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Vision of a circular economy for fashion



In a circular economy for fashion, products (apparel, footwear, and accessories) are used more, made to be made again, made from safe and recycled or renewable inputs.

A circular economy for fashion creates better products and services for customers, contributes to a thriving fashion industry, and regenerates the environment.

It presents the opportunity to tackle the root causes of global challenges such as climate change, waste, and pollution.

In delivering the vision, the rights and equity of all people involved in the fashion industry are prioritised. A circular economy for fashion creates new opportunities for growth that are distributed, diverse, and inclusive.*

This vision offers a target state to innovate towards. Realising it will require collaborative efforts by industry and government, significant investments, large-scale innovation, transparency, and traceability.

The time to act is now.

*These topics, while vital, are not the key focus of this vision statement and therefore are not defined in more detail in this document. Research and actions on social fairness in the fashion industry is being undertaken extensively by other organisations, for example, Fashion Revolution, The International Labour Organisation, and the UN Alliance for Sustainable Fashion. Whilst more research is needed to fully understand the social implications and opportunities of the transition to a circular economy, academia and organisations including BSR and Circular Apparel Innovation Factory (CAIF) have begun to explore what those could be.

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In a circular economy for fashion, products (apparel, footwear, accessories) are:

Used more

- Business models that keep products at their highest value, like rental and recommerce, are the norm across the industry, decoupling its economic development from resource consumption.
- Products are designed and manufactured to last, and align with the business model that will deliver them (for example, in rental models, considering the durability and ability to repair the products).
- Businesses empower users with the necessary knowledge, tools, and services to maintain the physical and emotional appeal of their products.
- All products that are made are used. Excess inventory is minimised and is never destroyed.
- Where relevant, products are enhanced or replaced by virtual alternatives such as digital collections or virtual showrooms.

Made to be made again

- Products and their materials are designed and manufactured to be disassembled so that they can be reused, remade, recycled, and - where relevant, and after maximum use and cycling - safely composted.
- Landfill, incineration, and waste to energy are not part of a circular economy.
- Packaging is minimised, and is made from reusable, recyclable, or compostable materials, and is more broadly in line with **Ellen MacArthur Foundation's vision of a circular economy for plastic** (and equivalent for other packaging materials).
- Products are in practice collected and sorted to be reused, remade, recycled, and — where relevant and after maximum use and cycling — composted:
  - Businesses contribute to support infrastructure, commensurately with what they put on the market, to ensure their products are collected and reused, remade or recycled in practice.
  - Governments support effective collection infrastructure, facilitate the establishment of related self-sustaining funding mechanisms, and provide an enabling regulatory and policy landscape.

Made from safe and recycled or renewable inputs

- The health of people and ecosystems is protected by ensuring:
  - Products and their materials are free from hazardous substances.
  - Production and use of products do not discharge hazardous substances into the environment.
  - Microfibres that may cause harm are prevented from reaching the environment, either by design or collection.
- Production, supply chain practices, and technologies ensure the effective use of resources, for example by optimising the use of water, energy, chemicals, and materials.
- Production (including inputs used during manufacturing and processing) is fully decoupled from the consumption of finite resources:
  - The need for virgin resources is minimised by increasing the use of existing products and materials.
  - Production by-products are minimised, and where unavoidable, are treated as valuable materials.
  - Post-consumer recycled content is used both to help decouple from finite feedstocks and to stimulate demand for collection and recycling.
  - Where virgin input is needed it is from renewable feedstocks sourced using regenerative production practices.
  - The manufacturing, distribution, sorting, and recycling of products is powered by renewable energy.

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Common definitions for the vision

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Traceability
Transparency

This section provides common definitions and explanations to underpin the vision, aiming to support transparency and consistency. The section builds on ISO and BSI definitions where applicable.[1]

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In a circular economy, waste and pollution are designed out, and products and materials are kept in use.

Materials in the circular economy can flow in two cycles, the technical cycle and the biological cycle. In the technical cycle products and their materials can continuously cycle through the system so that they can be maintained at their highest value at all times.

For fashion, all materials (including biological materials such as wool or cotton) should first be cycled through the technical cycle loops of reusing, repairing, remaking, and recycling.

Where relevant, materials can then enter biological loops such as composting or anaerobic digestion to generate additional value, for example by increasing the health and carbon content of soil.

Circulation of materials is enabled by keeping different technical materials separate or easily separable (as not doing so can hinder recycling), as well as keeping biological materials and technical materials separate or easily separable (as not doing so can hinder recycling and composting).

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USED MORE

In a circular economy, products and materials are kept in use at their highest value at all times. Reuse is the preferred option wherever relevant.

DURABILITY

The ability of a physical product to remain functional and relevant over time when faced with the challenges of normal operation.

Notes:
- *This definition applies to a product over multiple uses and users, and acknowledges repair, maintenance, and other services as means to increase overall durability.*
- *Durability can generally be categorised into two broad aspects which are equally important:*
  - *Physical durability: considers garment construction and component reinforcement in order to create products that can resist damage and wear.*
  - *Emotional durability: considers the product's ability to stay relevant and desirable to the user, or multiple users, over time.*
- *Products should be designed and manufactured to last, meaning they are both physically and emotionally durable.*

REUSE

Operation by which a product or component is used repeatedly and for long periods of time, for its original purpose, without being significantly modified, remade, or recycled. Products might need to be 'prepared for reuse', which often involves cleaning, repairs, or small modifications so that they can continue to be used throughout time and multiple users.

SOURCE:
BS 8001:2017 - 'Framework for implementing the principles of the circular economy in organizations – Guide', based on Section 2.59 Reuse/reused

Notes:
- *Reuse refers to the repeated use of a garment, either by a single user or by multiple users, with the aim of increasing the average number of times it is used and of keeping it in use for as long as possible.*
- *Examples of business models that support reuse include, but are not limited to, rental and recommerce. If employed, these models should effectively increase the average number of uses of each garment.*
- *Products are designed to align with such business models. This means that product design, development, and manufacturing ensure that the product can be reused as many times as possible, for example by identifying components that might fail first and improving their durability or repairability and offering support for users to care for the products.*

REPAIR

Operation by which a faulty or broken product or component is returned back to a usable state.

SOURCE:
BS 8001:2017 - 'Framework for implementing the principles of the circular economy in organizations – Guide', based on Section 2.56 Repair

Notes:
- *Repair is a key strategy to keep products in use and could be coupled with business models such as rental and recommerce.*

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MADE TO BE MADE AGAIN

From the outset, products are designed and manufactured so that they can be reused, remade, recycled, and - where relevant, and after maximum use and cycling - safely composted.

COMPOSTING

Composting is the process by which materials biodegrade through the action of naturally occurring micro-organisms and do so to a large extent within a specified timeframe. The associated biological processes will yield CO2, water, inorganic compounds, and biomass which leaves no visible contaminants or toxic residues.

Notes:

- *The high resource, energy, and labour intensity of textile production implies that a large amount of value is lost when garments are composted. At the same time, textiles typically contain very few nutrients that can enhance soils.*
- *The priority is therefore to keep products in use for as long as possible through reusing, repairing, remaking, and recycling, before considering composting. For example, a product made from 100% compostable materials (including trims, threads and accessories unless they are removable) would be designed to be durable so that it can be used for a long time, repaired, the material remade or recycled, and when no longer possible returned back into the biosphere.*
- *Composting can take place in an industrial facility, through a controlled process managed by professionals, as well as in home-composting units, where the process is subject to the householder's skills and other environmental conditions. Products can be certified2 as "Home Compostable for direct inclusion in a home composting bin along with other organic waste (compostable at 20-30°C for a maximum of 12 months with 90% level of biodegradation), or as "Industrially Compostable" (compostable at 58°C for a maximum of 6 months with 90% level of biodegradation).*
- *Where products are designed to be compostable it should be proven that these can be composted in practice and at scale, for example there are opportunities and infrastructure to collect, sort, disassemble, and compost them. In addition, all materials (for example, trims and threads) used in the product must also meet the necessary requirements.*
- *Any chemicals or production processes applied to the product would need to take into account the ability to safely return biological nutrients to the environment after use.*
- *The term 'biodegradable' should not be confused with 'compostable'. 'Biodegradability' designates a property which is needed - among others - to make a product compostable. It does not indicate whether a product can in practice be collected and composted following a managed process (for example, indicating how quickly and under what conditions it can biodegrade). Given that 'compostable' is defined more comprehensively and precisely by international standards, compostable is therefore typically the preferable term*

DESIGN FOR DISASSEMBLY

Design principle that enables the product to be taken apart in such a way that allows components and materials to be reused, remade, or recycled.

SOURCE:
ISO 14021:2016(en) - 'Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling)', based on Section 7.4.1 Usage of term

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RECYCLING

The process of reducing a product back to its basic material level, reprocessing those materials, and using them in new products, components or materials.

Notes:

- *Recycling is an important part of a circular economy, yet the loss of embedded labour and energy and the necessary costs to make products from their raw materials mean that it is a lower value process than reuse and remaking.*
- *Scaling recycling will require technologically and economically viable solutions. This can be supported by converging towards a selection of materials that can be recycled in practice and developing them alongside highly effective collection, sorting, and recycling processes for those materials.*
- *Where material blends are used, these can be separated to be either returned to the biosphere or continue to be cycled in the technical cycle as relevant. Developing new materials or innovation of recycling processes will be required where no current ones can provide both the desired functionality and recyclability.*
- *Mechanisms for transparency and traceability integrated in the design of clothing and aligned with processes across the value chain will support the identification of materials in the system to improve the output quality of the recycling process.*
- *Where products are designed to be recyclable it should be proven that these can be recycled in practice and at scale.*
- *Recycling within a specific industry is the preferred option, to stimulate design for recyclability, materials innovation and demand for recycled inputs. Where products are recycled into other industries or applications these should be designed to be recycled again and ultimately separated.*
- *Processes that turn materials into fuels or energy are not considered recycling and are not part of a circular economy.*
- *In a circular economy, products and materials are circulated at their highest value at all times. Within recycling, this principle results in a general order of preference for recycling*

2 Based on European standard EN 13432

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types, favouring techniques that retain most embedded value. Yet, this should not be seen as a strict hierarchy for determining the best option for every single product:

1. *Fibre recycling is performed by sorting garments by colour and material which are then shredded and processed back into fibres. This type of recycling is also referred to as 'mechanical fibre recycling'.*
2. *Polymer recycling takes fibres back to the polymer level, destroying the fibres but keeping the chemical structure of the material intact. This can be achieved by either melting and extruding textiles ('mechanical polymer recycling'), or by extracting the polymer with a solvent ('chemical polymer recycling').*
3. *Chemical monomer recycling breaks polymers down into individual monomers or other constituent materials that can then serve as feedstock to produce virgin-quality polymers.*

- *For the definition of recycled material, WW page 9.*
- *More information on textile recycling can be found in the report A New Textiles Economy - Redesigning Fashion's Future (Chapter 3).*

REMAKING

Operation by which a product is created from existing products or components. This operation can include disassembling, re-dyeing, restyling, and other processes to improve emotional and physical durability.

Notes:

- *Remaking can comprise both the product-level operation of refurbishment (which can bring a product to an 'as-new' condition and can include updates and improvements) and the component-level operation of remanufacturing (which brings a component to an 'as-new' condition and level of performance).*
- *Remaking examples include taking pieces of complete fabric from used products and sewing them together to create a new product, as well as replacing sections of fabric within a product. For knitted garments, remaking can be performed by unraveling the yarns while keeping them intact, and re-knitting them into a new garment.*

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MADE FROM SAFE AND RECYCLED OR RENEWABLE INPUTS

In a circular economy, substances that are hazardous to health or the environment are designed out to allow safe material circulation and ensure that no pollutants are released into the environment.

Moving away from a take-make-waste model, a circular economy aims to decouple production from the consumption of finite resources. This is achieved first and foremost by drastically reducing the need for virgin inputs through reuse, remaking and recycling, and then, by sourcing the remaining virgin inputs from renewable materials using regenerative production practices.

HAZARDOUS SUBSTANCES

Compounds exhibiting intrinsically negative properties such as being persistent, bioaccumulative and toxic (PBT), very persistent and very bioaccumulative (vPvB), carcinogenic, mutagenic and toxic for reproduction (CMR), or endocrine disruptors (ED).

SOURCE:
ZDHC Knowledge Base - Glossary (September 2020)

MICROFIBRES

Textile fibres, or fragments of textile fibres, that are shed from the product during production, use, and after-use phases.

Notes:

- *The term microfibre is applicable to both synthetic (for example, plastic-based) and natural (for example, cellulose-based) fibres. Plastic-based microfibres are a type of microplastics.*
- *Although often referred to as fibres less than 5mm in length, there is no common definition for the size of microfibres. What is most significant to consider is the potential impact that fibres of any size may cause if they end up in the environment.*
- *The term 'fibre fragment' is used interchangeably with the term 'microfibre'.*
- *In recent years, the textiles industry has been identified as a major contributor to the issue of plastic entering the ocean. Approximately two thirds of textiles are made from synthetic materials, dominated by plastic-based polyester, polyamide and acrylic.*
- *Natural or cellulose-based fibres are often treated with textile finishing treatments which may prevent microfibres from biodegrading safely in the environment, or allow substances of concern to be released in the digestive system of species that ingest them.*
- *Microplastics are moving up the food chain. Ingestion of microplastics has been demonstrated to cause starvation and stunted growth in some species, and to have the ability to release substances of concern by breaking down in the digestive system.*
- *Microplastics additionally have the potential to accumulate substances of concern on their surface, meaning these substances can concentrate in the bodies of larger animals. Microplastics have also been found in other products consumed by humans, such as beer, honey, salt, and sugar, although the source and the contribution of textiles still needs further investigation.*
- *A common test method needs to be decided upon and adopted rapidly to test and identify sources of microfibre shedding, as industry progress has been stalled by a lack of robust data.*
- *The capture of microfibres has been the focus of efforts to date. Eliminating their release in the first place by changing how clothes are designed and made is less explored and requires a robust evidence base.*
- *A systemic understanding and fundamental rethink of the materials used to make textiles, and of the processes used in production, will be needed to avoid microfibre pollution. It will require the research and development of new materials and production processes to design out microfibre shedding, increasing the effectiveness and scale of technologies that capture the microfibres.*
- *More information on microfibres can be found in the report A New Textiles Economy - Redesigning Fashion's Future (Chapter 1).*

RECYCLED MATERIAL

Material that would have been disposed of as waste, but is instead reprocessed by means of a manufacturing process and made into a final product or into a component for incorporation into a product.

SOURCE:
ISO 14021:2016(en) - 'Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling)', based on Section 7.8.1. Usage of terms

Notes:

- *The term 'secondary raw material' (SRM) is used interchangeably with the term 'recycled material'*[3].

3 According to the European Commission, SRMs are materials that can be recycled and then injected back into the economy as new raw materials. (**EU Circular Economy Action Plan 2015**)

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- *Recycled material refers to both post-consumer[4] and pre-consumer[5] content, either coming from recycling of fashion products or from other industries.*
- *Post-consumer recycled content from apparel-to-apparel recycling[6] is the preferred source of recycled feedstock, as it allows the industry to continuously cycle the materials it puts on the market, and avoid material value loss within its own and other industries.*
- *In a circular economy, the concept of pre-consumer waste is eliminated. Production by-products and excess inventory are minimised, and where they are unavoidable, treated as valuable materials and used, for example as recycled inputs.*
- *The use of post-consumer recycled content from other industries can help reduce the need for virgin input in the fashion industry and hence increase the profitability of collectors, sorters, and recyclers. However, this option must not prevent higher-value recycling in those industries, and within the fashion industry itself, when this is possible.*
- *For the definition of 'waste' see on this page.*

REGENERATIVE PRODUCTION PRACTICES

Regenerative production practices build soil health and carbon content, increase water quality and biodiversity, and improve the resilience of ecosystems.

Notes:
- *The term 'regenerative' is used to refer to methods that regenerate natural systems (it does not refer to recycling materials such as fibres).*
- *Regenerative production practices in agriculture can include agroforestry, permaculture, and managed grazing.*
- *Practices such as organic farming, which rely on naturally occurring substances rather than synthetic inputs, can be considered as a means to move towards implementing regenerative production practices.*
- *The improvements achieved by regenerative production practices are compared to a baseline of conventional practices which, in the example of agriculture, rely on, inter alia, inputs from finite resources and a small number of crop varieties, and have impacts such as soil degradation, pollution, and biodiversity loss.*
- *Regenerative production practices used on depleted land have the potential to improve natural ecosystems.*

RENEWABLE MATERIAL

Material that is composed of biomass from a living source and that can be continually replenished. When claims of renewability are made for virgin materials, those materials shall come from sources that are replenished at a rate equal to or greater than the rate of depletion.

SOURCE:
ISO 14021:2016(en) - 'Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling)', based on Sections 7.14.1. Usage of term and 7.14.2. Qualifications.

Notes:
- *The way land is used to produce renewable materials must not negatively impact or degrade natural ecosystems, including ancient and endangered forests and other landscapes, or compete with land needed for the production of food.*
- *The aim is to grow all renewable materials using regenerative production practices as applicable (see on this page). Renewable material refers to organic material (including, but not limited to, crops, trees, algae, and animals), as well as to waste and by-products of biological origin (including, but not limited to, agricultural and food waste).*

WASTE

Materials or substances that are discarded and no longer used, typically resulting in landfill, incineration, or leakage into the environment.

Notes:
- *In a circular economy, products, materials, and components never become waste. Waste is 'designed-out' by intention.*
- *Through redesign, materials or substances that would become waste are eliminated, become feedstock for another production process, or are safely returned to the biosphere.*

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4 Post-consumer recycled content is material generated by households or by commercial, industrial, and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. (Source: ISO 14021:2016(en) - 'Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling)', based on Section 7.8.1. Usage of terms)

5 Pre-consumer recycled content, also referred to as post-industrial recycled content, includes materials diverted from the waste stream during a manufacturing process. (Source: ISO 14021:2016(en) - 'Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling)', based on Section 7.8.1. Usage of terms)

6 Apparel-to-apparel recycling refers to the recycling of old garments into new ones, after they can no longer be reused or remade.

TRANSPARENCY AND TRACEABILITY

Achieving the vision will require transparency and traceability across the value chain, for example on product specifications, chemical inputs, materials used, and production practices. Such information will be crucial to inform after-use practices such as sorting, remaking, and recycling

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TRACEABILITY

The ability to trace products, components, and materials, as well as the social and environmental conditions in which they were made, along the whole supply chain, including after use.

TRANSPARENCY

The ability to make information (for example on product specifications, chemical inputs, materials used, and production practices) available to all actors of the supply chain (including users), allowing common understanding, accessibility, comparability, and clarity.

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About the Ellen MacArthur Foundation

The Ellen MacArthur Foundation was launched in 2010 with the aim of accelerating the transition to the circular economy. Since its creation, the charity has emerged as a global thought leader, putting the circular economy on the agenda of decision-makers around the world. The charity's work focuses on seven key areas: insight and analysis; business; institutions, governments, and cities; systemic initiatives; circular design; learning; and communications.

Further information: **www.ellenmacarthurfoundation.org** | @circulareconomy

About Make Fashion Circular

Make Fashion Circular was launched by UK charity the Ellen MacArthur Foundation at the Copenhagen Fashion Summit 2018. It brings together leaders from across the fashion industry, including designers, brands, cities, philanthropists, NGOs, and innovators. It is leading international efforts to stop waste and pollution in fashion by creating a circular economy for the industry, where clothes are used more, are made to be made again, and are made from safe and recycled or renewable inputs.

To make fashion circular, businesses, governments, innovators, and citizens need to join forces. Make Fashion Circular is supported by Philanthropic Partners Laudes Foundation, Mava, and players of the People's Postcode Lottery, awards funds by the Postcode Dream Trust.

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Further information: **tiny.cc/makefashioncircular**

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