

Design and Longevity

Holly McQuillan

holly.mcquillan@hb.se

www.hollymcquillan.com

www.zerowastedesignonline.com

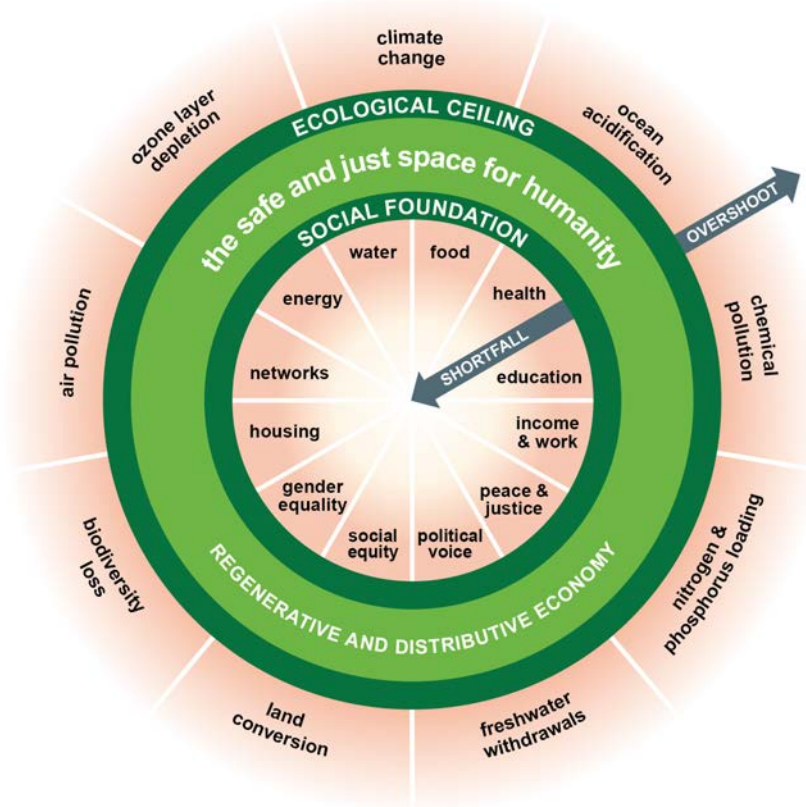
www.criticaltextiletopologies.com

UN Sustainable Development Goals



<https://sustainabledevelopment.un.org/>

Doughnut Economics model



Kate Raworth

What can be done?

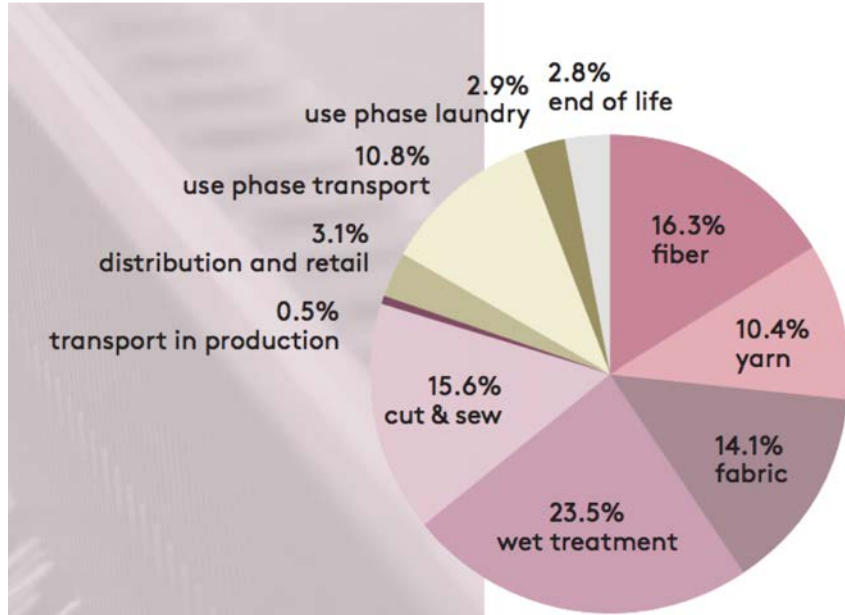


figure 2, climate impact per phase in entire life cycle, calculated for all Swedish clothing consumption

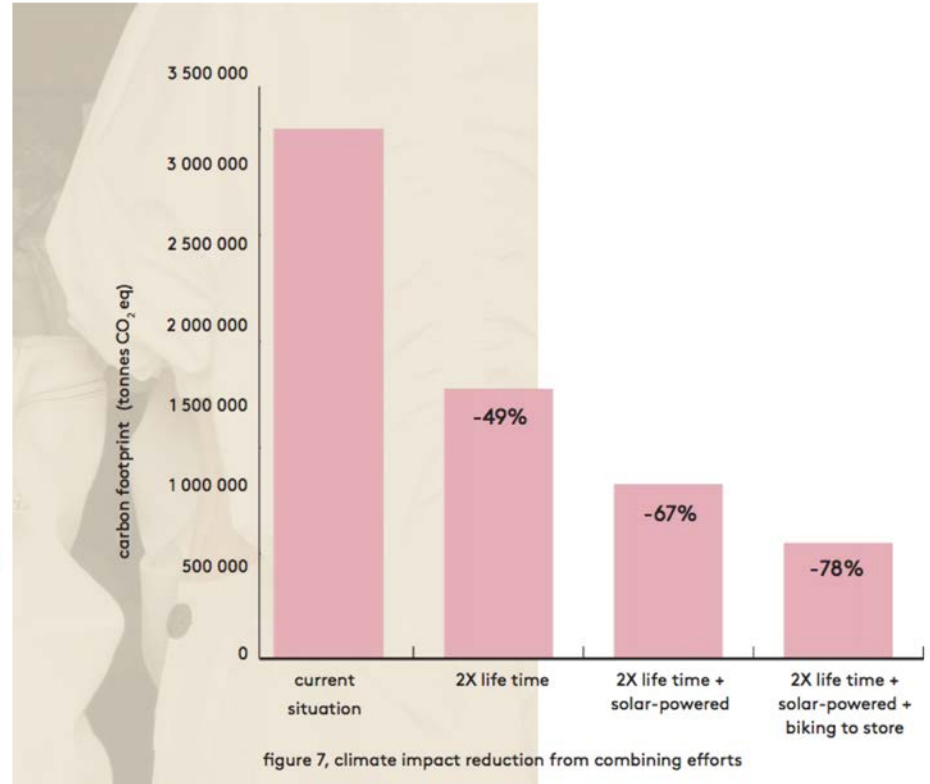


figure 7, climate impact reduction from combining efforts

Product and Material Longevity

For product longevity (extending product life)	For material longevity (enabling material recovery)
Extending single-user lifetimes; <i>Keeping products in use as long as possible for their first life</i> e.g. functionally durable materials, timeless style and care/repair services	Advancing material recovery; <i>Technologies which can recover virgin quality materials from existing textile waste streams</i> e.g. chemical recycling of PET, cellulose, mixed waste, and sorting technology to enable these processes
Enabling multiple-user lifetimes; <i>Services which give existing products a new life opportunity</i> e.g. leasing, sharing, charity and branded resale	Designing FOR recovery; <i>In-built design features which enable more efficient recovery to support material recovery</i> e.g. design for disassembly, monomaterials, biocompatibility
Scaling garment upcycling; <i>Reinventing existing products with design intervention</i> e.g. upcycling, remanufacture	Reducing production impacts; <i>Innovative production systems which reduce overall impacts of garments</i> e.g. streamlined and vertical manufacturing, redistributed production, automation, mass customisation

Goldsworthy, K. et al. (2018) Circular Speeds: A Review of Fast & Slow Sustainable Design Approaches for Fashion & Textile Applications

Product Longevity: Extending Single-User Lifetimes

- *Internal facing Actions:*
 - Designing for long technical and aesthetic life.
 - Design for ease of repair. Replacable parts etc.
 - Material selection that facilitates repair.
 - Changeable design (either product or material or both)
- *External facing Actions:*
 - Labelling to encourage repair and to ensure correct laundering/care for long life.
 - Provide service for repair.

Extending Single-User Lifetimes

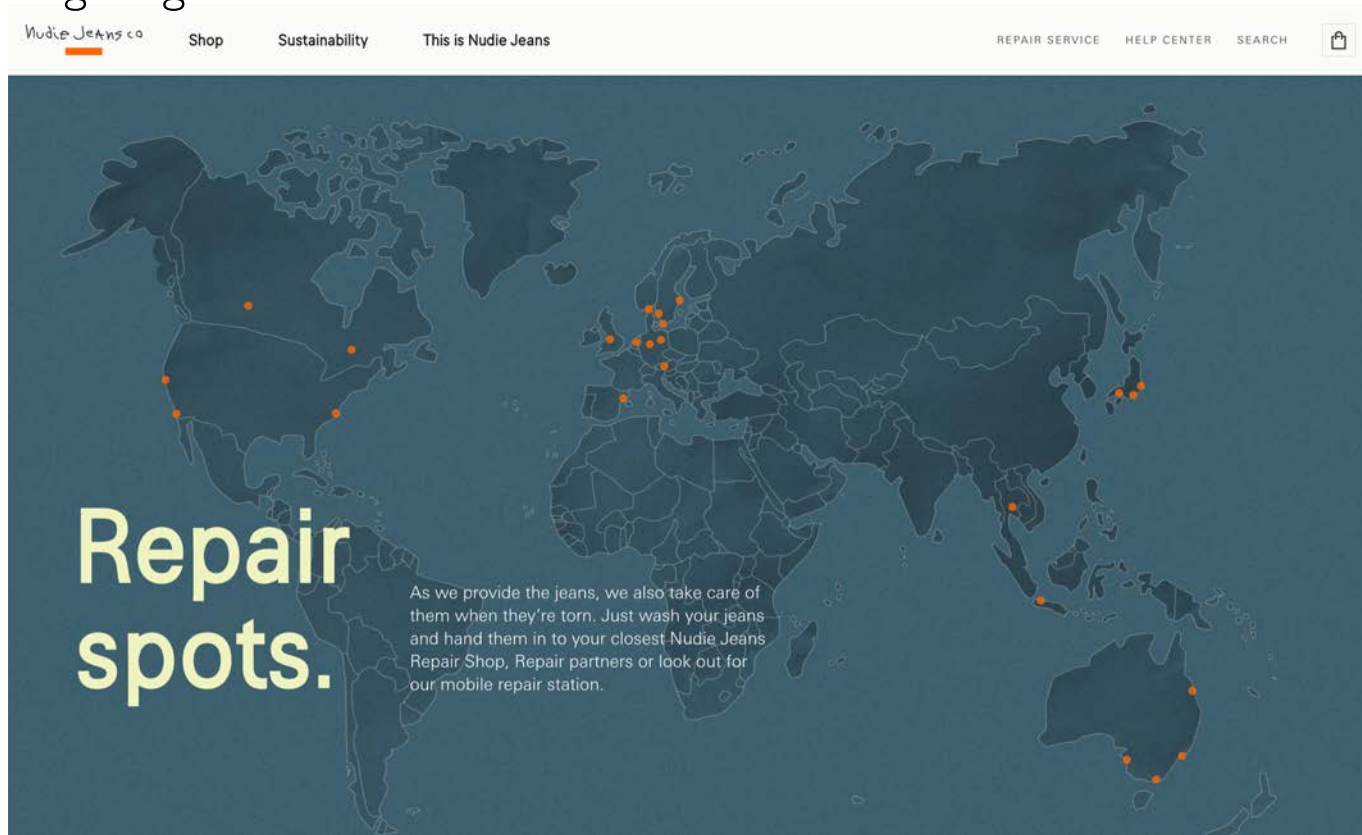


Repair Your Patagonia® Gear



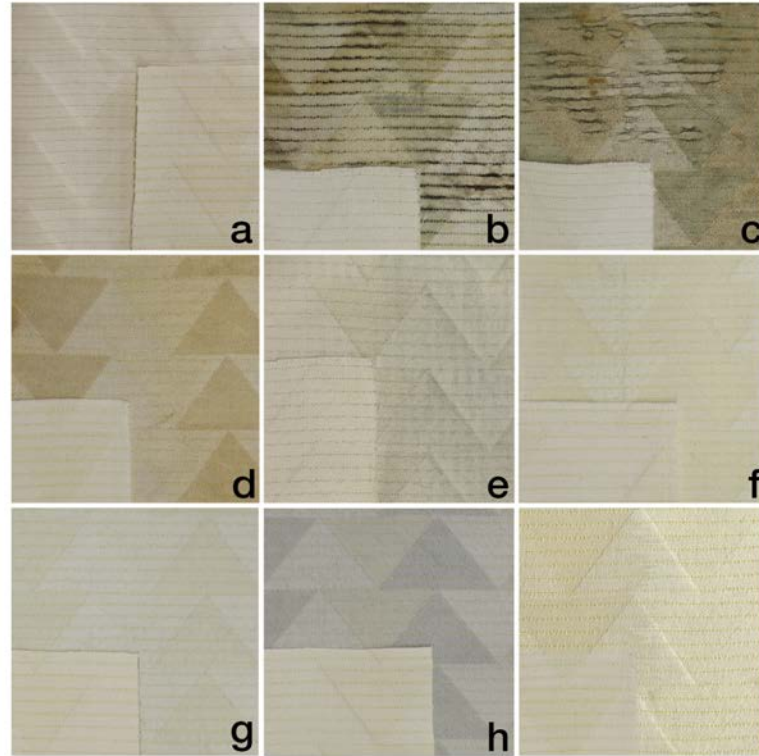
Patagonia: Pairs timeless design with repair services

Extending Single-User Lifetimes



Nudie Jeans: Pairs timeless design (and denims desirable “wear”) with repair services

Extending Single-User Lifetimes



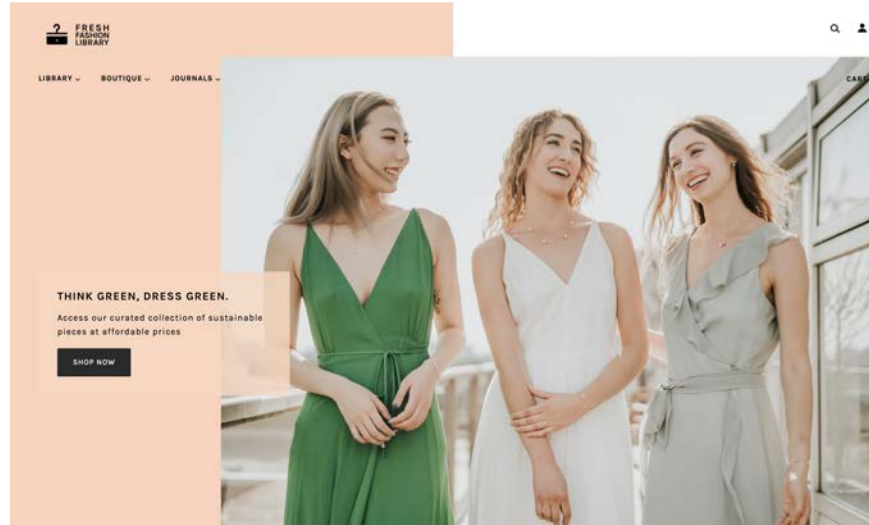
Riikka Talman: Changability as a quality in textile design.

Product Longevity: Enabling Multiple-User Lifetimes

The focus here is on brand leasing and clothing libraries, peer-to-peer sharing platforms and resale, charity and branded resale.

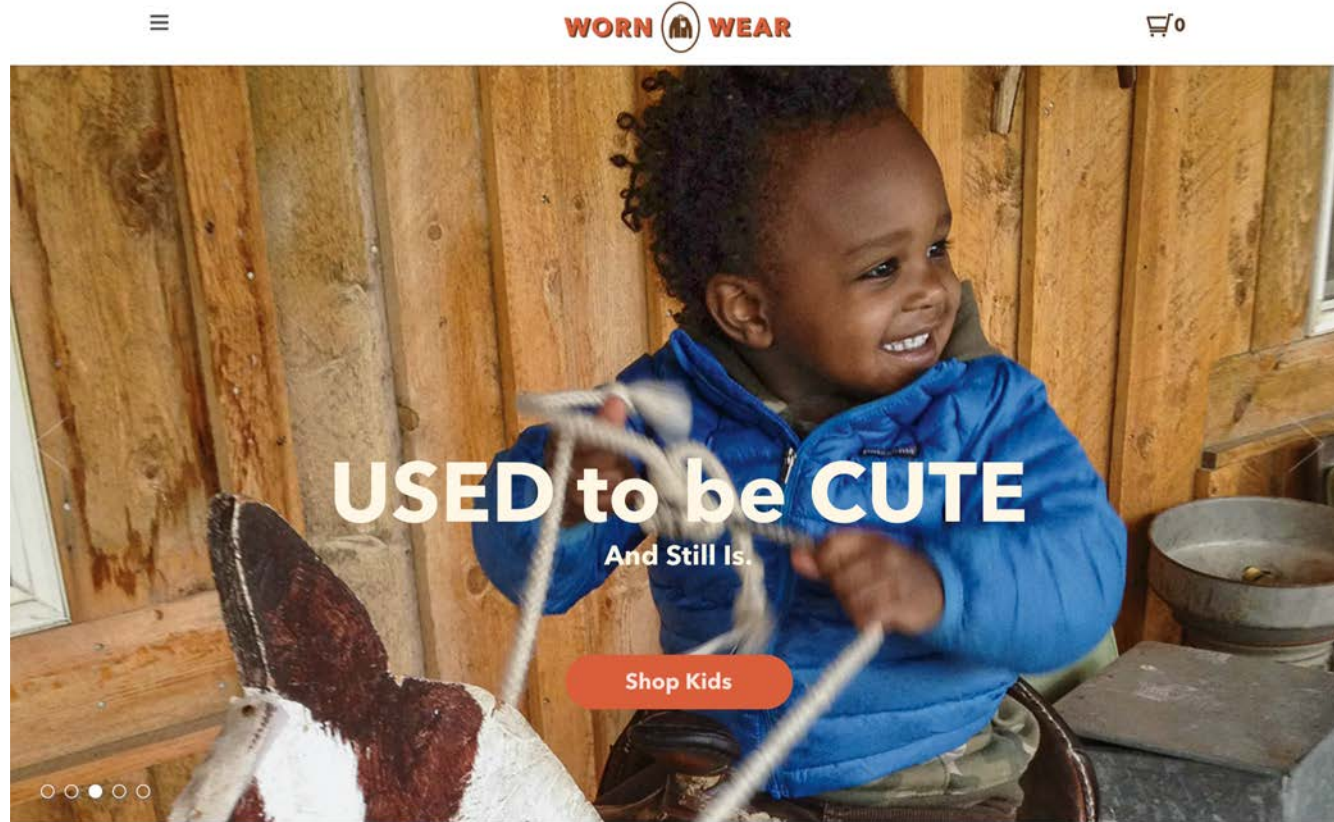
- *Internally Facing Actions:*
 - Models and Logistics for collecting and redistributing products.
 - Designing for longevity
- *Externally Facing Actions:*
 - Online
 - Bricks and mortar
 - Advertising/education of citizens to encourage the use resale.

Enabling Multiple-User Lifetimes



Clothing Libraries and Leasing

Enabling Multiple-User Lifetimes



Patagonia: Worn Wear

Enabling Multiple-User Lifetimes



COS RESELL

Extend the life cycle of your COS clothing
through resell: a space to buy and sell
preowned styles.

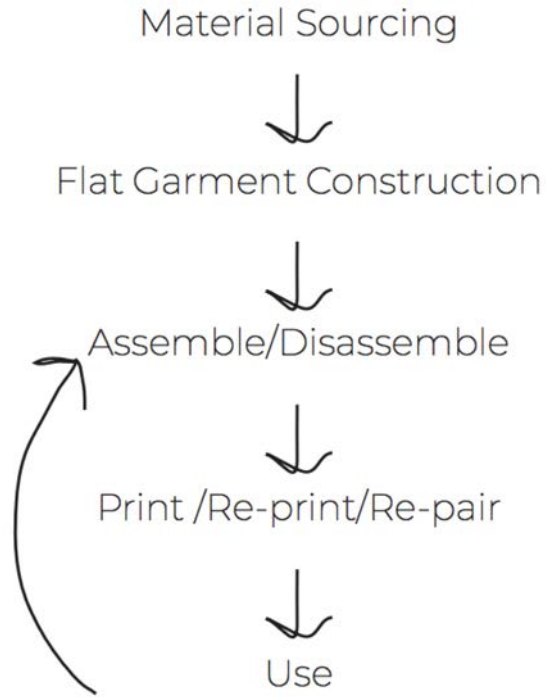
COS: Re-Sell

Enabling Multiple-User Lifetimes



Nudie: ReUse - on-sells worn jeans

Enabling Multiple-User Lifetimes



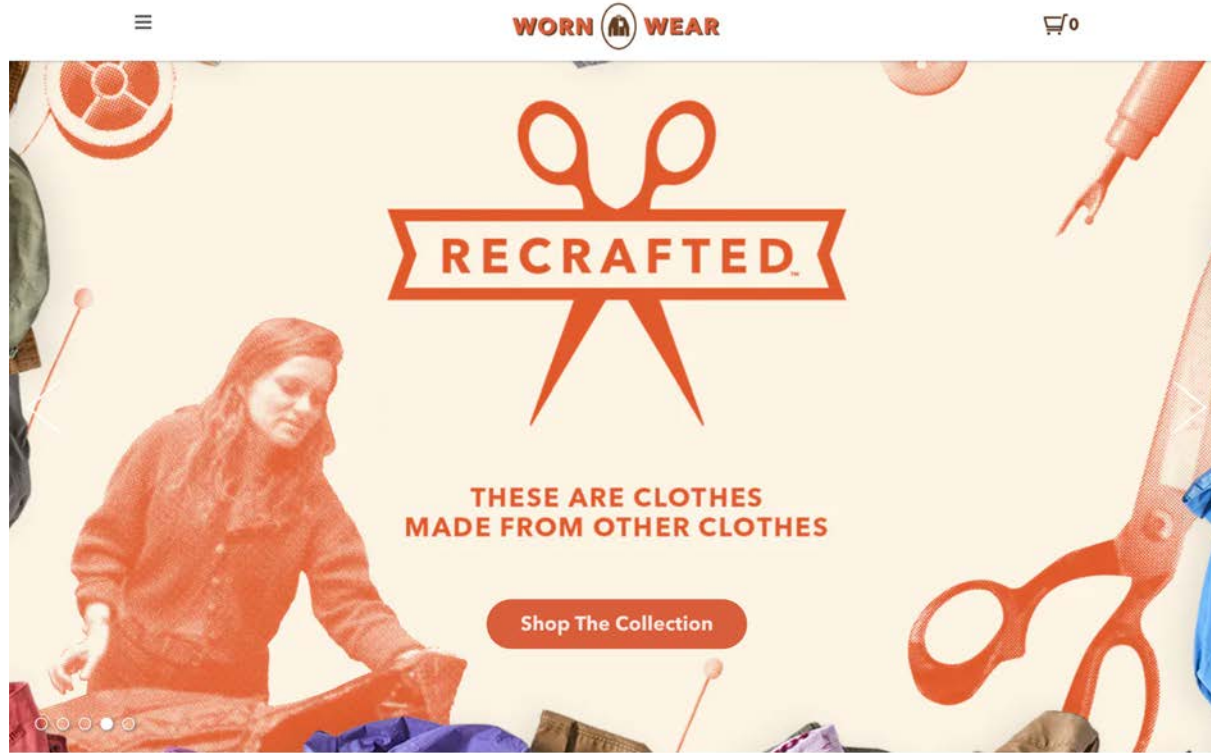
Lynn Tallvod (2020) Made to Fade. Also see Rissanen, Grose and Riisberg (2018) Designing Garments with Evolving Aesthetics in Emergent Systems

Product Longevity: Product Reconstruction & Recycling

This approach involves reinventing existing products through design intervention.

- *Internally Facing Actions:*
 - Design methods and production processes to redesign products for resale/refreshment (redyeing for example).
 - Relocalisation of aspects of production.
 - Team dedicated to this process.
- *Externally Facing Actions:*
 - Collection facilities for garment drop-off etc

Enabling Multiple-User Lifetimes



ReCrafted Down Vest
\$231



ReCrafted Down Jacket
\$294



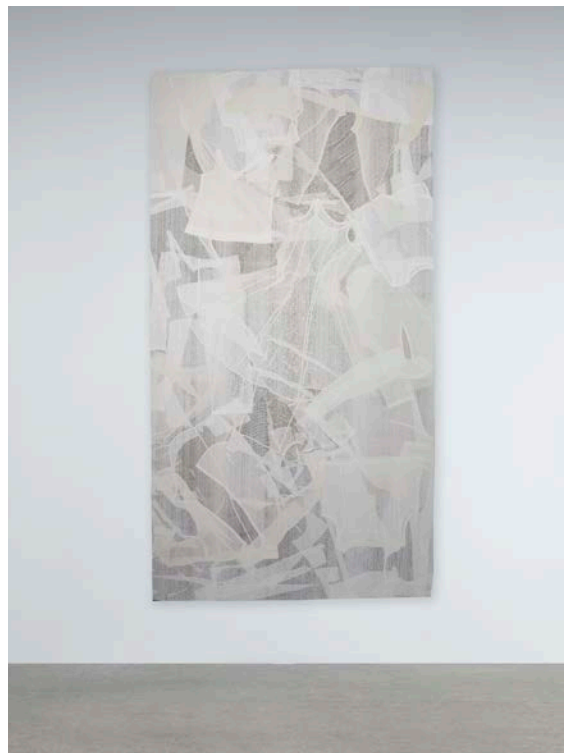
ReCrafted M's T-Shirt
\$57




ReCrafted Synchilla Sweater
\$158 - \$197


Patagonia: ReCrafted (new products and income streams without more material use)


Enabling Multiple-User Lifetimes




 RENEW

[SHOP](#) | [SPECIAL COLLECTIONS](#) | [OUR STORY](#) | [EVENTS](#) | [EILEEN FISHER](#)







Resewn Patchwork Tunic
\$178




Resewn Patchwork Coat
\$298




Resewn Patchwork Tunic
\$178




Resewn Flight Jacket
\$298




Resewn Reversible Wool Jacket
\$298




Resewn Denim Jumpsuit
\$218



Resewn Glovette
\$68



Resewn Glovette
\$68



Eileen Fisher Upcycling: Renew

Enabling Multiple-User Lifetimes



Rebecca Earley Service Shirt: Designing for a 50 year lifecycle

Enabling Multiple-User Lifetimes

SPA
CE
BETW
EEN

[about us](#)

[shop](#)

[fashion lab](#)

[research](#)

[blog](#)

[glossary](#)

[contact us](#)

 (0)

A slow fashion antidote which upcycles corporate uniform waste which contrary to fast fashion doesn't have an artificial expiry date.



SpaceBetween: Uniform upcycling.

Material Longevity: Advances in Material Recovery

The focus here is on technologies which can recover virgin quality materials from existing textile waste streams; chemical recycling of PET, cellulose, mixed waste, and sorting technologies.

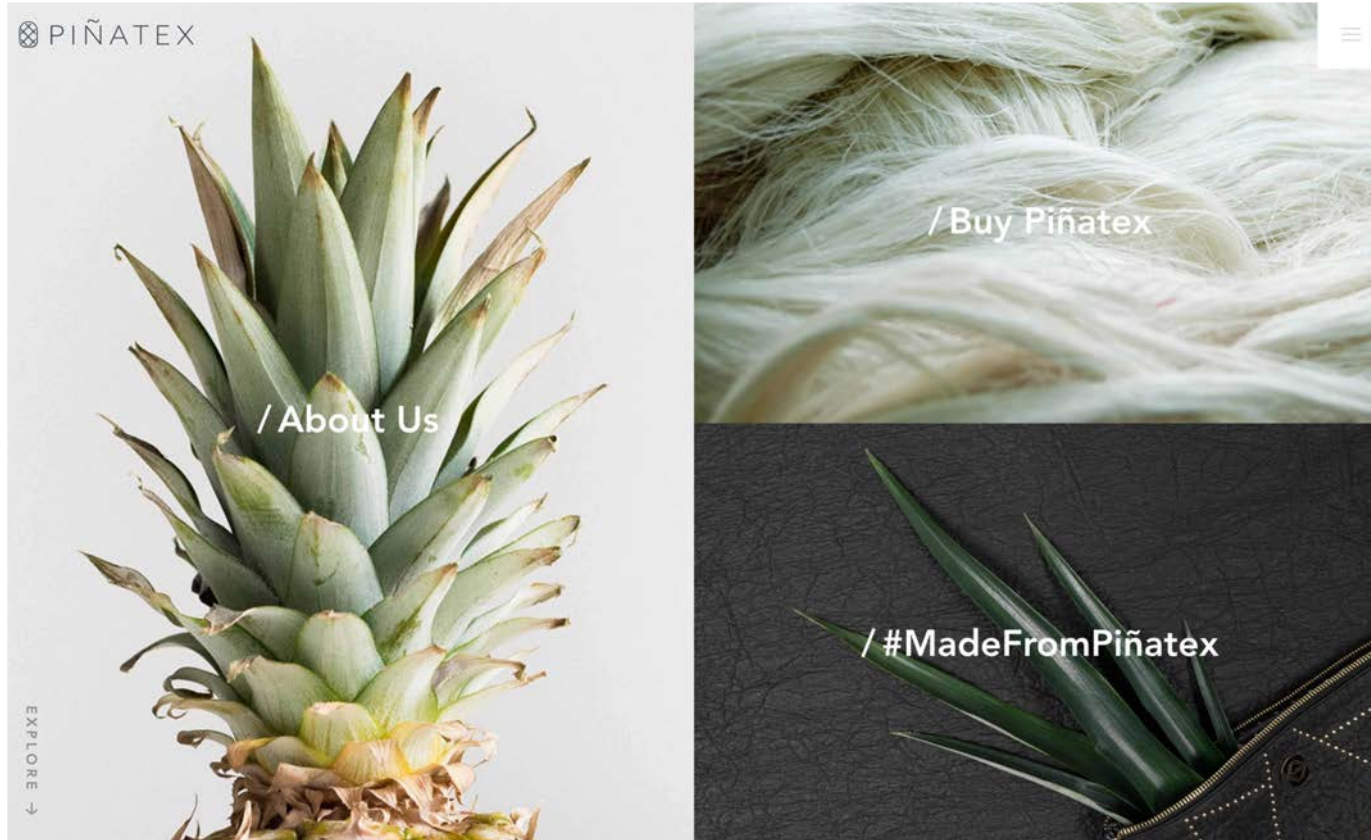
- *Internally Facing Actions:*
 - Fibre to fibre recycling, mixed fibre recovery,
 - Waste stream use (food waste etc).
 - Tends to be focused on technical solutions without design, but involve designers in these processes to speculate, test and develop use, to pinpoint avenues for exploration. What aesthetic or cultural implications does the use of these new materials have?
Training/employing teams who can respond to these ways of thinking and doing.
- *Externally Facing Actions:*
 - Advertising, education, external commitment.

Advances in Material Recovery



Evrnu “Nucycle” material recycling.

Advances in Material Recovery



Pinatex: food waste as fibre.

Material Longevity: Designing For Recovery

Here we explore in-built design features which enable more efficient recovery to support material recovery; design for disassembly, monomaterials, biocompatibility.

- *Internally Facing Actions:*
 - Design for Cyclability. Mono-material.
 - Design textiles for disassembly/recycling,
 - Design garments/products for disassembly/recycling.
- *Externally Facing Actions:*
 - Systems for recapturing products.
 - Advertising, education, external commitment.

Designing For Recovery



The Eternal Trench Coat

100% Recycled, 100% Recyclable

Inspired by the slow speeds of nature, this 100% recycled and recyclable coat is mindfully made from plastic bottles to last for a decade or longer – then it can be fully recycled into the same material from which it was made. The coat is designed in timeless style and quality, lightweight, water repellent, packable, and it has the Filippa K guarantee of 10 Years of Care.

Material

Polyester takes millions of years to create and 200 years to biodegrade. It is typically used in fast fashion, so we're redefining its purpose as a slow material by using recycled polyester from plastic PET bottles that can be re-made into new fabric for future garments.

Colouring

We worked with We aRe SpinDye to dope dye this garment, resulting in a reduced carbon footprint and less energy and water consumption than a typical dyeing process. The coat also has extraordinary performance against wear and tear, UV light damage, and washing – above what is achieved by traditional dyeing.

Finishing

The garment is finished with Organotex: an eco-friendly water repellent technology inspired by the 3D-structure of the lotus flower, and developed using biomimicry. The finish can be maintained and refreshed with the FK Textile Waterproofing Spray made with the same technology.

10 Years of Care

10 Years of Care is our guarantee to help you care for your Front Runners garment for the next decade. Just like its inspiration in nature, this coat is designed for a long life in your closet. We're here to help with any repairs or restorations your garment may require. Just bring the coat back into one of our stores and we'll treat it according to its needs. When your ownership is finished, please donate it or return it to a Filippa K store so we can resell, lease or recycle it.

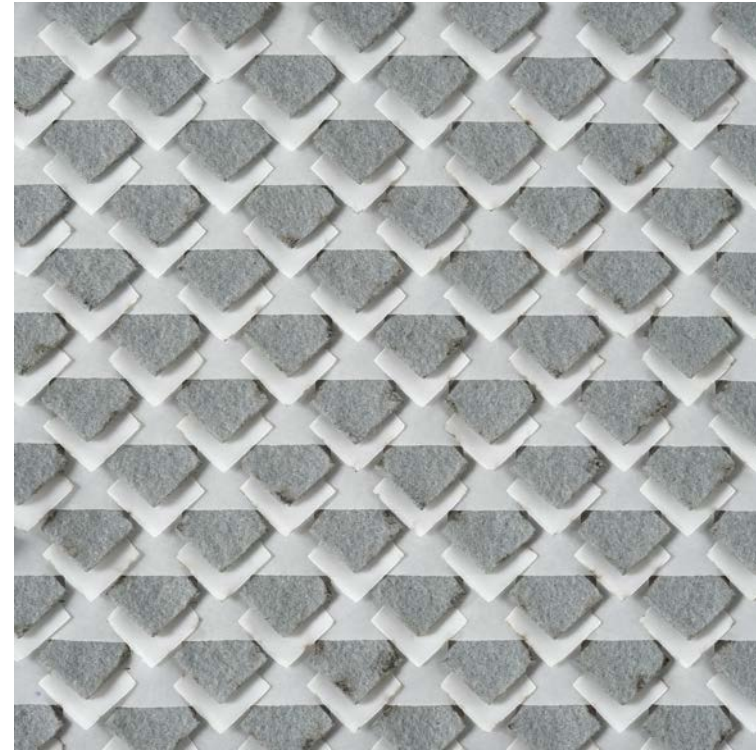
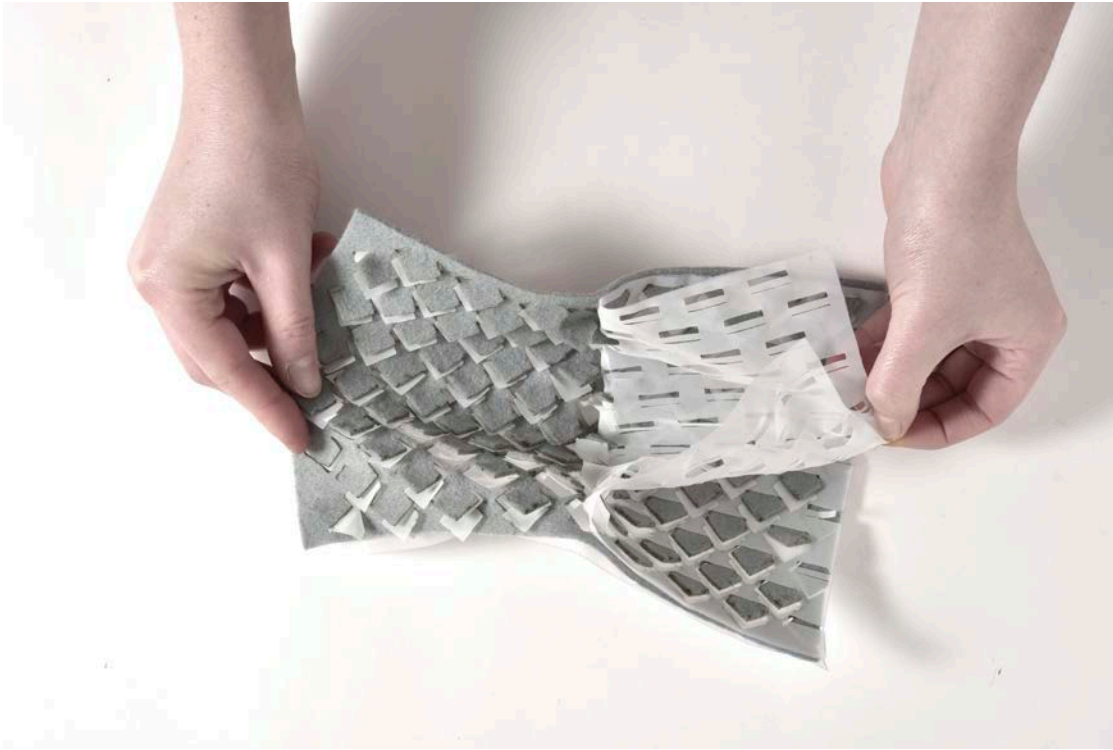
Filippa K: Speed cycles project with Mistra Future Fashion. Eternal Trench coat.

Designing For Recovery



Stella McCartney, Adidas and Evrnu: Design for Circularity.

Designing For Recovery



Laetitia Forst: Designing textiles for recovery. Separating stretch from textiles

Material Longevity: Reducing Production Impacts

There is great potential in innovative production systems which reduce overall impacts of products; streamlined and vertical manufacturing, redistributed production, automation, mass customisation.

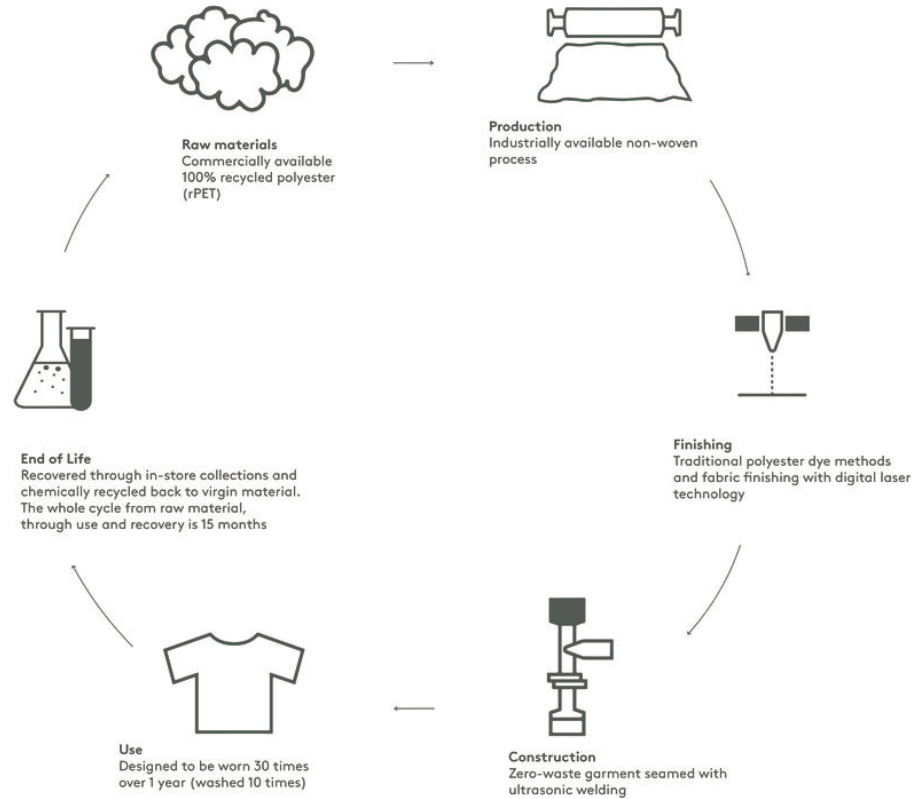
- *Internally Facing Actions:*
 - Vertical manufacturing,
 - Redistributed Local manufacturing,
 - Automation.
 - Regenerative Agriculture Micro systems
 - Use of Non-wovens.
 - Long term investment.
 - Immaterial Design
- *Externally Facing Actions:*
 - Advertising, education, external commitment

Reducing Production Impacts



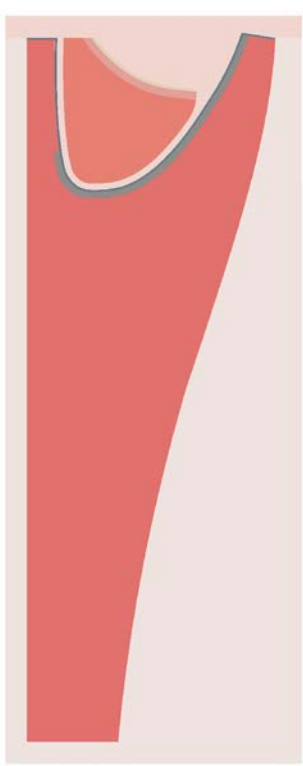
Unmade: on-demand, redistributed production.

Reducing Production Impacts



Goldsworthy Non-woven Lazer-line Mono-T

Reducing Production Impacts



Holly McQuillan. Woven Textile-Forms

Reducing Production Impacts



Diane Scherer. Root System Domestication



Reducing Production Impacts



Immaterial Design

Industry 4.0 and Design

Using Industry 4.0 to connect information about products over their lifetime, but the products themselves need to be designed so as to activate meaningful and appropriate action and use.

- *Internally Facing Actions:*
 - Information sharing between departments
 - Training and Implimentation of the use of digital tools
- *Externally Facing Actions:*
 - Providing citizens and future users with details about whats in your products.

Synergy and Holistic Design

Many of these approaches are highly compatible and the benefits will compound.

- Long lasting materials with long lifecycle.

Also some are at odds with each other so care must be taken to ensure compatible approaches are taken.

- Consider relationship between materials and timescale
- Collaboration between technical and design

The Transition Framework

A vision for the transition to a sustainable society is needed. It calls for the reconception of entire lifestyles that are human scale, place-based but globally connected in their exchange of technology, information and culture. It calls for communities to be in a symbiotic relationship with their ecosystem.

New ways of designing will help realize the vision but will also change/evolve it. As the vision evolves, new ways of designing will continue to be developed.

The vision of the transition to a sustainable society will require new knowledge about natural, social and built/designed systems. This new knowledge will, in turn, evolve the vision.

The transition to a sustainable society will require new ways of designing that are characterized by:

New Ways of Designing

Theories of Change

Ideas, theories, & methodologies from many varied fields and disciplines inform a deep understanding of the dynamics of change in the natural and social worlds.

Changes in mindset, posture and temperament will give rise to new ways of designing. As new design approaches evolve, designers' temperaments and posture will continue to change.

Posture & Mindset

A new theory of change will reshape designers' temperaments, mindsets and postures. And, these 'new ways of being' in the world will motivate the search for new, more relevant knowledge.

Living in & thru transitional times requires a mind-set and posture of openness, mindfulness, a willingness to collaborate, and 'optimistic grumpiness'

Designing the transition from how you do things now, to how you want to do things.

- *Problem evolution* (How did you get to this place?).
 - How and Why is your company currently the way it is.
- *Problem Mapping* (What is the current issue, what do you currently do?).
 - How are products currently used and designed,
 - what is the design process,
 - relationship between departments (silos and hierarchies?),
 - what happens to your products once they leave your hands?
- *Adopt a Transitional Posture*
 - such as: We are in a climate and biodiversity crisis and need to take actions to reduce new fibre and garment/product production
- *Visioning* (where do you want to be?).
 - Which approaches seem most viable for your company to respond to this new posture.
 - What would you need to do to change, in design, marketing, production,
 - Who needs to be involved?
 - What is the: Motivation, Time, Knowledge, Flexibility, Buy-in... of everyone involved?

For further investigation

Tools:

- <https://sustainabledesigncards.dk/>
- <http://www.tedresearch.net/teds-ten/>
- <http://mistrafuturefashion.com/wp-content/uploads/2019/09/Mistra-Future-Fashion-Outlook-2019-Communications-Card.pdf>

Read:

- <https://earthlogic.info/wp-content/uploads/2019/12/Earth-Logic-eversion.pdf>
- https://www.researchgate.net/publication/329819246_Circular_Speeds_A_Review_of_Fast_Slow_Sustainable_Design_Approaches_for_Fashion_Textile_Applications
- <http://mistrafuturefashion.com/wp-content/uploads/2019/10/N-Morley.-Research-Agenda.-Mistra-Future-Fashion-report.pdf>