelerate re-commerce and rental business models and contribute to the apparel industry shift towards circular consumption models. The project led by Circle Economy guides 4 apparel brands on a circular innovation process to help them design and launch rental and recommence business model pilots by 2021.

<https://www.circle-economy.com/programmes/textiles/switching-gear>



LENA - the first fashion library in the Netherlands.

LENA was founded five years ago by 3 sisters and a friend in Amsterdam. The company offers a “clothing library”; a system to borrow clothes and provide an extended wardrobe for every occasion. One item serves many different people and it gets actually used, instead of being forgotten in one person's wardrobe. LENA believes in a circular approach, which promotes access over ownership and fights using up all our resources and producing textile waste.

By means of their Sharing business model, LENA has managed to save around 35.000 pieces of clothing since the start. This translates into about 5500 Olympic swimming pools of water and the CO2 emissions of 65 two-week-holidays to Bali.

<https://www.lena-library.com/>



Patagonia - USA

The “father” of the slow fashion movement Patagonia, is a pioneer on high quality durable (outdoor) clothing with organic, recycled, and upcycled fibers. At the very heart of Patagonia's business is to take end to end responsibility of the product.

Patagonia's Worn Wear encourages consumers to take good care of their gear, washing and repairing as needed, and eventually recycling once the garment can no longer be used. The repair facility in Reno, repairs over 45,000 items per year and the company operates retail repair stations around the world, in addition to providing its customers with free tools for repairing their own clothing. With every repair, the company provides feedback to their designers to improve future products.
www.patagonia.com



Dutch Spirit - Suit as a service

The Arnhem based company Dutch Spirit not only designs and tailor makes sustainable and recyclable suits, but the company also offers a “suit as a service”. For 99-130 euro per month, the customer receives one tailored made suit and two tailor-made shirts per year. For two years, Dutch Spirit remains responsible for the alterations when needed (for example due to weight changes or when the suit is damaged)
<https://www.dutchspirit.com/suit-as-a-service/>

Mudjeans - Lease your jeans

Mudjeans introduced their pioneering leasing business model in 2013. Mudjeans allows you to lease a pair of jeans for a monthly fee. When the jeans are worn out, or if you feel like a change after 12 months, the trousers is recycled.
www.mudjeans.nl



Second hand becoming mainstream

According to the Future-of-Circular-Fashion report by Fashion for Good, “Rental appears to be very attractive in higher-value segments, subscription-rental has consistently strong potential, while re-commerce appears to be the most financially attractive of the models analysed.”²⁵.

With a re-commerce or reuse model, the company in question implements a take-back scheme for clothes and resells this second-hand clothing, either themselves or through a third party. Brands increasingly see the potential to centralise and formalise second-hand activities to retain profits for themselves whilst encouraging sustainable consumer behaviour. Also, peer-to-peer platforms are gaining popularity, which allows consumers to buy and sell peer to peer directly. Examples of online sharing platforms include United Wardrobe, Vinted and The Next Closet.

Online collaborative consumption has opened new possibilities for sustainable consumption. The utilisation of second-hand goods reduces the demand for new products and mitigates premature disposal. For every cotton t-shirt that is reused, approximately 3 kg CO2-eq is saved.

United Wardrobe app

United Wardrobe is an online community which makes buying and selling clothes, shoes and accessories fun and easy. The company was founded by 3 Dutch students in Utrecht in 2014, and has grown into a multinational company, operating in 4 countries. What sets United Wardrobe apart from other “online marketplaces” is that the platform is focused on fashion only and provides a safe and secured payment system. Approximately 4 million users have already uploaded 15 million fashion products onto the platform.
www.unitedwardrobe.com

Share your Clothes by Claudia Sträter

Claudia Sträter, a Dutch womenswear clothing brand, embraces the re-commerce concept through their “Share your Clothes” Vintage boutique. The company collects “pre-loved”-items from their customers and resells these in their vintage boutique store., that is located within a regular Claudia Sträter shop. This way, the lifespan of the garments is extended, while the profits go to the Claudia Sträter Foundation.
<https://www.claudiastrater.com/mvo/share-your-clothes>

Clothing swap

A clothing swap is an (online or physical) event wherein participants exchange their valued but no longer used clothing for clothing they will use. Clothing swaps are considered not only a good way to refill one’s wardrobe but also are considered an act of environmentalism.

Designing for the sharing economy

For designers, the sharing economy also requires a new way of thinking. Ensuring an item is durable enough to withstand the continual logistics of renting and/or swapping will be imperative. Circular design thinking could reignite the need for values such as quality, durability and longevity and requires you to think out of the box.

Wear & care

20 Percent of the environmental impact of a garment is determined at its user phase²⁶. The choices made on the frequency and how to wash your clothes are a significant sustainability consideration that is often overlooked. Simply reducing the frequency with which we wash a garment can significantly reduce the amount of water and detergent needed. The type of laundry detergent also matters because most commercial laundry detergents use phosphorus that contributes to water pollution, harms the quality of water²⁷. Approximately two-thirds of use phase energy is estimated to be used during washing (including heating water) and one third for tumble drying²⁸.

Choosing the right energy-efficient washing machine with a long lifespan can therefore make a difference. Companies such as Bundles²⁹ or Homie³⁰ allow the customer through a subscription or pay-per-use model to use such a washing machine at home without the need to make a large upfront investment. Bundles and Homie also repair the devices when needed and encourage the manufacturers to take extended producer responsibility.

Microplastics

Most people are not aware that when they run a laundry wash with a moderate load of synthetic clothing, they also release on average 20 million of microfibres into the sewage water³¹. These microfibres are so tiny, making it difficult to filter them out. For that reason, microfibres end up in the air, in house dust and the water, furthermore entering our food chain and even into our own body.

Care

For consumers to take greater care of their garments and extend their lifespan, it is unlikely to happen without the change of consumer behaviour. Campaigns to inform the population, education in primary school for simple textile repairs, such as sewing buttons back on, and the implementation of eco-labels for textiles with a longer life-time could be considered. A great example of such an initiative is the Repair Cafe.

Swap clothes globally

The Global Fashion Exchange is an international platform promoting sustainability in the fashion industry with inspiring forums, educational content and cultural events. Through interactive clothing swaps, GFX empowers consumers to take action for a better environment while they stylishly renew their wardrobe and save hundreds of thousands of clothes from going to the landfill. Sofar GFX has given new life to over 500 thousand kilos of clothing from going to landfills through over 40 events held on 5 continents. Soon GFX will launch “the swap chain”, a new digital fashion swapping community. The platform will use Blockchain to decentralise the control of the platform and give the users the freedom to upload and swap clothing at their ease.

<https://www.globalfashionxchange.org/>

Repairing is caring - Repair Cafe

In 2009 Martine Postma came up with the idea to start a Repair Cafe: a place where people can go to repair their broken stuff, with the help of volunteers. There are over 1800 Repair cafes in more than 35 countries worldwide. According to the Repair Cafe Foundation, over 1 million items have been successfully repaired through the Repair cafe so far. Trousers, jackets and sewing machines are among the top 10 most brought items.

Currently, many people have very little knowledge about how to repair broken items; For that, the Repair Cafe developed an online repair monitor. Repair data is collected and shared through the central database, which allows repairers to learn from each other’s experiences.

repaircafe.org

Washing your clothes the eco-friendly way:

Seepje

Seepje is known for their Sapindus mukorossi peels, a fruit which grows in abundance in trees in India and Nepal. When these shells get in contact with water, they create a natural form of soap that makes your clothes wonderfully clean and soft.

Jasper Gabriëlse and Melvin Loggies, the two Dutch founders of Seepje, discovered the peels 7 years ago. By coincidence, they saw a Nepalese woman on the television who was washing her clothes with the Sapindus mukorossi peels. In the meantime, the company has a huge success, selling over 650 thousand products each year, consisting of 15 types of washing detergent and household soap, all made from at least 99 per cent natural ingredients.

<https://www.seepje.nl/>



The need for awareness and social responsibility

Creating awareness

Today, there is an increased awareness that we, especially in western culture and society, have lost connection with the fashion's materiality. Most of us have lost touch with how clothing is made, and where the textiles, yarns and fibres come from.

A great challenge lies ahead to make people aware that a change in the textile industry is needed. People should use their “consumers” voice to move the textile industry in the right direction. Documentaries like *The True Cost*, *River Blue* and *The Next Black*, but also the Dutch Sustainable Fashion week offers us wake-up calls. More and more consumers expect brands to be concerned about environmental, social and ethical issues and have a positive contribution and impact. Research by the Boston Consulting Group³² shows that even though 75% of the surveyed customers consider sustainability as important, for only 7% sustainability is the key purchasing criteria.

Documentary *Taking Justice*, by Mumster

Taking Justice shows that even a small, sustainable and ethical brand can make a difference. Chanel Trapman follows Janneke and Judith, founders of the fashion brand J-LAB3L to India, in their fight for justice in the fashion industry. Here they produce their clothing collections in at a special production facility mostly run by women.
www.mumster.nl

Fashion for Good experience - museum about sustainable fashion innovation

At the interactive museum of Fashion for Good in Amsterdam, you can learn about how your clothes are made and discover game-changing innovations shaping the future of fashion. The museum shows concrete ways to have a positive impact and encourages to take action now. It allows you to learn about new technologies and takes a closer look at your own consumer behaviour.
www.fashionforgood.com

Fashion Revolution: a global movement

At the interactive museum of Fashion for Good in Amsterdam, you can learn about how your clothes are made and discover game-changing innovations shaping the future of fashion. The museum shows concrete ways to have a positive impact and encourages to take action now. It allows you to learn about new technologies and takes a closer look at your own consumer behaviour.
www.fashionrevolution.org



Photo: Fashion Revolution

Modern slavery

According to the United Nations³⁴, over 40 million people globally work as modern slaves. Not only in the developing countries but also in Europe, for example in Leicester, UK. According to British Parliament-member Andrew Bridgen, around 10 thousand people work in the Leicester area as ‘modern slaves’ for large online retailers³⁵. They work in appalling working conditions, far below the minimum wage. According to the British Centre for Social Justice³⁶, it concerns at least 100 thousand people in the entire UK (both British as well as foreign workers). Exploitation and slavery are interwoven in the global textile and apparel supply chains: from raw materials to manufacturing. Ending slavery in supply chains requires global governments and law enforcement to enforce anti-slavery laws and making sure criminals are held to account.

Social impact

Most consumers have lost touch with the human dimension of fashion and with the blood, sweat and tears that goes into making clothes. Social impacts such as worker rights, poor working conditions, long hours, low wages etcetera are still problems of concern in developing nations. Child labour, unfortunately, continues to be a reality in the textile industry. Bangladesh, China, Ethiopia, India and Nepal are still accused of using child labour, while North Korea reportedly uses forced labour. The textile industry is a major force in the lives of some 168 million children (11 per cent of all children worldwide)³⁷ forced to work, at all stages of the supply chain. For example, in the cotton industry, where children are employed to

transfer pollen from one plant to another or help with harvesting. Here they are exposed to pesticides and are forced to work long hours, without protection, often below the minimum wage.



Vanhulley: a circular business model with an impressive social impact

The Dutch company Van Hulley is a great example of a social enterprise with a circular business model. The customer sends its end-of-life, unwanted or pre-loved shirt to Van Hulley. A team of 15 women with a distance to the labour market sew the shirt into a boxer short, face mask or children's trousers. Once finished, the upcycled item is sent back to the customer. Van Hulley further supports their employees, by allowing them to study for one day in the week, improve their language (Dutch) and broaden their network.
www.vanhulley.com

The future of circular textiles: what needs to be done?



The impact of COVID-19 on circular textile industry,
by Gwen Cunningham - Lead Textiles Programme at
Circle Economy, Amsterdam

The COVID-19 pandemic has lifted the veil on a lot of problems in the textile industry that were already there for a long time. It exposed the inequalities, the lack of human rights throughout the value chain and the lack of social security for people that work in the fashion industry. This not only applies to the garment worker from Bangladesh but also to the shop assistant in a fast fashion store on the high street. Online campaigns and petitions such as #PayUp, initiated by the NGO Remake, encourages fast-fashion retailers such as Primark to take responsibility and pay and take their orders.

From a circularity perspective, the pandemic has really disrupted the entire supply chain, specifically the end-use supply chain. The market for post-consumer

Lost Stock - a solution to surplus stock

With the corona pandemic shutting down the global textile industry, brands are trying to limit their revenue losses through the cancellation of orders placed (which have long been processed). Manufacturers are therefore unable to pay the garment workers, with the result that, according to the Workers Rights Consortium, some 50 million garment workers are at risk. Additionally resulting in huge overstocks at textile factories in developing countries. The UK shopping app Mallzee created Lost Stock as a solution to this overstock ending up at landfill and to the many garment workers that were left unpaid. Lost Stock is a box containing at least 3 items of clothing that origin from surplus stock directly from the factories. The boxes are sold for 50% of the recommended retail price, and one box supports a worker in Bangladesh for one week.

www.loststock.com



Upscaling circularity - Schijvens Corporate Fashion

The Dutch family-owned company Schijvens Corporate Fashion has been producing workwear for more than 150 years. Since 2017, they have started to take back and recycle outworn clothing into new circular corporate wear. The recycling of garments saves around 99% of water (compared to growing virgin cotton), 40% CO2 and 40% energy.

Schijvens recently dressed 100 thousand employees of the Albert Heijn, which is the largest supermarket chain in the Netherlands, into Schijvens new circular corporate wear. The employees of Kruidvat, a large drugstore chain, will also receive new circular outfits in the near future from Schijvens.

Sustainability is part of DNA: Schijvens Corporate Fashion is the winner of the Circular Award Business 2020, is rated with a high score at the Fair Wear Foundation, is affiliated with the IMVO textile covenant and is ISO9001 / ISO14001 certified. Schijvens Corporate Fashion proves that circular clothing doesn't need to remain a niche market and can be upscaled! www.schijvens.nl

relationship with textiles, in the sense of how we use, value and care for our textiles and keep them for as long as possible. Covid-19 made us realise we can actually do with a lot less in our lives.

The future of the textile industry is largely unclear. On the one hand, you see people, who lost their income, queuing at Primark. On the other hand, there are reports that state that people have had a fundamental change in thinking. Only time will tell. At least COVID-19 opened up a discussion and made us realise the time is there to change.

textiles is put to a halt, because of regional and national lock-downs. Also because of consumers that fear of contamination linked to second-hand clothing. The movement of used textiles globally, being exported from the US to Africa or Asia has locked down. It brings the problem of textile waste, much closer to our home. We cannot ignore it anymore, we cannot export it.

What you see is a kind of renewed urgency and the need for a local supply chain and local resilience. I hope that the temporary pause that we were forced to take with COVID-19, on an individual level, as well as on an industrial level has really triggered us to think about what is really necessary to survive. That may be wishful thinking, but in a way, it is a simulation of the resource scarcity that is sure to come if we don't change business as usual.

The textiles industry needs to implement alternative circular business models, which are built on a different kind of value that we prescribed textiles and to see textiles as something that is essential and not only decorative. I hope that we are going to have a different

The COVID-19 pandemic opened our eyes to the fact that the textile industry is still far from circular. It has also made us realise that the entire textile supply chain is interconnected and interdependent. When a retailer decides not to take responsibility for its cancelled order, all the entities that are participating in the supply chain are affected. People working at the beginning of the supply chain, often from developing countries, pay the highest price.

Fortunately, consumers increasingly demand sustainable, ethical and circular textiles and clothes. More and more large (fast fashion) retailers start to launch “sustainable” collections, for instance, the Conscious collection by H&M, The JOIN LIFE collection by Zara or the Wellness collection by Primark, often accompanied by large marketing campaigns. It creates the appearance that the textile industry is on the right track to a circular future, but let's not forget that the founder of Inditex (which includes a.o. Zara) is one of the wealthiest persons in the world and that in the past 15 years we consumed twice as much clothing as before.

The textile industry will only become circular if all stakeholders join forces. Meaning that suppliers become partners and collaborate on a large scale throughout the entire supply chain. Consumers need to use their voice and only purchase those items that they truly love. Brands and producers need to take extended producer responsibility, embrace innovation and recover the value of textiles at its highest level possible. Foremost, let's make the circular shift together and upscale the circular business models that are already out there!

Final concluding words - by Mieke Evers, main author of this brochure, International sustainability advisor at the Netherlands Enterprise Agency.

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