

Circulator Guide 2

H&M Group

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In 2021, we launched our first guide to designing more circular products. Now we're back with an updated version.

Since we published the original guide, our teams have used it to design everything from high-end party collections to daily staples like jeans. You can discover some of the results in the case studies at the back of this guide.

This guide is one step in our journey. We are constantly learning more about circular design and we feed all this new knowledge back into the Circulator guide and tool, adding new functionality and moving to a more data-based approach. For example, we are currently reviewing the design strategies to make them more product specific, less subjective and to focus on what will increase a product's circular potential the most.

But it's going to take more than one brand to shift an entire industry. We need to stop taking, making and wasting and start reselling, rewearing repairing and remaking instead. And while we've relished seeing more brands talking openly about circular design, there's more we can do together.

We want to hear from you. What are your thoughts on circular design? Have you tried the guide? What did you like? What would you change? What have we missed? Send all your feedback to circulator@hmgroup.com.

What's new this time?

Since the first edition of this guide, we have:

- Adapted the process to better follow how we develop products. We tested different approaches with our teams and found that it made more sense to put design strategies before input selection.
- Improved how we assign product purpose by moving from a subjective assessment of a product's intended use to a more data driven approach.
- Added production processes and trims to the input frameworks, including prints, dyeing, buttons and zips.
- Carried out durability tests on a significant number of our most used materials and products to better understand their longevity.
- Conducted a new recycling survey to understand what progress the industry has made over the last 18 months.
- Designed several new collections using the Circulator method, including [the seven case studies at the back of this guide](#).

Learnings

Since we started out on our journey to become a circular business and incorporate circular design principles, we have faced several challenges. However, we remain focused on improving the circular potential of our products. Here are some of our main learnings.



- To make any meaningful progress, we need industrywide collaboration. Together with ASOS, BESTSELLER and Zalando, we have established the Circular Design Consortium. To date we have focused on aligning our approaches and now we are expanding the scope. This type of alliance is crucial to speed up the transition to a circular fashion industry.
- Integrating circular design into our business is more than just adding another stage to the design process. It demands a mindset shift and a whole new approach. For this to be successful, we need to increase understanding across all layers of the organisation of the value of circular design for transitioning to the circular economy and reaching our climate and nature goals.
- H&M Group is a large organisation with several brands and business units, all with their own way of working. In this environment strong internal networks are key to making progress. We have developed the Circulator Academy, an online training portal, and a team of ambassadors to engage with different parts of the organisation. Our future focus will be to empower this network to embed circular design on a local level.
- Alongside the academy, we have built an online learning hub. It includes several case studies and videos about circular design to guide our teams on how to apply circular design, inspire them and encourage collaboration. We've also seen long-standing siloes breaking down across different functions. Our sustainability, materials, quality and assortment teams are working closer together than ever before. Working together towards a common goal is proving a powerful motivator.
- We need to develop new KPIs and metrics that move away from the traditional, linear, financial measures. To make this happen we need to improve the availability of data and integrate it into the tools already being used by our development teams.
- We remain committed to designing for product purpose. To optimise our use of resources we need to think about how a product is used and allocate resources accordingly. We have been working with policymakers to raise awareness of the importance of this approach and are starting to see it reflected upcoming legislation and other initiatives, as well as an increase of understanding in other brands.
- Attitudes towards clothing need unpicking. For example, we know that low perceived value and declining desire for a garment can lead to early disposal. If we want to extend the life of products and encourage resale, we need to understand this area better. Using research, such as this about reasons for clothing disposal, we are trying to foster a scientific approach.

A circular H&M Group

With natural disasters driven by climate change topping our news feeds, circularity has never been more pressing. At H&M Group, we are working towards becoming a circular business and circular design is one element of an entire systems shift.



Our circular ecosystem is made up of three elements that together will help us to achieve net-zero and have a net positive impact on biodiversity.

Circular products:

Create products that are made to last, from safe, recycled, regenerative or other more sustainably sourced materials, and that can circulate multiple times.

Circular supply chains:

Build scalable systems that circulate products and materials for repair, reuse and recycling, and that use lower impact production processes, such as dyeing, printing and finishing.

Circular customer journeys:

Provide convenient ways to engage in circular fashion where products are used more before being repaired, reused and recycled.

What is a circular product?

We need to change the way we make products to keep them in circulation for longer and to ensure we optimise the resources used to make them. However, there is no industry standard for circular products today. So, we work towards Ellen MacArthur Foundation's (EMF) vision of a circular economy for fashion.

The vision states: a circular economy for fashion creates better products and services for customers, contributes to a resilient and thriving fashion industry, and regenerates the environment. It prioritises the rights and equity of everyone involved in the fashion industry and will create new opportunities for growth that are distributed, diverse and inclusive.

At H&M Group, we apply these principles across our entire product range, including fashion, footwear and homewares.

Products in this circular economy should be:

- **used more**
 - Alongside making durable products we need to adapt our business to extend the use of a product, for example through repair, resell, rental or remake.
- **made to be made again**
 - To make recycling as simple as possible, we need to make products that are easy to collect, identify and process into new materials.
- **made from safe and recycled or renewable inputs.**
 - We are already working towards using safe and recycled or renewable inputs. In 2021, 80% of the material we sourced for our products met our definition for more sustainably sourced materials. We aim to reach 100% by 2030 at the latest.



Balancing trade offs – the importance of product purpose

EMF's definition states that circular products should be used more and made to be made again. However, it can be difficult to make products that are both durable and recyclable with the technology we have today.

Durability and recyclability are not always compatible

Durable products are tricky to recycle because they often need extra stitching or blended materials. At the same time, easy to recycle products made of mono-fibres can't always deliver the same performance, functionality or durability as blended-fibres.

On top of this, our planet has finite resources, and we need to optimise our use of them. Of course, all products should meet a minimum level of durability, however, if we make them excessively durable, we could end up using more materials and generating more greenhouse gases than needed. The level of durability should reflect how the products will be used.

Designing for purpose balances trade offs

To deal with the trade-offs between durability and recyclability and to make sure we don't waste resources, we assign all products a category based on how much it will be used and the length of its lifespan. We call this product purpose. You may also hear it called intended use or intended function.

There are three different product purpose categories – light, mid and extensive. The light category prioritises recyclability while the extensive category prioritises durability. Product purpose also guides

decisions on how to make a product and what materials and processes to use.

A deeper understanding of how products are used

We know that many things impact product purpose such as who the intended user is, how on-trend the product is, what context it will be used in and how much it is washed. To move toward a more data-driven assessment, we are incorporating learnings from existing research, such as this around [clothing lifespans](#) and this around [number of users](#).

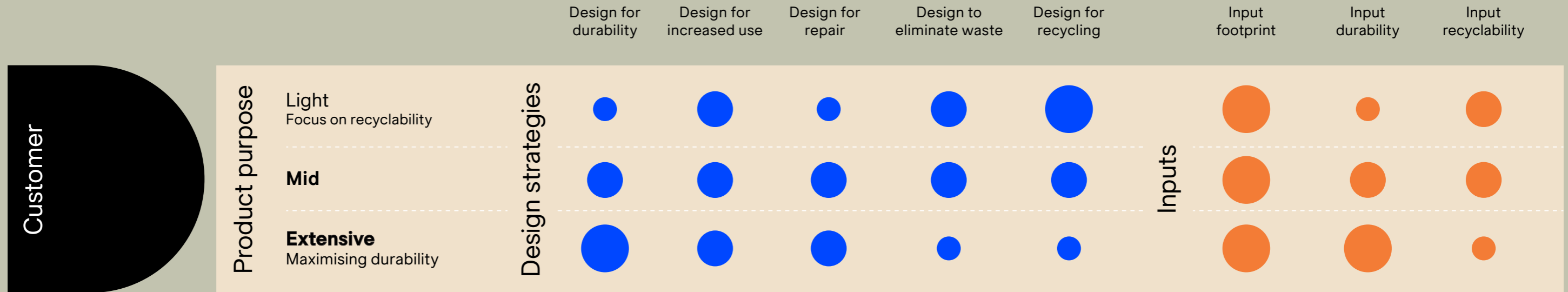
However, there is a lack of data about the customer use phase. To address this gap, we worked on a research project with Seam, H&M Group's new wardrobe app. The app helps users keep track of their clothes, plan outfits, share inspiration and sell their garments directly to other users or via Sellpy.

The idea was to test a research method that could help us gather information on how customers use garments, something we don't know much about today. Seam users logged how they used their clothes, recording garment type and the context in which it was used. Unfortunately, the questions were not clear enough, which led to unsatisfactory data. As a result, this remains an area that we need to understand better and it's key that brands come together to share their knowledge and investigate further.

The process

We have devised a four-step process that guides product teams to make better design decisions and create more circular products.

The size of the circles relates to how much you should prioritise the different design strategies and inputs for each product purpose category. The larger the circle, the more an area should be prioritised.



- 1 Know your customer
- 2 Define your product purpose category
- 3 Select your design strategies
- 4 Choose your inputs

Step 1

Start with the customer

Fashion can never be sustainable if it lies unworn and unloved at the bottom of our wardrobes, or worse, discarded after a couple of wears.

As with any product development process, creating a circular product starts with getting to know your customer. Use industry insights and research, as well as your own knowledge and experience to build a picture of their needs and expectations.

Remember to keep your customer in mind throughout the development process to guarantee you end up with a product based on what they want.

Step 2

Assign your product purpose

To find out which purpose category your product falls into, follow these instructions:

- 1. Place your product on the start circle.** Then move up or down the frequency axis depending on how often it will be used. Next move left or right on the lifespan axis and select how long it will be used.
- 2. Now, think about wear and tear.** For products that will experience heavy wear and tear, go up one category and for products that will experience very little wear and tear, go down one.
- 3. Finally, decide on the access model.** If your product will have multiple users either through rental or sharing/swapping/resale go up a category.



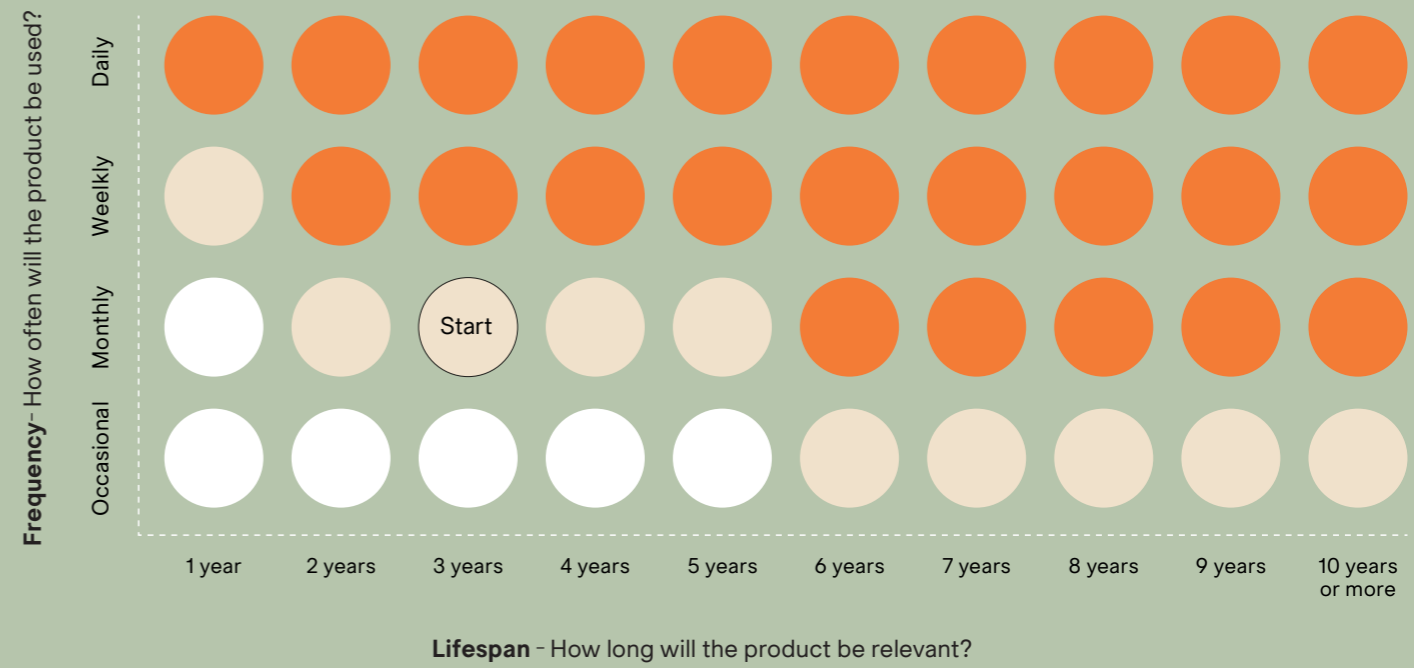
Light
The light category includes products that tend to be used less or be part of a shorter trend and can be subject to less physical stress.



Mid
Most products will fall into the mid category.



Extensive
Extensive category products are used more often or are part of a long-term trend and can experience more physical stress.



Product purpose examples

Let's take two different products and explore how different contexts impact product purpose.

A casual dress will get lots of wear and will be categorised as extensive. Whereas a dress designed for the office will be used less often and would fall into the mid category. At the other end of the spectrum, a dress for a special occasion will be worn seldom, subject to less wear and tear and be in the light category.

Casual men's trousers would see regular use and would be classed as extensive. A pair of trousers designed for the office will also fall into the extensive category. While trousers for special occasions would be worn less and fall into the mid category.

Product purpose – examples

	CASUAL	OFFICE	PARTY
DRESS			
TROUSERS			

Step 3

Select your design strategies

Design strategies are different approaches, opportunities and solutions that help maximise the circular potential of a product. They either increase how much a product is used, prolong its lifespan, eliminate waste or enable recycling at the end of a product's life.

We've deliberately kept the strategies quite general so they can be widely applied and the more you use, the more circular the product. As we learn more, we may include strategies for specific product types in the future.

The design strategies we use fall into five categories:

- **Design for durability (both physical and non-physical)**
- **Design for increased use**
- **Design for repair**
- **Design for eliminating waste**
- **Design for recycling**

Product purpose first

You should prioritise design categories according to your product purpose category:

- For extensive use products prioritise durability and repair
- For mid use products all categories are equally relevant
- For light use products prioritise recycling, eliminating waste and increased use

Business model criteria

Developing more circular products is an emerging area. However, we know that circular products and circular business models go together. Circular design creates products that can be used longer and recirculated at their highest value. But to facilitate this recirculation, we need the right business models and systems in place. That's why some strategies relate to business models rather than products.

Strategies relating to product development can be applied at product level. While those connected to business models aim to create a longer-term shift in approach at assortment level.

Remember, whatever strategy you use, keep returning to the customer brief to make sure you develop products that meet customer demand.

Design strategy

Durability

PRIORITISED FOR PRODUCT PURPOSE CATEGORY:

Mid / Extensive

CIRCULAR PRODUCT DEFINITION:



Made to be used more

At the heart of closing the loop and going circular is preserving the value of a product for as long as possible. Physical durability increases the amount of time before a product gets worn out. While non-physical durability connects to how long a product will be used, cherished and loved, even when fashions and tastes change.

Physical durability

PRODUCT CRITERIA

Material & process choice

Select exposed materials and processes that optimise durability.

Construction and making

Strengthen any stress points, for example:

- For woven material - use heavier thread for stitches, shorter stitch length, wrapped seams, double line stitching for back rise, reinforcement for belt loop and pocket opening, increased seam allowance on cuffs and zippers and extra strong material for pocket bags.
- For jersey materials – use reinforcement tape at shoulder seam, waist seam, bottom crotch and similar.
- For heavy knit materials – reinforce linking, add shoulder tape, bar-tuck secure linking ending.
- For fine knit materials – reinforce linking, use additional linking at bottom armhole, stitch secure linking end.

Fit and construction

Reduce stress points and decrease the risk of components breaking through considered ease of movement combined with material choice.

Wear testing

Test the product under real conditions to discover any weak spots and/or actively include customer feedback to improve durability.

Additional care instructions

Give the customer additional care instructions guiding them to wash less, wash at lower temperatures and avoid tumble drying.

Non-physical durability

PRODUCT CRITERIA

Iconic design

Work with storytelling to encourage the customer to build a stronger emotional bond to increase the likelihood of them keeping the product longer and then recirculating it.

Trend lifecycle

Use materials, proportions, details, colours and prints that will be relevant for several seasons or years.

BUSINESS MODEL CRITERIA

Customer co-creation

Involve the customer in the design process to build a stronger attachment, increase perceived value and encourage longer use. For example, allow the customer to pick design elements like colour or print.

Made to measure

Offer the product as made-to-measure, personalised to the customer's fit.

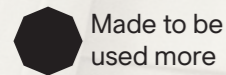
Design strategy

Increased use

PRIORITISED FOR PRODUCT PURPOSE CATEGORY:

Light / Mid

CIRCULAR PRODUCT DEFINITION:



Made to be used more

We need to encourage customers to get more use out of their products. One option is to offer multi-user access models like rental. Another is to give the customer several ways to use a product. Think versatility, modularity, reversibility or adjustability. A good source of inspiration is the sports and outdoors sector that already offers lots of multi-purpose products.

PRODUCT CRITERIA

Versatility

Build in versatility so the customer can style and use the product in multiple ways. Make it reversible, adjustable or adaptable. Or even modular where details or parts of the garment can be detached, replaced or upgraded.

Fit for many

Design the product to fit lots of different body types. Use technical features to enable adjustability, for example, strap ring and sliders, hidden elastic, adjustable ties, drawstrings, stretch panels, smock, bias cut, smart constructions. This can include a genderless design, but not an oversize fit.

Alteration ready

Construct the product so it can be altered throughout its lifespan. For example, add extra seam allowance or hem length, split the waistband or include unopened stitched buttonholes on sleeves.

Redesign

Provide instructions on how to re-colour or remake the product or offer a service to redesign the product after each use phase.

BUSINESS MODEL CRITERIA

Rental/Sharing

Offer access through a leasing, rental or sharing service.

Design strategy

Repair

PRIORITISED FOR PRODUCT PURPOSE CATEGORY:

Mid / Extensive

CIRCULAR PRODUCT DEFINITION:

 Made to be used more

Repairing and refreshing products is a simple way to extend their lifespan and preserve their value. The important thing is to make it easy for the customer to find information on how to repair and maintain their products or offer easy-to-access repair services.

PRODUCT CRITERIA

Repair information

Make information about repair and maintenance of the product available to the customer, though an on-product QR code or link to web page.

Standardised components

Use trims that belong to a standardised system so they can be replaced or upgraded easily.

Spare components

Include spare components or make these items available on request. For example, thread, buttons, beads or fabric patches (from cutting waste).

Construction and making

Construct the product in a way that makes it easy to repair or replace components and considers the most common failure points. For example, include extra seam allowance, don't stitch down elastic in channels, stitch the zipper on the inside instead of between layers of fabric and don't use glued or fused seams.

BUSINESS MODEL CRITERIA

Repair service offer

Offer the customer access to an inhouse or third-party repair and refresh service.


Design strategy

Eliminate
waste

PRIORITISED FOR PRODUCT
PURPOSE CATEGORY:

Light / **Mid**

CIRCULAR PRODUCT DEFINITION:

 Made from safe, and
recycled or renewable inputs

Waste is a design flaw and in the fashion industry a lot of valuable material is discarded during production. Instead of throwing materials away we need to start seeing them as a valuable resource that can be used and recirculated just like any other material.

PRODUCT CRITERIA

Optimised pattern efficiency

Make the product with a higher-than-average pattern efficiency.

Zero waste pattern cutting

Make the product with a pattern efficiency between 99-100%.

Fully fashioned

Produce the product as fully fashioned or seamless knitwear.

Utilise cutting waste

Make the product from cutting waste and/or use the cutting waste from this product in the production of another product.

Remake

Make the product fully or partially from post-consumer products, excluding labels and interlining. Post-consumer recycled materials do not count towards this strategy.

3D prototyping

Use 3D design to reduce physical samples in product development.

BUSINESS MODEL CRITERIA

On demand

Produce the product to order with or without customisation.

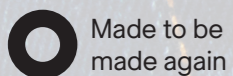
Design strategy

Recycling

PRIORITISED FOR PRODUCT
PURPOSE CATEGORY:

Light / **Mid**

CIRCULAR PRODUCT DEFINITION:



In a circular economy you need to think about what happens to a product at the end of its life before it's even created. Recycling products keeps materials in the loop and reduces our reliance on virgin resources.

Making a product easy to disassemble, for example by using unscrewable buttons, sounds like a great way to maximise recyclability and still use different materials. However, it's currently not efficient to manually take a product apart at scale. Plus, disassembly can compromise quality, shortening the lifespan and decreasing recirculation potential.

PRODUCT CRITERIA

Mono-material

Choose materials made of the same fibre type:

- Basic – use the same fibre type for at least 98% of the product weight. This includes shell and lining but excludes interlinings, pockets, labels, threads and trims.
- Medium – use the same fibre type for at least 98% of the product weight. This includes shell, lining, padding, interlinings, pockets but excludes labels, threads and trims.
- Aspirational – use the same fibre type for 100% of the product weight. This includes all materials - shell, lining, threads, zipper tape, trims, interlinings, paddings, pockets, etc. Labels can be excluded.

Material choice

Choose materials made of the same fibre. For cotton, nylon 6, linen, hemp silk or wool, at least 90% of materials should be made of the same fibre. For polyester, 85%.

Minimise trims

Reduce or eliminate additional components that could disrupt the recycling process. For example, use bar tacks instead of rivets.

BUSINESS MODEL CRITERIA

Product data

Assign a digital product passport using technology such as RFID, NFC, or traceable fibre technology to identify materials and construction to enable easy sorting and recycling.

Step 4

Choosing inputs

Everything that goes into making a product – from fabric to finish, lining to buttons, dye to embellishments – can affect the circular potential of a product. So, what you leave out, is just as important as what you put in.

What is an input?

Inputs refer to materials and trims, as well as processes applied to full lengths of fabric and cut or finished garments. There are three key impact areas to consider when you select your inputs. These areas relate to the three parts of the Ellen MacArthur Foundation's definition for more circular products:



Footprint

— made from safe and recycled or renewable inputs



Durability

— made from inputs that are designed to be used more



Recyclability

— made from inputs that are made to be made again

To make sure we don't use more resources than is absolutely necessary, input areas are prioritised according to product purpose category:

Light

Prioritise materials and processes with a lower footprint plus those that are easy to recycle.

Mid

Prioritise materials and processes with a lower footprint.

Extensive

Prioritise materials and processes with a lower footprint plus those that are durable.

Input footprint

PRIORITISED FOR PRODUCT PURPOSE CATEGORY:

Light / **Mid** / Extensive

CIRCULAR PRODUCT DEFINITION:



Made from safe, and recycled or renewable inputs

Inputs should be safe to use and do not damage the health of people involved in their production nor the environment. Ideally, the fibres will be recycled and where virgin fibres are used, they should come from renewable sources using regenerative production.



100%
RECYCLED
FABRIC

To help fashion companies make better informed decisions about the materials they use, Textile Exchange are due to launch their [Preferred Fiber and Material Matrix in 2023](#). The matrix will provide data about the impact of over 65 of the industry's most used materials.

What are we doing at H&M Group?

We are constantly trying to improve what inputs we put into our products and how we source these inputs.

- Setting [several goals](#) to help improve our material sourcing and to meet our customers' expectations.
- Supporting our design teams to make better decisions about materials by developing a [framework](#) that compares the impact of different types of materials within the same family, for example different types of cotton or paper. Each family of materials is broken down into four groups. Those in group A are our preferred materials while materials in group D include conventional, virgin materials. For a product to be considered more circular it needs to be made of materials categorised as A, B or C (excluding Better Cotton Initiative*). We aim to continuously move our sourcing towards category A.
- Encouraging our design teams to swap to lower impact processes by developing frameworks that

assess prints and dyeing for their impact in terms of water, energy chemicals and waste. We will add processes as we learn more.

- Supporting the development of materials and processes through our Circular Innovation Lab that works with start-ups and innovators to scout, develop, evaluate and scale their ideas
- You can find out more about our approach to materials and processes in our annual [Sustainability Disclosure](#).

Natural versus synthetic

There's a common myth that natural fibres are better for the environment than synthetics. However, it's not that simple and every fibre has an impact. For example, conventional cotton needs a lot of water, wool uses a lot of land and traditional synthetics are made from fossil fuels. All materials shed microfibres and even natural ones can persist in the environment if chemicals, like dyes and finishes, are applied. Not just synthetics as widely believed.

To make more circular products we need to use a mix of different fibres that meet different product needs according to product purpose. [Find out more here.](#)

*Better Cotton Initiative (BCI) and mass balance play a crucial role in helping brands and farmers achieve scale in sustainability. However, traceability promotes long-term integrity and is equally as important for H&M Group. Therefore, using BCI does not increase the circular potential of a product.

Input durability

PRIORITISED FOR PRODUCT PURPOSE CATEGORY:

Extensive

CIRCULAR PRODUCT DEFINITION:



Made to be used more

Durable inputs should not change the way they look or become worn out after several washes and wears. Elements that can affect durability include fibre length, yarn type, spinning, fabric construction, wash treatment, dye type and mechanical treatment.

What are we doing at H&M Group?

All our products must meet strict internal quality standards as a minimum. However, we know we need to go a step further to make sure our products are fit for a circular fashion industry.

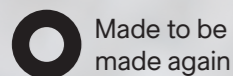
- Increasing our design teams' knowledge of input quality to help them better understand how their decisions impact durability.
- Developing frameworks to help teams easily identify more durable inputs based on fibre type, fabric structure, fabric weight, yarn type, wash treatment, dye stuff and finishes.
- We tested a significant share of our core materials and products to verify our frameworks and to prepare for upcoming EU initiatives. Products were washed regularly for up to 50 times. They were then checked for shrinkage, colour fastness, twisting and change in appearance. We also tested product strength, for example tear strength, tensile strength, pilling and bursting strength tests. The results will help us identify where we should focus to make products more durable.

Input recyclability

PRIORITISED FOR PRODUCT
PURPOSE CATEGORY:

Light

CIRCULAR PRODUCT DEFINITION:



Made to be
made again

Today, mono-materials are easier to recycle than blends. While processes like dyes, prints or coatings can have a big negative impact on recyclability. However, technology moves fast and in the coming years we expect several new solutions to become available that will mean we can recycle more.

What are we doing at H&M Group?

To meet our goal of using 30% recycled materials in our products by 2025 we know that we need to increase the volume of high-quality feedstock for recycling.

- Developing frameworks to encourage our designers and product teams to move towards using more recyclable materials and processes.
- Collaborating with other companies to better understand how chemical content affects recycling, including a large-scale study we did with IKEA.
- Surveying recycling and sorting companies about the future of garment-to-garment recycling.

KEY FINDINGS:

- Feedstock made up of the same fibre is the most widely accepted and produces the highest quality recycled output.
- Materials currently recycled at scale are cotton, polyester, wool, nylon 6, linen, silk and hemp.
- Recyclers favour feedstock containing a high percentage of a single fibre, around 90%, which means many garments produced today are unrecyclable.
- If a solution can handle mixed fibres, it tends to focus on reclaiming one fibre while treating the others as waste.
- Most recycling technology can only handle textiles with a maximum of 3 – 5 % elastane, however clothing such as underwear and sportswear often contains higher amounts.
- Innovation continues to be directed towards technology that recycles a single fibre – either cotton or polyester. A clear innovation gap remains for technology that separates several different fibres for recycling in a single process.
- Some print techniques are difficult to recycle, especially when used on cellulosic fabrics.
- Recyclers often sort out garments with large areas of print. Even garments with smaller areas of print can be discarded if the work involved in cutting away the print or the loss of material is too great.
- In mechanical recycling textile waste is shredded to turn it into a processable material. This shortens the lengths of the fibres and impacts the quality and durability of the recycled output.
- Recycling capabilities are diverse and a garment that might be recycled at one facility may not be at another due to sorting processes and recycling technologies.
- Multi-layered garments are currently a disruptor for sorting.
- Most trims are considered waste. While those made of metal are the most likely to be recycled.

How chemical recycling works

In chemical recycling, blended fibres are dissolved or broken down into their building blocks. These building blocks, or monomers, can then be processed again to produce new materials, which are often the same quality as virgin material.

Compared to mechanical recycling, some chemical recycling technologies use more energy and chemicals. However, it can handle feedstock made up of several different fibres or featuring prints and trims. Chemical recycling is mostly used for synthetics, but it can also break down cotton to produce regenerated cellulosic fibres.

How mechanical recycling works

In mechanical recycling, garments and fabrics are shredded into fibres that are processed into new yarns and textile products. The process uses less chemicals and energy than chemical recycling. However, it relies on good-quality feedstock with a very high percentage of a single fibre because it is unable to separate different fibres from each other.

Mechanical recycling is mostly used for cotton and wool. This process affects the quality of the fibres, making it necessary to strengthen any new products with virgin materials, reducing the percentage of recycled content.

Mechanical recycling can't remove dyes and several recycling companies will use chemicals like bleach to remove dye, which damages the fibres. It also has problems processing prints and trims.

Case studies

Over the next few pages, we highlight some of the collections that have been designed using the Circulator Guide and tool.

Designing with circularity in mind is a relatively new concept and there is no agreed method to follow. But we can't wait until we have all the answers, at this stage progress is more important than perfection. These case studies illustrate how our brands have started exploring the idea and trying out different ways to make products more circular.

The teams behind these collections are helping us to learn so much. Every success, set back or mistake gets fed back into the next collection so we can continue to take steps in the right direction.

We are aware that a product can't be truly circular until we have other circular systems in place, such as a circular supply chain and [circular business models](#). Across our organisation we are trying to find solutions, but we can't do it alone. Our industry and other brands need to work together to make this shift.



Case Study

H&M Cherish Waste

H&M wanted to create a collection that changed attitudes to materials often thought of as waste by transforming them into eye-catching fashion pieces for customers to cherish. This collection is part of the Innovation Stories series that focuses on sustainable materials, technologies and production processes.



DESIGN STRATEGIES:

Durability:

- Iconic design – part of H&M's Innovation Stories series and featured a compelling storyline around falling in love with your clothes.

Increasing use:

- Rental/sharing – customers could rent key pieces of the collection.

Recycling:

- Material choice – over 50% of the garments in the collection used mono-materials to increase the recycling potential.

INPUTS:

The collection prioritised inputs from safe, recycled and renewable inputs. Highlights include:

- Mirum is a 100% biobased material made from rice husks and coconut fibres mixed with natural rubber. It was used on a bracelet and a pair of pumps.
- AirCarbon made from microorganisms from the ocean and CO2 used for jewellery
- RENU recycled polyester made from garment waste used for a dress.
- Digital print, which uses less water, chemicals and energy than other methods.

LEARNINGS:

Set goals on product level

When you're creating a collection it's easy to focus on the concept. By drilling down and thinking about each piece individually, you can set more targeted goals that when taken together, have a big effect.

Be open minded

Don't see circular design as an obstacle. Learn everything you can about the approach and keep an open mind. This way you'll see more opportunities.

Patience & persistence

We're in this for the long run and circular design isn't something we will do just once, nor will we get it right first time. It's important to get started because it will be the bedrock of developing products in the future. Having patience and persistence now will pay off later.



Case Study

H&M Circular Design Story



This was H&M's first time using our circular guide on a full clothing collection. The garments were designed to be treasured, shared, repaired and recycled. It celebrated the fun and eclectic nature of fashion while moving the industry closer towards a more circular future.

DESIGN STRATEGIES:

Durability:

- Construction and making – reinforced high-stress seams.
- Iconic design – as part of H&M's Innovation Stories series, the collection had a strong narrative.

Increased use:

- Versatility – straps alter the fit of shirts or coats, trouser width can be altered, and the team opted for a separate skirt and bustier instead of a ball gown.
- Rental/sharing – some items in the collection were created for rental only.

- Alteration ready – relevant items in the collection had a split waistband and extra-long hems.

Repair:

- Spare components – customers received, for example, spare buttons and beads on relevant pieces to allow for repair.

Recycling:

- Mono-materials – chose fibres from the same material family for all textile layers, i.e. recycled polyester for lining, shell and padding, on 13 womenswear garments to increase recycling potential.

INPUTS:

The collection prioritised inputs from safe and recycled or renewable inputs, as well as inputs that are designed to be made and made again. Highlights include:

- Removed metal coating on sequins, which is used to get a shine effect, to increase the potential for recycling.
- Selected recycled materials, for example polyester made from textile waste or pet bottles, to avoid using raw materials.
- Chose materials from more sustainable sources such as Eastman Naia™ Renew.
- Vegea™, an innovative vegan material partly made from grape skins, stalks and seeds discarded during wine making and turned into a beautiful alternative to leather.

- Cycora® by Ambercycle, a fabric that makes use of old garments and end-of-life textile waste.

- Resortecs®, a dissolvable sewing thread, was used to attach glass beads to garments and experiment with designing for disassembly.

LEARNINGS:

Customer first

Don't lose sight of who you are making products for. The team learned that sometimes the best choices on paper are not the best for the customer. If you make a choice that is more sustainable but less desirable, the product may end up being unloved and unworn.

Team effort

It takes more than just product teams to make circular design successful. Next time the team would have a better start-up with colleagues in production. They are extremely important in this journey and need to be as informed and passionate as the product development teams.

Make decisions at product level

A collection can always be edited and refined further, and each product needs to be able to stand alone. The team recommend making choices on a product level and not focusing too much on how the whole collection looks because in today's world the customer seldom sees all the pieces together.

Case Study

H&M Metaverse

Metaverse Design Story is H&M's eighth Innovation Stories collection. It is designed to explore the intersection between real life and the digital world and encourage new ways of thinking about circularity, sustainability and the future of fashion. The party collection features ready-to-wear, rental as well as a digital collection.



DESIGN STRATEGIES:

Durability:

- Strengthened stress points – used reinforced endings at slit openings and pockets to minimise risk of breaking.

Repair:

- Spare components – all beaded or embellished garments come with a selection of spare beads

allowing the customer to replace any should they fall off.

Increased use:

- Rental – key pieces from the collection are available to rent.

Eliminate waste:

- Optimised pattern efficiency – collection includes a zero-waste dress

- 3D prototyping – reduced number of samples by using 3D prototyping .

Recycling:

- Mono-materials – 43% of items use mono-materials on all textile layers, including two accessories, increasing recycling potential.

INPUTS:

The collection prioritised inputs from safe, recycled and renewable inputs. Highlights include:

- Removed metal coating on sequins, which is used to get a shine effect, to increase the potential for recycling.
- Used recycled textile to textile waste where possible, including a pilot project that collected used garments that were not suitable for resale or reuse and recycled them into new fibres and garments.
- Digital print, which uses less water, chemicals and energy than other methods.
- Avoided sandwash effect that is conventionally applied to cupro in order to save more natural resources.

LEARNINGS:

Zooming out

Considering the entire life of a garment encouraged the team to think beyond the use phase and include features they may have otherwise overlooked. For example, swapping tailored waistbands for elastic ones to make the garment adaptable to different or changing body shapes.

Going zero

Zero-waste design has a reputation for creating oversized, sack-like garments. The team wanted to challenge this preconception and designed a dress made up of lots of small rectangles that hugs the figure for a closer fit. Although it was only available in one size, the design aligned the smocked panels in different ways to achieve maximum stretch and therefore suit lots of body types.

Better choices

There are hundreds, if not thousands, of different materials and processes to choose from when making a garment. Allocating a product purpose to each garment helped the team focus on the most appropriate inputs and design strategies according to how it will be used.

Small changes can make a big difference

Designing more circular doesn't have to be a big leap. Even the smallest of changes can make a big difference on a large order. Getting started is the biggest step you can take.



Case Study

H&M Puffer Jacket

H&M brought together customer co-creation and on-demand production by offering customers the chance to create a customised winter jacket. Customers could choose or personalise several features including colours and jacket length. The jackets were made to order and shipped directly to customers.



DESIGN STRATEGIES:

Durability:

- Customer co-creation – customers could choose the colour of the outer jacket, the lining, zip and other trims from a wide palette. They also had a choice of two lengths
- Trend lifecycle – the team chose a classic puffer jacket style known to be popular with customers.

Eliminate waste:

- On demand – the puffer jackets were pre-ordered by the customer to ensure we only produced what we sold.

Recycling:

- Mono-materials – puffer jackets used mono-materials on all textile layers – shell, padding and lining.

INPUTS:

The collection prioritised preferred inputs from safe, recycled and renewable inputs. Highlights include:

- Used 100% recycled polyester for the shell, padding and lining.

LEARNINGS:

Keeping it classic

The team chose a padded-jacket style that they had sold before and knew was popular with customers. For the colour palette, they looked to classic hues as well as on-trend tints. To fit more body types two different lengths were offered.

Everything takes longer than you think

Trying out new circular business models is not an add on to product development. You need time to design new processes, set up new systems, develop new webpages. The team found that even the smallest thing could take a long time.

Start early

Gathering the entire team from the very beginning can save you time in the long run. If everybody understands the process and can see potential challenges ahead then it's easier to keep everything on track and deliver on time.



Case Study

H&M Women's Jeans Redesign



The Divided Denim team wanted to create a collection that met Ellen MacArthur Foundation's Jeans Redesign guidelines – jeans that are used more, made to be made again and made from safe and recycled or renewable inputs.

DESIGN STRATEGIES:

Durability:

- Material choice – selected higher quality material that can withstand at least 30 home laundries
- Construction and making – reinforced stress points with bartacks.
- Additional care instructions – customers can

access tips on how to care for their garment via a QR code.

- Trend lifecycle – focused on classic, timeless silhouettes and details.

Repair

- Construction and making – included split side seams to make it easier to patch and repair.

- Care information – printed information for the customer on pocket bag about how to care for the garments and how to get more use out of them.

Recycling

- Mono materials – six out of eight articles used 100% pre-consumer recycled cotton. The other two articles used 1% EcoMade Lycra®. Across the collection, this resulted in cellulosic fibres accounting for at least 98% of the product weight.
- Minimise trims – replaced metal rivets with bartacks and removed jacron branding patch from back waistband of jeans.
- Product data – QR code included for traceability and to aid sorters and recyclers at end of life.

INPUTS:

The collection prioritised preferred inputs from safe, recycled and renewable inputs plus durable inputs designed to last a long time. Highlights include:

- Fibres with a higher tear strength that can withstand a minimum of 30 home laundries.
- 100% pre-consumer recycled cotton on six articles and 98% recycled cotton/2% recycled elastane on 2 articles.
- All threads, internal labels and zipper tapes made from recycled polyester because the durability of cellulosic threads and labels is currently not good enough.
- Jeanologia third-party verified Low EIM washes applied.
- Partly recycled metal button and zipper pull and teeth.

LEARNINGS:

Time is your only constraint

Most things are possible if you have enough time. However, deviating from your standard development process – for example evaluating new fabrics, extended wear testing or trying to connect new technology like QR codes to products – can take extra time. Get alignment and set expectations early to get better results.

It takes a village

No one person can do this alone. You need to tap into the expertise from all job roles to make it a success. By pooling knowledge and collaborating you can make sure you don't miss an opportunity nor fail at the first challenge.

Creativity boost

Working with circular design principles can be really fun. The team relished the opportunity to expand their creativity, question the existing decision-making process and create products with stronger intention and value.

Look back as well as forward

Taking time at the end of the development process to reflect on what worked and what didn't will prepare you for the next collection. We are at the beginning of this learning curve and there is no perfect path when it comes to designing products for a circular economy.

Case Study

Monki's Jeans Redesign

In this special denim drop, Monki wanted to develop their first collection that met Ellen MacArthur Foundation's Jeans Redesign guidelines - creating jeans that are used more, made to be made again, and made from safe and recycled or renewable inputs.

DESIGN STRATEGIES:

Durability:

- Trend lifecycle – collection included three of Monki's most popular jean designs plus a classic denim jacket
- Material & process choice – used a natural indigo dye and klean core dyeing technology that uses less

water, energy and chemicals and therefore, puts less strain on the fabric than a conventional wash.

Recycling:

- Mono-materials – used over 98% cellulosic materials on all pieces in the collection, for example organic cotton for the pocket bags instead of a

cotton-polyester mix and Eco Verde thread, a mix of BCI cotton and recycled polyester, instead of 100% recycled polyester thread.

- Minimise trims – replaced metal rivets with bartacks and laser printed logo on back waistband instead of using a jacron patch.
- Product data – QR code printed on a label for traceability and to aid sorters and recyclers at end of life.

INPUTS:

The collection prioritised preferred inputs from safe, recycled and renewable inputs plus durable inputs designed to last a long time. Highlights include:

- Main material was 20% post-consumer waste cotton and 80% in conversion cotton.
- Natural indigo dye kept chemical content to a minimum, reduced energy and water use, whilst maintaining colour clarity.
- Eco Verde thread made with a mix of recycled polyester and BCI cotton increased the cellulosic content of garments without compromising durability.
- Non-electroplated natural aluminum buttons for closure.

LEARNINGS:

Don't forget the storytelling

For this drop, Monki took a low-key approach to marketing. Next time, the team will involve the brand and marketing team at an early stage to create fun,

visible and inspiring storytelling around the collection to help boost awareness of circular design.

Don't forget who your customers are

The details of this collection, such as the dye and cotton type, would be better appreciated by a denim aficionado than a core Monki customer, who is looking for sustainable products but perhaps don't want extra features if the price point goes up.

Small steps easier than one giant leap

A tip from the team is to decide what is most important first. If it's the lifespan, focus on designing a classic and durable product. If it's the story, then it needs to stand out from the crowd. And if it's a product with lots of trims and details, break it down and look at each part to decide what is necessary and what can be simplified or made better?

Breaking the habit

The easy option is to do things the way they've always been done. However, the team found that by taking a step back and questioning the status quo, they could be more creative and discover different solutions that they may have otherwise missed.

No easy answer for traceability

Providing the relevant traceability information is not easy. Currently, customers and sorting companies can access a webpage with the relevant details. But this page will need to be regularly updated and picture rights renewed. Plus, the recycling and sorting industry is evolving fast, so it's unsure if this solution has longevity. However it's important to test to learn more.



Case Study & Other Stories Summer Capsule Collection

With so many new and innovative materials available today, & Other Stories wanted to explore how they could be used to make a full collection that was also met the criteria of circular fashion set out by the Ellen MacArthur Foundation.

DESIGN STRATEGIES:

Durability

- Additional care instructions – customers can access additional product care tips via a QR code on the hang tag.
- Trend lifecycle – the capsule collection used materials, proportions, colours and prints that will be relevant for several seasons or years.

Repair

- Standardised components – standard buttons and trims used across the collection to make repair easier.

- Spare components – additional buttons sewn onto internal labels so customers can replace them at home.

Increased use

- Alteration ready – the back crotch seam on the suit trouser had extra width and a split waistband to make alteration easier.

Recycling

- Mono-material medium – all the jersey and silk pieces plus the cotton bag use the same fibre type for at least 98% of the product weight. However,

a small amount of recycled elastane was needed on one garment made with Naia to ensure stretch and recovery.

- Minimise trims – for example, on the blazer the cuff fastenings were omitted and a single button used for the closure on the front of the garment.

Eliminate waste

- Optimised pattern efficiency – improved the pattern efficiency for all 100% silk styles by three to seven percent. However, any gain was cancelled out by a defect that created a lot of unusable fabric, which was subsequently recycled. This was unfortunate, but a valuable learning for the future.
- Fully fashioned knitwear – all knit items in the collection produced in a way that creates no production cutting waste.
- 3D prototyping – reduced physical samples by using 3D prototyping for all garments except the tailored blazer

INPUTS:

The collection prioritized preferred inputs from safe, recycled and renewable inputs. Highlights include:

- Entire collection used 100% safe, recycled and renewable inputs except a small amount of elastane on one garment.
- Silk is a DNA fibre for & Other Stories and is much loved by customers. The collection used 100% pre-consumer recycled silk made from waste created during producing silk fabric and cutting waste.

- In conversion cotton jersey instead of organic cotton to support farmers during their three-year transition to organic production.
- Plant based dyeing and digital prints.
- NAIA™ made from pine and eucalyptus from sustainably managed forests and plantations (FSC Certified).

LEARNINGS:

Product purpose boosts intent

Designing products for a circular economy brings added intent to the development process. The team allocated each garment with a product purpose and then used this category to guide their choice of design strategies and inputs, resulting in products that consider the full lifecycle.

Be ready to compromise

There are trade-offs between making something durable and making something recyclable. The team wanted to avoid using blended fibres in the collection to increase the recycling potential. However, for one knit garment they had to add recycled polyester to ensure stretch and recovery to increase durability and wearability.

The circular story

Telling the circular story to the customer is a challenge. On a product level it's hard for them to relate to design elements like pattern efficiency. While on a broader level, you need to have all the pieces in place, such as circular business models and supply chains, to explain how circular products fit into a circular economy.

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To accelerate impact and foster consistency across the industry, we are working with ASOS, BESTSELLER and Zalando on circular design using the Ellen MacArthur Foundation's vision of a circular economy for fashion as a basis. At first, the consortium's ambition was to align approaches – such as securing agreement on circular design terminology – and to learn from each other. Now the plan is to expand the scope to drive further impact and scale.

H&M Group