



*TEXTILE RECYCLING*  
**TOOLBOX**



2020 CIRCULAR FASHION  
SYSTEM COMMITMENT

# IMPRINT

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## **ABOUT GLOBAL FASHION AGENDA**

Global Fashion Agenda is a leadership forum on sustainability in fashion. Anchored around the world's leading business event on sustainability in fashion, Copenhagen Fashion Summit, Global Fashion Agenda advances a year-round mission to mobilise the global fashion system to change the way we produce, market and consume fashion, for a world beyond next season. A non-profit initiative, Global Fashion Agenda collaborates with a group of Strategic Partners, including Kering, H&M, Target, BESTSELLER, Li & Fung and Sustainable Apparel Coalition on setting a common agenda for focused industry efforts on sustainability in fashion.

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# INTRODUCTION

## WHAT IS A CIRCULAR FASHION SYSTEM

Today's linear "take, make, dispose" economic model is reaching its limits, and natural resources are becoming increasingly scarce, threatening the growth of the fashion industry.

A circular system restores and regenerates materials, in addition to providing opportunities to reduce environmental pressures and ease demand on natural resources while securing future supply and capturing the value of a product to the greatest extent possible.

The public is becoming increasingly aware of the environmental impacts of the fashion industry. Consumers expect the industry to address issues related to production, such as extensive water usage, toxic chemicals and garments accumulating in landfills. Implementing circularity offers an opportunity to evaluate and improve current business models as much as it provides a unique opportunity to create a close relationship with consumers.

An essential part of creating a circular fashion system is to set up collection systems, integrate circular design and consider how to manage end-of-use of garments. This can happen through practices that extend usage, for example resale, or through recycling worn-out garments and incorporating recycled post-consumer fibres into the production of new garments.

*"It is essential that we take action on circularity today, even though we don't yet have all the solutions for creating a circular fashion system. It's only through testing and trying that we will find them."*

- MORTEN LEHMANN  
Chief sustainability officer, Global Fashion Agenda

## UNITING STAKEHOLDERS FROM THE ENTIRE FASHION INDUSTRY

At Copenhagen Fashion Summit 2017, Global Fashion Agenda called on fashion brands and retailers to sign a commitment to accelerate the transition to a circular fashion system. As of June 2018, 94 companies and corporations had signed the 2020 Circular Fashion System Commitment (henceforth 2020 Commitment), representing 12,5% of the global fashion market. The 2020 Commitment contains four action points for the signatories' targets:

**Action point 1:** Implementing design strategies for cyclability

**Action point 2:** Increasing the volume of used garments and footwear collected

**Action point 3:** Increasing the volume of used garments and footwear resold

**Action point 4:** Increasing the share of garments and footwear made from recycled post-consumer textile fibres

In the first year of the 2020 Commitment, Global Fashion Agenda focused on industry-wide collaboration and knowledge sharing as the pillars of future progress. As a result, four toolboxes have been developed based on each action point.

The aim of the toolboxes is to provide key insights, lessons learned and best practices from brands, organisations, companies and researchers to encourage and activate fashion brands to close the loop. The focus is on finding ways to loop products back into the fashion system by redefining the life cycle of garments. The toolboxes point out external resources and guides that can provide additional insights and useful tips. The toolboxes represent a starting point for fashion brands and retailers looking to explore circularity within their company, while informing and inspiring key departments within the company – from management and design to marketing. Moreover, they can also serve as a source of further inspiration for those already taking action.

The four toolboxes are aligned with the action points in the 2020 Commitment. Although they are presented separately, they are meant to be used continuously and simultaneously as all aspects of a circular strategy go hand in hand, just as aligning collection, design and the management of end of use is important.

## RECYCLING TOOLBOX

This toolbox is a learning tool designed to support fashion brands and retailers who would like to increase the share of recycled post-consumer textile fibres in their production. In this toolbox, textile recycling refers only to the recycling of post-consumer garments and footwear into new fibres to be used for clothing or shoe production.



## GETTING INFORMED

# THE CURRENT STATE OF TEXTILE RECYCLING

Reutilising products at the end of use is crucial to become circular and can be done by extending the life of a product or recycling it. Extending the life of a product includes repair, reuse, resell as well as remanufacturing, and is preferable over recycling from an environmental perspective.<sup>1</sup> Recycling includes disassembling or shredding and then regenerating into new yarn, which requires a high level of integration throughout the whole value chain, and relies on technological developments. Textile recycling is becoming increasingly necessary to address issues related to textile waste and decrease of natural resources.<sup>2</sup> However, it is still in its early phase, which is why setting up a support system is vital to making recycling financially, technically and logistically viable, and also as a means to increasing the share of garments made from recycled post-consumer textiles fibres.

## KEY LEARNINGS

- Recycling applies to worn-out clothes with no reuse value
- Key inhibitors to textile recycling include a lack of technology, a paucity of support systems, difficulties restoring the quality of fibres and integrating recycled fibres into garments without compromising on quality
- Demand and supply in the market for recycled post-consumer textile must increase for it to succeed
- Companies need to consider both the take-back of products and the designphase in increasing the amount of garments made from recycled post-consumer textile fibres

## RECYCLING PRACTICES

Successfully recovering materials requires chemical or mechanical recycling, with different recycling methods used for different materials. Today many garments are made of a combination of synthetic and natural materials, which requires recycling in different ways, making the recycling process a challenge.

Chemical recycling entails materials going through a chemical process to produce new filaments that will be transformed into new yarns and fabrics.

Mechanical recycling involves mechanically cutting and shredding fabrics to deconstruct them into reusable fibres and materials.

## RECYCLING STEPS

1. Collecting (see Toolbox: Garment Collection)
2. Sorting based on material, colour, structure
3. Disassembling, shredding, dissolving
4. Reprocessing, restoring quality, regenerating
5. Integrating in forward supply chain

## RECYCLING FACTS

- Integrating recycled textiles can tap into the current loss of USD 100 billion from wasted materials<sup>3</sup>
- Natural fibres such as wool and cotton can be mechanically recycled but the process decreases the length and quality of the fibres, which is why virgin fibres serve as a supplement. It is currently possible to include up to 40% of recycled materials in jeans to maintain the quality<sup>4</sup>
- Polyester can be fully restored through chemical recycling
- Less than 1% of material used to produce clothing is recycled into new clothing<sup>5</sup>

## CHALLENGES FACING THE RECYCLING MARKET

The low level of supply currently limits the integration of recycled post-consumer textile fibres in production, which is why investing in technologies and logistics that can increase the supply of recycled fibres is important.

### *Technological challenges in processing post-consumer textiles*

At present technology is not yet sufficiently developed to support textile recycling on a commercial scale. This means that recycling post-consumer textiles currently cannot yet meet speed, quality and financial viability requirements. Some of the existing technological challenges include separating materials, restoring quality and handling contaminants found in clothing. Moreover, there is a need to increase investments in technology, research, logistics and skill development.

**Systemic challenges**

While it is crucial to develop technology to enable recycling, the accompanying system also needs to be in place. At the moment, the complexity of the supply chain and lack of transparency represent one of the challenges to creating this system. This is further aggravated by the presence of multiple decisions makers for each product, not to mention the disconnect between designers and recyclers. Furthermore, there is a lack of regulation and taxation in favour of recycling. When combined, these challenges mean that the business case for textile recycling and sourcing of recycled post-consumer textile fibres is not yet financially viable.

**ACTION POINTS TO ENHANCE TEXTILE-TO-TEXTILE MARKET****Create supply**

- Start, continue or expand garment collection (see Toolbox: Garment Collection)
- Partner up with recyclers
- Invest in technological developments for sorting and recycling
- Create control over material streams

**Create demand**

- Integrate recycled post-consumer textile fibres in the design phase
- Increase amount of recycled fibres in the collection
- Create awareness among consumers about their role in returning garments for recycling
- Show commitment to using recycled input<sup>6</sup>
- Engage with policymakers to create incentives for recycled post-consumer textile fibres<sup>7</sup>



*“There are several reoccurring challenges with textile recycling, including: Post-consumer materials are in the consumption market and not in the manufacturing countries, processing costs make processing not cost-effective and ensuring that post-consumer materials still have acceptable quality.”*

- EDWIN KEH  
CEO, HKRITA

**DEVELOPMENTS IN TEXTILE RECYCLING**

- H&M, HKRITA, Ehime University and Shinshu University have found promising results on how to separate cotton/polyester blends without causing any secondary pollution<sup>8</sup>
- Worn Again has developed a textile-to-textile recycling technology that can separate and recapture polyester and cotton from discarded, low-value clothing to produce virgin-equivalent, cost-competitive polyester and cellulosic raw materials<sup>9</sup>
- Mistra Future Fashion has developed a method to separate cotton/polyester blends as part of the Blend Re:wind<sup>10</sup> project
- Re:newcell has found a way to recycle cellulosic textile waste into a pulp that can be made into high quality textile fibres<sup>11</sup>

## INSPIRATIONAL CASES

## DEVELOPMENTS IN RECYCLING

## FIBERSORT - AUTOMATED SOURCING TO ENHANCE RECYCLING

The Fibersort Project, initiated in 2016, is a consortium led by Circle Economy, which works with the following project partners: Smart Fibersorting, Valvan Baling Systems, Salvation Army ReShare, Worn Again and Procotex. Fibersort is a machine that automatically sorts finished textile products by fibre type. The purpose of this process is to create highly precise input materials for high value recycling processes. High value recycling includes textile-to-textile processes that use mechanical or chemical means to transform excess textiles into raw materials, such as dissolving pulp and fibres for new knit and woven textiles. Fibersort addresses a key bottleneck in creating a circular system by sorting post-consumer textiles into precise feedstocks for high value recycling processes.

Fibersort uses near-infrared spectroscopy to detect the fibres present in textiles. As of March 2018, the machine is programmed to identify the 14 different types of materials most prevalent in recycling grade post-consumer textiles (e.g. wool, cotton, viscose, polyester, nylon, wool blends and poly/cotton blends). The machine's detection capabilities will be expanded between now and the end of the Fibersort project, at which point the machine is expected to enable brands and retailers to source recycled textiles made from post-consumer inputs.

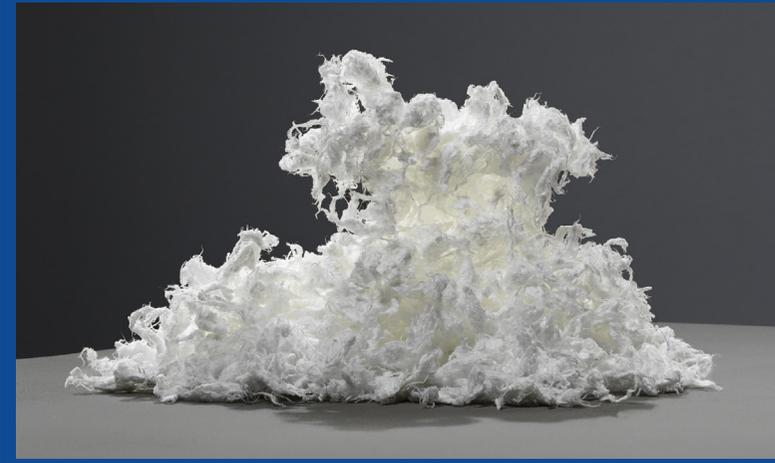


## RE:NEWCELL - DEVELOPMENTS IN RECYCLING

In 2017 the first demo Re:newcell plant opened in Kristinehamn, Sweden. The purpose of the plant is to close the loop in the textile value chain by recycling cotton and viscose.

The plant shreds pre- and post-consumer cellulosic textile waste, turning it into a slurry and separating out contaminants and other non-cellulosic content. The slurry is converted into Re:newcell pulp, which is a dissolving pulp of higher quality than the virgin alternative and can be fed into the production of new man-made cellulosic fibres, yarns and textiles. The plant has the capacity to produce 7000 tonnes of Re:newcell pulp each year.

As a new initiative, the aim is to expand recycling practices for clothing companies. Re:newcell offers a recycling service for pre- and post-consumer textile waste and also supplies recycled feedstock into the current supply chain. Combined, these services provide an opportunity for companies to create a closed loop flow of materials.



## STRATEGY

## EXPLORING TEXTILE RECYCLING

The number of companies practicing textile-to-textile recycling remains limited, despite the growing focus on reutilising materials. As part of the 2020 Commitment, 47 textile recycling targets have been set. Large and small brands are currently exploring textile recycling, but fully realising the recycling process can be complex and time-consuming. Despite current technological and systemic limitations, brands of all sizes can embark on recycling in a variety of ways.

## KEY LEARNINGS

- Integrating recycling in your supply chain requires close collaboration throughout your organisation as it links end of use with design and production
- It is crucial that the chosen strategy for recycling aligns with upcoming or already implemented garment collection schemes and circular design strategies
- Determining which materials you want to recycle and aligning them with your garment collection scheme and available recycling opportunities is important

## OPPORTUNITIES TO INCREASE RECYCLING

A recycling strategy should include two crucial elements: creation of material streams for recycling post-consumer textiles as well as for sourcing, and integration of recycled post-consumer textile fibres in production. The creation of material streams is linked to garment collection and requires large quantities, highly precise sorting and advanced technological processes, which is why this procedure is likely to be outsourced. Sourcing and integrating recycled post-consumer textile fibres are linked to the design phase and should therefore be taken into consideration when establishing a circular design strategy (see Toolbox: Circular Design).

## FACTORS INFLUENCING RECYCLING IN YOUR COMPANY

The quantity of textiles available is a decisive factor for creating the business case for recycling. A large constant flow of materials is needed to create consistent supply.<sup>12</sup>

The capacity to invest influences your ability to recycle, especially in terms of investing in infrastructure for material streams, research and technological developments.

Choice of materials for production impacts recycling opportunities and also affects the availability of recycled post-consumer textile fibres.

Readiness for circular design and current integration of recycled post-consumer textile fibres is a crucial aspect of managing recycling, as designers must have an understanding of how to work with recycled post-consumer textile fibres.

*“We believe that old textiles should be seen as a resource, not waste.”*

CECILIA STRÖMBLAD BRÄNNSTEN  
Environmental sustainability manager, H&M Group

## CASE STUDY – H&amp;M: DENIM RE-BORN

In early 2014 H&M took the first big steps in their mission to become 100% circular. They made their first collection range with recycled cotton fibres from collected garments. In close cooperation with their partner, I:CO, they mapped the closed loop supply chain for cotton. To implement this pioneering project a few challenges needed to be addressed:

**DEVELOPING A NEW SUPPLY CHAIN**

For the realisation of the Denim Re-born project, I:CO developed and established a denim recycling supply chain. Cotton blue jeans, the main source, are sorted out, contaminants removed and then the material sanitised. Afterwards, the jeans are mechanically recycled in a process that involves shredding and pulling the material to win back the fibres. H&M integrates these fibres into its existing production chain, starting with the spinners, where the recycled fibres are blended with virgin yarn.

**QUALITY**

The key achievement of this process was the establishment of a reliable supply chain able to process large volumes of recycled cotton, which further ensures consistent, high quality output that matches H&M's standards. I:CO continuously works to optimise efficiency and scale mechanical fibre-to-fibre-recycling.

**IMPACT**

Through their mutual effort, H&M and I:CO represent a strong case for high quality, recycled products made from post-consumer textile waste – an important journey and learning project for the whole industry. What's more, a life cycle assessment commissioned by H&M shows that using recycled, instead of virgin cotton, fibre reduces climate and water impacts by 80-90% in the stages that make fibre ready for spinning.

## INDUSTRY COLLABORATION

Recycling materials demands a high level of collaboration throughout the industry and with many different stakeholders. Large companies have more resources to invest in research, development, infrastructure and technology. Collaborating encourages sharing knowledge and resources to create mutual benefits from recycled materials.

SMEs can contribute with:

- Post-consumer, high quality mono-material for recycling feedstock
- Small investments
- Knowledge and learnings from current experiences
- Source recycled materials
- Design for easy recyclability

Large companies can contribute with:

- A large flow of materials
- Investments in research, development and technology
- Knowledge and learnings from current experiences
- Design for easy recyclability
- Create partnerships with textile suppliers to develop and increase supply for recycled materials

## INVESTMENT IN TECHNOLOGY

Investments are needed due to the current lack of sorting and recycling technology. As a result part of creating a recycling strategy involves investments in developing technologies.



## TECHNOLOGICAL TRENDS TO ENHANCE TRANSPARENCY

Transparency is important in sorting and recycling processes, especially concerning the materials and chemicals used in the product. Plan how to communicate which materials garments contain to the recycler, for example with tracing technology that links to recycling processes.

## INVESTMENT IN INFRASTRUCTURE FOR MATERIAL STREAMS

It is important to build infrastructure and create a support system for recycling that includes collection points, transportation, sorting and recycling plants. Creating a system that enables financially viable textile recycling is just as essential as developing the technology.

## SOURCING RECYCLED POST-CONSUMER TEXTILE FIBRES

A challenge in terms of incorporating recycled post-consumer textile fibres is the shortage of off-the-shelf supply. At present recycled textiles are mostly derived from PET bottles and fishnets. All brands need to join the effort to find suppliers to contribute to the demand for recycled post-consumer textile fibres.

## POST-CONSUMER TEXTILES MARKET PLATFORM

Another action to take is participating in a marketplace where post-consumer textiles and recycled post-consumer textile fibres can be traded, such as Re.Verso, Circle Market or circular.fashion. Adopting a platform like this also benefits from including various stakeholders, such as sorters, recyclers, SMEs and larger companies.

## CASE STUDY – MUD JEANS: FROM RETURN TO SALE

In 2013 MUD Jeans implemented a take-back scheme that supports their recycling strategy. When the MUD office receives returned jeans, a quality check is executed. If the jeans are still of decent quality, or need a minor fix, they are washed and sold with the option of customisation via MUD Jeans' vintage platform. Jeans that cannot be patched up are sent to the company's recycling partner, Reconvertex, located in Spain. Reconvertex removes the rivets and zippers, pulls the jeans apart and shreds them into tiny pieces, which are then converted back into cotton fibres and blended with virgin organic cotton, for strength and performance purposes. This fibre combination is then spun into new yarns, which are dyed using indigo blue and water at Tejidos Royo before being woven into denim again. In partnership with Tejidos Royo, MUD Jeans has developed a fabric containing 40% post-consumer recycled denim. After undergoing quality control the fabrics are shipped to Yousstex International, a garment supplier and laundry in Tunisia. Washes use state-of-the-art techniques, such as laser and ozone, to avoid the use of chemicals and to save water. The final products find their way back to MUD Jeans' warehouse in the Netherlands before being shipped to B2C and B2B customers.



## STRATEGY

# INTERNAL INVOLVEMENT

To enable recycling, it is important to involve various departments within your company, for example it is crucial to consult with designers on the integration of recycled post-consumer textile fibres. Getting top management on board is also vital, especially in terms of investments, and can be achieved in part by demonstrating the need for action and by showcasing the strategic importance of recycling.

### INVOLVING INTERNAL DEPARTMENTS

Consider involving the following departments:

*Design and product development* to ensure that garments maintain their quality and performance when integrating recycled post-consumer textile fibres, and to make certain that products are designed for recyclability

*Marketing and communication* to professionally manage external communication of recycling initiatives

*Logistics* to find the most feasible way to create a material stream for recycling and the sourcing of recycled post-consumer textile fibres

*CSR and sustainability* to determine the environmental costs or savings of practices related to recycling practices

*Legal* to guarantee that new initiatives are in accordance with external standards, such as European Union's REACH regulation<sup>13</sup>

#### FUN FACT

What designers consider as embellishment, recyclers consider as contaminants

*“There is a need for an industry-wide scale up of recycling, and we can all do our best to accelerate this development. This can happen a lot quicker if all actors of the value chain are involved and committed.”*

- CECILIA STRÖMBLAD BRÄNNSTEN  
Environmental sustainability manager, H&M Group

### GETTING TOP MANAGEMENT ON BOARD

It is important to involve top management in the creation of a recycling strategy. To bolster your argumentation, demonstrate the need for action by highlighting that:

- Integrating recycled textiles can tap into the current loss of USD 100 billion from wasted materials<sup>14</sup>
- The European Union is working towards a circular economy by introducing incentives favouring recycling<sup>15</sup>

And showcase the strategic importance by underlining that:

- Recycling is one way to secure future supply of materials<sup>16</sup>
- Companies that get on board with recycling can be part of determining the agenda for recycling for the fashion industry
- Integrating recycling in business practices provides opportunities for marketing as a circular company
- Recycled fibres rank highest in Made-By's environmental benchmark for fibres and represent an excellent showcase for your company<sup>17</sup>

## STRATEGY

# MANAGING COSTS AND LOGISTICS

It is imperative to consider the practicalities of logistics and costs when creating a recycling strategy. Costs are related to establishing material streams, sourcing practises and communication, for example. Logistics are related to material streams and reversing the supply chain.

### COSTS RELATED TO RECYCLING

Costs will vary, depending on how you choose to work with recycling. The key costs are derived from investments in technology, logistics and sourcing.

Costs related to establishing material streams:

- Investment in technology
- Establishing logistics
- Research and development
- Investments in existing initiatives

Costs related to sourcing recycled post-consumer textiles fibres:

- Sourcing recycled post-consumer textile fibres
- Educating designers in including recycled post-consumer textiles fibres
- Quality and durability tests of clothing, including recycled post-consumer textiles fibres

Costs related to communication:

- Educating and informing in-store staff about recycling practices to share with customers
- Marketing materials

### LOGISTICS

Logistics are a key component for creating a material stream for recycling and sourcing of recycled post-consumer textile fibres. The starting point is to reverse your supply chain by considering how collected garments can be recycled and how recycled post-consumer textile fibres can be integrated in the forward supply chain. Considerations when developing your logistics:

- Map out a detailed plan of your reverse supply chain
- Consider what existing resources and partnerships are in place that can be utilised or align logistics with new partnerships
- Consider your carbon footprint when developing logistics

*“Returning the resources embedded in post-consumer textiles to the front end of the supply chain is one of the most important components of a circular system.”*

- TRACI KINDEN  
Project manager circle textiles programme, Circle Economy

## STRATEGY

## SETTING TARGETS

Targets are a vital aspect of showing internal and external stakeholders the objectives of creating a material stream and sourcing recycled post-consumer textile fibres. Setting targets can enhance reporting on the recycling progress made.

## TARGETS RELATED TO CREATION OF A MATERIAL STREAM

Targets are mainly linked to investments and creation of infrastructure. Inspiration for targets:

- Investment in technology – presented as percentage increase or total amount
- Building infrastructure – involvement in specific initiatives
- Number of recycled textiles

## 2020 COMMITMENT TARGET BY INDITEX

*"By 2020, we will invest USD 3.5 million in textile recycling technologies, with the goal of upscaling post-consumer mechanical fibre recycling."*

## TARGETS RELATED TO SOURCING RECYCLED POST-CONSUMER TEXTILE FIBRES

Targets are mainly connected to the amount of recycled post-consumer textile fibres being sourced or integrated into designs. Inspiration for targets:

- Number of garments that include recycled post-consumer textile fibres, by percentage increase or amount
- Total percentage/kilos of recycled post-consumer textile fibres included in production
- Percentage of recycled materials used

## 2020 COMMITMENT TARGET BY OUTSIDER FASHION

*"By 2020, 50% of our products will contain recycled post-consumer textile fibres."*

## REACHING OVERALL SUSTAINABILITY TARGETS

A recycling strategy that includes both the creation of a material stream and sourcing of recycled post-consumer textile fibres can be integrated into your overall sustainability strategy. Consider how your recycling strategy can help you reduce water, energy, chemicals and CO<sub>2</sub> emissions.

For more assistance with setting targets, watch Global Fashion Agenda's "[Setting Targets](#)" [webinar](#). Examples of targets for sourcing recycled post-consumer textile fibres can also be viewed on Global Fashion Agenda's [website](#).

*"We are currently recycling our old jeans through mechanical recycling. The process of mechanically recycling post-consumer cotton shortens the cotton fibres over time, which implies that they lose strength and performance. Due to this limitation we are only able to go as high as 40% post-consumer recycled denim in our fabrics. Through chemical recycling we wish to increase this percentage, our final goal is 100% recycled denim."*

- EVA ENGELEN  
CSR, MUD Jeans



*“If we replace a significant part of virgin fibres in the global fibre mix with recycled and biodegradable alternatives, we would reduce the industry’s negative impact across the board. We could shift away from water-intensive cotton cultivation, energy-intensive synthetics and the logging of carbon-storing forests. This means lower emissions, less water use, less chemical pollution, less plastic microfibre pollution and less eutrophication.”*

- HARALD CAVALLI-BJÖRKMAN  
Head of communications, Re:newcell

## IMPLEMENTATION

## CONSIDERATIONS FOR IMPLEMENTATION

The implementation phase includes both establishment of material streams for recycling and sourcing recycled post-consumer textile fibres. During implementation it is crucial to be involved in various kinds of collaboration, depending on the chosen strategy. Furthermore, investments are crucial in terms of creating a material stream and building a support system – while aligning design and recycling is essential to sourcing recycled post-consumer textile fibres.

## KEY LEARNINGS

- Materials chosen for establishing a material stream should match design aims on including recycled post-consumer textile fibres
- Ensure that all involved parties are aligned when implementing
- Acknowledge current limitations before implementing and stay abreast of current developments in textile recycling

## CREATING MATERIAL STREAMS

Worn-out garments unsuitable for resale can be used to create a material stream that can turn into recycled fabrics. Handling worn-out items can be done by outsourcing the whole process or by creating partnerships that can manage each step of the process.

***Selling worn-out textiles to recycler***

If it suits your company to outsource the whole recycling process, the collected textiles can be sold to a sorter or recycler, such as I:CO. If you choose to manage the recycling process via partnerships, your company must collaborate with one or more service providers to sort, recycle and restore the textiles. You must also ensure that the integration of recycled textiles is part of the continuous design identity. You should consider the following steps:

1. **Sorting:** Sorting is currently a time-consuming, costly process. Find a solution provider to help with sorting that preferably uses automated sorting.
2. **Recycling:** Establish a partnership with a company that can provide the needed recycling process. Keep in mind that materials are recycled in various ways, e.g. chemically and mechanically, and with various outcomes. As a result it is important to be fully aware of what materials you wish to recycle and the output you need when partnering with a recycler.
3. **Restoring materials:** Fibres degrade during consumer use and throughout the disassembling process. One of the challenges with current recycling is that the outputs are of low quality. The restoring process is crucial to improving the quality to ensure that the recycled yarn is of the same high quality as virgin yarn. Restoring the quality is mainly done by mixing fibres. Find one or more providers that can support this process.

## INTEGRATING INTO FORWARD SUPPLY CHAIN

After the fibres are restored to yarn, it has to be integrated into the forward supply chain, which means the logistics should also be sorted out. In addition designers should be consulted to ensure that the quality of your products remains the same if the recycled yarn is replacing other materials.

## SOURCING RECYCLED MATERIALS

Recycled post-consumer textile fibres are sourced from one or more sources, depending on the materials needed for specific collections or styles. This means buying recycled materials and incorporating them into design and production. Find suppliers for the recycled materials you wish to use.

FIVE KEY TEXTILE RECYCLING CHALLENGES BY MISTRA  
FUTURE FASHION

1. Sorting, controlling and characterisation of the textile input
2. Restoring quality in fibres to compete with virgin materials
3. Separation of textile fibre blends, such as cotton/polyester or cotton/elastane
4. Separation and purification of dyes and additives, including handling the subsequent waste stream
5. Keeping all processes in a framework of sustainability, which means considering the social, environmental and economic impacts of the process

## COMMUNICATION

# MARKETING RECYCLING INITIATIVES

Communicating about recycling is one way to promote circularity and sustainability as a business. There are different ways to communicate, depending on the content and available channels, for example.

## KEY LEARNINGS

- Communicate clearly about investments and developments in terms of recycling
- Acknowledge the current limitations in terms of recycling and integrating recycled post-consumer textile fibres, and be transparent in your communication
- Create advertisement on collections that include recycled post-consumer textile fibres
- Include information about recycling with products made from recycled post-consumer textile fibres

## EXTERNAL COMMUNICATION

Your customers are a crucial source of resources in terms of recycling. They ensure a large flow of materials that supports the business case of recycling textiles. That's why it is important to foster a close relationship with your customers. This includes communicating the importance of reutilising their used garments and showing them why recycling is important in a broader perspective, while also recognising current limitations.

## ONLINE CHANNELS

Online communication is a superb way to provide more in-depth information related to recycling and to products that include recycled post-consumer textile fibres. It can also be used to create general awareness. Nudie Jeans, Timberland and Patagonia are examples of companies that provide information about materials in an easy, accessible way online.

## COMMUNICATION THROUGH CLOTHES

Include information for the consumer on product tags and labels. Create an appealing story about the materials coming back to life.

## CAMPAIGNS

Campaigns are a good way to communicate new initiatives to a broad audience. It makes sense to align campaigns with additional information through online channels, in-store or communication in clothes.

## NEWSLETTERS

Create a section in your regular newsletter that allows consumers to follow your recycling journey.

### TOP THREE TIPS ON COMMUNICATING RECYCLING BY FUTERRA

#### 1. KNOW WHO YOU'RE TALKING TO

Not everyone cares equally about the environment. Understand how much of a purchase driver sustainability really is for your customers and make sure your communications meet people where they're at.

#### 2. ANSWER 'WHAT'S IN IT FOR ME?'

If recycled products are to appeal to the masses, they have to provide consumer value. Can they perform better? Do they make me look better? Or do they make me feel good?

#### 3. KEEP IT SIMPLE

Circularity is full of jargon. Find the simple language that means something to customers and works with short attention spans. Don't blind with science.

## EVALUATION

## EVALUATING RECYCLING PRACTICES

Reporting on the progress of your recycling practices to external and internal stakeholders is an important part of describing their impact and development. Experience shows that there is both a need and an interest from customers to understand what happens to their clothing once it is collected, which is also linked to motivation to return clothes. Using take-back systems for your own clothing can be the best way to test your products and their durability for future improvements.

## KEY LEARNINGS

- Continuously evaluate your recycling targets
- Translate the impacts into tangible outcomes that your stakeholders can relate to
- Be transparent about the progress you have made and the challenges you are facing

## INTERNAL ASSESSMENT

A key performance indicator (KPI) when evaluating your recycling strategy is internal success. Be sure to get feedback on the internal processes from involved departments. For example:

*Investments:* Has any key development happened based on your investments?

*Logistics:* Does your logistics support recycling and sourcing?

*Design:* Are designs containing recycled post-consumer textile fibres aligned with your product values?

*Marketing:* Has your communication team created an appealing story around recycling?

*Partnerships/collaborations:* Have you made strategically smart partnerships to support the targets of recycling?

## EXTERNAL ASSESSMENT

One KPI is the environmental benefits related to recycling. This indicator can be determined based on:

- Reduction in the usage of natural resources, such as water and cotton
- Decline in emissions
- Waste redirected and reutilised

## CUSTOMER FEEDBACK

Encourage your customers to provide feedback about your new products. This can include the quality of the product, the emotional value of buying products made from recycled materials or the interest in the information you provide about your products.

*“Our customers love to return used jeans because it makes them feel proud that they are working on a better and cleaner planet.”*

- EVA ENGELEN  
CSR, MUD Jeans

## THE GLOBAL RECYCLED STANDARD (GSR) CERTIFICATION

GSR certification is a voluntary, international standard that aims to validate the amount of recycled materials in a product. The Global Recycled Standard can be applied to products with a minimum of 20% recycled materials and is a way to ensure transparency in processes throughout the whole supply chain. That's why GRS certification is also a way to evaluate and verify your recycling practices.

## THE ROAD AHEAD

# STEPS TOWARDS TEXTILE RECYCLING

Recycling textile-to-textile fibres on a commercial scale is still a relatively new practice and currently has various limitations. Over the past couple of years, however, the fashion industry has shown an increasing dedication to find solutions to enable this process. It's necessary to optimise garment collection systems and develop sorting and recycling technologies to make textile recycling financially and practically viable in the long run.

### ENABLING TEXTILE RECYCLING

In order to optimise garment collection systems and develop sorting and recycling technologies will require investments and collaboration between various stakeholders along the value chain. Furthermore, recent initiatives have shown that there are key factors that influence the ease with which textile-to-textile recycling can be turned into reality: Transparency, traceability and automation, interconnectedness and new business models.

### TRANSPARENCY, TRACEABILITY AND AUTOMATION

An essential part of recycling is creating transparency and traceability in terms of what materials and chemicals are embedded in a garment. Technology implemented in the garments is a growing field. Traceability is of importance for automation, as more precise labelling of materials can ease the sorting process. An example of innovation in this field is Avery Dennison, who uses radio-frequency identification to enable transparency throughout the supply chain.

### INTERCONNECTEDNESS

A higher level of transparency also provides opportunities for more interconnectedness, e.g. between the design and recycling phases. With more production technologies emerging, such as 3D printing, knitting technologies and robot sewing machines – it is also worth considering the opportunities they create for easier disassembling, traceability and optimal use of materials.

### NEW BUSINESS MODELS

As supply chains and practices are changing, new business models are needed. Business models that embrace renting and leasing are appearing, which creates opportunities to be in control of products and resources. Considering how new practices might influence your business model is worthwhile.

*“Textile-to-textile recycling will be an important enabler and one important piece of the puzzle to move towards a circular fashion industry. Even though the technology is not really commercial at scale yet for most textile materials and blends, we are convinced that it will happen within the near future, at least for the biggest fibre types, like synthetics and cellulosic materials, such as polyester, cotton and viscose.”*

- CECILIA STRÖMBLAD BRÄNNSTEN  
Environmental sustainability manager, H&M Group



# ADDITIONAL RESOURCES

## DESIGN FOR LONGEVITY

The Design for Longevity platform provides inspirational cases, while giving you access to best practices for benchmarking. Utilising its various tools (articles, videos, how-to guides and other formats) will allow you to explore the many benefits of design and recycling.

## ELLEN MACARTHUR FOUNDATION

Ellen MacArthur Foundation published a comprehensive report made in collaboration with several industry stakeholders called *A New Textiles Economy: Redesigning fashion's future* that provides an overview of visions for applying the circular economy to the global fashion industry.

## MISTRA FUTURE FASHION

Mistra Future Fashion is a cross-disciplinary research programme that aims to deliver insights and solutions to be used by the fashion industry and other stakeholders to significantly improve environmental performance and strengthen global competitiveness. A variety of publications are publicly available on Mistra Future Fashion's website.

## NORDIC COUNCIL OF MINISTERS

The Nordic Council of Ministers has published several reports on different aspects of textile recycling, for example *Stimulating Textile-to-Textile Recycling and Textile-to-Textile Recycling - Ten Nordic brands that are leading the way provides useful perspective* on the current state of recycling.

## RECYCLING INITIATIVES

Several initiatives are under development in textiles recycling. Let Re:newcell, Evrnu, The Infinited Fiber Company, Recover, Circle Economy, REMO, Worn Again, C&A Foundation, Cradle to Cradle Products Innovation Institute, Osom Brand, EON.ID and Teijin inspire you.

## TOOLBOXES

As part of the 2020 Circular Fashion System Commitment, Global Fashion Agenda has developed four toolboxes to be used continuously and simultaneously to support you in reaching your targets and in becoming a circular brand.

# REFERENCES

1. Nordic Council of Ministers. (2014). EPR-systems and new business models: Part II: Policy packages to increase reuse and recycling of textiles in the Nordic region. [pdf] Available at: <https://norden.diva-portal.org/smash/get/diva2:791018/FULLTEXT02.pdf> [Accessed 22 June 2018].
2. Global Fashion Agenda & Boston Consulting Group (2017). Pulse of the Fashion Industry. [pdf] Available at: [http://globalfashionagenda.com/wp-content/uploads/2017/05/Pulse-of-the-Fashion-Industry\\_2017.pdf](http://globalfashionagenda.com/wp-content/uploads/2017/05/Pulse-of-the-Fashion-Industry_2017.pdf) [Accessed 22 June 2018].
3. Ellen MacArthur Foundation (2017). A new textiles economy: Redesigning fashion's future. [pdf] Available at: [https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy\\_Full-Report\\_Updated\\_1-12-17.pdf](https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf) [Accessed 22 June 2018].
4. Information provided by Mud Jeans.
5. Ellen MacArthur Foundation (2017). A new textiles economy: Redesigning fashion's future. [pdf] Available at: [https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy\\_Full-Report\\_Updated\\_1-12-17.pdf](https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf) [Accessed 22 June 2018].
6. Ibid.
7. Ibid.
8. H&M Foundation (2017). Technological breakthrough: Successful method found for recycling blend textiles into new fibres. [online] Available at: <https://about.hm.com/en/media/news/general-2017/Successful-method-found-for-recycling-blend-textiles-into-new-fibres.html> [Accessed 22 June 2018].
9. Worn Again (2018). Worn Again. [online] Available at: <http://wornagain.info> [Accessed 22 June 2018].
10. Mistra Future Fashion (2017). Blend Re:wind, a new process that recycles both cotton and polyester is now demonstrated in Sweden. [online] Available at: <http://mistrafuturefashion.com/rewind-recycles-cotton-polyester/> [Accessed 22 June 2018].
11. Information provided by Re:newcell
12. Allwood, JM., Laursen, SE., Rodríguez, CM, Bocken, NMP. (2006). Well dressed? The present and future sustainability of clothing and textiles in the United Kingdom. [pdf] Available at: [https://www.ifm.eng.cam.ac.uk/uploads/Resources/Other\\_Reports/UK\\_textiles.pdf](https://www.ifm.eng.cam.ac.uk/uploads/Resources/Other_Reports/UK_textiles.pdf) [Accessed 22 June 2018].
13. European Union (2006). Regulation (EC) No 1907/2006 of the European Parliament and of the Council. [pdf] Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:396:0001:0849:EN:PDF> [Accessed 22 June 2018].
14. Ellen MacArthur Foundation (2017). A new textiles economy: Redesigning fashion's future. [pdf] Available at: [https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy\\_Full-Report\\_Updated\\_1-12-17.pdf](https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf) [Accessed 22 June 2018].
15. Bontoux, L., Boucher, P., Scapolo, F.(2017). Textiles and clothing manufacturing: Vision for 2025 and Action Needed. [pdf] Available at: <http://publications.jrc.ec.europa.eu/repository/bitstream/JRC106917/kjna28634enn.pdf> [Accessed 22 June 2018].
16. Nordic Council of Ministers (2017). Stimulating textile-to-textile recycling. [pdf] Available at: <https://norden.diva-portal.org/smash/get/diva2:1161916/FULLTEXT01.pdf> [Accessed 22 June 2018].
17. Made-By (2017). Environmental Benchmark for Fibres. [online] Available at: <http://www.made-by.org/consultancy/tools/environmental/> [Accessed 22 June 2018].