FASHION REGENERATION

50 CLIMATE POSITIVE AND REGENERATIVE SOLUTIONS FOR THE FASHION INDUSTRY

asn bank

Kode21

The only companies that are going to survive in the future are the companies that make a positive contribution to people and planet.

Paul Polman, co-author, Net-Positive, former Unilever CEO

Notes

‘Fashion Regeneration’ is a project for ASN Bank and ASN Impact Investors. For brevity, we will often use ‘ASN Bank’ only.

All images in this report are generated through artificial intelligence. They are for illustration purposes only and may not accurately reflect reality.

This project focuses on the textile value chain, with less emphasis on leather, footwear and accessories.

Our definition of ‘climate-positive’: achieving (close to) net-zero greenhouse gas emissions, or even negative emissions, in the entire value chain, without resorting to carbon offsets outside of the value chain.

Our (loose) definition of ‘regenerative’: producing, in the balance of all its inputs and outputs, a positive effect on society and ecology.

Utrecht, The Netherlands, July 2023

Thank You

Fashion Regeneration Team

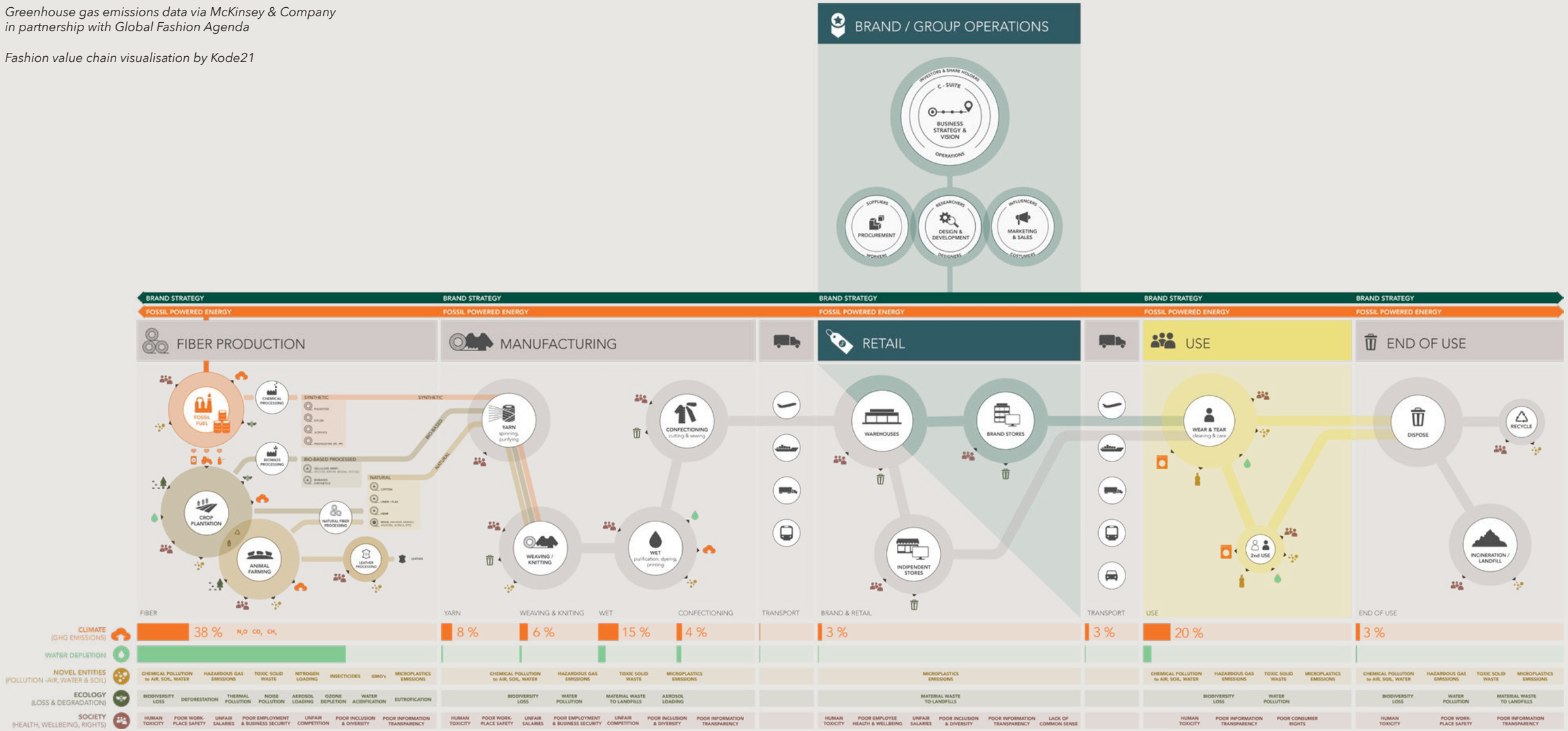
Iris de Laet, ASN Bank
Kirsten Kossen, ASN Bank
Ceren Bagatar, Kode21
Jolane Schaffner, Kode21
Michiel Cornelissen, Kode21

Special thanks to:

Alissa Baier-Lentz, Kintra Fibers
Anouk Vegter, ASN Bank
Britt Enthoven, ASN Bank
Chad Frischmann, RegenIntel
Daan Koomen, ASN Bank
Freek Geurts, ASN Bank
Giovanni Zentena, Apparel Impact Institute
Kim van der Weerd, Consultant
Kyrk McMillan, Wood Wood
Mansi Shah, Consultant
Mariette Smids ASN, Impact Investors
Monique Messelink, ASN Bank
Natascha van der Velden, Consultant
Ose Nielsen, Sustainable Roots
Piet Sprengers, ASN Bank
Ryan Gaines, Apparel Impact Institute
Sandra Gonza, Impact Strategist
Stefan Siedel, Puma
Verena Weiss, Stichd/Puma
Vidhura Ralapanawe, Epic Group
Vincent van Assem, Consultant
Zubin Nayak, Schneider Electric

Greenhouse gas emissions data via McKinsey & Company in partnership with Global Fashion Agenda

Fashion value chain visualisation by Kode21



Introduction

The Buildings Blocks of a Regenerative Fashion System

Imagine emissions, pollution and abuses were restricted, expensive and unpopular. What would the fashion industry look like in such a world?

As one of the world's largest industries, fashion brings joy to its customers and employment to millions of workers. But there's a flip side to this coin that we cannot ignore anymore: the fashion industry emits a significant portion of the world's greenhouse gas emissions, causes deforestation, creates enormous amounts of waste and pollution, and leaves a trail of human rights abuses. Righting these wrongs is the moral thing to do - but it's also becoming a business prerequisite. Business as usual, with its emissions, pollution and abuses is rapidly becoming restricted, expensive, and unpopular.

ASN Bank and ASN Impact Investors have been actively promoting fair wages and sustainable practices in the fashion world for years. With this project, they challenged us to bring together a vision of the final goal: a net-positive fashion industry. A fashion ecosystem that is not just 'less bad' but that, in the balance, has a positive impact on climate, nature and people.

We don't need to tell you that this is a tall order. It means carbon and other greenhouse gasses are not released, but drawn down. That pollution stops, nature restores and biodiversity grows. And that people in the fashion ecosystem thrive. At that point, fashion becomes regenerative.

The surprise is that it can be done. Not in a blue sky, science fiction-y way, but by implementing dozens of solutions that are possible today, have scientific backing, and make business sense. We have curated 50 solutions that we believe can set fashion on the track of regeneration. The biggest challenges may not lay in finance or technology, but in how flexible our minds can be in embracing the new abundance that is possible.

This vision has been created for various audiences. It has been written mostly from the point of view of fashion brands, in terms of what needs to change - but not yet how those changes can be effected. However, this document is primarily intended for internal use at ASN Bank and ASN Impact Investors, to serve as an inspirational guide for future investments and other actions and communications - and we hope other financial institutes will be able to use it in similar ways.

Beyond that, our not-so-secret agenda is to convince the fashion industry itself that regeneration is integral to business success in the 21st century. It can be a spark for innovation and should be a factor in every decision as it offers the most attractive - and in our view, only - way forward for businesses and their leaders.

Perhaps most of all, we hope this work can uplift anybody in need of some regenerative inspiration.

The Fashion Industry

is estimated to be worth around $2 trillion, making it one of the largest industries in the world. If it were a country, it would be in the top 10 of GDP rankings.

produces 2% to 8% of the world's greenhouse gas emissions, mostly through the use of fossil fuels for energy and materials, agricultural emissions, and deforestation.

contributes to water pollution through agricultural nutrient overloading, dyeing and other processes.

contaminates people, water and soil through the use of PFAS and other 'forever chemicals' in coatings and treatments.

provides employment to an estimated 75 million people globally, though often in the context of very low wages, absence of job security, and unhealthy work environments.

produces around 60% of its clothes from plastics - in other words, from fossil fuel.

causes landfill and incineration of large amounts of pre- and post consumer waste.

causes major biodiversity losses through a combination of all of the factors above.

includes China, Germany, Bangladesh, Vietnam, India, Italy, Turkey and the US as some of its main exporting countries.

uses untenable amounts of freshwater, mostly through withdrawals for irrigation of cotton grown in unsuitable soils and climates, with desertification as a consequence.

contributes to microplastics pollution through the washing and decomposing of synthetic fibres.

Vision

A Practical Utopia for Fashion

A regenerative fashion ecosystem is one that depends less on virgin material resources. Instead, it creates and maintains **value** through skills, experiences and relationships.

The **materials** it needs come from nature once again - through familiar natural fibres and dyes, as well as innovative biosynthetics. The farms and plantations needed to grow these resources bring life into the soil, store carbon and improve livelihoods.

Garments are created with **energy** from a variety of carbon-free sources, in efficient systems that include powerful storage and strong, smart grids. This transition also brings us cleaner air, new jobs and healthier homes and workplaces.

A regenerative fashion ecosystem thrives because it puts **people and nature** at the centre of every decision.

Solutions

1. Value over Volume
   - I Circular Business Models
   - II Stories that Matter
   - III Positive Products
2. Biobased, Reduced and Recycled Materials
   - I Use and Reduce Textile Waste
   - II Better Farming
   - III Better Fibers
   - IV Better Processes
   - V Packaging
3. Renewable, Electrified, Reduced Energy
   - I Renewable Energy
   - II Process Improvements
   - II Buildings and Urban Planning
   - III Transition Support
   - IV Transport
   - V Energy in the Use Phase
4. Fortifying Nature
5. Investing in People
6. Telling the Whole Story
7. So what do we do?

1. Value over Volume
Circular Business Models
Stories that Matter
Positive Products

1. Value over Volume

Many of the regenerative solutions we describe in this project make business sense on top of the social and ecological benefits they deliver. So yes, it may be possible to become a company that is 'less bad' by following a trail of cost savings and sound investments. However, we'll need to move beyond the business model of 'produce as much as possible, as cheaply as possible, as fast as possible' to enjoy fashion within planetary boundaries.

Renewable energy capacity is growing impressively, but still nowhere near as fast as we need it to. Regenerative, biobased materials need land to grow, often more than today's extractive counterparts. Those fiber crops will often have to compete for land with food crops, leading to increased risk of deforestation. It is therefore crucial that the fashion industry learns how to thrive with a reduced need for virgin resources.

Practically speaking, this will mean that our clothes will have to last longer and be used better - much like they were in the past. Various business models can play a part in this transition: a new focus on lasting quality, the integration of repair, care and perhaps even upgrades in a product's lifecycle, and the facilitation of re-use and recommerce. Intensifying use is another path to reducing resource extraction: a garment that is used only occasionally might be rented, and in that way serve dozens of people.

The creative challenge to the industry is to design enticing, exciting customer experiences that don't depend on the rush of ever more impulse buys. Can those fleeting contacts be replaced by lasting, meaningful customer relations? Can we be delighted by a pre-loved piece, a brilliant repair and even an end-of-life collection experience? If a brand truly wants to be part of the solution it will have to convince on all of these aspects.

SLOW AND DURABLE FASHION

We know how to make clothes that last for decades, but designing for ever faster obsolescence has just been too tempting for companies' balance sheets. However, it's a big part of the reason why fashion is wreaking havoc on our planet. Doubling the useful life of a product equates to halved production emissions - a feat very few, if any, technologies can match.

High product quality and slow, seasonless fashion are made for each other. If you sell similar, evolving products for years, you'll get better and better at it. And once you've invested all of that knowledge in creating the perfect item, turning that product into a fleeting hype is not in your best interest. We don't need to worry that it might get boring: 10 apparel items in 10 different styles are enough to give every inhabitant of earth a unique wardrobe. We're not dependent on fashion brands for our individuality.

It will be a huge challenge for brands to adapt their business models to reduced physical sales, but pioneers are proving that it is possible. What a brand looses in material throughput it can gain in meaningful, durable relationships. Lifetime warranties and guaranteed deposits ensure years and years of customer interactions, recommerce supplies and remanufacturing resources. The shift from volume to value may be the most exciting thing to happen to fashion in a long time.

Camper: 'We make products that can be repaired and offer a lifetime warranty' (fashionunited.com)

Breaking the pattern: The apparel brands ditching trends and seasons (fashionunited.com)

Selfridges wants half of transactions to be resale, repair, rental or refills by 2030 | Retail industry | The Guardian

Introducing: Tony's Mission Lock – a future-proof legal structure for impact companies - Tony's Chocolonely (tonyschocolonely.com)

LIFECYCLE DESIGN

In the 21st century, we no longer design for the runway. Lifecycle design builds positive impact into our clothes starting from production, through a long and effective life of use, to the end of their use and beyond.

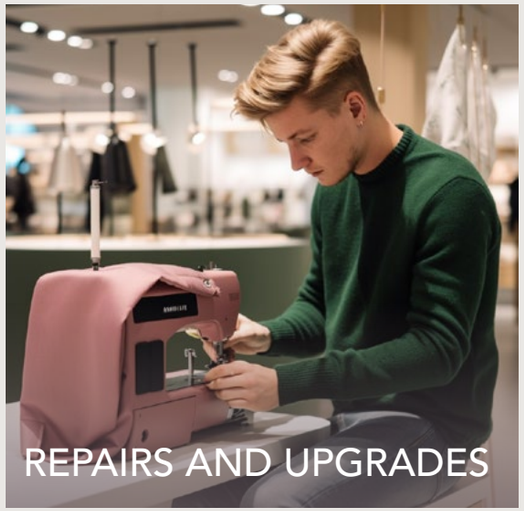
Clothes need to be designed for a long life of intensive use through high quality material choices and timeless styles and functions. Potential weak points are spotted and either removed, or prepared for eventual repairs. More radical interventions can include designing for changing measurements of the customer, or even for ways to update the colour and print of an item. Garments are designed so that when their useful life finally ends, their parts and materials can be used again. Materials can easily be separated from each other and don't contain 'diabolical blends' that are hard or impossible to recycle. As a bonus, this more thoughtful approach is likely to make fashion design a more rewarding profession.

Adidas Futurecraft Loop: is mono-material the future of footwear? | LinkedIn

Modular Fashion – the next big thing? | Features | News (ecotextile.com)

One size fits all: the designer creating clothes that grow with kids | Small business | The Guardian

Doctor Natascha van der Velden over duurzame mode: de rol van ontwerpers (fashionunited.nl)



REPAIRS AND UPGRADES

Mending clothes may have been at risk of becoming a lost art, but it's making a crucially needed comeback. How often have we thrown away a garment because, say, 1% of its materials stopped functioning correctly?

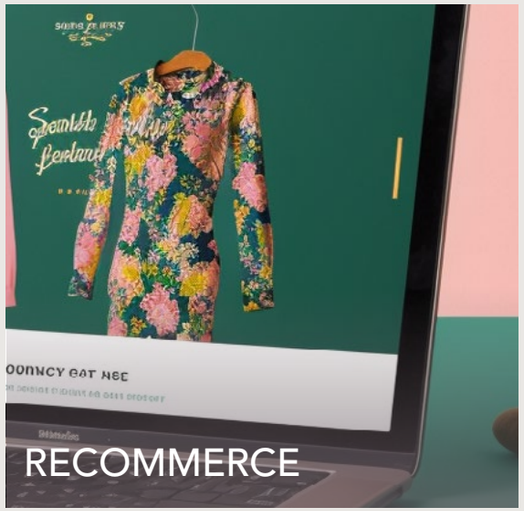
For a business, repair services are a great way to provide value while using a minimal amount of resources. With some imagination, repair can be a valuable way to reconnect with customers while making old favourites better and more beautiful than they ever were. Repairs might be done through DIY sets, as an in-store service, or in cooperation with local workshops.

A confident brand will offer clothes with a lifetime of free repairs. A creative brand might also design ways to change the sizing of a pair trousers or the print on a T-shirt several times during their lifetime, adding new value with a minimum expenditure of materials.

Net-A-Porter teams up with The Seam to offer repair service (fashionunited.com)

Toast launches collection of "creatively repaired" pieces (fashionunited.com)

Grote merken gaan voor kledingreparatie in Amsterdam: 'Dit wordt hip' (mtsprout.nl)



RECOMMERCE

Thrift stores may once have been considered the turf of hippies and the underprivileged, but the recommerce landscape is changing rapidly. Vintage stores and pre-owned platforms have become a celebrated fixture in the retail landscape, both online and in the streets.

Many of these stores are independent, but brands are discovering the added value of these 'new' shopping experiences too. In fact, it may be the largest circular experience that fashion shoppers are exposed to today. And for good reason: there's more logistics than technology involved and there's a huge amount of cheap resources (read: trashed clothes) available.

When done right, recommerce can absolutely be a regenerative climate solution. The ecological costs of transport and cleaning will usually be much smaller that those of creating a new garment. Pre-owned fashion shouldn't be a small, green-looking add-on to a business - but a proud, indispensable brand pillar that replaces virgin sales.

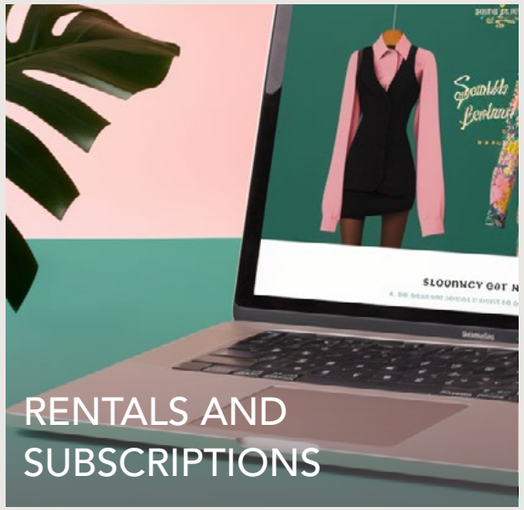
Vinted | Sell and buy clothes, shoes and accessories

Otrium | Online Designer Outlet

Trove: Branded Resale Solutions for Fashion & Apparel

Is eBay's Love Island Partnership a Sign of Fashion's 'Vibe Shift'? | BoF (businessoffashion.com)

Can AI make secondhand luxury shopping easier? | Vogue Business



RENTALS AND SUBSCRIPTIONS

We rent or lease houses, cars, phones and even bicycles. It looks like our clothes will become the next things we don’t need to own.

By only renting what we need at a certain point in our life, we free up items we don’t need for use by others - avoiding the production of new products and their associated emissions, land use and pollution.

Imagine the freedom of a wardrobe you don’t own. Your subscription gives you the right to the use of a pair of jeans, and you’ll never have to worry about something breaking or tearing - that’s the manufacturer’s problem now. You’ll be able to swap sizes, colours and styles at any time at little or no cost. Suddenly, having 5 pants in your closet feels like owning 25.

Trickle down economics might not work, but perhaps trickle down fashion will? An item starts as a high end, newly bought piece. After a while, it goes back to the manufacturer for years of use in subscription models. And finally, it will be sold as a vintage piece or reclaimed for the valuable materials it contains.

Lease Page – MUD Jeans

Rent the Runway | Rent thousands of designer clothing, dresses, accessories and more

H&M introduces rental to UK in flagship store | Fashion & Retail News | News (ecotextile.com)

REGENFLUENCING

Fashion brands have a huge megaphone. Their billboards, socials, influencers and other channels give them a voice like very few others. Fashion has the power to tell the story of a regenerative future.

Fashion's voices must stress that there's nothing cool about private planes or any other kind of conspicuous consumption. They can talk more about how to extend the life of a garment, than why you'd need a new one. Messages should be less about the latest trends and more about the virtues of vintage. They will help novel concepts such as remanufactured and upgradable clothing, or rentals and subscriptions, become mainstream. Even runway shows can join in the transition - presenting new pieces in the context of classical creations from the past.

The future is what we imagine. Brands can paint this picture by presenting their designs as part of the world of tomorrow: inside comfortable long distance trains, on an electric bike or next to biobased architectural masterpieces.

No new technology is needed for any of this. All it takes is a choice, and the new stories can be told from tomorrow onwards.

The rise and fall of a fast fashion phenomenon (thetimes.co.uk)

Greenfluencers: How Social Media Creators Are Becoming Sustainability Superheroes (forbes.com)

Copenhagen proves fashion week can be responsible and still fun | Vogue Business

REGENERATIVE STORES

If the purpose of a brand is no longer to 'sell as much stuff as possible', where does that leave shops? Circular store environments where clothes are customised, repaired, upgraded and resold might just become the new eye catchers for brands.

A brand with regenerative ambitions will put value adding, resource-decoupled services and experiences front and center. Customization, upgrading and repair are the first areas a customer interacts with. A next zone (or online layer) has pre-owned and rental pieces, followed by remanufactured beauties. Only then will we get to newly manufactured apparel, designed to last and made from biobased, waste-based and recycled sources.

Shop environments can also become showcases for climate solutions in the built environment. They will often be retrofits of existing buildings. New constructions will be in CLT (cross laminated timber) and other biobased materials that store carbon, instead of emitting it in production. Solar panel façades can form a beautiful architectural addition, and if we dream a little, perhaps even heatpumps and power storage batteries can become celebrated features.

Asket to unveil new resale and repair store concept in Sweden (fashionunited.com)

CONNECTING TO MAKERS AND FARMERS

Not that long ago, many of us knew the people that made our clothes personally. We could tell them our preferences and they could design for our size. Can we bring some of that interaction back, even if makers and users are separated by continents?

Making production a star of the show is not new. Electric car manufacturers are proud to show off the clean, futuristic shop floors where their vehicles are made. At a coffee shop, the making of your drink is part of the experience. What would be fashion's equivalent?

This is about celebrating the farmers that farm your fibers, and making the workers that sow your garments visible again, in stores and other channels. Perhaps we will once again be able to talk to the makers of our clothing, to tell them our ideas and wishes, giving us new appreciation of the skill and effort that goes into the making of our products.

Fendi shows menswear in new factory (fashionunited.com)

REGENERATIVE MESSAGES

Cars, motorbikes, airplanes - examples of fossil-fuelled technologies that have become cultural icons. Who hasn't owned a t-shirt with a print of one of those? A regenerative future needs new messages.

Wind turbines, solar panels, regenerative farming, cycling, plants and trees and ecosystems - those should be the new themes to push. The messages of Extinction Rebellion and Greta Thunberg are becoming mainstream. Artists such as Nicole Kellner and Gavin Snider are creating the aesthetic of the climate transition. Fashion companies must find ways to join in.

Nicole Kelner – nicolekelner

Green New Deal Posters (readingthepictures.org)

NET-POSITIVE CAPSULES

Transitioning an entire brand to become climate, people and nature positive may be a lengthy, sometimes discouraging process of decades. However, smaller 'net-positive' capsule collections can already be produced today.

Creating carbon negative and planet positive collections now can be an inspiration to the entire brand and a catalyst for innovation. It's an island that in time will overtake the sea.

Pioneers are leading the way. Interface produces carbon-negative carpet tiles, based on a combination of biobased and recycled resources. Electric bike manufacturer Cake is intending to build a dirt-bike that releases no carbon in production by 2025. Polestar is planning a similar feat for an entire car, some years later. And companies like Sheep Inc and Allbirds have started to offer articles of clothing that they say can be considered carbon-negative, without offsets. When will the first brand step up to offer us an entire wardrobe with only positive effects on people and planet?

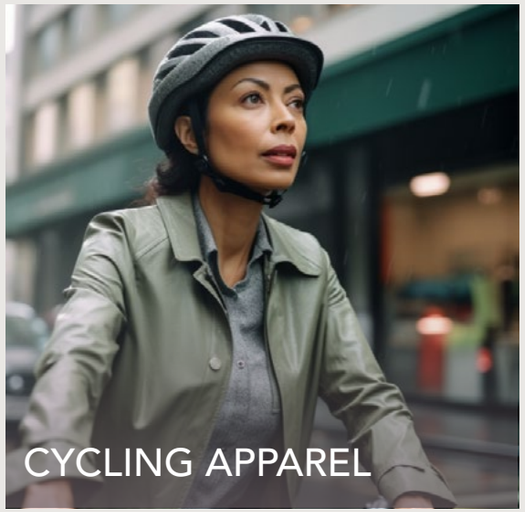
Greenwashing alert: in talking about such an isolated project, it's always important to mention that this is not yet representative of the entire company, as much as we'd like it to be.

Carpet brand Interface aims to run its business "in a way that reverses global warming" | Dezeen

Cleanest dirt bike ever | CAKE (ridecake.com)

Polestar 0 project | Polestar Global

Allbirds M0.0NSHOT - The World's First Carbon Zero Shoes



CYCLING APPAREL

A climate positive behavior that can use some help, is the simple act of getting around by bicycle. That's great on summer days, but in rain, sleet and cold conditions, the right set of clothes makes the difference.

Cycling (both electric and human powered) is the most energy-efficient way to travel that's ever been invented. It's also healthy, affordable and it reduces traffic pressure. It is one of a few regenerative growth markets, and some of the coolest brands on the planet - like Cake or Roetz - might be open to collaborations for creating stylish, functional bicycle apparel.

Greenwash is always just around the corner. A brand that showcases this as climate action would do well to make sure the apparel is made from responsible, biobased resources and doesn't use polluting coatings such as PFAS.

The Excess Collection | Rapha

CRAFT PRESERVATION

Workers in the fashion industry are mostly used as ‘hands’ that do what brand operations asks them to do, often from thousands of miles away. Using traditional, indigenous knowledge from production countries in the design and manufacturing of clothes, will be a welcome change from western-dominated globalised styles while valuing the diverse cultural backgrounds in the fashion system.

Traditional technologies aren’t a guarantee for climate and nature positivity, especially when scaled to the numbers of the global fashion industry. However, they will often use biobased materials, natural processes and timeless styles - giving them great potential for regeneration.

Traditional craftsmanship is perhaps the most tangible manifestation of intangible cultural heritage (unesco.org)

‘WARM SWEATERS’

With all the hype around fashion, it’s easy to forget that clothes have a functional role in our lives too. Climate appropriate clothing saves energy and money.

A good layer of insulating clothing lets us turn down thermostats by several degrees. Actively warming and cooling clothes may even save lives. And what might the future bring? Colour-changing clothes that go from dark to light depending on the sun’s strength?

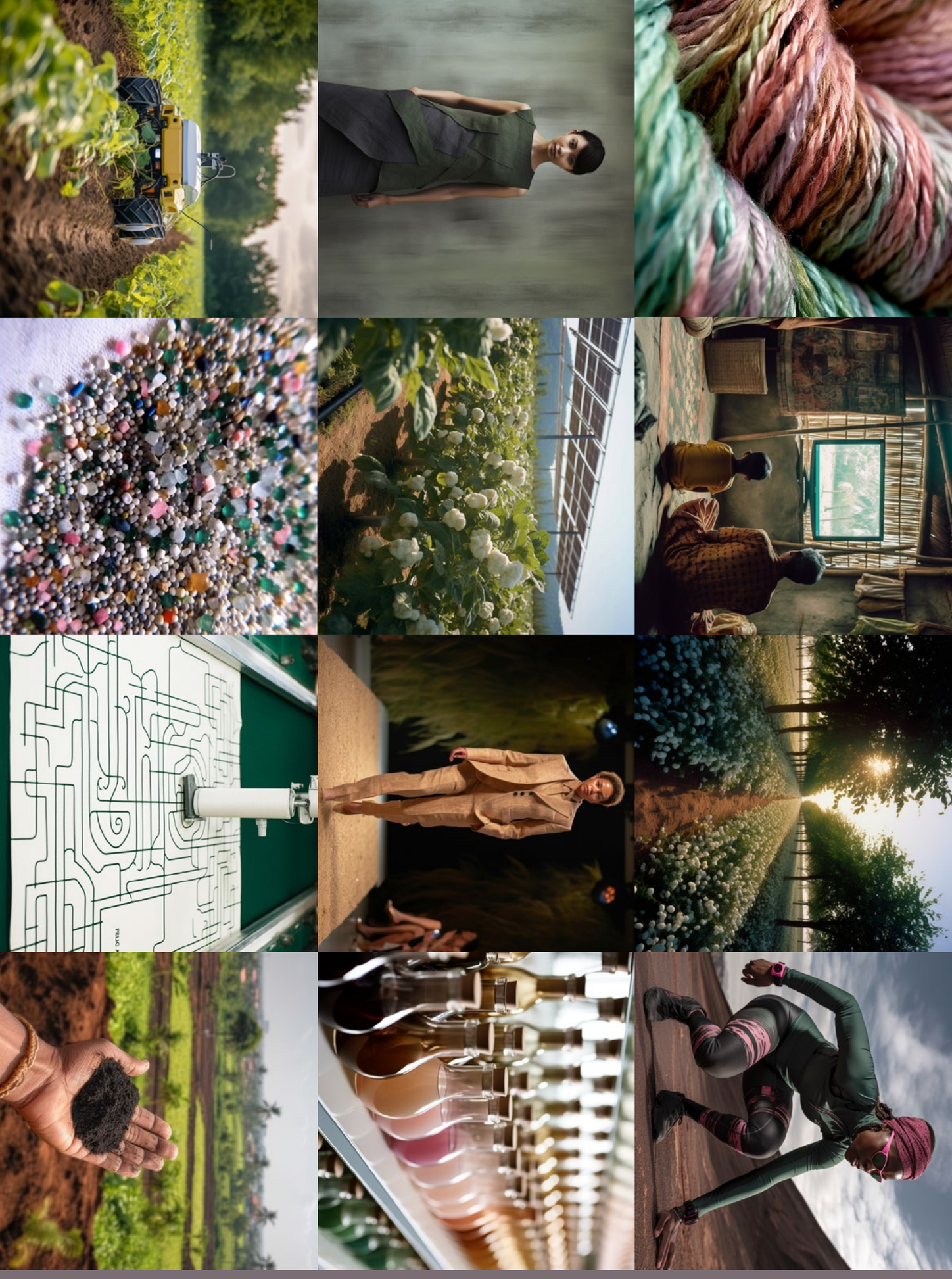
Greenwash alert: a brand that showcases this as climate action will need to make sure the apparel is made from responsible, biobased resources and with minimum expenditure of fossil energy.

Heat Waves Drive Demand for Jackets With Fans - Bloomberg

Gewapend met thermo-ondergoed komen we die koude winter wel door - De Correspondent

Stoov® | Warmtekussens & warmtedekens | We warm people

De ouderwetse lange onderbroek heeft een upgrade gekregen | Trouw



2. Materials

Use and reduce textile waste
Better Farming
Better Fibers
Better Processes | Packaging

2. Biobased, Reduced and Recycled Materials

Decarbonising while making the majority of textiles out of fossil oil is impossible, to put it bluntly. If the fashion industry is serious about becoming carbon neutral, let alone regenerative, it will eventually need to shift all of its virgin inputs (back) to natural materials.

We simply don't know how to use fossil materials without causing emissions in production, microplastics in use, and landfill or even more emissions at the end of its life. Recycling can be great, but not so much if it continues to be fed with fossil feedstocks.

The shift to natural materials must come with strict conditions though, or we risk making things worse. It must be accompanied by a reduction of virgin material use, or more deforestation may result. And we will need improved farming practices to avoid even more emissions, water use and pollution. If done right, the reward will not just be clean materials, but also more, better and healthier farming jobs.

We may also see a shift to the use of alternative natural materials, from well-known hemp and linen to seaweed-based biosynthetics, and many more. Harmful chemical dyes and treatments need to be phased out and replaced by alternatives such as algae or funghi-based ones. A regenerative material mix may end up being a blend of history and science fiction.

Use and reduce textile waste
Better Farming
Better Fibers
Better Processes | Packaging

REDUCING WASTE

Production efficiency and waste reduction is one of the areas where traditional business minds and sustainability wonks can meet without friction. Every bit of waste we eliminate avoids emissions, pollution and land use - in principle.

Overproduction and deadstock - inventory that will likely not be sold - is a huge problem for the industry, and for the planet when it is landfilled or incinerated. Accurate prediction of trends and, even better, aiming towards timeless designs, can avoid much of this. Smarter, dynamic pricing structures can help as well. Small scale production runs can prevent deadstock, but can also whip up the wasteful hype machine.

Returns that aren't sold anymore are another factor in the problem. Better, possibly AI-assisted online sizing methods reduce the need for returns, while last-mile reverse logistics can make them hassle free.

Technologies that eliminate waste include 3d-knitting and zero waste patterns. However - if the cost savings of production efficiency and waste reduction are used for creating and selling even more items, we're moving away from regeneration.

Why Telfar's New Pricing Model Matters | BoF (businessoffashion.com)

How fashion can minimise the billion-dollar return problem | Vogue Business

Breaking the pattern: The apparel brands ditching trends and seasons (fashionunited.com)

SXD | Zero Waste Design (sxd-ai.com)

IDEO | Human-Centered Design Firm | Learn More

Google thinks it has cracked virtual try on with generative AI (www.businessoffashion.com)

REMANUFACTURING

When a piece of clothing really can't or won't get worn anymore, the next best thing is to reuse its materials. Building a new item out of one or more old pieces is often the least resource intensive way to do this.

Remanufacturing is something of a cottage industry right now, but pioneering brands are aiming to scale this up massively. This can even happen in the countries where the original new pieces were made. Considering that 40% of containers go back to exporting countries empty, it's not strange to imagine them filled with used clothes destined for remanufacturing (and repair, and recycling).

Today, labour is taxed heavily while material use and pollution are not. Reversing this is key in making remanufacturing succeed.

Can Julie Pelipas Make Upcycling Work at Scale? | BoF (businessoffashion.com)

Remade in L.A. (suayla.com)

With investment, can Magliano become the next Italian heritage brand? | Vogue Business

The Excess Collection | Rapha

Hij pimpt de kleren van de 'dode witte man' - OneWorld

Recycling is often treated as the holy grail of sustainability and circularity - but in this project at least, it's only one of 50 solutions. Still, it can have a significant role to play.

Before material recycling comes in view, we need to see to it that products are kept in use in their original function for as long as possible. Next, we can remanufacture items based on deconstructed apparel - and only then should we consider reusing fibers in new textiles.

Having said that, some companies are making impressive progress in the reuse of textile fibers in new textiles. Renewcell, for instance, takes natural fibers such as cotton from discarded jeans, and turns it into Circulose, a cellulosic pulp that can be used to create, new, high quality biodegradable fibers for new clothing.

But again, recycling is no panacea. If it's based on fossil plastics, especially those that could be reused in other industries (like PET bottles), it might be counterproductive. In some cases, quality goes down and more microplastic release might result. And recycling that needs large amounts of energy may also be a barrier to a regenerative transition.

Mud Jeans and Saxion University develop the world's first fully circular jeans (fashionunited.com)

PVH joins Carbios' fibre-to-fibre consortium (fashionunited.com)

Recycled denim: Have Pangaia and Evrnu made a big breakthrough? | Vogue Business

Lenzing and mill partners to recycle Tencel | Materials & Production News | News (ecotextile.com)

Stella McCartney to pioneer new fibre-to-fibre textile recycling process | Vogue Business

Ecosystem | Ambercycle

Circ | Threading Together the Future of Circular Fashion

Refiberd | Intelligent Sorting for Textile-to-Textile Recycling

REGENERATIVE AGRICULTURE & CARBON FARMING

Regenerative agriculture is a mixture of hope and hype; it lacks clear definition and may mean different things to different people. However, it does offer the potential to farm with positive impacts such as carbon sequestration in soils.

Regenerative agriculture combines various sustainable farming techniques, often rooted in indigenous knowledge. Objectives include improving topsoils, increasing biodiversity and creating resilience to climate change. Cover crops, crop rotation and elimination of tillage may be used to protect soils.

Agroforestry or 'farming with trees' mimics the structure of natural forests, and may be applicable in the fashion system in combination with cotton or other fiber crops. It could regenerate degraded farmlands and produce additional income through the farming of various food crops.

Perennial plants such as silvergrass and eucalyptus (and even ancient versions of cotton) can stay in the ground during harvesting and can often grow on degraded farmland. This helps keep carbon in soils while large amounts of biomass, for use in textile fibers such as MMCF's, are produced efficiently. Sheep and other animals can also play a role in regenerative systems, for instance through rotational grazing.

Regenerative agriculture can give farmers better working circumstances, additional income, reduction or elimination of costs for fertilizer and pesticides, and improved long term value of their lands.

Regenerative Agriculture | Project Regeneration

Conservation Agriculture | Project Drawdown

Regenerative Annual Cropping | Project Drawdown

Perennial Biomass Production | Project Drawdown

Perennial Cotton Ratoon Cultivation: A Sustainable Method for Cotton Production and Breeding - PMC (nih.gov)

Toensmeier, The Carbon Farming Solution, page 289: perennial cottons (book)

Cotton Carbon Farming: A new opportunity for Greece | LinkedIn

Carbon capture and storage - CottonToday (cottoninc.com)

Carbon by Indigo Progress | Indigo Ag

Planting a better future via carbon credits | Acorn Rabobank

Zeewier biostimulant: verbeterde oogst en ecologisch herstel – (topicnederland.nl)

OTHER FARMING IMPROVEMENTS

Farming puts a heavy burden on the planet. Relatively straightforward improvements that almost any farmer would agree to can make a big difference, even without going fully organic or regenerative.

Pesticides and fertilizer are often overused in farming. If eliminating them is not an option, then reducing their use is still a win-win-win for costs, emissions and health. Smart data management can play a role, as well as farming robots that remove weeds and pests without pesticides or apply nutrients with surgical precision.

Cotton is often grown in areas that need vast amounts of irrigation. Switching to mostly rain-fed cotton in other areas can be a solution, but more efficient systems such as drip and sprinkler irrigation can also conserve large amounts of freshwater and reduce associated emissions.

Equipment may not be the biggest factor in farm emissions, but electrification is an improvement. Many electric tractors are hitting the market with the potential to reduce emissions and costs from fuel use. Where electric infrastructure is not available, tractors that run on biomethane may provide a solution.

Nutrient Management | Project Drawdown

Farm Irrigation Efficiency | Project Drawdown

Why artificial intelligence is key to Asia's farming future | World Economic Forum (weforum.org)

Fertiliser emissions could be cut to 'one-fifth of current levels' by 2050 - Carbon Brief

Multifunctional agricultural robot capable of farming sustainably - IO (innovationorigins.com)

AI-Powered Harvesting Robots : Vegebot (trendhunter.com)

Monarch Electric Tractor

Game changer: World's first cow-dung-powered tractor is here (interestingengineering.com)

AGRIVOLTAICS

Land is scarce, and not always easy to make a living from. Agrivoltaics, or the practice of growing crops under solar panels, is a way to increase the productivity of the land. ‘Energy’ becomes a second crop for farmers.

Sometimes one plus one is more than two. Solar panels shade plants from too much harsh sun, and help retain water in the soil. Crops can have a cooling effect, increasing the energy output of solar panels. Even farmers might benefit from the shade provided by the solar panels, especially in tropical countries.

Promising experiments with growing cotton under solar panels have started and it’s likely that other fiber or biomass crops that can be used in textiles, are suitable partners for ‘growing energy’.

40 percent higher yields for tomatoes and cotton crops (www.ise.fraunhofer.de)

Agrivoltaic solar farms offer "shocking" benefits beyond producing energy (dezeen.com)

Zonnepanelen op landbouwgrond | TNO

BIOCHAR AND ROCK WEATHERING

Biochar looks like charcoal but results from the slow, oxygen-free burning of biomass - locking carbon down for hundreds or thousands of years. The process can use biomass from sources such as agricultural waste and even sewage sludge as input.

This technique was already in use by indigenous people in the Amazon thousands of years ago - resulting in the highly fertile ‘terra preta’, or black soil that can still be found in those regions. Because besides sequestering carbon, biochar has many more benefits and potential uses. When biochar is spread across farmlands, it can increase water and nutrient retention. Biochar can also be used to filter water, and experiments are under way to use it to replace highly polluting ‘carbon black’ as a pigment in black textiles. Biochar can be produced in small furnaces as well as in large industrial complexes.

Olivine sands and other ‘rock flour’ work through different mechanisms, but also lock down atmospheric carbon while potentially improving farming output.

Under the right regulatory framework, these methods can provide additional income from carbon offsets to farmers while improving the productivity of their lands.

Biochar Production | Project Drawdown

Biochar from organic clothing (linkedin.com/posts/kathleen-draper)

How biochar works, and when it doesn't: A review of mechanisms controlling soil and plant responses to biochar - Joseph - 2021 - GCB Bioenergy - Wiley Online Library

Carbon removal you can trust. (carbonfuture.earth)

SUPPORTING FARMERS

Cotton farmers are considered ‘tier 4’ suppliers in the fashion supply chain - meaning, they are the furthest away from brand operations and often the least visible. Even though they might benefit strongly from it, their economical conditions often make it impossible for them to achieve sustainable transitions by themselves.

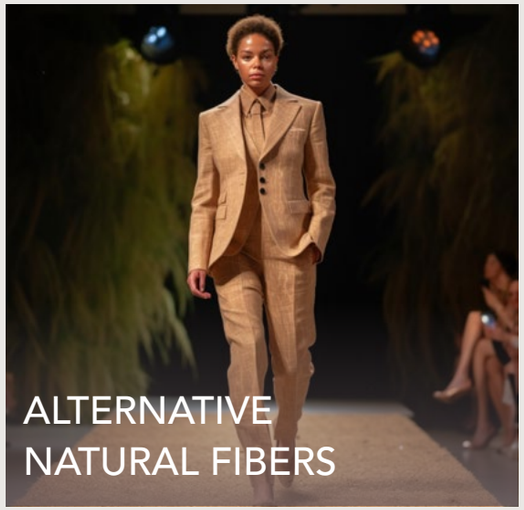
At the same time, sustainable and regenerative agriculture can form a big part of the climate- and biodiversity puzzle that the fashion industry faces, so backing farmers in ways that work for their local context is imperative. Support can come in all kinds of forms, from financial backing, to help with certifications, to fair contracts. One particularly creative method was found in Kenya, where Shamba Shake up is a popular TV show, educating and supporting farmers on profitable and sustainable agricultural approaches.

Cotton farmers - Fairtrade Foundation

Welcome to Shamba Shape Up - Shamba Shape Up

Sustainable Intensification for Smallholders | Project Drawdown

Women and Food | Project Regeneration



ALTERNATIVE NATURAL FIBERS

A century ago, fiber crops such as hemp, flax and jute were staples for the textile industry. They can be once again.

Today, those crops have been largely replaced by cotton - a wonderful, versatile fiber that unfortunately tends to need large amounts of water, pesticides and fertilizer, contributing to climate change and degradation of nature.

Giving more prominence to these alternative natural fibers (as well as less known crops such as ramie, nettle and kenaf) has immense advantages. They can restore degraded soils, grow in environments that need less water and need less pesticides and fertilizers. They extend the range of climatic conditions for growing fiber crops, for instance to cooler climates. Many of these fibers also offer superior strength, breathability and moisture wicking qualities. If they are used without mixing in plastics and other contaminants, they are recyclable, compostable, or - as a last resort - fit for safe incineration.

Global natural fiber composites market to reach $9.3 Billion by 2026 - TEXtalks | let's talk textiles...

The Future of Sustainable Materials: Milkweed Floss | Fashionista

Hemp "more effective than trees" at carbon storage says researcher (dezeen.com)

BANANATEX® | Technical fabric made from Abaca banana plants

Barktex | Tree bark fleece

Rethread Africa - textiles from sugarcane bagasse and other agricultural waste

TRANSITION TO MMCF AND BIOSYNTHETICS

Transitioning to a regenerative fashion system means moving away from fossil fuel-based plastics. Alternatives like MMCF and bioplastics offer sustainable pathways and impressive qualities.

While fossil fuel-based plastics, particularly polyester, currently dominate the fashion industry, it's hard to imagine a role for them in a regenerative fashion system.

These plastics cause greenhouse gas emissions during production and when incinerated at the end of a garment's life. Recycling might reduce the scale of the problem somewhat - but it doesn't take it away, and it might make problems like microplastics release worse.

If natural fibers don't cut it, options like MMCF (Man-Made Cellulosic Fibers) or bioplastics offer an alternative. These materials can be derived from biomass from agricultural waste and regenerative plantations and have qualities such as moisture-wicking, breathability, and a luxurious feel. When produced from fast growing crops like bamboo, eucalyptus, elephant grass or water-borne azolla fern, they turn our clothes into a type of carbon storage. Other promising developments include mycelium-based 'leather' and fibers from precision fermentation.

Kintra Fibers | Biobased Polyester

TENCELTM - Lenzing - innovative by nature

Biodegradable, endlessly recyclable cellulosic yarn (heiq-aeoniq.com)

Polyester alternative from food waste (thealttex.com)

Azolla Fern | Project Regeneration

Bamboo Production | Project Drawdown

Will Fashion's Next Generation Materials Be Brewed Like Beer? (businessoffashion.com)

Bota Bio | Industrial Microbial Production

Pangaia and NFW introduces new plant-based and plastic-free material (fashionunited.com)

Protein fibers from fermentation (spiber.inc)

Seaweed deserves a special mention as a potential new material for fashion. it's abundant, versatile, draws down carbon, and doesn't require valuable land area to grow.

Innovators include Algiknit, a company that utilizes seaweed-derived fibers to produce biodegradable and renewable yarns with a luxurious texture and a minimal ecological footprint. Another brand, SeaCell, incorporates seaweed into their textiles, offering moisture-wicking, skin-soothing, and UV-protective properties. Seaweed can also be transformed into sustainable materials for accessories such as buttons and buckles.

Beyond fabric production, seaweed can be used for biodegradable packaging and to create natural dyes, replacing the environmentally harmful synthetic dyes commonly used in the industry.

SMARTFIBER AG | SEACELL

Keel Labs - Algiknit

Phycolabs - textiles from seaweed

We make packaging disappear - Notpla

Seaweed Farming | Project Drawdown

The Seaweed Company | Capturing the value of seaweed

MICROPLASTICS ERADICATION

The exact consequences of the release of microplastics from clothes for human and planetary health are not clear yet - but it's probably not good news. It's a problem that needs to be tackled at its root - by minimizing the use of plastics in fashion.

Before that happens, there are some other things we can do. Pre-washing textiles in production (and filtering the run off) can prevent a large portion of microplastic releases, as the first washes tend to produce the bulk of the pollution. Filters on consumer washing machines may also reduce the problem.

The real solution will nonetheless be in phasing out fossil fuel-based plastics in textile production. Biobased fibers such as cotton, linen and hemp don't contribute to the microplastics problem, and any particles released by them will biodegrade. Even biobased plastics, however, might still create non-biodegradable microplastics, so this is something to monitor carefully.

Acousweep – sound wave technology that separates microplastics from water | H&M Foundation (hmfoundation.com)

Samsung Collaborates With Patagonia To Keep Microplastics Out of Our Oceans – Samsung Global Newsroom

New tech uses airflow to tackle microfibre shedding (apparelinsider.com)

ALTERNATIVE DYES AND TREATMENTS

Dyes and chemical treatments for water- and stain resistance are amongst the heavy polluters in the fashion industry. Technological and natural alternatives that are much cleaner and safer exist.

Alternatives to PFAS and similar coatings include biodegradable repellent finishes, old-fashioned waxing and plasma treatments. High quality weaves can take on some water repellent properties, even without further treatment.

Natural pigments and dyes have been around for thousands of years, and can come from such varied sources as plants, waste streams, algae, seaweed and mushrooms. Biochar pigments can store some carbon while replacing heavily polluting 'carbon black' dyes. Technologies like digital printing, continuous dyeing and waterless dyeing offer further sustainability improvements. And let's not forget that many textiles have a beautiful natural colour - without any dyeing at all.

KBCols Sciences Pvt. Ltd – KBCols Sciences Pvt. Ltd. is a technology driven startup in the field of Bioprocess Technology.

Biotech startup Werewool uses proteins from coral to dye fabrics (fastcompany.com)

Ventile - High Performance Sustainable Fabrics

Raincoats Without Toxic PFAS Chemicals Are Coming - Bloomberg

Food by-products as a dye: EarthColors by Archroma (ellenmacarthurfoundation.org)

The world's first T-shirt dyed with black algae - MaterialDistrict

Fabulous Fungi dye - MaterialDistrict

A sewage sludge-based material as pigment and additive - MaterialDistrict

What goes for our clothes, goes for their packaging too. We must use less of it, reuse and recycle, and create them from biobased, biodegradable materials.

What we don't make, doesn't pollute. Packaging must be avoided and minimized wherever possible. If we do need it, it's possible to design systems (for instance, for supplying stores) that can be reused hundreds of times.

When we design packaging systems that can be reused for years, durability of the materials used is paramount. But here too, we must eventually wean ourselves off the use of fossil resources.

In fact, the same biobased fibers that can gives us textiles (bamboo, elephant grass, hemp and many more) can be used to create durable, reusable packaging too. Slightly more exotic alternatives such as mycelium and seaweed may play a role too.

Reusable packaging solutions (www.repack.com)

We make packaging disappear - Notpla

Ecovative - Mycelium Technology | Sustainable & Biodegradable Material

Sway Seaweed Packaging (swaythefuture.com)

3. Energy
Renewable Energy | Process Improvements
Buildings and Urban Planning
Transition Support | Transport
Energy in the Use Phase

3. Renewable, Electrified and Reduced Energy

Energy use is the biggest component of the fashion industry's greenhouse gas emissions, but it gets much less press compared to circular innovations and material alternatives. That's a missed opportunity, as the switch to clean, renewable energy sources will not just bring us closer to 'net zero'. It will also drastically reduce air pollution, improve the health of workers, save heaps of cash in the long run and create new employment opportunities.

The energy transition in the fashion world, as anywhere, entails a lot more than just building wind and solar farms. Those are crucial, but there are many other exciting sources to consider. We will also need grid improvements, energy storage and electrification of many processes that currently rely on coal and gas. Transport of products may not be the biggest factor in emissions, but there are ways to both make it cleaner and improve the experience of customers at the same time.

We might not be able to see if a sweater was made with coal or with photovoltaics. But the effects of decarbonized energy on the lives of workers in the supply chain may be as dramatic as the reduction in greenhouse gasses. A healthy, energy producing factory is a great first step, but could we look even further? Can low carbon employee transport improve lives? Can comfortable worker housing become part of a clean, autonomous microgrid?

Even in use, a piece of clothing continues to need energy: when we wash it, dry it and care for it. Doing this more efficiently will reduce the strain on our electricity systems, that already have a hard time coping with far-reaching electrification and the switch to renewables.

Transitioning the fashion world to clean, renewable energy will be a gargantuan task - but there is no alternative, and the potential benefits are immense.

Renewable Energy | Process Improvements
Buildings and Urban Planning
Transition Support | Transport
Energy in the Use Phase

It is clear that the world needs to transition to carbon-free energy as soon as possible, and the fashion value chain is no different. In practice, a large part of power generation will come from wind turbines, solar farms and hydropower installations.

A crucial part of decarbonizing energy is making sure there is sufficient renewable production - somewhere. Even if the actual electrons used in a textile mill might come from coal or gas installations, clean power purchase agreements (PPA's) ensure that the same amount of energy is produced elsewhere through renewables. Advanced versions of these agreements also guarantee that clean power production matches energy use at any point in time - so yesterday's clean power can't be used to match today's dirty sources. Helping build wind- and solar farms and storage makes this clean power available.

At the largest scale, national grids need to decarbonize and massive amounts of clean power have to be introduced. For this to happen, collaborations will be needed between fashion brands, with other industrial sectors, and of course with governments.

The transition to clean power doesn't just help us halt climate change. In a country like Pakistan, for instance, it would, according to a study by professor Mark Z. Jacobsen of Stanford University, save over 200.000 lives a year, now lost to air pollution-related illnesses. It would reduce energy use and costs by some 60%. And it would add over 400.000 long-term, full-time jobs. The investments needed for this transition are high, but they can be recuperated in years, not decades. The profits of the fashion industry's top players would go along way to paying for it.

100% Wind, Water, and Solar (WWS) All-Sector Energy Roadmaps and Grid Studies for 145 Countries (stanford.edu)

The world can reach a 100% renewable energy system by or before 2050 (helsinkitimes.fi)

Leading fashion companies average profit global 2019-2021 | Statista

Renewable energy production doesn't stop at wind turbines and solar panels. Many other technologies can play important roles in the fashion supply chain, and each has its own characteristics and advantages.

Small hydropower equipment can be placed in streams and rivers without severely interrupting the flow and availability of water and can provide continuous power, largely independent of weather conditions.

Geothermal energy can be produced at various scales in regions from Indonesia to Brazil and can provide a continuous output of heat and power.

Tidal power is largely untapped, but it can provide constant energy throughout the year. As many textile producing regions are near oceans, this is worth investigating further.

Biomass can play a role, as it's freely dispatchable and doesn't require extensive infrastructure. Responsible sourcing is crucial - for instance, coming from perennial plants grown on degraded land that can't be used for much else.

Some other solutions also need to be qualified very carefully. Farm and production waste can be an important source of energy - for instance, through creating biomethane - but preventing waste in the first place is even more crucial. Existing nuclear power can be a great low carbon energy source, but building new nuclear plants takes very long and uses resources that can be used in much more efficient ways right now. Hydrogen is not an energy source, but a carrier - one that may play a small role in the fashion supply chain, but only as a last resort because of inherent inefficiencies.

And to come back to the wind and the sun: there are many variations available beyond windfarms and solar panels. The heat of the sun can be harvested directly in solar water heaters - that can even be built into roads. Concentrated solar plants are massive, utility scale operations that have built-in energy storage. And smaller wind turbines can be used on industrial compounds and even housing developments. Every situation will require its own solutions, that need to be analysed individually and through local eyes.

Small Hydropower | Project Drawdown

Small turbines turn almost any river into a hydroelectric power source - Springwise

Geothermal Power | Project Drawdown

Ocean Power | Project Drawdown

Cost Reduction Pathway of Tidal Stream Energy in the UK and France (catapult.org.uk)

Bij de Vlissingse sluizen komt een getijdenturbine: 'Hij levert meer energie dan een zonnepaneel of windmolen en je ziet 'm niet' | Zeeland | bndestem.nl

Biomass Power | Project Drawdown

Solar Hot Water | Project Drawdown

Warmte uit wegdek! - Koggenland Energie Neutraal

Concentrated Solar Power | Project Drawdown

Small windmill for farms | EAZ wind

GRID UPGRADES

Today's electrical grids - even if they function well, which is not a given - are not suited for the renewable future. They will have to transition from centralised, top-to-bottom systems with a few large power providers, to decentralised ones where local solutions can vary strongly, and many smaller power producers exist - end-users among them.

Various types of renewables, energy storage and smart, demand responsive equipment need to cooperate smoothly through these new versions of the electrical grid. On top of that, electrification of many functions currently provided by fossil fuels means that total power transmission will be higher than today.

The grid transition is much less visible than the transition to wind turbines and solar farms, but just as crucial. It needs money, technology, time and often new regulations as well.

The electricity system is undergoing a profound transformation | LinkedIn

Grid Flexibility | Project Drawdown

MICROGRIDS

If a national grid doesn't yet give us the reliable, low carbon energy we need, a microgrid can. It combines local renewable energy production with energy storage and smart load management tools.

There are many situations in the fashion world where microgrids could provide a solution. Consider for instance the possibility of providing employee housing with solar panels. Those dwellings will need little energy during working hours, which is when production facilities need it most - so the energy production from housing can be put to use in factories. On the other hand, the energy storage that is needed for reliable electricity during production, won't be needed as much when the factories are closed or less busy and can then be used by employees. Even the batteries of electric vehicles that don't need immediate use can be part of the microgrid.

Microgrids | Project Drawdown

Smart Microgrids | Project Regeneration

The sun doesn't always shine, and the wind doesn't always blow - it's a bit of a cliché, but true. Even though other renewables such as hydropower or geothermal are more constant, the world will still need large amounts of energy storage to be able to make optimal use of the intermittent production of most renewables.

Energy storage will both be needed for short term dispatch as well as longer term storage - for instance, to compensate for differences between seasons. Luckily, variants for all of these are available - but they need massive scaling.

Electric batteries such as lithium-ion ones are great for short term storage and can be used at various scales. The cold air of the night can be stored in salt batteries and used for cooling a fashion factory's floor during the day. Heat can be trapped for several months and taken out for direct warming or electricity generation. And by pumping water to higher reservoirs, energy can be stored and dispatched almost indefinitely.

Hydrogen is a form of energy storage that may be of use in some circumstances - but care must be taken, as the conversion back and forth is inefficient, so it should only be used as a last resort.

Utility-Scale Energy Storage | Project Drawdown

Energy Storage | Project Regeneration

Powin, BlackRock start working on world's largest battery – pv magazine International (pv-magazine.com)

Finnish mine to host 75 MW/530 MWh underground pumped hydro facility – pv magazine International (pv-magazine.com)

Deze nieuwe Zwitserse superbatterij bestaat bijna volledig uit water - Duurzaam energienieuws, WattisDuurzaam.nl

ARENA backs world-leading 1600MWh compressed air storage plan for Broken Hill | RenewEconomy

Finnish "sand battery" offers solution for renewable energy storage (dezeen.com)

"Brick toaster" aims to cut global CO2 emissions by 15% in 15 years (newatlas.com)

ELECTRIFICATION & EFFICIENCY

Electrification, more often than not, is efficiency. Fossil-fuelled processes tend to loose much of their energy in unused heat and other conversion losses. Electrification of industrial processes in the fashion industry is needed to make use of the electrons that are produced with carbon-free renewables, but it also creates much-needed energy savings.

Hot water boilers, often powered by fossil fuels, are used at various stages in the fashion production process, from dyeing to printing to washing to ironing. Switching from coal- and gas powered boilers to electric ones unlocks the use of renewable energy. Switching to industrial heatpumps for creating heat needs more investments, but it can reduce energy use by a factor 3 to 5. Using techniques such laser or plasma dyeing or dry chemical dyeing, instead of inefficient and polluting wet processes, can have an even bigger impact. Heat can also partially come from solar water heaters - even roads can be used for heat harvesting.

Other efficiency improvements can stem from relatively small and simple changes. Knitting a textile, for instance, needs much less energy than weaving it. And good maintenance and tuning of equipment can make a difference as well.

Liebreich: The Next Half-Trillion-Dollar Market - Electrification of Heat | BloombergNEF (bnef.com)

Electrifying Industrial Heat: A Trillion Euro Opportunity Hiding in Plain Sight - Ambienta Sgr S.p.A.

Pernod Ricard to Build $250 Million Carbon Neutral Distillery - ESG Today

Geelen Counterflow plaatst eerste elektrische droger: 'Cruci... - De Limburger

Reuzenwarmtepomp van 120 MW voor chemieconcern BASF - Duurzaam energienieuws, WattisDuurzaam.nl

DEMAND-RESPONSE STRATEGY IN TEXTILE PRODUCTION

One convenient aspect of fossil fuels is that they can - literally - be fired up whenever we need them. Not so with most renewables - their availability fluctuates with the weather, to put it simply. Energy storage can help, but a more efficient tactic is to tune our consumption to the availability of energy.

Can this work in the fashion world? It's an intriguing notion. A relatively simple switch would be to pre-heat boilers (for industrial processes, but also for building needs and even use in employee housing) when renewable electricity is cheap and plentiful. Charging of electric vehicles can be planned in this way too.

More far-reaching changes include the scheduling of energy intensive weaving when the wind blows and the sun shines, while energy efficient knitting and manual work kick in when a factory runs on limited stored energy - something we realise may not always be practical. Flexible working hours to 'fit to the weather' might help too, but need to be regulated carefully to avoid straining worker's lives even further. But for some it may work out: getting the same pay with less, but more flexible working hours.

Simply using energy when it's available - in tune with nature, one might say - may provide enormous cost savings and reduce emissions, if we can figure out how to fit it into our industrial processes.

Home – Sympower

AutoOhms | OhmHours | What are AutoOhms and OhmHours (ohmconnect.com)

HEALTHY, ENERGY EFFICIENT FACTORIES & HOUSING

The buildings and environments in the fashion value chain can help us save and produce energy, and even store carbon - while caring for people and nature.

Green roofs, white roofs, high performance glass and insulation are all ways to reduce energy use in factories - but they also minimize heat stress and other climatic influences. It's even possible to store the cool night air (for instance, in 'salt batteries') and use it for cooling purposes during the day. Ventilation improves indoor air quality. All of them together increase productivity, worker health, job satisfaction and loyalty.

Buildings can also produce energy - through solar panels and solar heaters, and even with small wind installations. Roofs and grounds can harvest and clean water - a solution that indirectly also reduces emissions.

How we construct these buildings matters. Steel and cement are carbon bombs - that no amount of energy efficiency later on can compensate for. Whenever practical, we should choose reuse and retrofits over newly built constructions. When we do build anew, biobased construction materials such as CLT (Cross Laminated Timber), bamboo, but also hemp and other fibers, can turn those bombs into carbon storage. Where concrete is still needed, carbon negative versions, for instance using biochar as the aggregate, can be used. A recent project stores 90 tons of carbon per single family home - a feat achievable by using 95% biobased building materials.

Well-constructed, all-electric employee housing can be a boon to any company, with the added benefit that it may produce energy that, during work hours, can be used in industrial processes. Zooming out further, we can even consider creating walking and cycling-friendly infrastructure that turns industrial zones into energy-positive, nature-inclusive 15-minute neighbourhoods.

'Demolition is an act of violence': the architects reworking buildings instead of tearing them down | Architecture | The Guardian

ballast-nedam.com/news/2022/ballast-nedam-development-launches-climate-positive-nature-house-made-of-straw

Singapore university unveils Asia's largest timber building | CNN (ampproject.org)

Green and Cool Roofs | Project Drawdown

High-Performance Glass | Project Drawdown

Insulation | Project Drawdown

Building affordable homes using local biowaste materials (tudelft.nl)

Carbon-Negative Concrete | Carbicrete

Be cool with the world's coolest white - MaterialDistrict

New York to deploy 30,000 window-sized electric heat pumps in city-owned apartments (bdcnetwork.com)

Fifteen-Minute City | Project Regeneration

Add-on klimaattoren koelt met zout (orangeclimate.com)

Ask a Techspert: How does a building become "water positive"? (blog.google)

How to accelerate progress on sustainability? Listen to suppliers | Vogue Business

The regenerative solutions we present here are menu items. We're pretty sure most parties in the fashion value chain will need and want to have some of these dishes, at some point - but it's not for us to say which ones, or when.

Local context is everything. Suppliers have the best insights into what works for their operation, what barriers exist to implementation and what support is needed.

Brands, on the other hand have the means, knowledge and networks that can facilitate the changes we need for a thriving regenerative fashion system. In the last chapter we discuss some possible forms of cooperation.

LOCAL PRODUCTION & NEARSHORING

Moving textile production closer to the main markets can have several climate benefits. It reduces transport emissions but more significantly, the electricity grids in developed countries tend to have much lower emissions because their power sources are cleaner.

More robust supply chains and a more stable political landscape can be amongst other reasons for moving production closer to home. It may also make vertical integration easier, which can make both decarbonisation and improvement of working conditions easier to achieve. There are caveats though. It seems very unlikely that tens of millions of textile jobs could move out of the current producing countries. And even it were possible, it would result in a human tragedy of job losses.

The best strategy is probably to do a bit of everything. Bring back some textile industry closer to the main markets, especially circular economy activities like repair and remanufacturing, that depend on local input; while at the same developing and decarbonising the supply chain in current producing countries.

The Year Ahead: Can New Production Models Help Fashion Overcome Supply Chain Woes? | BoF (businessoffashion.com)

Luxury brands are snapping up suppliers: What are the pros and cons? | Vogue Business

CLEAN(ER) LONG DISTANCE TRANSPORT

In fashion and other sectors, transport emissions tend to be surprisingly small, compared to a product's lifetime carbon emissions. On the other hand, some of those emissions are very hard to get rid of, for instance because no electrified options are available.

A good chunk of fashion's transport emissions are related to the use of air freight. Moving completely to land and sea transport is one of the most effective actions we can take, and it's possible - especially when we decide that styles and stock don't have to change by the day.

Road transport is rapidly electrifying - with bigger long distance trucks entering the game all the time. For even longer distances, electrified rail transport is increasingly becoming an alternative to fossil fuelled shipping. Even today, it's already possible to transport goods by rail from China to The Netherlands in 3 weeks or less - faster than sea freight.

If ocean freight is the only option, cleaner alternatives are becoming available too. Lower speeds, hull cleaning, and the use of sails (yes, sails!) on container ships reduce emissions significantly. Alternative fuels such as biodiesel and ammonia exist, but face many hurdles and limitations. On the other hand, there are strong indications that electrified ships will become competitive over longer and longer distances over the next years and decades.

Mercedes tempts freight operators with eActros LongHaul electric truck (newatlas.com)

New Silk Route: rail transport between China & the Netherlands | Ritra

Giant inflatable sails could make shipping greener | CNN

Rapid battery cost declines accelerate the prospects of all-electric interregional container shipping | Nature Energy

Hull Cleaning Rotterdam - Fleet Cleaner - Hull cleaning during port time

Efficient Ocean Shipping | Project Drawdown

ELECTRIC LAST MILE

Whether it is to stock stores, or to bring products to your doorstep, the ‘last mile’ might be the most important one of thousands. Innovative new transport modalities are making it clean, efficient and friendly.

Electrification is bringing us micro trucks and electric cargo bikes and other modalities that are made for the city. They take less space, are safer and create almost no noise or pollution. This in turn invites new business models such as ‘try while we wait’ - to take the hassle and waste out of the fitting process.

Laws around extended producer responsibility and increased validation of physical resources will make the last mile into a two way street. Even after years, we will be able to return any purchases conveniently - for repairs, swaps, resale or recycling. The electric vehicles we need for this are increasingly becoming available. In the best version of this future, delivery jobs will - once again - become stable, coveted work, performed by people we recognize and interact with throughout the years.

CAKE and Volta Trucks join forces to provide world's first electric microhub for last mile deliveries. | CAKE (ridecake.com)

Everything you need to know about Amazon’s electric delivery vans from Rivian

Can Fashion Finally Crack the ‘Last Mile’? | BoF (businessoffashion.com)

WALKING & CYCLING INCENTIVATION

If you take the car for a 15 km drive to buy a t-shirt, the emissions from the drive might top those of the entire lifecycle of the shirt.

Locating stores where they can easily be reached by foot, on a bicycle or by public transport, incentivises better transport habits and is part of a wave of creating healthy, attractive ‘15-minute-neighbourhoods’. Offering bicycle parking and charging points for e-bikes near stores is the cherry on the cake.

Fifteen-Minute City | Project Regeneration

Walkable Cities | Project Drawdown

Bicycle Infrastructure | Project Drawdown

New IKEA inner-city store rethinks everything | Ingka Group

A surprising amount of emissions are caused by our clothes *after* they arrive in our closet - through washing, drying and ironing. Using materials such as good old-fashioned wool or innovative, bio-based coatings and biosynthetics, that need much less washing and ironing can make the difference.

Reminding customers about the correct number of uses between washes and encouraging air drying is another good idea - that also saves them time and money.

Improvements in care technology can be expected. Washing machines should become more energy efficient and may have microplastic filters. And more and more, our appliances will be able to wait for the availability of plentiful, renewable energy when caring for our clothes, reducing emissions while saving money.

LABFRESH | Life-proof menswear. No stains. No odour. No wrinkles.

4. Fortifying Nature

The best way to stop natural destruction is to take away its causes, in the ways we discuss in the other sections. But taking direct action to fortify nature can be a worthwhile addition.

For one, it can serve as an - imperfect - way to compensate for any negative impacts we haven't been able to stop yet, as well as for the immense sum of historical emissions and pollutions the industry has caused; as long as we don't make the mistake of thinking that it makes the negatives disappear. It can also provide social and economic benefits, resilience and protection to regions and communities associated with the supply chain.

And lastly, ecosystem protection may prove to be both a financially sound investment, and an insurance of crucial ecosystem services such as pollination.

There is no shortage of ecosystems that are in dire need of protection and restoration. Fashion brands may look for projects in regions associated with the value chain, where they can bring cascading benefits to people and nature.

Loss and damage reparations is one of the many reasons why a brand might want to do this. The fashion industry is responsible for a sizable portion of worldwide climate-changing emissions, and therefore also for a large part of historic emissions. Historic emissions, that are now starting to cause flooding, heatwaves and droughts. What better way to mitigate some of these effects than by fortifying nature?

Mangrove forests can help protect coastlines in countries such as Bangladesh, Pakistan, Vietnam, Nigeria and Senegal. Forests and grasslands everywhere regulate temperature, water retention and even rainfall - services that are crucial to farmers and other inhabitants.

Ecosystem fortification isn't philanthropy - it's an act of self-preservation.

Visualizing Carbon Storage in Earth's Ecosystems (visualcapitalist.com)

A NASA scientist designed a platform to track the carbon of every tree (fastcompany.com)

Kering biodiversity strategy | Kering

Why the future of carbon should be blue | World Economic Forum (weforum.org)

Mangroves | Project Regeneration

The indigenous people that have lived in and near critical ecosystems for thousands of years are also the ones best qualified for continued stewardship.

Fashion brands can support them in many ways. They can use their political networks and communication channels to support lobbying efforts for securing land rights for indigenous people. They can use their financial muscle to support fragile communities in their efforts to prevent destructive activities such as illegal logging and detrimental construction. Introduction of technologies such as satellite monitoring can play a role.

All of it together will help keep hundreds of gigatons of stored carbon, immense biodiversity resources and invaluable human knowledge and traditions safe.

Indigenous Peoples' Forest Tenure | Project Drawdown

'It all hinges on the herders': world's largest soil carbon removal project enlists Kenyan pastoralists | Global development | The Guardian (ampproject.org)

Why protecting Indigenous communities can also help save the Earth | Climate Academy by Grounded | The Guardian

Philanthropy doesn't have to be the main motivation for implementing regenerative climate solutions . Even actions as 'natural' as ecosystem protection can make business sense, too.

An obvious first lens for a business is to see ecosystem protection as a form of climate- or biodiversity offsets; a way to counter some of the negative impacts we may not yet have been able to take away. It's important to realise, however, that **possible** positive impacts should never be used to hide **assured** negative impacts. The two should always be kept in separate categories, and reduction of the negatives always comes first.

Direct financial gains from ecosystem protection are possible too. For instance, **debt-for-nature swaps** allow a country to restructure its debt at a lower interest rate or longer maturity, with the proceeds being used in conservation projects. Investment from the private sector is key in these deals, so fashion fortunes might find a home there. More in general, the **payment for ecosystem services** movement is beginning to assign financial value to goods, services and cultures stemming from ecological resources - making them tradeable and investable.

The activities around ecosystem protection and restoration can lead to new jobs, for instance for the indigenous people that are often best suited to do the work. And if we think out of the box a little, perhaps ecosystem protection might become an optional, fulfilling part of some textile jobs, too?

Payments for Ecosystem Services: Getting Started - A Primer (unep.org)

Debt-for-Nature Swaps Gain Traction Among Developing Countries - Bloomberg

Carbon financing in action: Restoring peatlands in Indonesia | McKinsey

Value wild animals' carbon services to fill the biodiversity financing gap | Nature Climate Change

Oncra – Open Natural Carbon Removal Accounting

Hoe investeren in de natuur miljardenwinsten oplevert - VPRO

5. Investing in People

We cannot forget that the fashion industry has brought jobs and development to millions - which can be seen as a first step in regeneration. The industry must now show that it can overcome the abuses and injustices that came with the good parts. And it may well find that a safer and healthier workforce may lead to a more skilled, resilient and loyal supply chain - with benefits for brands and customers, too.

If this chapter on 'people' looks a bit short - that's because almost invariably, the solutions in the other chapters also have social benefits. Regeneration is good for people. Clean energy brings healthy air, better farming methods make for better farm jobs, regenerative business models give new validation to skill and labour, and so on. But focused attention is needed, too, especially in this industry. Living wages should be the norm, as well as safe working conditions and job security.

It's easier said than done, especially in a system that's been carefully honed for everything but this. Fair representation in decision making structures of the women, people of colour and youth that are most affected by the negative impacts of the fashion industry will be an important next step. Progress on these aspects will ultimately give fashion its social license.

Most of the regenerative solutions highlighted in this project have direct benefits for people. That doesn't absolve us from the responsibility to tackle the problem of working conditions head on.

This can mean many things, but it starts with the basics. Wages need to be set at minimum 'living wage' levels, to avoid conditions which might be considered modern slavery. Work needs to be safe - which is helped by many of the regenerative solutions here, but not guaranteed. Some job security must exist - which can only happen through long term contracts at various levels in the supply chain.

Improved working conditions could also include providing daycare services, meals, housing, healthcare and education. The right to organise should be mentioned here, too, as a way to make all of this happen.

Brands can hide behind the fact that they don't own factories and therefore have limited influence on working conditions - but that is not a law of nature. Vertical integration of suppliers into brand operations is one way to give back control and take responsibility.

We realise that it's very easy to write these things down in a few paragraphs, but extremely complicated to actually make them happen - especially in an economic system which is tuned for rock-bottom pricing and ultimate flexibility. In the last chapter, some starting points for action are discussed.

Platform Living Wage Financials – (PLWF)

The Anker Methodology for Estimating a Living Wage - Global Living Wage Coalition

Nobody left behind: Why fashion should strive for a 'just transition' | Vogue Business

Global Investors Welcome the EU's Proposed Forced Labor Ban While Urging Modifications to Strengthen its Effectiveness | Investor Alliance for Human Rights (investorsforhumanrights.org)

Women's empowerment is key to reducing climate change - Earth Day

Health and Education | Project Drawdown

There are many reasons to invest in women's education and rights. Reducing CO2 emissions isn't one of them. (sustainabilitybynumbers.com)

How much economic growth is necessary to reduce global poverty substantially? - Our World in Data

INCLUSION, DIVERSITY & EQUALITY IN THE FASHION ECOSYSTEM

The overwhelming majority of fashion workers are young women of colour, but this is not at all represented in boardrooms, even if some improvements are under way.

It's not easy to make up the regenerative balance of the fashion world. It's true that it has brought jobs to underdeveloped nations and taken tens, perhaps hundreds of millions of women out of conditions of absolute poverty. However, in a 'tradition' that spans continents and centuries, those jobs have often come with dangers, abuses and oppression.

Having a fair and inclusive representation of the different groups of stakeholders at all levels of the value chain is one of the most effective ways to achieve improvement. Women, people of colour, climate-threatened groups, youth and even future generations should be represented in boardrooms and anywhere else where crucial decisions are made.

Berlin fashion spoof causes chaos as Adidas denies involvement | Fashion industry | The Guardian

Puma invites young environmentalists to critique its sustainability strategy – edie (amppro-ject.org)

More minorities are filling supply chain roles. How can brands protect them? | Vogue Business

6. Telling the Whole Story

The complexity of the fashion supply chains, the difficulties in tracing everything that happens from farm to store, and the smokescreens that - intentionally or not - exist around this create another layer of difficulties of top of the 'real' problems of emissions, pollution and abuses. Transparency about these requires honesty, clarity and completeness.

When we fail to tell the whole story on our impacts, greenwashing is never far away. Transparent and honest communication on how products are made, what's in them, and what needs to happen once we're done using them is crucial for purchasing decisions, care and repair, and reuse and recycling. It's increasingly becoming an investment tool, too.

A first layer of transparency should be created through unified standards and labels - that are accessible enough to be used by even the smallest farmer, and simple enough to be understood at first glance by any fashion customer. Introduction of TruePrices that take externalities such as climate change contributions and social problems into account can play a role in communicating negative impacts and, eventually, in levelling the playing field for products produced with beneficial impacts. At a more granular level (digital) product passports can provide detailed information that can be used when we're purchasing items, caring for them, giving them a second life or when we're finally disposing of them responsibly.

Aligned and inclusive labels and certifications, functional and accessible product passports, and 'true' prices can all be reinvented and reframed as benefits, rather than company chores.

ALIGNED, INCLUSIVE STANDARDS & CERTIFICATION

There's a jumble of, often vague and opaque, labels and standards in the fashion world describing how a product might be 'organic', 'sustainable', 'fair' or 'responsible' - rendering them as good as useless. What is needed are clear, aligned and inclusive certifications.

In the end, what really matters is fairly simple.

1. Of each product that is created, we need to know what its contribution to the climate crisis is or - hopefully more and more - to its opposite, carbon storage, for instance through regenerative agriculture.

2. Closely related to the first one, it's important to know what other contributions to pollution or biodiversity loss were involved in creating a garment.

3. We should be empowered to know if there is a risk of compromised working conditions in the creation of a garment - or better, if there is proof of beneficial conditions.

The challenge will be in creating systems that allow the application of these factors in an universal way, while being usable by even the smallest suppliers. Technology, such as DNA identification, satellite data, blockchain and artificial intelligence may be able to help.

Xenos maakt duurzaamheid assortiment transparant met behulp van nature impact rating - Duurzaam Ondernemen (duurzaam-ondernemen.nl)

Grocer introduces receipt with carbon footprint of weekly shop | The Independent

Unilever to bring in carbon footprint labels for food | The Independent

Can Technology Fill In Fashion's Missing Data on Emissions? | BoF (businessoffashion.com)

How AI and DNA Are Unlocking the Mysteries of Global Supply Chains - The New York Times (nytimes.com)

PRODUCT PASSPORTS

If labels are traffic lights, product passports can be seen as detailed maps. As an evolution of well-known clothing labels, they can help us make informed decisions at any stage of the lifecycle of a garment.

This begins with giving us clear information on the provenance and impacts of production - as described in the previous solution. Next, they will help us with optimal care that makes our clothes last longer with minimal energy use - only washing when it's truly needed, for instance. They can help us find resources for repairing our items - either by ourselves, or via services.

And when we no longer need our items, product passports can inform a next buyer or user about their authenticity, size, age and the original price.

Finally, they can optimise recycling and responsible discarding through knowledge of composing materials and optimal processing.

Digital product passports use tools such as QR tags to enhance their functionality. They are starting to become enshrined in law, but it's also possible to imagine them as useful and fun enhancements to the life stories of our purchases.

Transparency | Another Tomorrow

You can now trace a Loro Piana garment from fibre to factory to store (fashionunited.com)

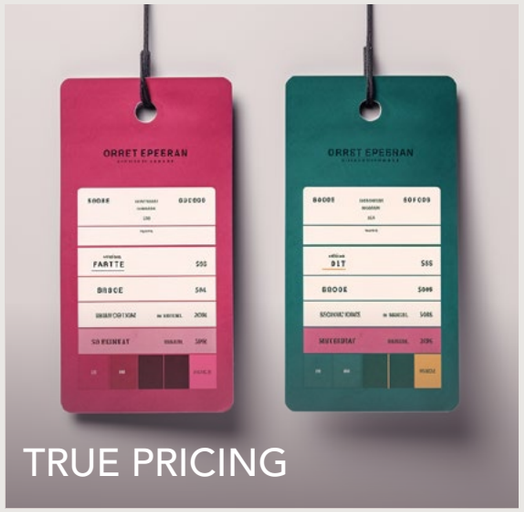
To simplify resales, Samsøe Samsøe sews QR codes into its garments (trendwatching.com)

Tracing textiles back to farmers | Remei

Is Luxury Set for Resale-Ready Products? | BoF (businessoffashion.com)

Digital Product Passport: what is it and what does it imply for the textile industry? - Generation Climate Europe (gceurope.org)

6. Telling the Whole Story



One way to communicate social and ecological impacts of a product is through 'True Pricing'. True prices add premiums for externalities such as climate change contribution, pollution of air and water, and social risks.

The TruePrice can be presented as a shadow price, to be able to compare more and less sustainable alternatives - in effect, a version of a label. A shadow TruePrice can also be used as an internal organisational tool for making decisions with the best possible outcome for people and planet, similar to how internal carbon prices are already in use. A TruePrice can also be used as the actual price of an item, although this may raise questions about what happens with the premium, or why a company seems to make more profit on an unsustainable product.

Sooner rather than later, we hope all prices become True Prices, not on a voluntary basis but through taxes and regulations. Instead of a 'green premium' there will then be a 'brown premium' - meaning that pollution, emissions and abuses finally come at a (True) cost - while social and ecological 'success' is rewarded, also in the marketplace.

Home - True Price

How Much Do Things Really Cost? | The New Yorker

It's essential that companies celebrate their sustainable successes and communicate regenerative intentions - it might even trigger a 'beneficial arms race'. Even more important though, is to put the successes in the context of the work that still needs to be done - or greenwashing ensues.

The fact is, even the big fashion brands that tell impressive stories about reducing emissions and protecting nature still have enormous carbon footprints - without exception. When their sustainability communication is all about cherry-picked, standalone (light)green successes, it becomes greenwashing.

Communication, through any channel, about subjects such as climate, pollution and workers rights should be honest and complete. Customers and other stakeholders have the right to know exactly how problematic the majority of actions of fashion brands are, in social and sustainable terms - to better be able to encourage those activities that do have positive impact.

Transparency 2.0 | White Paper by Techstyler – FibreTrace

Wereldkaart productielocaties | Zeeman

The New Rules of Sustainability Marketing | BoF (businessoffashion.com)

EU to demand clarity on climate offsetting - Apparel Insider

So what do we do?

We have presented snapshots of the regenerative future of fashion. When the solutions presented here are implemented and scaled up, the fashion ecosystem can become carbon neutral and even climate-positive. There will be beneficial impacts on nature, and people in and around the value chain can thrive. The big question is: what can we do to make it happen?

More particularly, what can ASN Bank do? To be clear: the project isn't officially at this stage yet, and you could argue that it's the most important part. The approach for the next stage will be to combine the needs of various solutions with the strengths of ASN Bank and ASN Impact Investors, and find the most powerful combinations. But even now, we can start to see the outlines of possible action.

Targeted and inclusive financing
Probably the first thing that comes to mind, when asking what a bank can do, is to provide money. Investing in areas that are underinvested, and providing access to underrepresented people and companies may be some of the most meaningful actions we can take. There's no shortage of solutions that need significant amounts of investment to get going; from energy solutions, to inclusive certifications, to emerging biomaterials. The creation of a regenerative fashion fund seems like a good possibility.

Other financial actions can include helping rich fashion brands minimize their own financed emissions, by working with sustainable banks or even becoming a type of regenerative bank themselves.

Metrics
We obviously would like fashion brands to become regenerative. But how can we tell? Can we measure it, for instance by scoring on many of the solutions presented here? This could be ASN Bank's next industry-leading financial tool, including diversified decarbonisation targets based on local contexts. It might become a publicly available dataset too, for anyone who wants to keep track of the (lack of) progress in the fashion ecosystem.

Another data-led approach could be to help companies establish the TruePrices of their products.

Fostering cooperation
The fashion world is... a bit of a mess. Its supply chain is one of the most complex in the world. The collection of NGO's involved in fashion is staggering. There seem to be more conferences about sustainable fashion than days in the year. Is there a task in 'sorting this out'? In achieving a little less conversation, and a little more action, as Elvis put it? This could be about finding out what really matters, what is really effective, and getting all the noses in the same direction. Aligning labels and certifications. Organising pre-competitive cooperation and multi-sector, multi-country conversations,

to tackle the big questions like carbon intensity of grids or climate reparations. Or it could be about helping out on the ground, where farmers and suppliers are taking the lead in decarbonisation and other sustainable improvements.

Business development
It's smart to help the companies you invest in grow, and good for the planet if those companies are on a regenerative path. A bank can help with matchmaking between investee companies, making connections inside the fashion world but also to companies outside of it. Or it could choose to help develop one 'example brand', to show the way for others.

Transition support
We have snapshots of the future - can we turn them into a roadmap? Is there interest and potential in developing the work here into a platform for long term symbiotic relationships between local banks, suppliers and brands that are looking to transition to carbon-negative, regenerative practices? By adding detail, depth and actionable tools, this could become a 'Drawdown for fashion'.

Politics
Politics, legislation and incentives have an enormous influence on the direction of society. Can we help legislators and policy makers set up the rules that will make the solutions happen faster and at scale? Which ones are not getting enough attention yet? What would an 'IRA for the textile industry' look like?

Our customers
How can ASN Bank's customers be involved in achieving the future we want? That is - without putting outsized responsibility on the end users of fashion, which is a common greenwashing techique of large companies. But still, could a bank reward customers for buying from preferred brands, or vintage? For... not buying?

The public
The regeneration of fashion makes for an interesting story, even if we say so ourselves. How might we tell that story in other ways, and make it have impact, too? Should this be a public-facing website? Might it be a streaming show? Do we need a 'Next in Regenerative Fashion'?

These are some first ideas that have popped up in the course of this project. We have no doubt that many more will follow, once we focus with all stakeholders on finding actions connected to the regenerative solutions in this document.

Fashion
Regeneration

50 Solutions | Background | Connect with us

Business Models | Materials | Energy | Nature | People | Transparency

BUSINESS MODELS / VALUE OVER VOLUME

Many of the regenerative solutions we describe in this project make business sense on top of the social and ecological benefits they deliver. So yes, it may be possible to become a company that is 'less bad' by following a trail of cost savings and sound investments. However, we'll need to move beyond the business model of 'produce as much as possible, as cheaply as possible, as fast as possible' to enjoy fashion within planetary boundaries.

→

SLOW AND DURABLE FASHION

LIFECYCLE DESIGN

REPAIRS AND UPGRADES

RECOMMERCE

RENTALS AND SUBSCRIPTIONS

REGENFLUENCING

REGENERATIVE STORES

CONNECTING TO MAKERS AND FARMERS

REGENERATIVE MESSAGES

NET-POSITIVE CAPSULES

CYCLING APPAREL


NETFLIX
Movies
TV
Originals
Recently Added
My List
Banking on Regenerative Fashion
Overview
Episodes
More like this
Details
Season 1
Season 2
Season 3
Episode 2
Banking on Regeneration
This episode focuses on the sustainable bank and its mission to create a regenerative fashion industry within a decade. We'll hear from the bank's CEO and team members about their motivations and plans for incentivizing the fashion industry to adopt more sustainable practices.
Episode 3
Value over Volume
We explore how the sustainable bank is incentivizing companies to reduce waste and extend the life of products, and hear from fashion companies that have successfully made the transition. We also examine the role of consumers in driving this change and the challenges of changing behavior.
Episode 4
Material World
This episode explores the use of sustainable materials in fashion. We'll see how new materials made from natural fibers and recycled materials are being used to create stylish and sustainable clothing items.
Episode 5
Watt's Next
This episode delves into the fashion industry's transition to renewable energy sources in its supply chain. We explore the challenges and opportunities of this transformation, including the use of solar, wind, and other sustainable energy solutions
Episode 6
Follow the Thread
This episode explores the importance of transparency and traceability in the fashion industry. We showcase fashion companies that are leading the way in implementing transparent and traceable supply chains, and discuss the role of consumers in demanding greater accountability from brands.

Contact

Michiel Cornelissen, Kode21
www.kode21.com
michiel@kode21.com

Kirsten Kossen, ASN Bank
www.asnbank.nl
kirsten.kossen@asnbank.nl

Kode21

asn bank