

ECAP: Creating a circular approach to textiles

This tool provides an overview of results from the European Clothing Action Plan (ECAP).

In particular it focusses on the possibilities around recycling fibres and turning them into new garments as part of a circular economy for textiles. The tool is aimed at professionals working for the textiles industry, including designers, fashion brands, retailers, workwear suppliers and textile recyclers. It provides an overview of relevant issues and links to useful resources. Topics covered include learnings from pilots, policy and market developments. It has been created to inspire others to take action in creating a circular approach to textiles. Fibre to fibre recycling is a fast-moving area and we are learning new things every day, so not everything may be covered. If you know of any relevant additional information, please let us know: ecap@wrap.org.uk.

This tool was produced under the European Clothing Action Plan (ECAP), whose goal is to bring a circular and sustainable approach to fashion and textiles in Europe and is supported by EU LIFE funding.

Find out more about [ECAP](#).



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with Adobe Acrobat)





General information

The production and consumption of clothing and textiles has a large environmental footprint. In Europe its footprint is only exceeded by food, housing and mobility. The production of clothing and other textiles utilises vast quantities of water, energy, chemicals and raw materials. Washing and care during use also have high energy and water demands and contribute to microplastics in the oceans. Most textile products end up in a landfill or are incinerated after users discard them.

The general information pages give an overview of some important policy and industry developments in the field of circular textiles.

1/3

Why textiles?

Reducing consumption, extending the life of and reusing textiles and the materials they contain to new products is critical in reducing the environmental impact of clothing. This embraces the concept of the circular economy where products are repaired, used and reused for as long as possible, re-manufactured and finally recycled. ECAP advocates a circular approach to textiles which means that clothes and fibres keep their highest value in the supply chain without ending as waste. In this tool we focus on how we can make by closing the loop with the recycling of discarded textiles.

More information

- > [Valuing our clothes](#)
- > [Ellen MacArthur Foundation – A new Textiles Economy](#)
- > [JRC Scientific report](#)
- > [CE Delft - LCA](#)
- > [Used textile collection in European cities](#)
- > [ECAP – consumer insights](#)
- > [ECAP F2F video](#)



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2/3

Policy

Across Europe the transition to a circular economy is taking shape. The European Union is encouraging a resource efficient economy which helps to develop business opportunities, including innovative and sustainable ways of producing and consuming goods. It can also create jobs and opportunities for social cohesion and reduce the environmental footprint of consumer goods. In 2016 the EU launched an action plan for a circular economy. It focuses on design and production, consumption, waste management and the development of markets for secondary materials. Several priority areas were established. Although textiles was not included at this time it is expected that the European Commission will start developing a Textiles Strategy in the next few years. A major step towards this is also the revised Waste Directive which makes it mandatory for Member States to have separate collection of textiles by 2025. This will lead to a urgency in finding solutions for used textiles that need to be recycled. The European Union is also looking at revision of the Eco Design Directive, in which resource efficiency and circularity could gain more traction.

In the meantime, individual European Member States have addressed the issue of textiles and developed their own circular economy policies, in which textiles are often prioritised.

More information

- > [European Parliament Briefing on the environmental impact of textiles](#)
- > [European Commission's Circular Economy Package](#)
- > [Dutch Transition Agenda Consumer Goods](#)
- > [Dutch Roadmap Circular Textiles](#)
- > [Nordic Council of Ministers](#)
- > [Sustainable Clothing Action Plan \(SCAP\)](#)
- > [Environmental Audit Committee](#)



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3/3

Industry ambitions

The textiles industry has a vision for large scale fibre to fibre recycling in the future, where old textiles can be recycled into new. Several companies have high ambitions or are already taking steps. Often this work is achieved collaboratively with companies, brands and non-governmental organisations (NGOs) operating at international and national levels. In 2017 Ellen MacArthur Foundation (EMF) launched the Make Fashion Circular program in collaboration with the textiles industry. The program aims to ensure clothes are made from safe and renewable materials and includes business models for turning old clothes into new. As part of the Global Fashion Agenda initiative approximately 75 fashion brands have committed to taking action on textiles circularity. One of the 4 action points is to increase the share of garments and footwear made from recycled post-consumer textile fibres. In 2019 Euratex, FESI, IAF, SAC and GFA also presented a manifesto to deliver circular economy in textiles.

There are also national initiatives. The Dutch Circular Textiles Valley formulated a road map for circular textiles. They are bringing together 4 regional circular textiles hubs in the Netherlands. These have focus areas, such as circular brands and business models, high quality recycling, circular design and circular workwear. Also upcycling technology, market development, take-back arrangements and track & trace systems are included. The Sustainable Clothing Action Plan (SCAP) is a collaborative and voluntary commitment of over 80 organisations to cut carbon, water and waste of UK clothing. Circular textiles is also part of wider sustainability initiatives such as the Dutch Agreement on Sustainable Garments and Textiles.

More information

- > [Ellen MacArthur Foundation – Make fashion circular](#)
- > [Global Fashion Agenda commitment](#)
- > [C&A Foundation – circular fashion](#)
- > [H&M Foundation – Recycling Revolution](#)
- > [Euratex manifesto](#)
- > [Dutch Circular Textiles Valley](#)
- > [Sustainable Clothing Action Plan \(SCAP\)](#)
- > [Baltic Circular Textiles System](#)
- > [Dutch Agreement on Sustainable Garments and Textiles](#)



Inspiration

The recycling of textile fibres is important to reduce the environmental impact of textiles as it has less negative impact than virgin fibres. By not using virgin materials water, energy and chemicals are saved and less waste is created. Therefore industry are taking steps towards fibre to fibre recycling.

The inspiration pages inform on good practices already available in the market.

1/4

Fibre to fibre

Often the steps toward fibre to fibre recycling are taken by small innovative brands. However there are also bigger brands doing research, pilots and experiments with the recycling of old clothing into new. A number of technological, economic and organisational barriers in the supply chain need to be addressed before process can be scaled-up but we are expecting that in the next few years more brands will start using recycled textile fibres.

More information

> [Fibre to fibre recycling: An economic & financial sustainability assessment](#)



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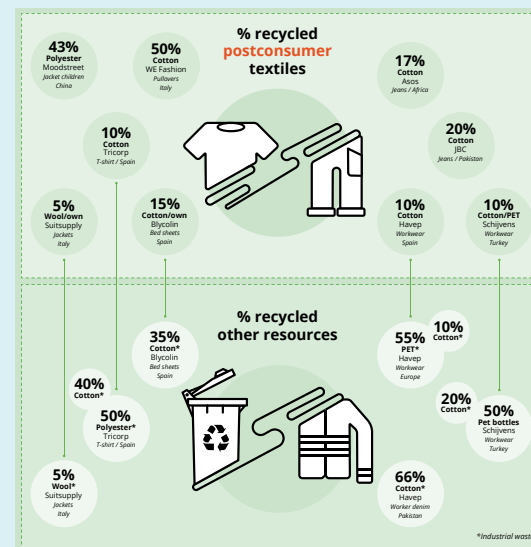
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ECAP Fibre to fibre pilots

As part of the European Clothing Action Plan fibre to fibre pilots took place to demonstrate that circular fashion is possible and that products are suitable for market. Nine companies, from fashion brands to workwear suppliers and from children's wear to hotel linen started innovative pilots to develop new garments with recycled post-consumer fibres. After production they sold these new garments. All garments contained post-consumer recycled textiles fibres that ranged from 5-50%. Most companies also used recycled industrial textiles waste or PET bottles. The companies have proven that fibre to fibre recycling is possible, although there are still issues to be addressed. Case studies are available on these pilots. We also summarised results in the a booklet.

More information

- > [Case studies F2F pilots](#)
- > [Video Circular textiles event Amsterdam](#)
- > [Booklet Circular textiles, ready to market](#)
- > [Presentations Circular textiles event Amsterdam](#)





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3/4

Learnings from the fibre to fibre pilots

The ambitions of the ECAP pilots was to use the experience and knowledge gained to inspire other brands to take up the use of recycled fibres in new garments. The pilots resulted in many lessons being learnt. These include:

- > **Leading the way** – Retailers and brands can take the lead and make fibre to fibre recycling common practice by working in new ways, with or without consumer demand;
- > **The importance of design** – Have an impact from the start and create products that will be made to last and can be recycled;
- > **New ways of working** – Not only ways of working in terms of technology, but also in the supply chain. Circular economy is all about collaboration, sharing of knowledge and information;
- > **Cooperation in the supply chain** – Know your suppliers, they are partners and you will need them for their expertise. Cooperation with other brands and retailers can also help in developing new business models; and
- > **Consumer engagement** – Empower consumers to make sustainable choices and the demand for sustainable garments will help drive change.

These lessons and others have been gathered in factsheets covering seven issues that are important if companies start using recycled fibres. These lessons deal with how to find internal and external support and cooperation, organise communication or logistics and address issues like design and quality of the garment. Some companies also looked at new business models.

More information

- > [Fact sheets lessons learnt fibre to fibre pilots](#)



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4/4

Fibre to fibre outside ECAP - fashion

Outside ECAP other trials in fibre to fibre are also taking place.

In fashion denim has been found to be a good place to start. In the Netherlands a collaborative action with the textiles industry and government will lead to the production of 1 million pairs of jeans containing at least 20% post-consumer recycled cotton. The Ellen MacArthur Foundation has also started The Jeans Redesign working with 16 brands to change the way we produce jeans to address the huge problems of waste and pollution. In Belgium HNST jeans are produced from collected denim in Antwerp. Other examples with recycled fibres include Nordic brands or Trash 2 Cash in the UK. Companies like Lenzing and Re:Newcell are also putting chemically recycled textiles fibres on the market.

More information

- > [HNST Antwerp](#)
- > [Nordic brands](#)
- > [Re:Newcell](#)
- > [Lenzing](#)
- > [EMF Jeans Redesign](#)
- > [Trash 2 Cash](#)
- > [Euratex Circulary](#)

Fibre to fibre outside ECAP - Workwear

In order to become more circular several large workwear suppliers are scaling up their efforts working with recycled fibres, organising take-back schemes and developing and trialling new business models. Public organisations are large customers of workwear suppliers, so ECAP has developed circular public procurement criteria to provide guidance. These are available and can also be used by suppliers to prepare themselves for the future market.

More information

- > [Rijkswaterstaat leasing workwear](#)
- > [Making new raw materials from old – Dutch Ministry of Defence](#)
- > [Purchasing textiles made from recycled fibres Ministry of Defence \(The Netherlands\)](#)
- > [Developing Sustainable towels for the Dutch Ministry of Defence](#)



Circular approach

The use of recycled fibres is an important step. However, circularity is about more than just recycling. All kinds of issues need to be changed. For instance design, production of materials, overstock, consumer behavior, procurement, take-back and collection of discarded garments, track and trace systems. Or the role which a policy instrument like extended producer responsibility can play.

The circular approach pages provide insight in some of these issues.

1/5

Design

Design is an important aspect of sustainability and circularity in textiles. In both fashion and workwear, decisions that are made during the design phase have a large impact on the finished garments and their environmental impact. The way clothing is designed can determine that it lasts long and if and that it is easy to recycle (design for recycling). Designers can also use recycled fibres in new garments (recycling in design). As part of ECAP the Danish Fashion Institute, now Global Fashion Agenda created the Design for Longevity platform. This online platform provides inspiration and knowledge for designers, technologists and product developers. It highlights what they can do to change the design process and provides information to make decisions to extend the lifespan of garments.

Ellen MacArthur Foundation developed design guidelines for jeans. You can also download the book *Products That Flow* which talks about design strategies and circular business models for fast moving consumer goods, such as clothes.

More information

- > [Design for longevity](#)
- > [EMF Jeans guidelines](#)
- > [Products that flow](#)
- > [Products that flow \(2\)](#)



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Public procurement

Procurement is one of the key areas any organisation can use to encourage and accelerate circular economy. Procurement is a lever for circular economy which can stimulate markets by demand.

For example public institutions, such as government or hospitals, are large procurers of workwear. Public purchasers are discovering they have big market power and can change the market when they procure clothing.

ECAP published two reports on workwear and public procurement and developed circular public procurement criteria which procurers can use when they are looking for circular solutions – for example new garments with recycled fibres, leasing instead of buying, lifetime extension, increasing reuse or setting up a take-back system. Some of the workwear pilots from ECAP were in this space.

REBus, an EU LIFE+ project had as a goal to acquire knowledge on the potential of circular business models. In the Netherlands REBus investigated the role public procurers can play. Textiles and workwear were an area of focus, where pilots with recycled content or leasing of workwear took place. Also in the ECAP pilots several of the products were aimed at the professional B2B market.

More information

- > [ECAP - Best Practice Guide for Circular Procurement](#)
- > [ECAP - Workwear Report](#)
- > [ECAP - Circular procurement action](#)
- > [REBus Textiles case studies](#)



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Extended Producer Responsibility (EPR)

The European Waste Directive provides the option for producers to take financial and organisational responsibility for the management of the waste they create. This includes separate collections, sorting and treatment operations and also the responsibility to contribute to waste prevention and the reusability and recyclability of products. This is called extended producer responsibility (EPR). The obligations of the extended producer responsibility can be fulfilled individually or collectively. For textiles, the only mandatory EPR exists in France and this is governed under the accredited Eco TLC organisation. Several European member states are now investigating the introduction of an EPR scheme for textiles including the Netherlands, Sweden and the UK.

More information

- > [European Waste Directive](#)
- > [Eco TLC \(France\)](#)
- > [Fixing Fashion \(Environmental Audit Committee\)](#)
- > [Dutch Transition Agenda Consumer Goods - Circular Economy](#)



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Business models

The traditional system of a consumer buying and owning products is being challenged and sometimes replaced by new business models in a move toward a circular economy. In workwear for example suppliers have organised a take-back scheme, started working on lease or buy-back contracts and providing services such as laundry and repair. In the fashion market consumers are also being offered new ways of getting clothing via new business models. These include subscription, rental or leasing of clothing.

MUD jeans started in 2013 with leasing a pair of jeans. For a monthly fee the consumer rents a pair of jeans which can be sent back to MUD after a year. The jeans are then recycled. Other brands have also run take-back / buy-back schemes in stores and resell the items as vintage or second-hand.

As part ECAP action's work with consumers, the London Waste and Recycling Board (LWARB) have worked with online fashion retailer ASOS to trial the commercial viability of alternative business models in order to reduce clothing waste and promote circularity. After considering a wide range of circular business models including rental and leasing, subscription, incentivised return and resale, the project team decided to narrow the focus to a deeper investigation of a resale proposition.

Although the trial did not result in a business pilot as originally intended, several insights and findings were found as part of the steps take.

More information

- > [ECAP - White paper ASOS](#)
- > [REBus - Case studies textiles](#)
- > [MUD jeans - Lease a jeans](#)
- > [Claudia Sträter - Share your clothes](#)
- > [Fact sheets lessons learnt fibre to fibre pilots](#)



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5/5

Track & Trace

Transparency is important in developing a circular approach to textiles. However with the global textiles industry many issues remain unknown including understanding where garments are made, how, under what conditions and what materials were used and where they originate. When production is outsourced often an overview of the supply chain is not available. The same is often the case for brands using recycled fibres.

As businesses and consumers, we need to know where the materials come from, their exact composition, possibilities for verification and certification and more. Several pilot companies under ECAP worked with the REMO Key, an independent track and trace system and guarantee on recycled content. They provide information about the item's origin and past life, recycled content and environmental savings for carbon, water and energy.

Dutch aWEARness developed a circular content management system (CCMS) in cooperation with suppliers. The CCMS is an online tool providing track and trace services for the entire supply chain. It enables customers to find out about materials being used, where the garments were manufactured and the environmental impact. It is also important to organise take-back of the product.

More information

- > [REMO key](#)
- > [Circular Content Management System](#)

Communication and marketing

Apart from communicating about the production process and the composition of the garment, it is important to communicate to customers about the products. An important lesson from the ECAP pilots is that customers do not put a lot of effort into finding out the story behind the clothing they buy. Thus the story needs to be short, appealing and comprehensive, which can be done through direct and indirect marketing and even education.

More information

- > [Fact sheets lessons learnt fibre to fibre pilots](#)
- > [Video from Moodstreet](#)



Sustainable and circular materials

Material choice forms a large part the environmental impact created by brands and retailers. To diminish their environmental footprint more awareness of the fibre choices is needed. Brands also can develop materials strategies in which choices are made for sustainable fabrics (sourcing, processing, recycling).

The materials pages direct to information about sustainability and access to recycled fibres.

1/2

Sustainable materials

It is important to be aware of the environmental footprint of fibres in order to be able to make choices to reduce the environmental impact on carbon, water and waste. Procurers of brands often have a leading role in choices a company makes for used materials. Recycled and organically grown fibres are preferred over conventional fibres for their lower environmental footprint.

On a global level the share of man-made fibres has been rising while the use of natural fibres such as cotton and wool is stable. Additionally, the production of woven and knitted fabrics yarns are treated in wet processing for example bleaching or dyeing which has a negative environmental impact.

Companies can assess their baseline footprints and then develop a sustainable strategy to reduce carbon, water and waste impacts. This has been done by several companies as part of ECAP where they have used the ECAP footprint calculator to understand their impacts and then developed a sustainable materials strategy.

More information

- > [Modint Sustainable Materials Guide](#)
- > [ECAP - Sustainable fibre strategies](#)
- > [Textile Exchange](#)
- > [Mistra Future Fashion](#)



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Recycled fibres, yarn and fabric

Recycled fibres have the lowest environmental impact compared to conventional and even organically grown fibres. With a growing demand for fibres, companies are starting to act more sustainably and it is expected that demand for recycled fibres will continue to grow.

Within the recycled fibres and yarns, mechanical, thermal and chemical recycling methods are used. Crucial for the recycling process is the sorting of textiles which nowadays can partly be done automated.

Mechanical recycling is characterised by the unravelling of used garments (post-consumer) or clippings/left-overs (pre-consumer).

Thermal recycling materials are melted and therefore materials have to be pure.

In chemical recycling a distinction can be made between the recycling of man-made synthetic fibres, such as polyester or polyamide and bio-chemical recycling of natural celluloses fibres, such as cotton to be recycled in viscose.

Mechanical recycling of cotton will shorten the fibre after a few cycles so chemical recycling could be the next best option in the cascade. Innovations in chemical recycling are also expected which will change the market in years to come.

Suppliers of fibres are making changes too. In Europe and Asia suppliers have expertise and machinery in place to produce recycled yarns and fabrics. More investment is needed however to expand for the use of fibre to fibre textiles to become common practice.

More information

- > [Fibersort](#)
- > [Eco-TLC textiles recycling](#)
- > [Texperium](#)
- > [Wolkat](#)
- > [Recover](#)
- > [Re:Newcell](#)
- > [Lenzing](#)
- > [Saxcell](#)
- > [Wornagain](#)