

Seamless

Circular clothing design foundations

An introduction to the principles of circular clothing design



Acknowledgement of Country

We acknowledge the traditional custodians of Country throughout Australia and their connections to land, sea and culture.

We pay respects to Elders past and present and extend that respect to all Aboriginal and Torres Strait Islander Peoples.



What we'll cover

1. Welcome and introduction
2. Australia's clothing waste challenge
3. The role of stewardship
4. Circular economy principles
5. The case for circular
6. Circular clothing design
7. Circular design in practice
8. Questions and close



Image: The Social Outfit

A person is using a tablet computer in a sewing studio. The person's hands are visible, holding the tablet. The background is a cluttered workspace with various sewing tools and materials. A spool of white thread is on the left, next to a red spool. A black alarm clock is in the lower left. A yellow measuring tape is coiled in the foreground. There are also some fabric scraps and a pair of scissors on the table. The text "Welcome and introduction" is overlaid in white on the image.

Welcome and introduction

Meet the trainers

Courtney Holm

- CEO and Founder of A.BCH World and Circular Sourcing.
- Circular fashion designer and systems thinking.



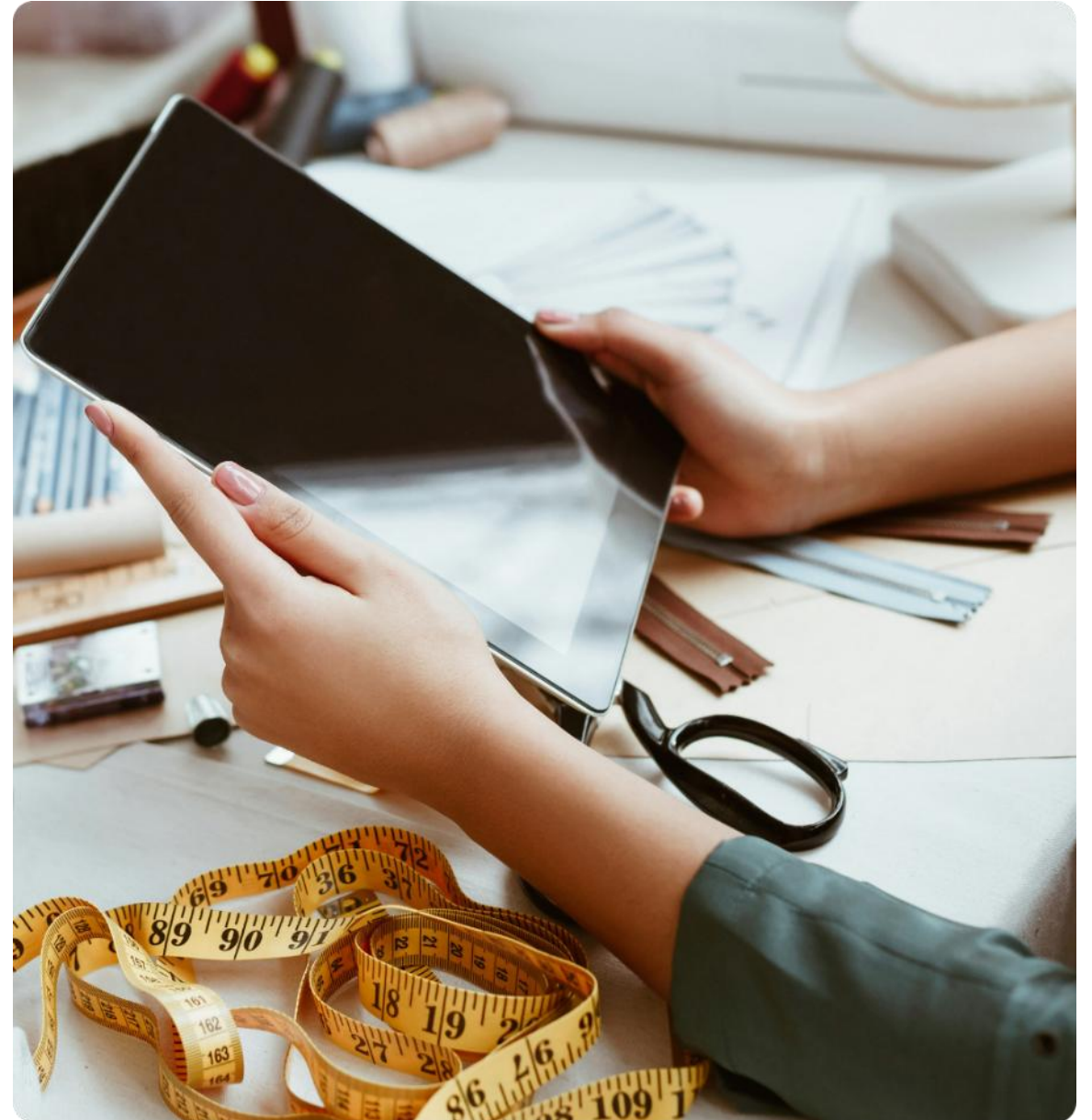
Julie Boulton

- Leading sustainability expert in application of futures thinking, circular principles and systems design.
- Advises business and government on implementing sustainability frameworks.



Learning objectives

1. Describe the global and local context for circular clothing design, including the drivers, impacts, and system-level changes influencing the shift from linear to circular models.
2. Apply the foundational principles of circular economy including resource efficiency and lifecycle thinking to identify practical starting points for your organisation to integrate circular thinking and support sustainable transformation of business models and the Australian clothing industry.



Refashioning

- **Refashioning: Accelerating Circular Product Design at Scale (Refashioning)** is an innovative circular design guide for all clothing brands, no matter the scale.
- It was produced by a collaboration led by RMIT University's School of Fashion and Textiles and delivered in partnership with Country Road Group, A.BCH World and Julie Boulton Strategy and Sustainability.
- This training program leverages this guide.





Discussion

Consider the clothing item you brought with you or something you're wearing today:

1. Are there aspects of your clothing item that reflect circularity principles?
2. Which aspects aren't circular?

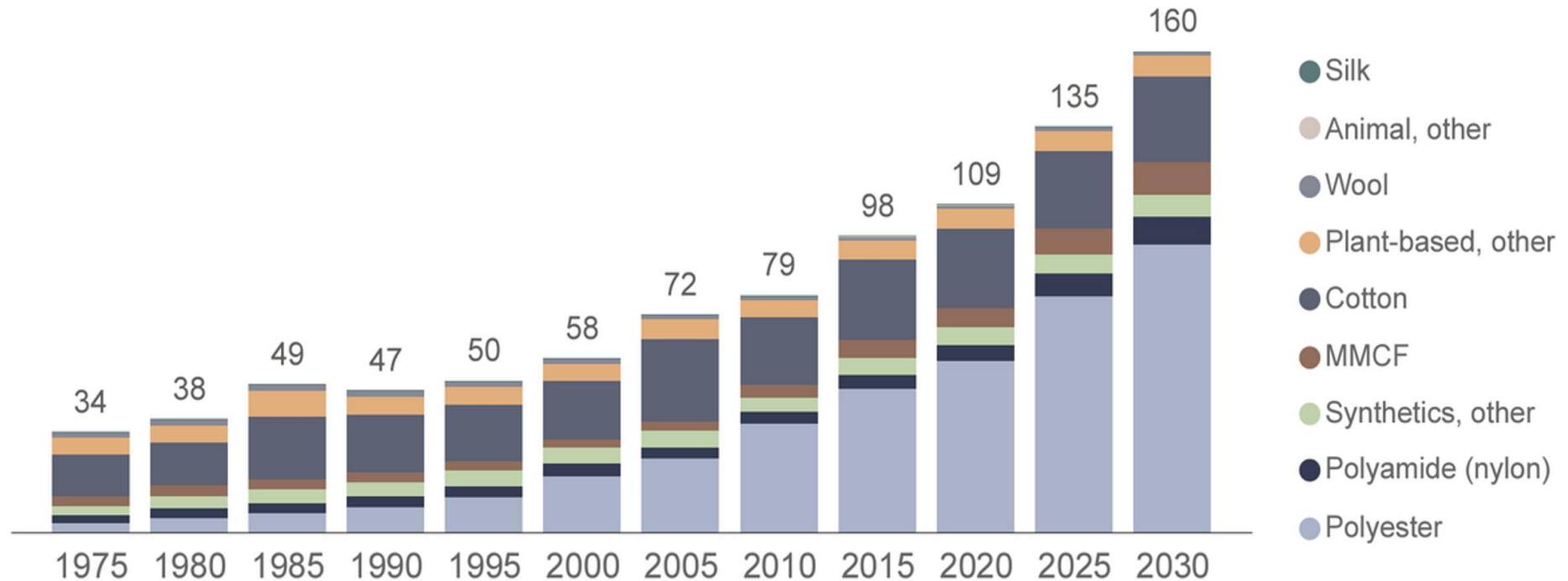
A person is seated at a table in a workshop, using a tablet. The table is cluttered with sewing-related items: a spool of white thread, a black sewing machine, a yellow measuring tape, a pair of black scissors, and various pieces of fabric and paper. The person's hands are visible, holding the tablet and pointing at the screen. The background shows more sewing tools and materials, creating a busy, creative atmosphere.

Australia's clothing waste challenge



Clothing and textiles impact

Global fibre production for textiles reached a record 124 million tonnes in 2023 and is expected to increase to 160 million tonnes by 2030.



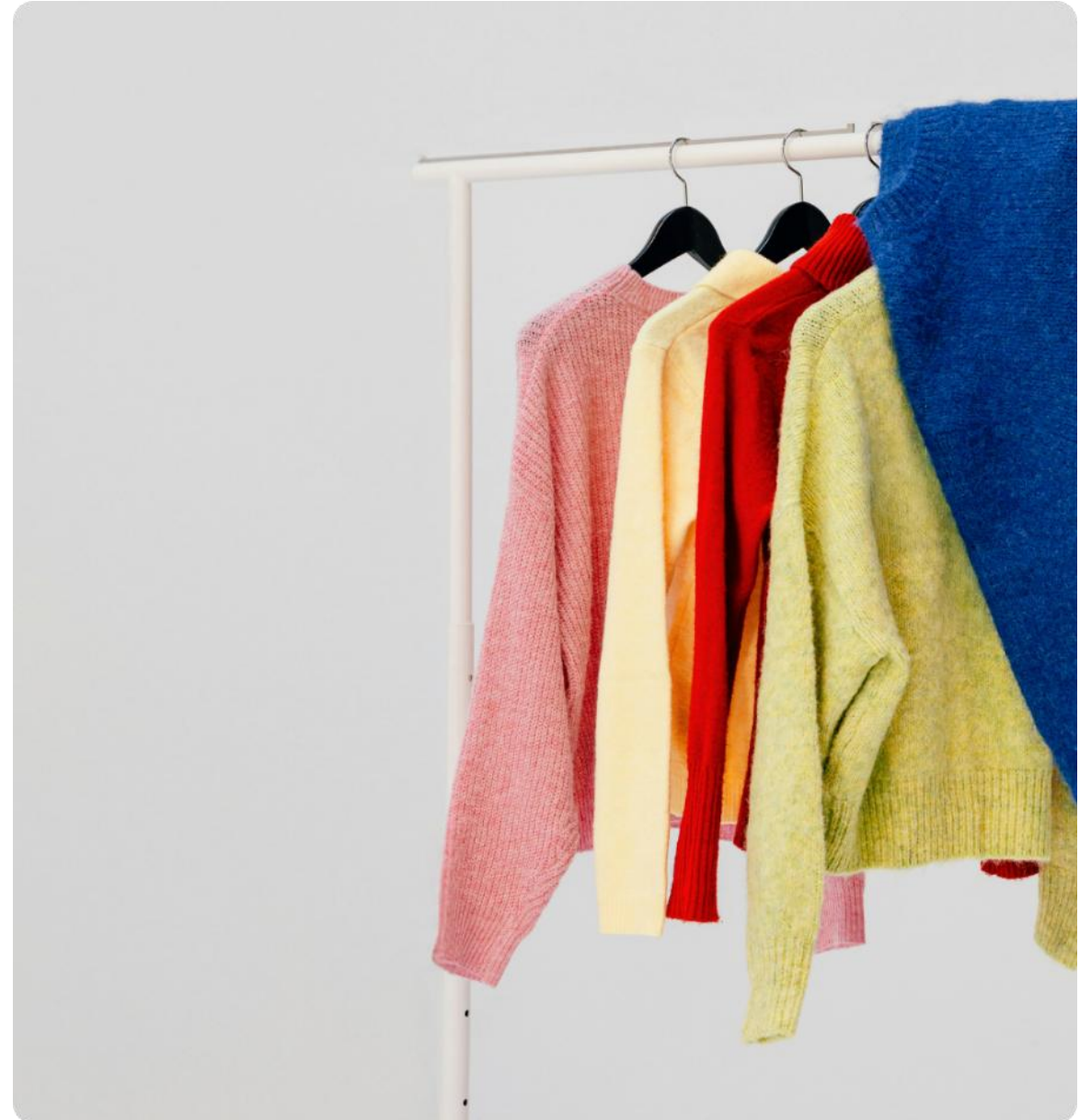
Source: Textile Exchange based on data from CIRFS, FAO, ICAC, IVC, IWTO, Maia Research and Textile Exchange modelling

A person is seated at a white table in a sewing studio, holding a tablet with their right hand and pointing at the screen with their left index finger. The table is cluttered with various sewing supplies: a large spool of white thread with a red base, a black vintage-style alarm clock, a yellow measuring tape coiled in the foreground, a pair of black-handled scissors, and several pieces of fabric and paper. In the background, there are more sewing tools like a sewing machine and a container of pins. The entire scene is overlaid with a semi-transparent dark grey filter.

The role of stewardship

Introducing Seamless

- No single organisation can drive the systemic transformation required
- Seamless is Australia's clothing product stewardship scheme
- As a stewardship scheme, it's based on a core principle: producers that put clothes on the market should take responsibility for the entire life of their garments
- Many stewardship schemes already operate in Australia for mobile phones, printer cartridges, containers and more
- Operating as a voluntary scheme and is the first to build circularity into its model



Seamless priorities

Circular design

Producers to design garments that are more durable, have recycled content and are recyclable.

Design
Materials
Manufacturing

Circular business models

Pilots and support to de-risk new business models to extend the life of clothing.

Rental
Reuse, resale and repair
Subscriptions
Made to order

Closing the loop

Support payments for effective collection, sorting and recycling. Establish trusted next markets for resource outputs.

Collection
Sorting
Pre-processing
Recycling

Citizen behaviour change

Nationwide education campaigns to help Australians choose clothes more purposefully, enjoy them for longer and reuse or recycle them with care.

What Seamless is advocating for

Co-investment now will prepare the clothing value chain for the transition to a mandatory, nationally coordinated stewardship scheme, which is the only viable response to Australia's clothing textile waste challenge.

Australia requires a mandatory, nationally coordinated stewardship scheme to address the clothing waste challenge and achieve a circular clothing economy.

Recommendations for immediate implementation:

1

Run pilots with State and Territory Governments to accelerate place-based solutions for collecting, sorting, processing, reusing and recycling clothing.

2

Undertake collaborative research and development, funded by clothing producers, to develop and commercialise Australian next markets for recycled clothing textiles.

3

Mandate standardised data reporting across the clothing value chain to establish a national system baseline and regulatory readiness.

4

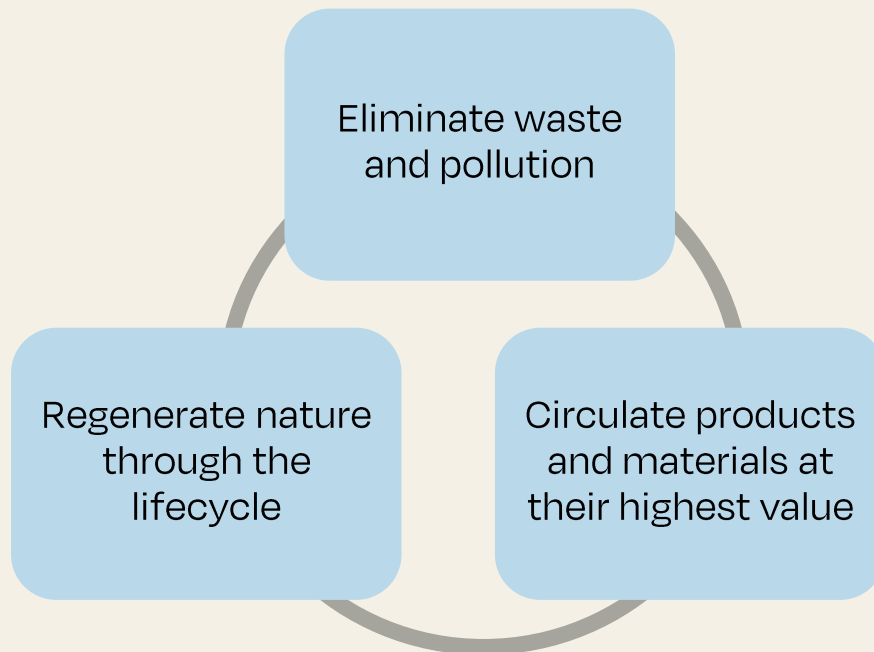
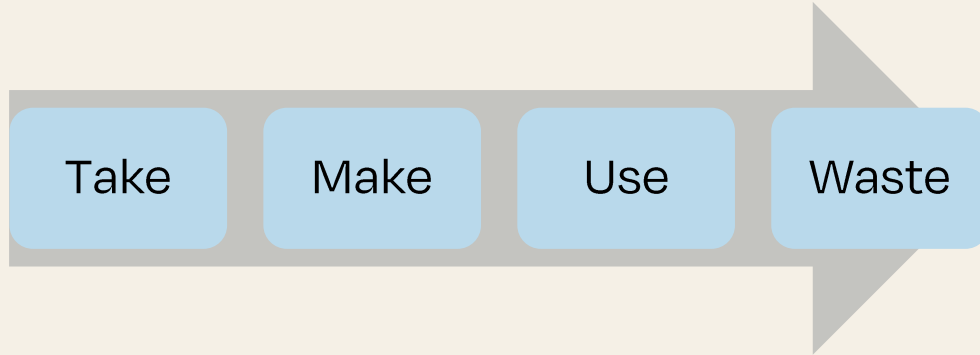
Set a target to introduce mandatory clothing stewardship by 2029, with a clear plan to achieve it.



A person is using a tablet in a sewing workshop. The workshop is filled with various sewing tools and materials, including a spool of white thread, a black sewing machine, a yellow measuring tape, and a black alarm clock. The person is holding the tablet with both hands, and their finger is touching the screen. The background is slightly blurred, showing more sewing tools and materials.

Circular economy principles

Linear vs circular

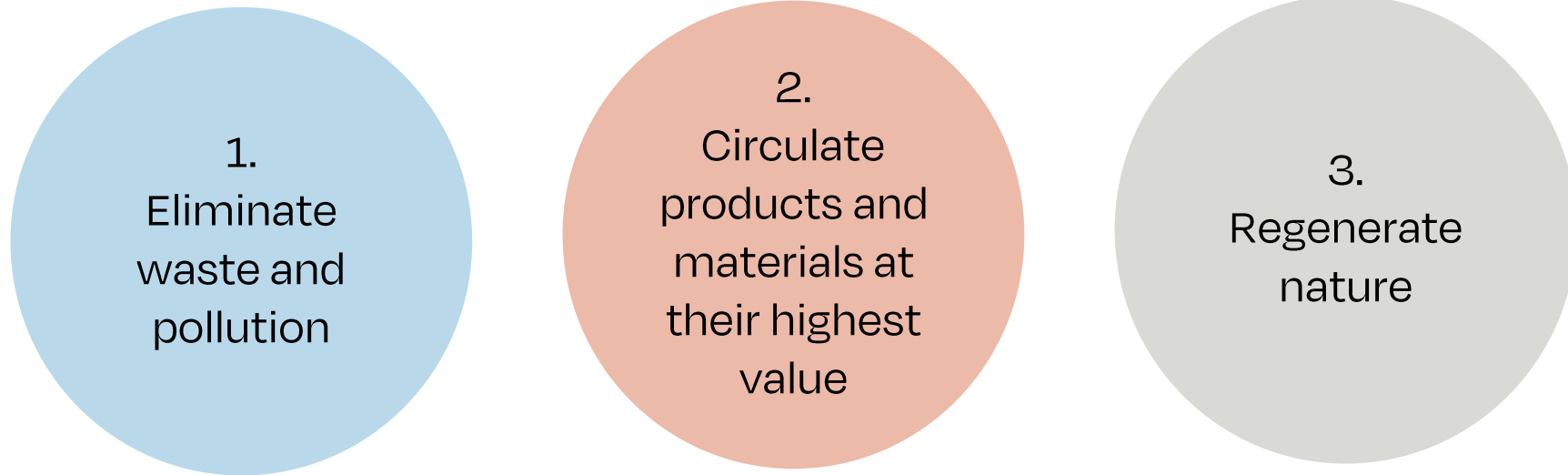


- A **linear economy** is where products are made, used and discarded – the 'take, make, waste' economy.
- A **circular economy** eliminates waste throughout a product's lifecycle by ensuring that safe, recyclable or renewable inputs are used and that what we make is used for longer and made to be reused.

Principles of a circular economy

"A circular economy is a regenerative system in which input system and waste, emission and energy leakage are minimised by slowing, closing and narrowing energy loops." (UNFCCC, 2019)

The three principles of a circular economy are:



Material flows

- The circular system can be understood within two material flow cycles: biological and technical.
- The **biological cycle** refers to a natural systems process for materials that are generated, consumed and returned to the earth safely.
- In the **technical cycle**, products and materials are kept in circulation for as long as possible in order to maintain the value embedded in the product.

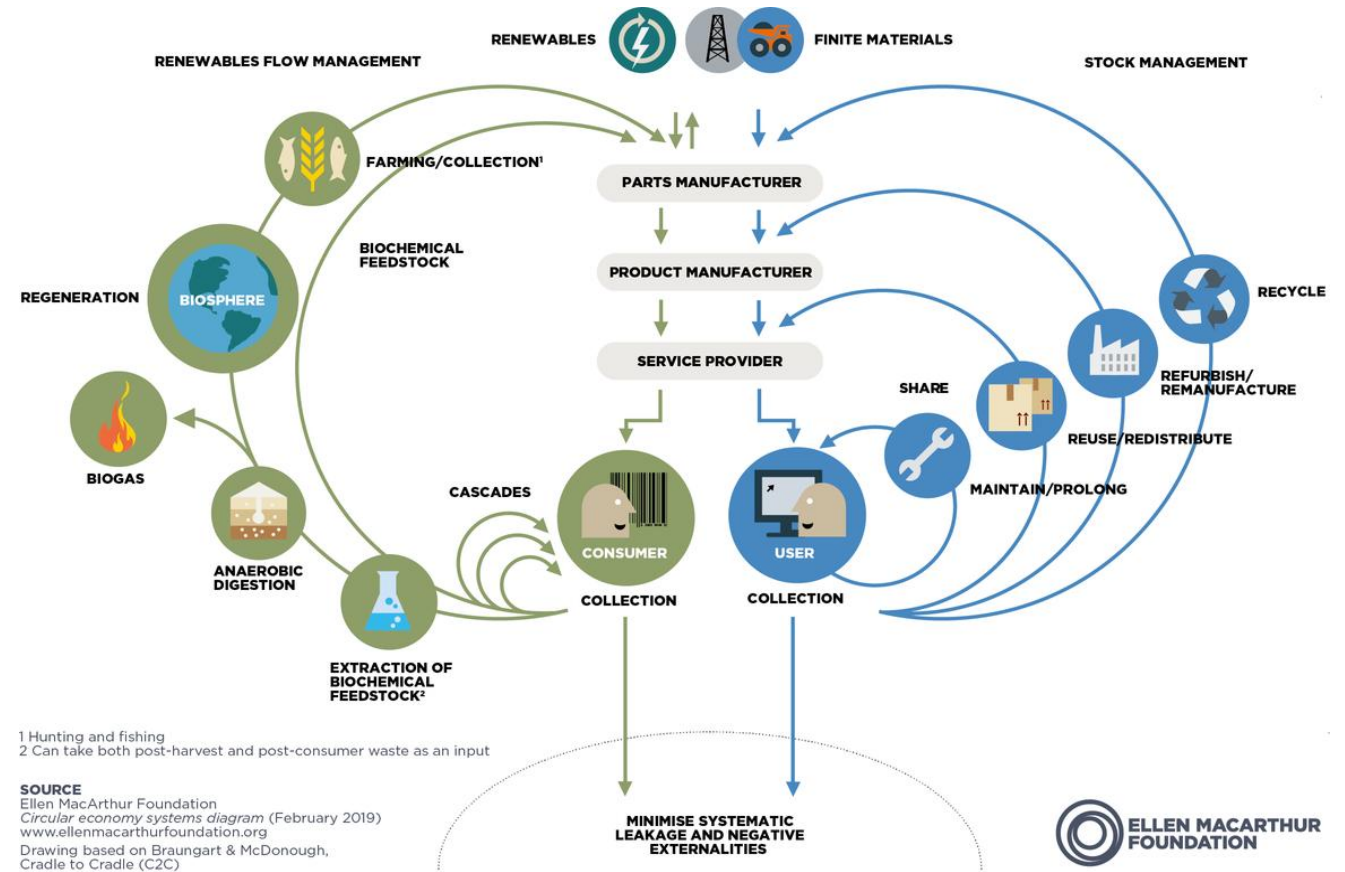
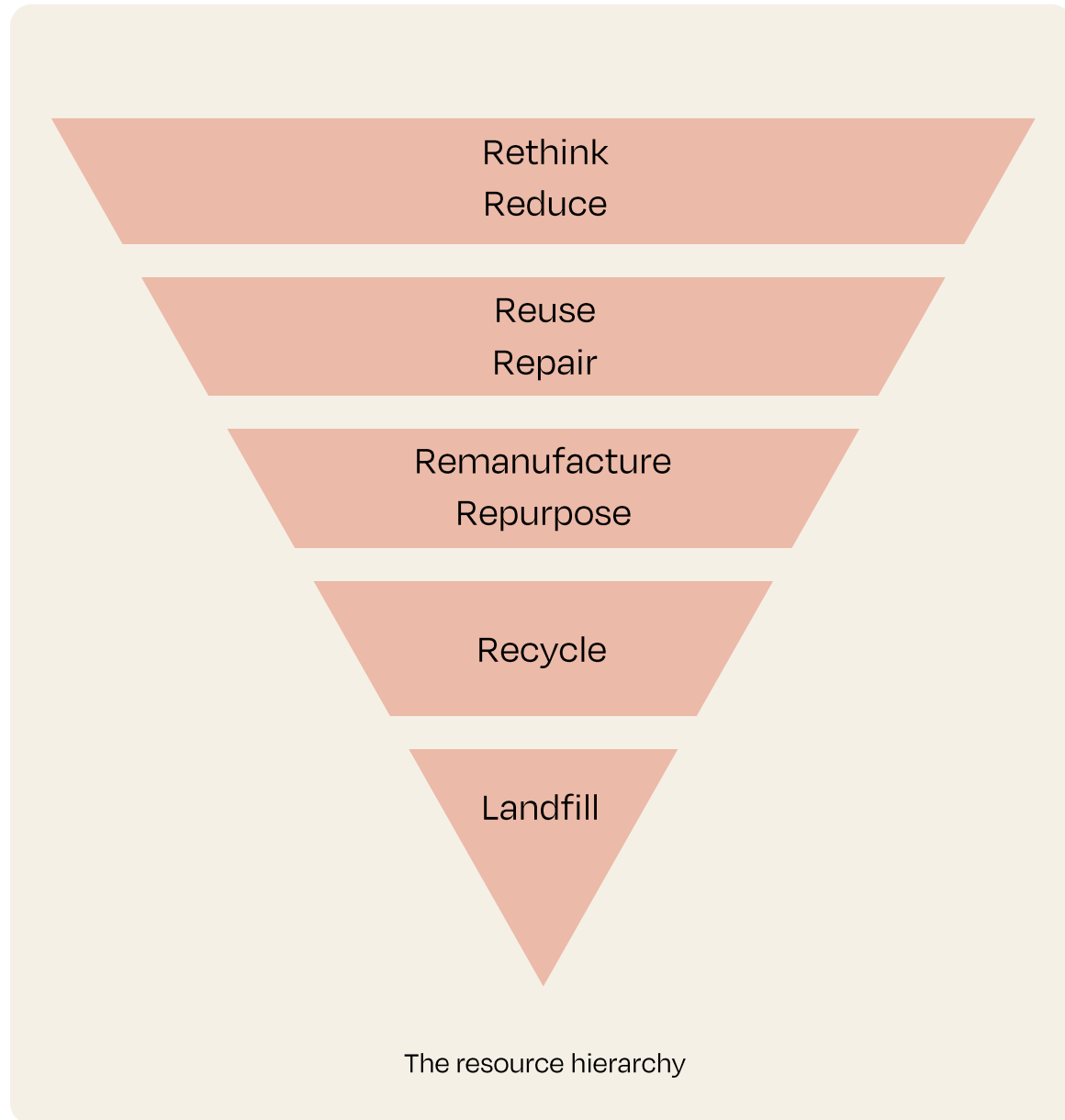


Image courtesy of the Ellen MacArthur Foundation

The resource hierarchy



- The resource hierarchy refers to product flowing through a technical cycle.
- The logic applies to the circular system as a whole, meaning that strategies and actions with both 'slow the flow' and 'close the loop' should be pursued.
- The diagram flow speaks to the key circular economy principles.

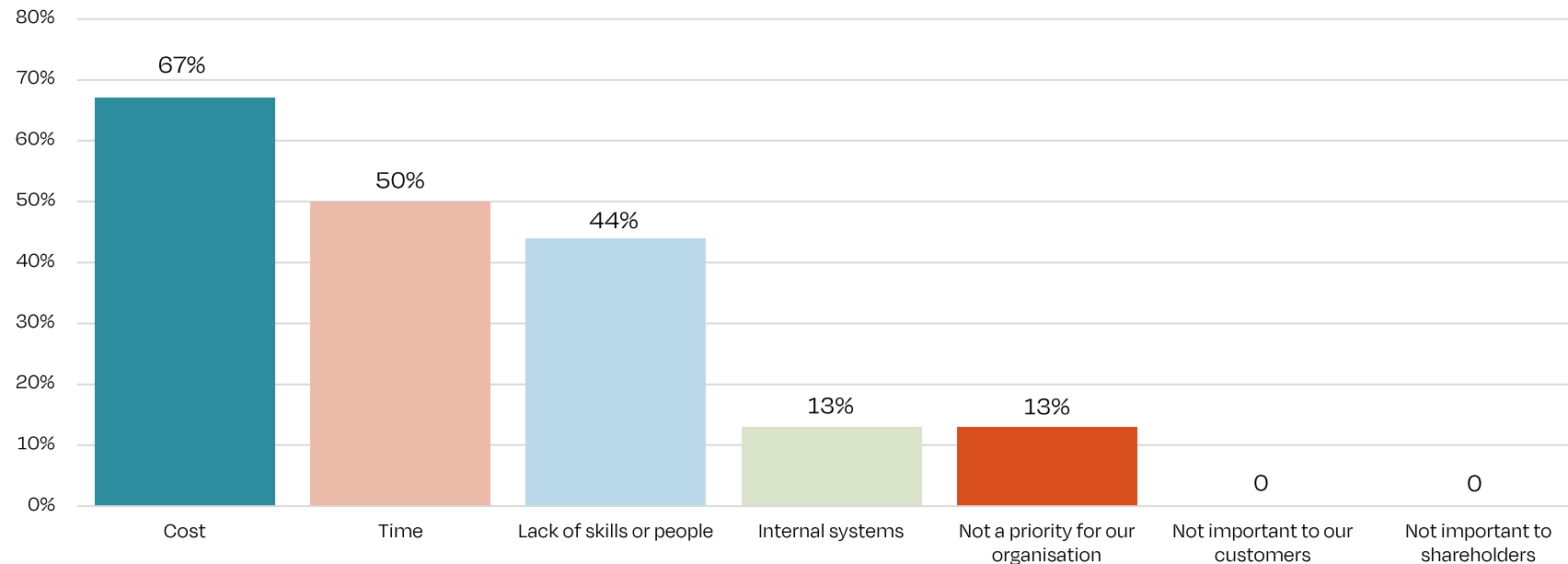
A person is using a tablet in a sewing workshop. The workshop is filled with various sewing tools and materials, including a spool of white thread, a black alarm clock, a yellow measuring tape, and a pair of black scissors. The person is wearing a green shirt and is pointing at the tablet screen with their right index finger. The background shows a cluttered workspace with various sewing supplies.

The case for circular

What you told us

Cost is your most significant barrier, followed by time and lack of skills or resources.

We asked you to nominate the barriers that may prevent your organisation from adopting circularity principles more widely.



The pre course survey also demonstrated you have varied levels of understanding of circularity. Also, while you told us that all aspects of this course are important, understanding the foundational principles of circularity and getting practical starting points for your organisation were slightly more important.

Business impacts

By decoupling revenues from raw material production – through business models such as resale, rental, repair and remaking – greenhouse gas emissions, pollution, and biodiversity impacts can all be reduced.

These business models have the potential to grow from 3.5% of the global fashion market today to 23% by 2030, becoming a USD 700 billion opportunity.

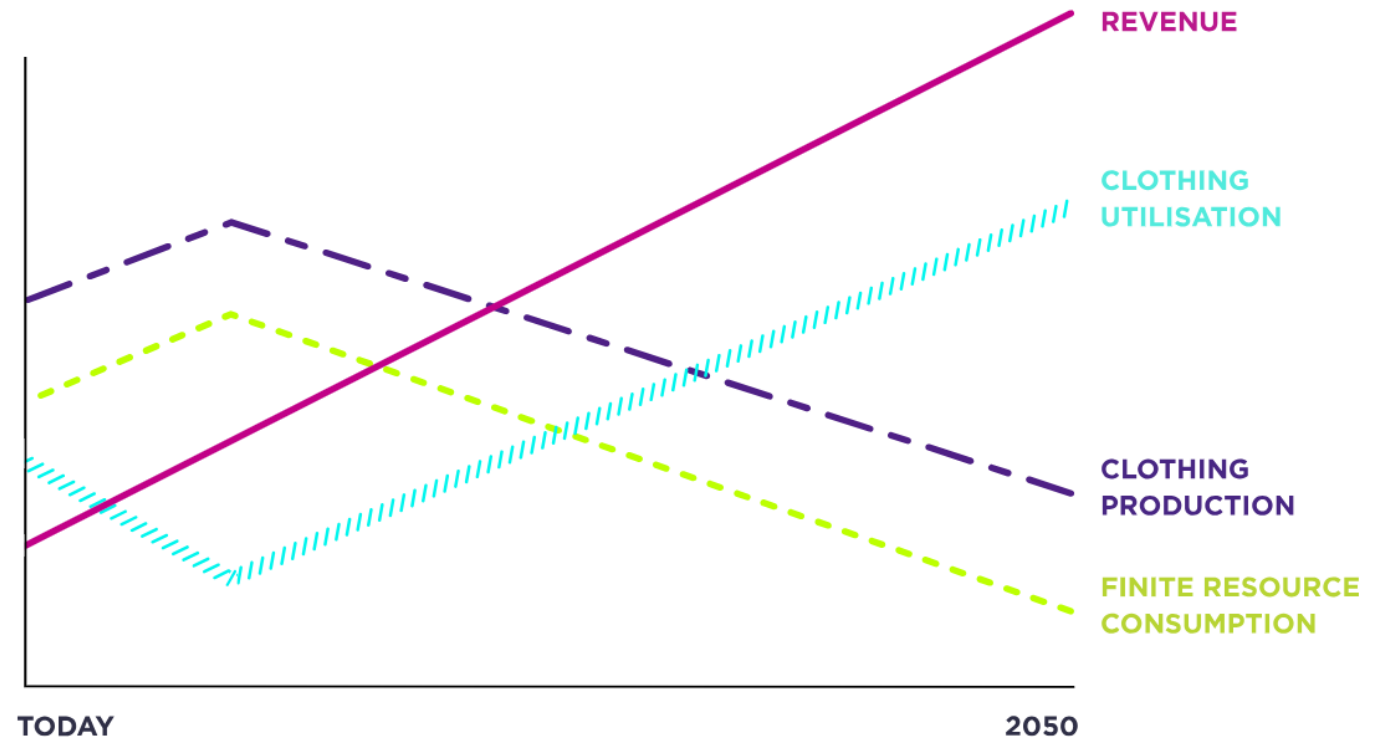
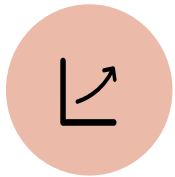


Image courtesy of the Ellen Macarthur Foundation

Imperatives for circularity



Economic: opportunities for increased revenue and reduced costs



Environment: resource conservation and reduction in landfill



Social: enhanced customer and staff loyalty and retention

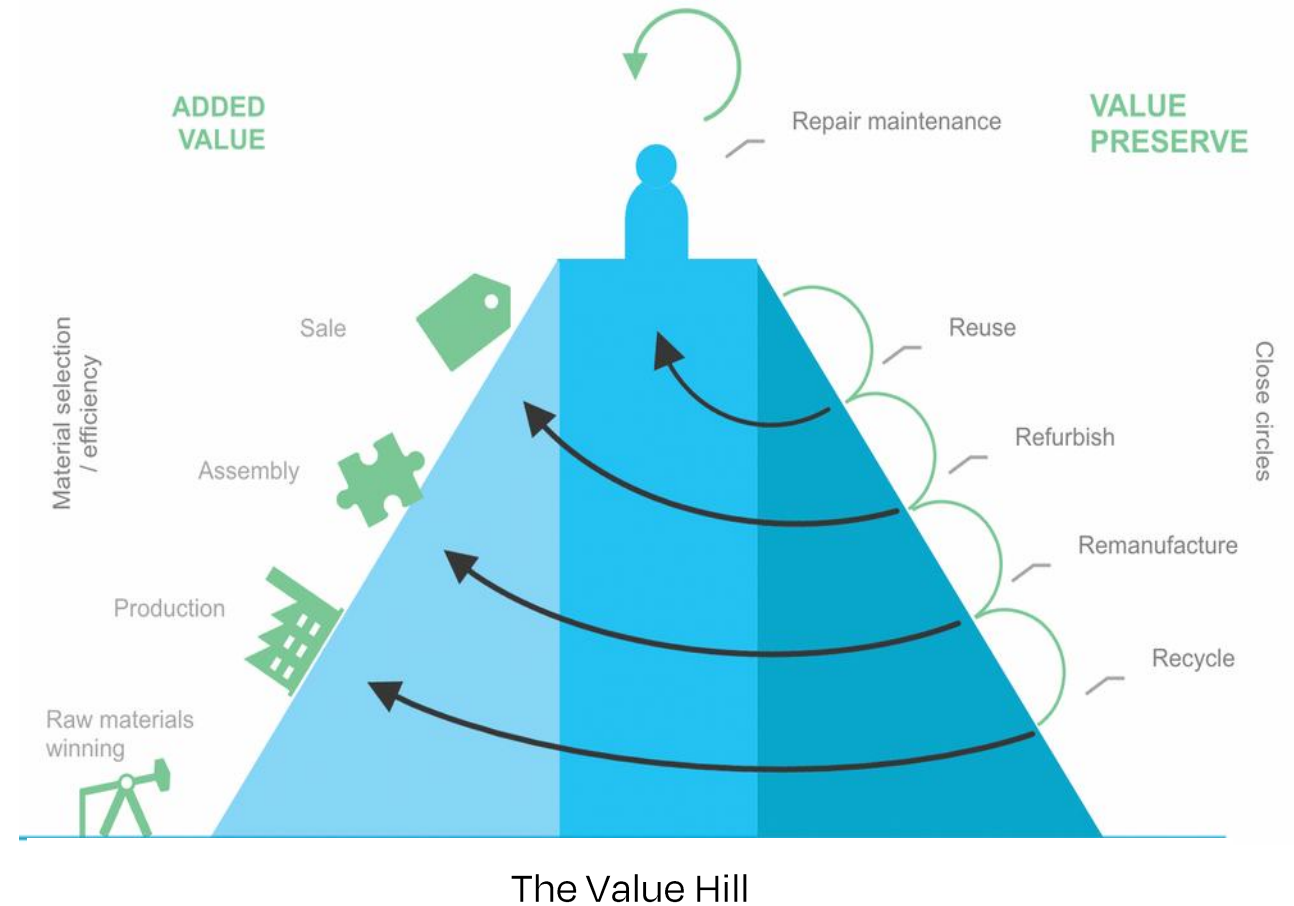


Image source: 'Master Circular Business with the Value Hill',
Circle Economy & Sustainable Finance Lab, September 2016

Practical impacts

- The Sussan Group has taken a system-level approach to sustainability spanning circularity, responsible fibre sourcing, packaging reduction and customer education.
- 20 team members completed Seamless circular design training in 2025 and the first circular design garments are scheduled for 2027.
- Responsible fibre usage has climbed from 24% of the range in FY24 to 35% in FY25 and 42% year to date in FY26. It is on track for the FY27 target of 50% — including more than five million garments made with fully traceable Australian cotton.



A person is using a tablet in a sewing studio. The background is a blurred workspace with various sewing tools: a spool of white thread, a red spool, a black alarm clock, a yellow measuring tape, a pair of black scissors, and some fabric. The person's hands are visible, holding the tablet and pointing at the screen. The text "Circular clothing design" is overlaid in white.

Circular clothing design

80% of a product's environmental impact is influenced by decisions made at the design stage.

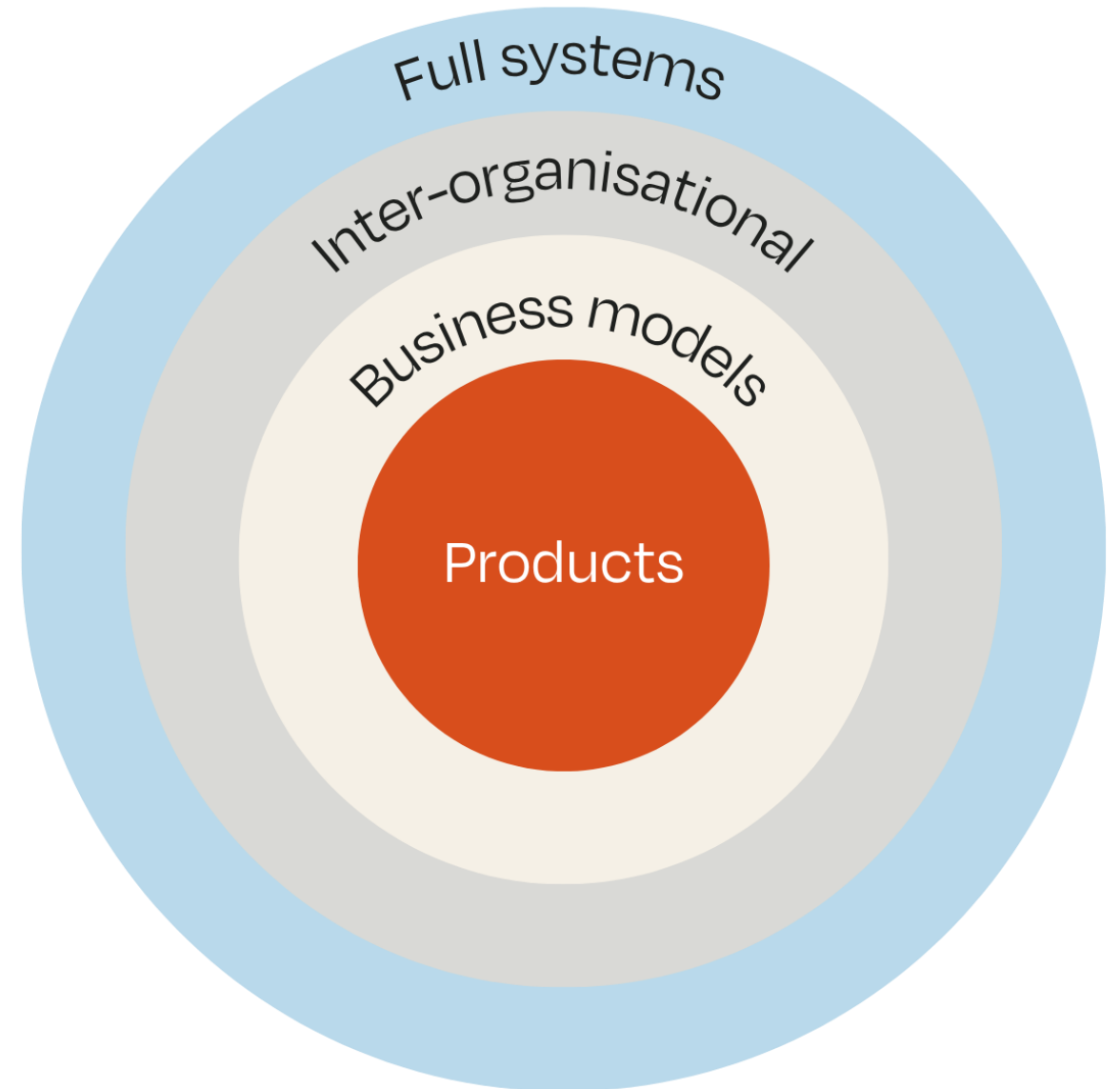
Ellen MacArthur Foundation:
An introduction to circular design, June 2022



Circular system levels

Businesses play a critical role in the transition to a circular economy through:

- Product transformation
- Business models and organisational adaptation
- Inter-organisational co-operation
- Global and regional systems



Leading with design

- The most powerful place a brand can start is design
- Designing for circularity is an immediate investment into the value of the product
- Designing for circularity means you are building value into the lifecycle of the product (and the power to decide where that value can be captured)
- Circular design is an upstream action that aims to reduce clothing in landfill and increase the amount of clothing being recycled

Circular products

Organisation, business model
and facility level

Inter-organisational

Broader systems
communities, networks
and regions

Circular design

- **Circular design** embeds circular economy principles into the design process. The objective is to produce products that can flow through a circular system.
- **Slowing the flow** is about designing products for a long life - they are kept in use at their highest value, for longer.
- **Closing the loop** is about designing for end of life – identifying how material value can be captured and reclaimed from the beginning.

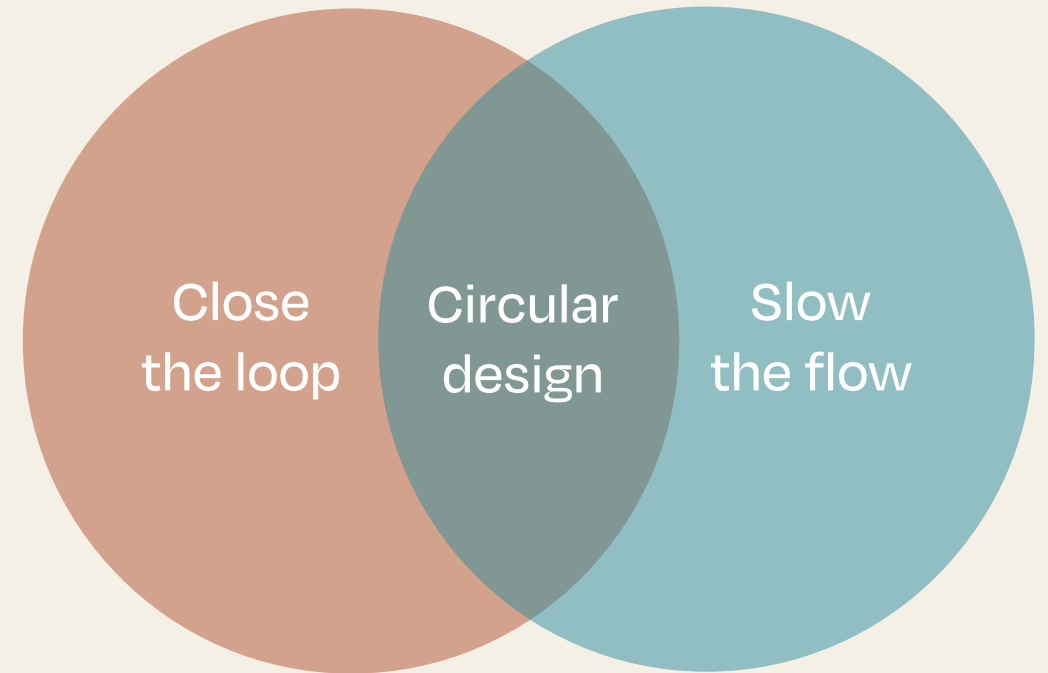


Image adapted from 'Refashioning: A Practical Guide'

Circular principles for clothing

- ✓ Clothing is used more
- ✓ Clothing is made to be made again
- ✓ Clothing is made from safe and recycled or renewable inputs

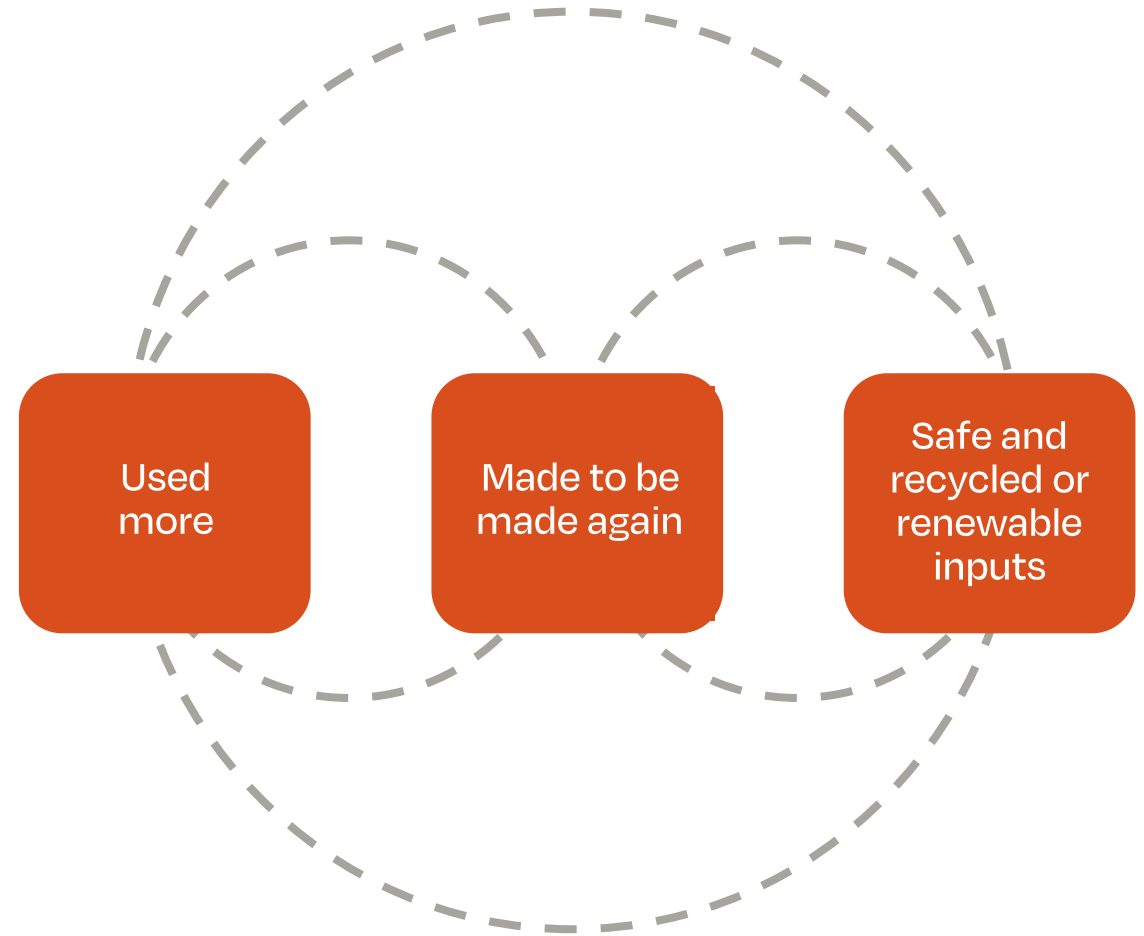


Image adapted from 'Principles for Circular Fashion',
Ellen MacArthur Foundation

Circular design for the full lifecycle

- Designing clothing for circularity requires knowledge of the full product lifecycle.
- It's crucial that designers consider the full lifecycle and if the product is not able to circulate past the use phase, to question whether the product needs to be created in the first place.
- Products that are not able to flow through this system are not circular.

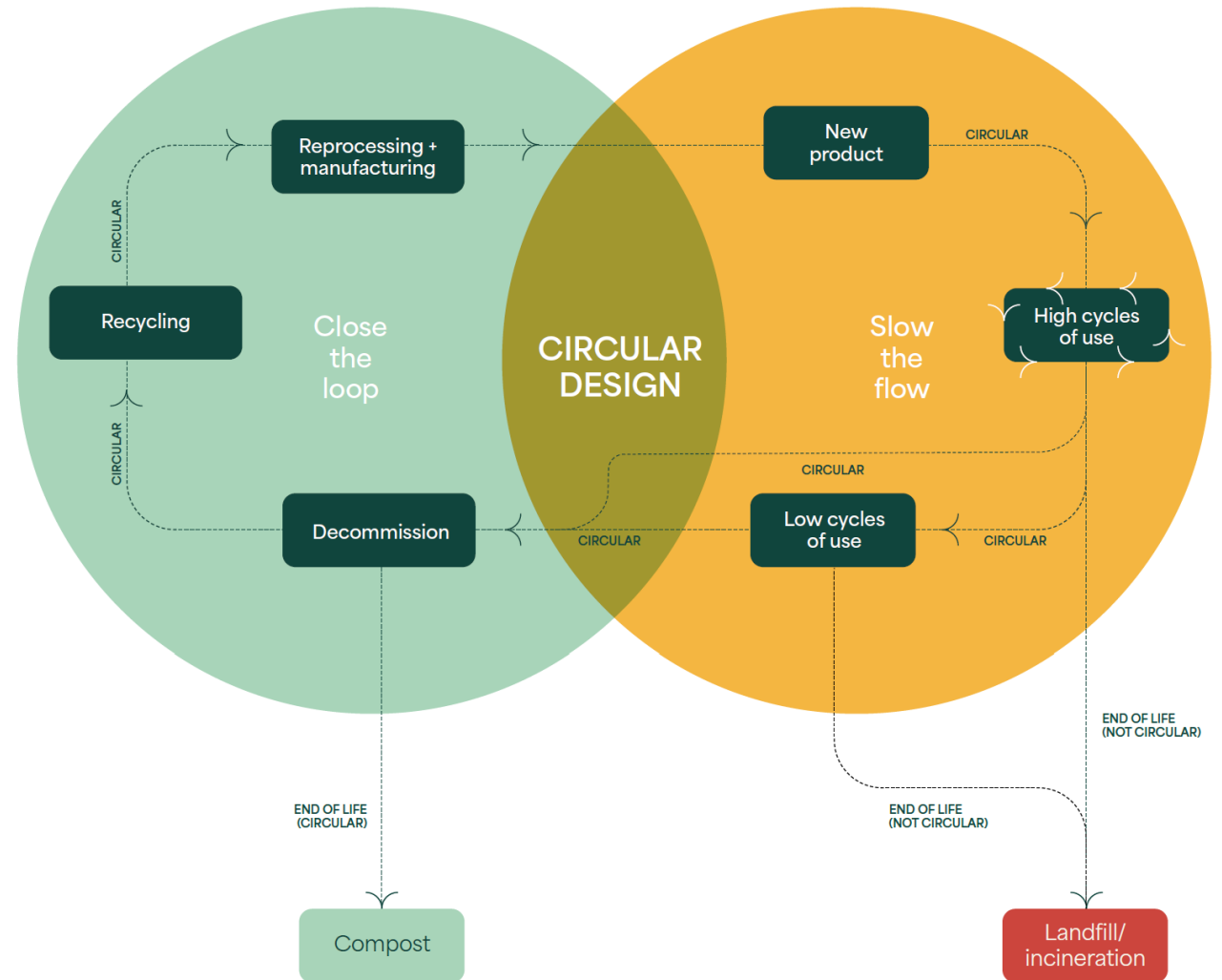


Image: Refashioning circular design systems approach, adapted from A.BCH World

Lifecycle design

- To achieve full circularity, circular design processes must cover the entire lifecycle of a product and the system it cycles within.
- Each stage in the lifecycle design should be planned for, documented and communicated.
- The integrity of lifecycle design is maintained through excellent record keeping and communication with internal and external stakeholders.

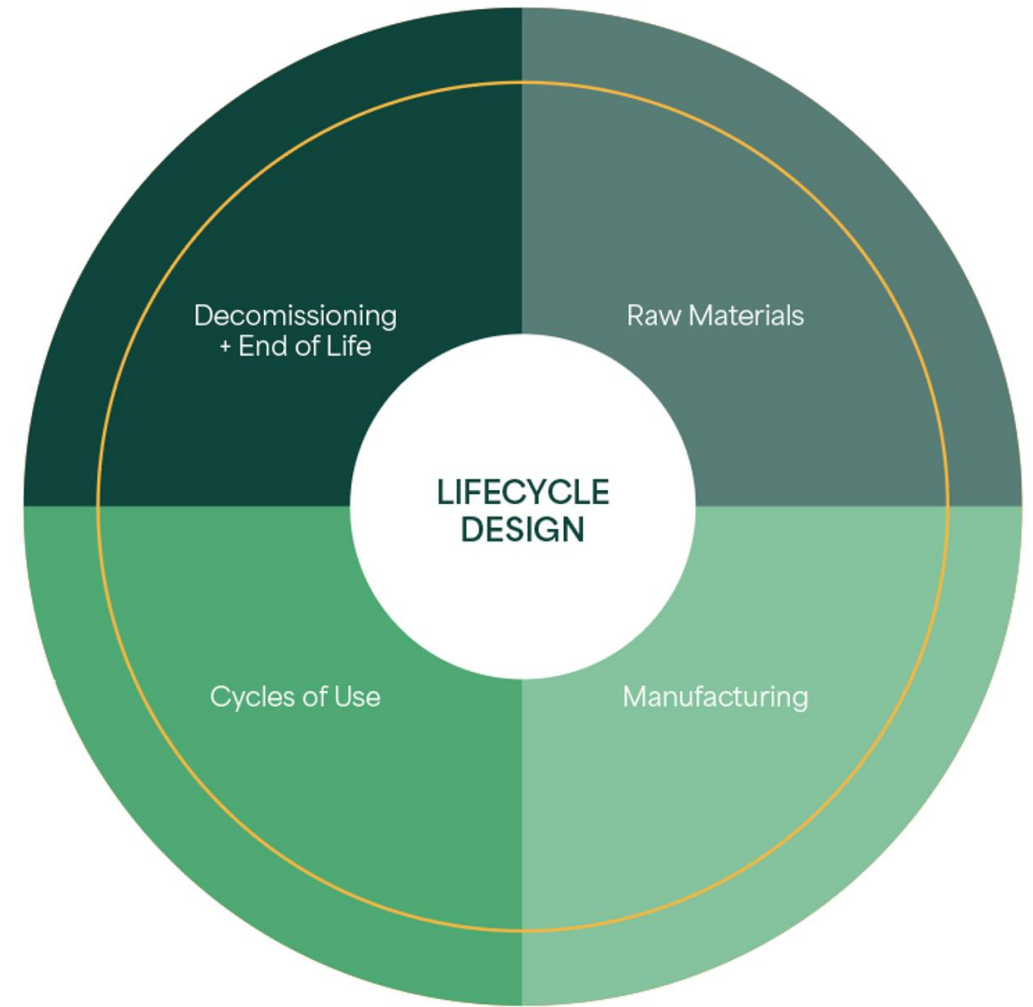


Image: Refashioning lifecycle design

Lifecycle partners

- Critical enablers to translate circular design intention into action
- Examples span the entire value chain, including suppliers, retail partners, customers, resellers, repairers, sorters and recyclers
- The Seamless member and supporter directory is a great place to find future lifecycle partners
- Additional resource: 'Lifecycle Partners: How to find, engage and work together with your value chain'

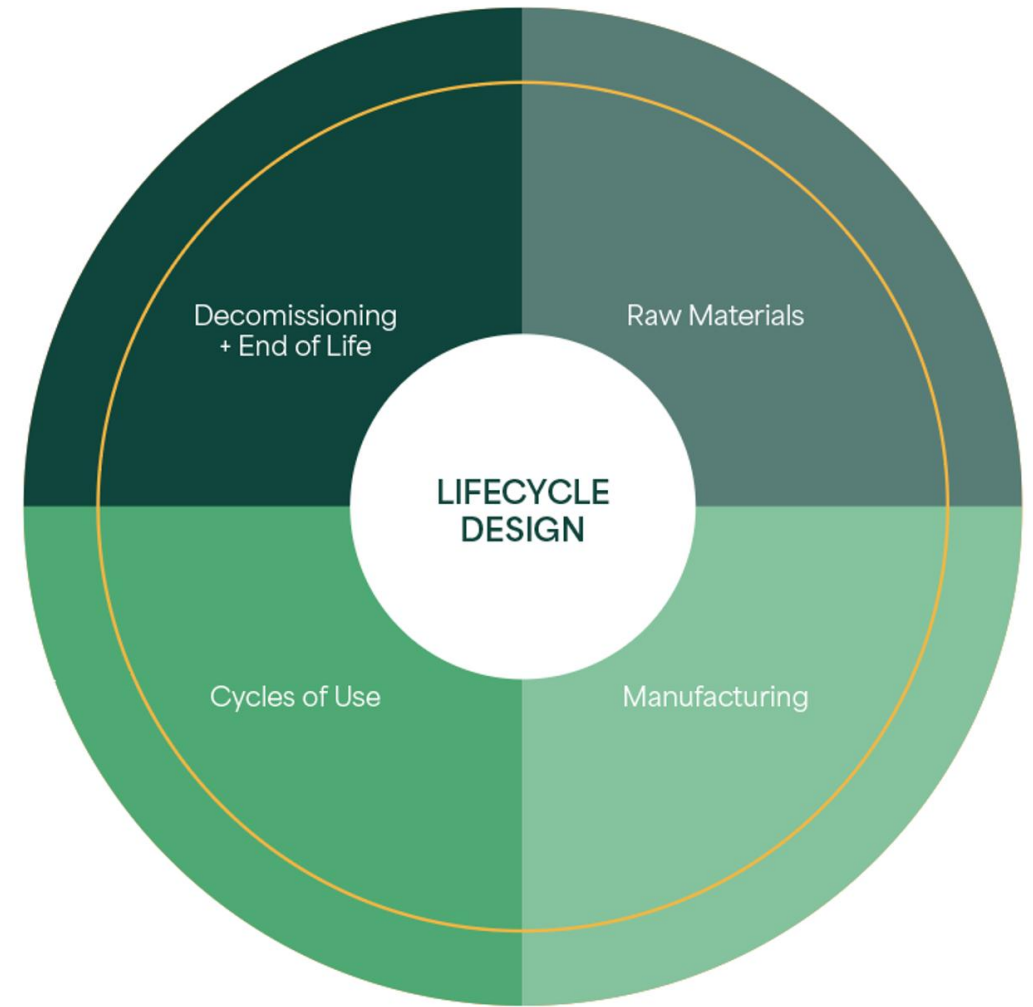


Image: Refashioning lifecycle design

Discussion and reflection

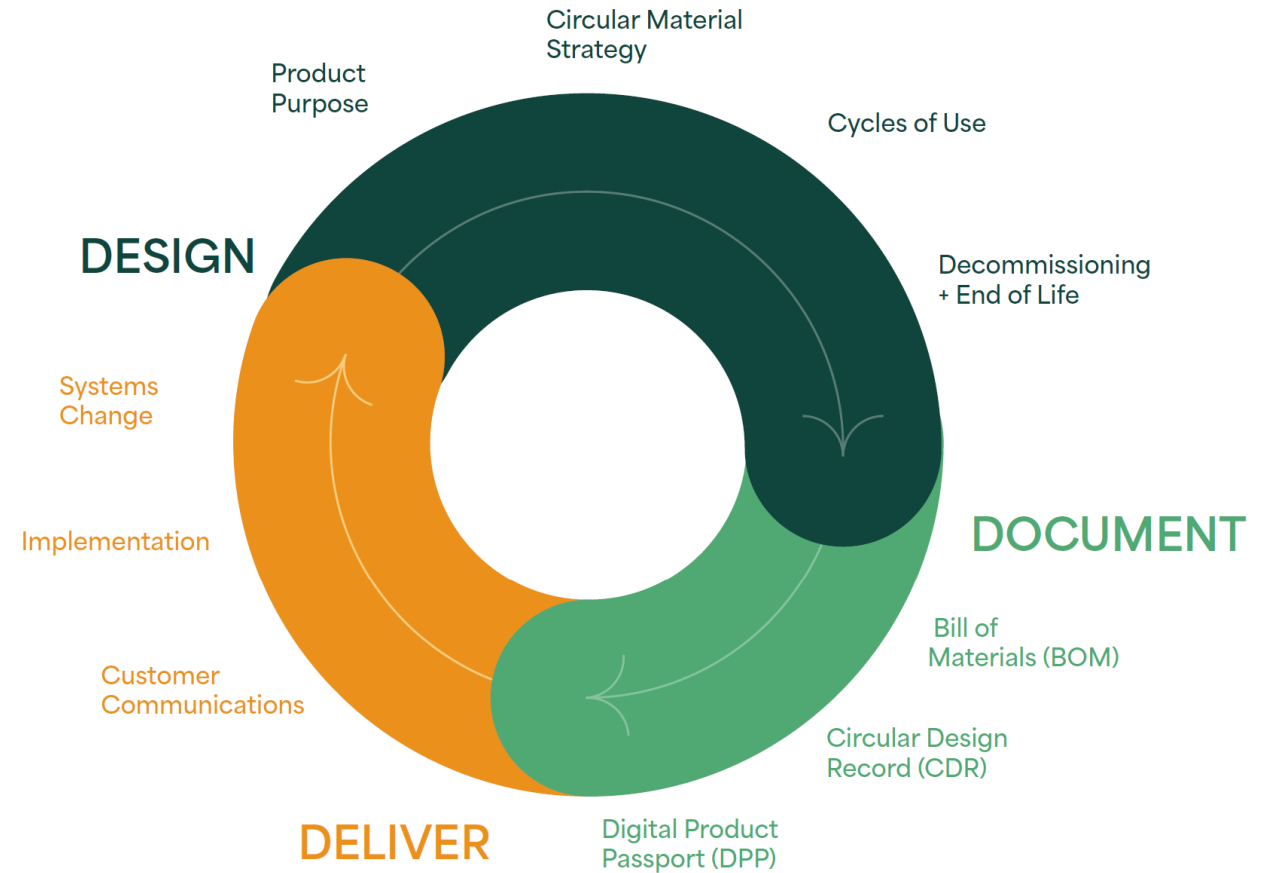


A person is using a tablet in a sewing studio. The person's hands are visible, holding the tablet. The studio is filled with various sewing tools and materials, including a spool of white thread, a black sewing machine, a yellow measuring tape, and a black alarm clock. The background is slightly blurred, showing more sewing equipment and fabric. The text "Circular design in practice" is overlaid on the image in a white, sans-serif font.

Circular design in practice

Product purpose activity

1. Function : what is the product supposed to do
2. Type: how is the product classified, and what are standard durability requirements
3. Lifespan: how long should the product last
4. Core testing requirements: what testing is needed to ensure the lifespan
5. Design durability: where are you building additional durability directly into the product - emotional and physical
6. Desired user behaviour: what do you want the customer to do to ensure its circular life?





Activity

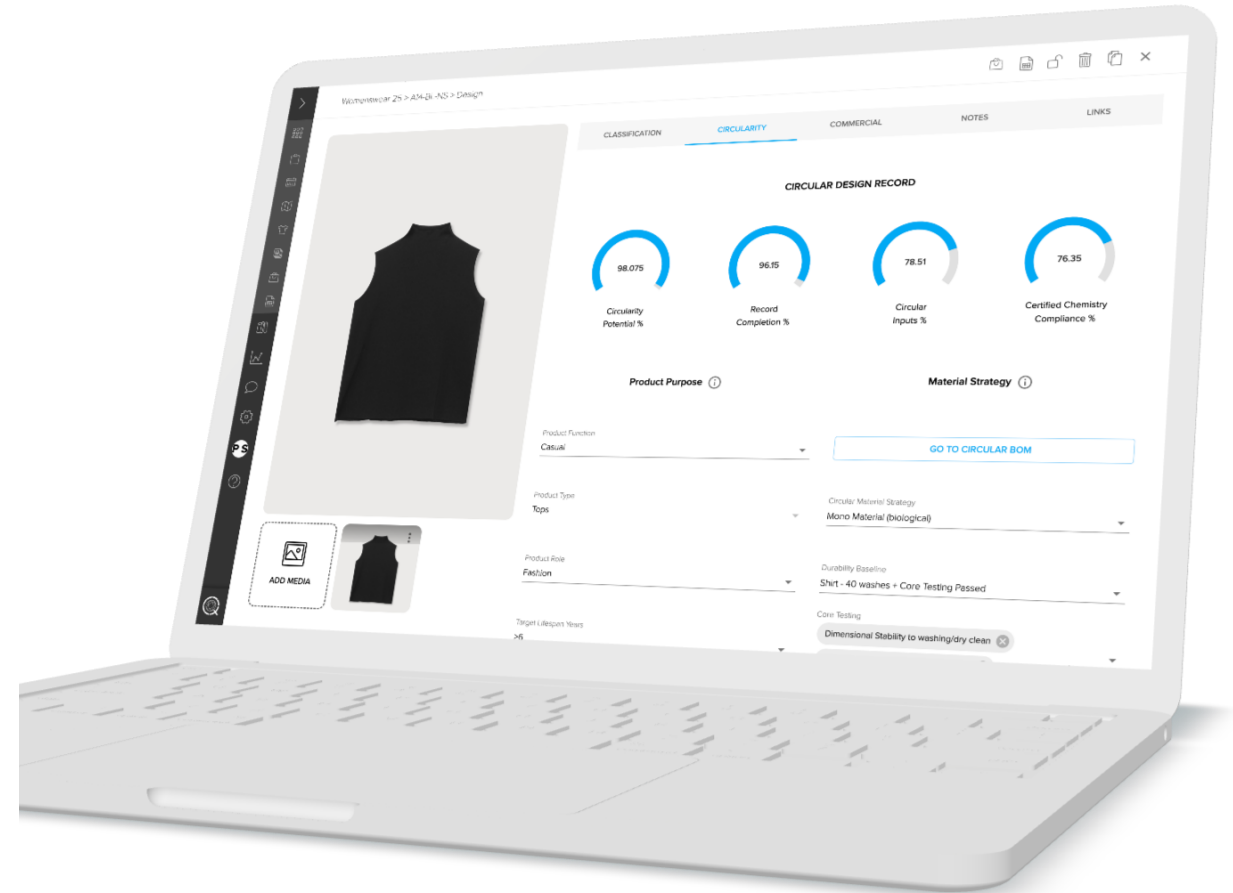
- Develop a a product purpose statement for the garment you brought
- It's speculative - don't overthink it
- You don't have to be a designer to do this
- Imagine you were designing this garment from the beginning - how would you think about it from a product purpose perspective?

Applying circularity principles

Milestone	Actions	Potential leaders	Why it's important
Set a circularity goal	Agree on one tangible target for the next season/quarter (e.g. "25 % of fabric sourced from circular inputs" or "run a take-back pilot").	Leadership, Sustainability, Teams	Aligns teams on a measurable goal
Circular design brief	Update design briefs to include targets for circular material strategies such as mono-material or simple disassembly.	Design, Sustainability	Embeds circularity at the concept stage
Lifecycle partner mapping	Create a map of lifecycle partners, including customers, relevant to your organisation and explore partnerships or cooperation.	Operations, Sustainability, Procurement	Engages with organisations in the value chain to help progress circularity
Pilot and iterate	Run a pilot for a new circular design or business model such as take-back, rental or resale. Gather real-world data, including costs, quality and impact.	Cross-functional	Low-risk proof-point; builds confidence and an internal case study
Story and signal	Develop simple, factual narratives and share early wins with your leadership team, employees and customers.	Marketing, Compliance	Drives demand and momentum, and educates stakeholders
Measure and report	Track circular metrics such as material diverted, recycled content used and carbon emissions reduced, and measure lifecycle margins. Feed results into next planning or goal setting cycle.	Leadership, Sustainability, Finance	Quantifies value, secures executive buy-in and aligns budgets

Quadrant Circular

- Documentation tool to facilitate circular clothing design at scale
- Can be used on its own or with full Product Lifecycle Management (PLM) functionality
- Developed from Refashioning Guidelines and grounded in research
- Allows teams to stay across designs, improvements and circularity metrics
- Facilitates efficient reporting and controlled supply chain visibility
- Complimentary six-month licence for Implementation course participants

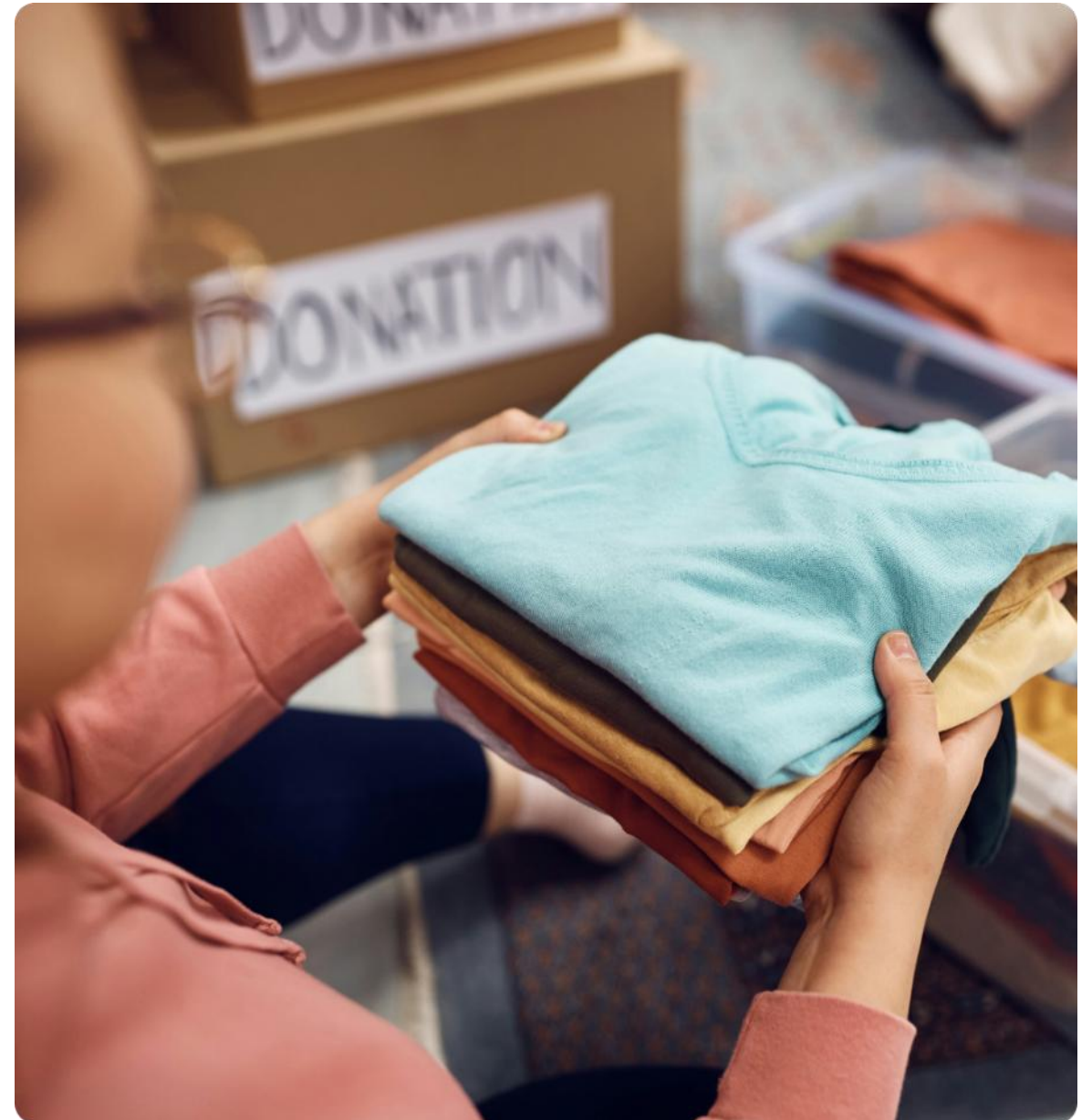


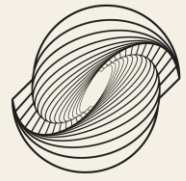
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Questions

Take-aways

1. Real change happens when the whole system works together — clothing producers, supply chain, industry government and citizens.
2. A circular clothing sector creates opportunities for new revenue streams, efficiencies and cost savings.
3. 80% of a product's environmental impact is influenced by decisions made at the design stage. Small changes can make a big impact.
4. Progress over perfection. Start by considering what you're already good at and building on it.
5. Make a start, measure and reiterate.





Seamless

Thank you

