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Circular Business Opportunities in the Fashion Sector

How Can Businesses Lead the Way to Sustainability?

UN environment programme

Mediterranean Action Plan Barcelona Convention

Regional Activity Centre for Sustainable Consumption and Production

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STAND Up!

This document is an extract of the publication “Circular business opportunities in the Mediterranean: how can businesses lead the way to sustainable fashion?” to be used in the framework of the training activities for sustainable textile entrepreneurs of the ENI CBC Med STAND Up! project.

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Businesses / case studies

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Circular Economy Approach and Business Opportunities for the Fashion Industry

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The fashion industry is currently based on the linear economic system of take-use-waste. Globally, only 1% of fiber input is recycled back into garment production. It is clear that there is much potential for circularity in this industry.

This potential lies in the value destruction points along a value chain. The aim of a circular economy is to minimize value destruction and encourage value retention or creation across the value chain. Retention of resource value means conserving resources in as close as possible to their original state (Reike et al., 2018). Looking at the whole life cycle and the value chain, significant value destruction is evident in both production and post-production phases, including use and post-consumer processes as well.

Globally, of all fiber input used for clothing, 12% is lost during production. In addition, water, energy, and chemical consumption is very intensive both at the raw material extraction and the manufacturing stage. In-house pollution prevention and cleaner production measures as well as industrial symbiosis practices help improve the resource efficiency and circularity of the whole value chain. In the implementation of such measures, the industry has mainly focused on production phases while paying little attention to the consumer and post-consumer-related phases.

A circular economy focuses particularly on these phases and looks at the whole value chain. A fashion product that becomes waste and is sent to a landfill or incinerator represents significant value destruction, and customers buying more garments and accessories than they will actually use, and underutilizing them for various reasons, exacerbate that value destruction. A circular economy suggests that product value should be maintained over a longer time and additional value should be created.

A circular economy would mean changing the whole system and would affect all actors in a value chain. In this system, manufacturers take into consideration the entire life cycle and value chain from the very beginning and design and manufacture accordingly. Consumers try to extend the product's life span in various ways. Manufacturers, retailers, or other stakeholders like public organizations and NGOs facilitate consumer efforts by establishing the necessary infrastructure.

Services and service providers are also key for this system. A circular economy proposes a service-based approach rather than a product-based approach. New business opportunities are available for those who can provide solutions to value destruction within a chain and develop appropriate services.

Circular Economy Strategies and Business Models


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Based on value chain analysis and life cycle impacts, five main business strategies have been identified as ways to accelerate the fashion industry's transition to a circular system (Figure 4):

1) Prevent pollution & save resources
2) Recover resources after disposal
3) Extend resource use & reduce disposal
4) Increase resource utilization rate
5) Shift to circular supplies and renewable resource

The strategies are numbered one through five in order of resource value retention as well as difficulty of implementation and coordination within value chains, with five being the greatest retention value and effort required for implementation and coordination, and one being the lowest.

In the following sections, the aforementioned strategies and their relevant circular business models will be examined in detail and assessed from the perspective of applicability in the South Mediterranean.

Circular Economy Strategies

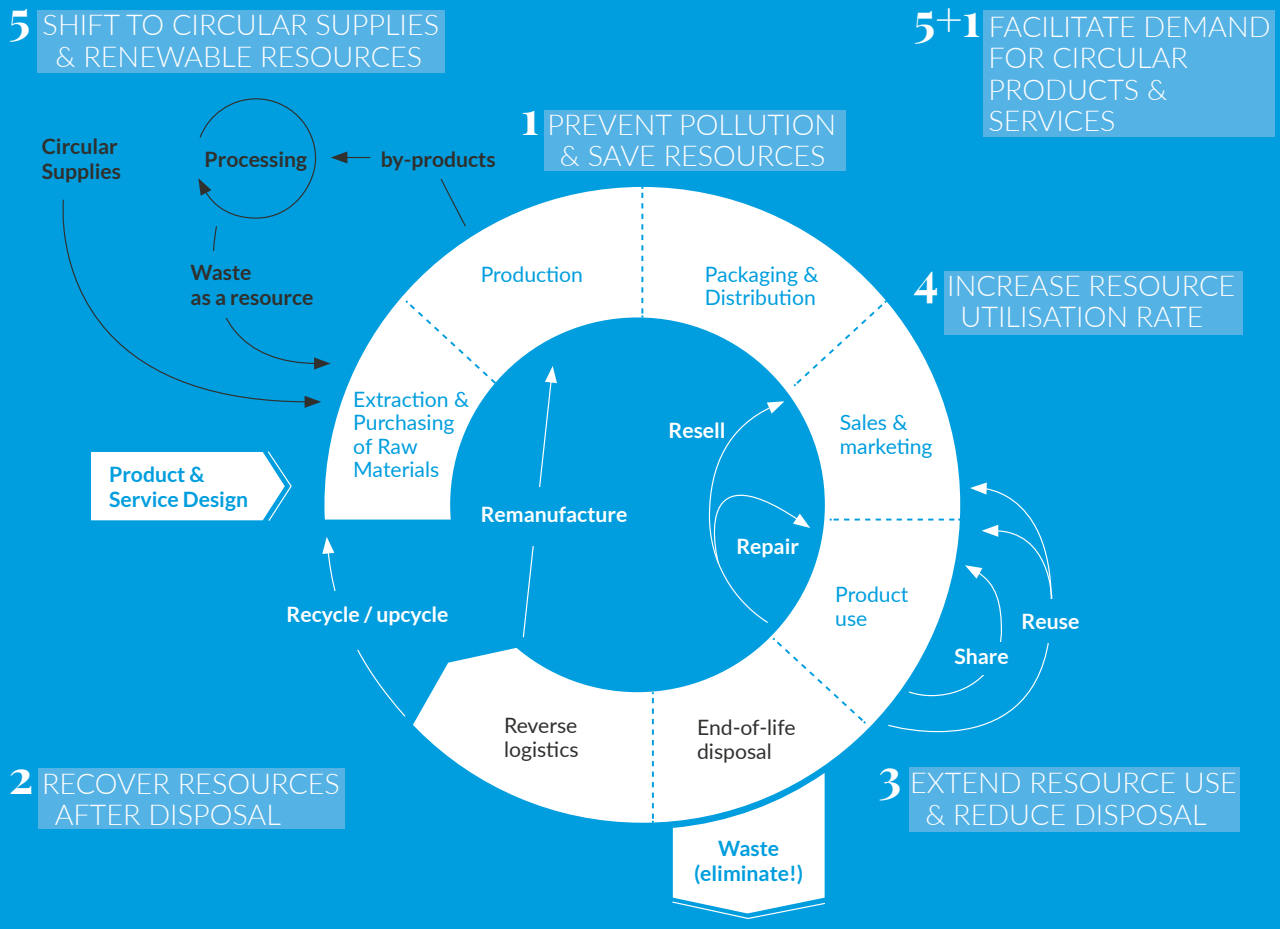

Figure 4. Circular economy strategies

Strategy 1 :
Prevent Pollution and Save Resources

This strategy is principally related with the manufacturing stage and aims at saving resources (i.e. raw material, water, energy) and preventing pollution. Usually, this strategy is linked with eco-innovations that affect production processes, including making those processes cleaner and more efficient (e.g. recycling onsite scraps, recycling wastewater in-house) so that they generate less waste and emissions and need fewer resource inputs, i.e. water, energy, and chemicals (UNIDO, 2019-b).

On the one hand, products and services are designed and production processes are organized in order to minimize all sources of waste and emissions. The aim is to eliminate air, water, and ground pollution linked with production processes. The most common pollutants that industries release are CO_2, petroleum hydrocarbons and petrochemicals, solvents, agrochemicals (pesticides, fertilizers, etc.), heavy metals, microplastics, sulfur and nitrogen oxides, persistent organic pollutants (POPs), etc.

The strategy also seeks a maximum reduction in the materials and energy needed to produce something. The intention is to produce the same product or service using significantly less raw materials and energy, or transform the product or service in a way that maximizes resource and energy efficiency in the production process (by reducing the use of resources, reducing the diversity of materials used, designing smaller and lighter products, reducing steps in production processes, reducing packaging, etc.).

Hence, the business opportunities are mainly associated with the economic and environmental benefits obtained through cleaner, resource-efficient, and zero-waste production. Relevant business model: Cleaner, Resource-Efficient, and Zero-waste Production.

Relevant business model:

Cleaner, Resource-Efficient, and Zero-waste Production.

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Cleaner, Resource-Efficient, and Zero-waste Production

This business model aims to implement cleaner and resource-efficient production within the facility, providing both environmental and economic benefits. The model, which includes a zero-waste approach as well, mainly creates value through process eco-innovation and the following eco-efficient measures: pollution prevention and reduction of resource consumption at the source (better process control, input changes, equipment modification and new process technologies); re-use and recycling of materials; and product eco-design, which is generally linked with improving input materials, especially chemicals and helps clean up the production processes as well.

From the fashion industry perspective, this includes saving water and energy, eliminating or minimizing chemicals, reduction waste, and using of low-impact and recycled feedstock. There are also opportunities to reduce the waste generated during garment production in the form of materials off-cuts and internal recycling.

Business Model Canvas





Key Partners / Stakeholders

- Raw material (fiber, yarn, fabric, etc.) and chemical suppliers that provide eco-friendly inputs and improve eco-efficiency
- Equipment and machinery suppliers that provide more efficient manufacturing systems and improved services
- Employees that implement and contribute to the cleaner production measures
- Customers (brands&retailers) that collaborate to develop more eco-efficiently produced materials, garments, and accessories
- R&D centers, universities, and consultants that collaboratively conduct the relevant R&D work and projects
- Cleaner production centers that provide technical and capacity development support
- Banks, investors, and other organizations that provide access to funding
- Public organizations that set the relevant regulations and standards and encourage such measures
- NGOs that help communicate the impacts of cleaner production measures
- Citizens that benefit from sustainable practices

Key Activities

- Conducting cleaner production and energy efficiency audits
- Identifying cleaner production opportunities
- Identifying priority areas through life cycle assessments, material flow analyses, etc.
- Conducting technical and economic feasibility studies
- Developing and implementing cleaner production, energy efficiency and zero-waste action plans
- Purchasing equipment and tools for cleaner production of materials, garments, and accessories
- Monitoring inputs and outputs
- Setting and implementing environmental management systems
- Cooperating with suppliers, consultants, and customers
- Conducting supplier checks and audits
- Training employees, contractors, and suppliers on cleaner production and resource efficiency measures and internal recycling of scraps
- Communicating with suppliers, customers, public organizations, NGOs, and other stakeholders

Value Propositions

- Provide brands&retailers with more circular and eco-friendly materials or garments and accessories and at reduced prices due to reduced operational costs
- Provide consumers with more circular and eco-efficiently produced garments and accessories, allowing them to reduce the environmental footprint of their fashion purchase practices

Key Resources

- Human resources
- Inputs including internal textile scraps, natural dyes, or low-impact chemicals and other accessories such as zips, buttons, etc. compatible with eco-efficiency targets
- Machinery and equipment for more eco-efficient production, including those for material recycling
- Energy and water
- Infrastructure: factories, offices, office material
- Production process monitoring systems
- Investment capital for new equipment and technologies
- R&D and innovation infrastructure
- Consultants and other external experts

Customer Relationships

- Joint projects and activities with brands&retailers that improve circular and eco-efficiency performance
- Relationships formed during compliance audits and when brands&retailers report their processes
- Stronger relationships with and commitments from brands&retailers
- Relationships with consumers that are more trustful and last longer
- Business-to-business commercial relationships and offline/online points of sale that provide opportunities for CE-related relationships with customers

Channels

For businesses:

- Sales: fairs, e-business portals, wholesales
- Communication: fairs, websites, social media, emails, phone calls, conferences/sectoral meetings

For consumers:

- Sales: website, apps, shops
- Communication: websites, social media, emails

Customer Segments

- Brands&retailers that produce/sell more eco-efficiently produced garments and accessories and are engaged with circular and sustainability practices
- Consumers seeking more circular and eco-friendly produced garments and accessories

Cost Structure

There are possible cost items associated with audits, implementation and sustainability:

- Human resources
- External experts and contractors
- Costs related with measurement, analysis and monitoring
- Costs related with R&D activities, trials and tests
- New equipment and technology investments
- Maintenance costs including repair and refurbishment activities
- Higher unit prices of low-impact chemicals, dyes, fabrics and other raw materials, if applicable
- Rental or acquisition of physical infrastructure (workshops, factories)
- Logistics infrastructure
- Production costs (energy, water, maintenance, etc.)
- Permit/license and certification procedures
- Development and maintenance of sales and communication activities

Revenue Streams

There are revenue streams associated with reduced costs and additional sales:

Cost reductions:

- Reduced use of raw materials and chemicals
- Water consumption and wastewater treatment
- Energy use
- Waste management and disposal
- Compliance with legislation and standards
- Increased process efficiency and productivity

Additional sales:

- Additional sales due to increased competitiveness (lower costs and prices)
- New markets for more circular and eco-friendly produced materials
- New customers for more circular and eco-efficiently produced materials

Feasibility and pay-back periods depend on the current level of eco-efficiency and extent of the measures to be applied. Pay-back periods generally vary between a couple of months to a couple of years

Potential Impacts

Economic

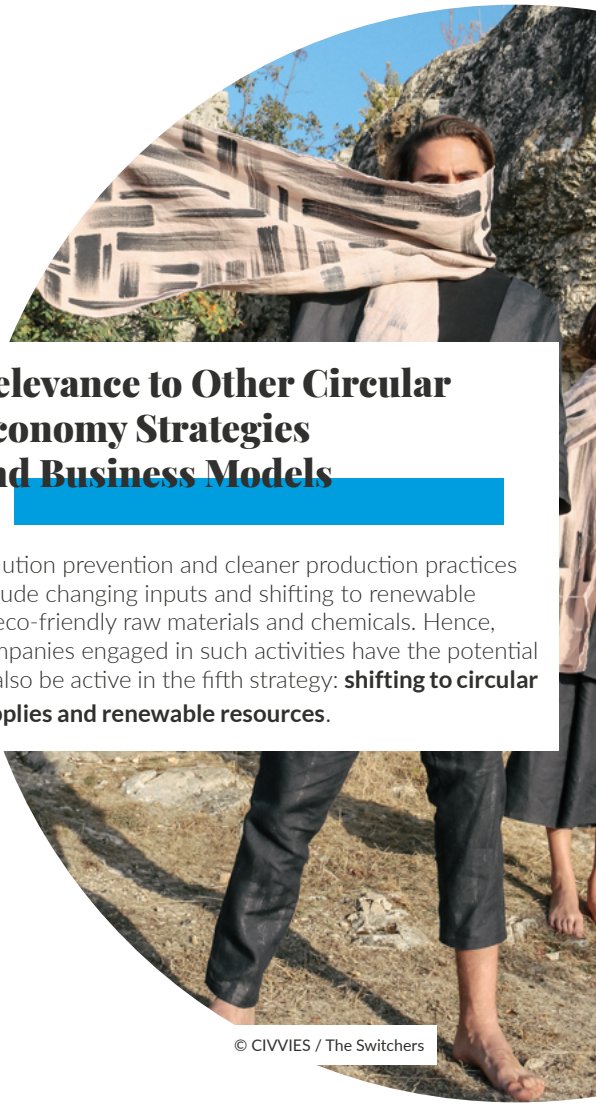
- Increased resource efficiency and reduced costs at both company and value chain levels
- Development of new products and new markets
- Increased demand for cleaner production and energy efficient services

Environmental

- Reduced chemical (hazardous and non-hazardous) use in production processes
- Eliminated/reduced hazardous chemicals content in the products
- Reduced GHG emissions
- Reduced water and energy consumption
- Reduced amount of textile waste sent to landfills
- Improved compliance with regulations and standards

Social

- A safer and cleaner environment for the community
- Products that contain no/less hazardous chemicals for consumers
- Lower-price products for consumers due to reduced production costs
- Job creation in the cleaner production services market
- Increased collaborations and interactions between companies and all stakeholders



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Relevance to Other Circular Economy Strategies and Business Models

Pollution prevention and cleaner production practices include changing inputs and shifting to renewable or eco-friendly raw materials and chemicals. Hence, companies engaged in such activities have the potential to also be active in the fifth strategy: **shifting to circular supplies and renewable resources**.

Strategy 2 :
Recover Resources After Disposal

The second strategy seeks to prevent resources from being discarded during the life cycle of a product, especially at the end of its life. The goal is to systematically replace disposal and landfill with reuse and recycling. This strategy is related to both the design-production and post-consumer-disposal phases.

Regarding the production stage, industrial symbiosis strategies can cover companies' complementary needs, matching and harmonizing their production processes: the waste management requirements of one company meet the resource needs of another. Thus, the by-products, wastes, and emissions of one production process become the inputs for another process.

For the end-of-life stage, the conceptual aim is to put an end to the idea of waste. Once a product becomes useless to the consumer, there should be a way to recover and recycle it back into production. Collection and recycling/upcycling systems and services are needed to implement this strategy.

This point of view should start at the design stage of the product. Efforts should be made to enable the easy recovery and recycling of materials and products through appropriate design features.

Relevant business models:

Design for disassembly, reassembly and recycling
Collection and recycling
Upcycling

Design for Disassembly, Reassembly, and Recycling

Once a product ceases to be functional, this business model recovers and recycles it back into production without discarded it. To this end, the product should be designed so that it can be easily disassembled, reassembled, and recycled when it reaches the end of its life. This can be achieved by using recyclable materials, avoiding mixtures of a variety of materials, and using easily separable components.

From the fashion industry perspective, this business model includes using unblended materials, like 100% cotton or another natural material, 100% polyester, non-hazardous dyes and finishes, etc., as well as avoiding zips, buttons, etc. that are difficult to separate, which obstruct processing. It is also linked to an eco-design approach. Considering the limitations of current collection and recycling facilities in the fashion industry, ensuring that the materials and products are compostable/biodegradable, in case they do not get recycled, is complementary to this business model. If a product contains both compostable and non-compostable parts, they should be easily separable so that the compostable parts can be treated appropriately.

Business Model Canvas

Key Partners / Stakeholders

- Suppliers of fabrics, non-hazardous dyes, buttons, zips, etc
- Equipment and machinery suppliers for dying, cutting, sewing, and ironing
- Designers and consultants, R&D centers, and universities for eco-design support
- Employees, including tailors and vendors
- Customers: consumers and brands&retailers
- Collection and recycling companies, brands, retailers, and designers that use recycled fabrics or garments and are interested in recycling clothes
- Banks, investors and other organizations providing access to funding
- Public organizations: municipal, regional, and national governments that implement measures to encourage businesses
- Citizens that benefit from sustainable practices

Key Activities

- Implementing a life cycle thinking approach and eco-design measures to ensure the circularity of garments through biodegradability, easily separable components, and unblended materials (100% cotton or polyester)
- Sourcing alternative raw materials and doing supplier checks to ensure product and material certification
- Purchasing equipment and tools to manufacture clothes
- Garment manufacturing processes (dying, cutting, sewing, and ironing)
- Setting up the infrastructure to manufacture and sell clothes
- Sales and distribution activities especially relevant to the communication of eco-design practices
- Communicating and interacting with consumers, suppliers, public institutions, NGOs, and other stakeholders

Value Propositions

- Provide consumers with garments and accessories that are easy to recycle, which reduces the environmental footprint of purchasing and using clothing
- Provide brands&retailers with garments and accessories that are easy to recycle, thus supporting and improving their circularity strategies
- Allow end-of-life customers, such as brands and designers with a take-back system and recycling companies, to easily identify material composition, sort garments, and implement recycling techniques and processes

Key Resources

- Human resources
- Strong eco-design capabilities
- Biodegradable fabric, natural dyes, and other materials needed to manufacture garments
- Machinery and equipment for dying, cutting, sewing, and ironing
- Energy and water
- Vehicles for distributing clothes
- Premises (factories and workshops)
- Offline and online sales infrastructure (websites, social media, apps, and physical shops)
- Office equipment
- Investment capital

Customer Relationships

- Relationships with conscious consumers that are more trustful and last longer
- Stronger relationships and greater commitments between retailer and manufacturer
- Business-to-business commercial relationships and offline/online points of sale that provide opportunities to create CE-related relations with the customers

Channels

For consumers:

- Points of sale: websites, apps, shops, markets
- Communication: websites, social media, email

For businesses:

- Points of sale: fairs, e-business portals
- Communication: websites, email, phone calls

Customer Segments

- Consumers interested in purchasing garments and accessories designed to facilitate reuse and recycling
- More common for affordable luxury and the customer segments with larger sale shares and sustainability awareness: the premium segment, young to middle aged group, womenswear
- Brands&retailers interested in selling clothes that are easy to reuse and recycle

Cost Structure

There are possible cost items associated with eco-design practices, production and communication:

- Human resources for eco-design, manufacturing, and selling
- External experts and designers for eco-design and manufacturing
- Costs related to trials and tests of eco-design measures
- Purchase of materials such as fabrics and other garments components
- Purchase and setting up of equipment and tools for dying, cutting, sewing, and ironing
- Rental or acquisition of physical infrastructure (shops, workshops, factories) and office material
- Production costs (energy, water, maintenance, etc.)
- Transportation and distribution costs
- Development and maintenance of sales and communication activities

Revenue Streams

There are revenue streams associated with sales:

Post-Consumer:

- For designers and small brands: revenue from selling to consumers
- For manufacturers: revenue from selling to retailers and brands

Feasibility and pay-back periods depend on the availability and cost of new inputs that support recyclability, the extent of the additional investments required, and the relevant markets that can be reached

Potential Impacts

Economic

- Increase in the demand for recyclable materials
- Expansion of the sustainable garment and accessories market
- Value and savings created through the use of recycled materials and elimination of virgin materials
- Expansion of the garment and accessories collection and recycling sector
- Reduction in costs associated with landfilling and incinerating end-of-life products

Environmental

- Reduction in the overall environmental impacts stemming from the extraction, processing, and waste management of non-recyclable materials products
- Reduction in the amount of garment and accessories waste landfilled or incinerated
- Improvement in the eco-design and sustainability perspective at both company and value chain levels

Social

- A safer and cleaner environment for the community
- Job creation and an increase in the demand for sustainable fashion designers
- Job creation in the garment and accessories collection and recycling sectors
- Raised awareness among consumers of eco-designed products

Relevance to Other Circular Economy Strategies and Business Models

- **Design for disassembly, reassembly, and recycling** is associated mainly with the use of recyclable materials and ease of separation of non-recyclable components. Hence, this business model is closely related and complementary to the collection and recycling business model.
- It is also linked with eco-design practices focusing on eliminating/reducing hazardous chemicals from products and production, which is part of the first strategy's business model, **cleaner and resource-efficient production & zero-waste production**.
- This business model goes hand in hand with the fifth strategy, **shifting to circular supplies and renewable resources**, since using recyclable materials promotes the use of recycled and circular supplies.
- Disassembly and reassembly features which improve recyclability can also support the third strategy, **extending resource use and reducing disposal**, by giving consumers the flexibility to use products in different ways and combinations or easily get them repaired. Hence it is possible for companies to implement both strategies at the same time, where feasible and applicable.

Collection and Recycling

This business model includes collecting, sorting, and recycling wastes as well as selling recycled materials. However, not all recycling creates the same value. When a material is transformed into something of lesser value, it is "downcycled". Some companies implement all these activities, and some specialize in only one or two of them. The business model also refers to creating and managing a network of companies through which all relevant activities of the collection, sorting, and recycling processes are implemented in coherence. Collection and recycling businesses are critical for implementing the strategy of recovering resources after disposal. It is relevant to both production waste and end-of-life garments, or pre-consumer and post-consumer waste (respectively).

Pre-consumer waste collection/ recycling in the fashion industry:

Yarn, fabric, and garment manufacturing companies generate various types of yarn and fabric wastes that differ in structure, content and size. If they can be appropriately separated within the manufacturing facility, textile recycling companies buy and recycle them to produce recycled/ regenerated fibers. This works very well with 100% pure cotton or polyester, but is also applicable to blended materials like polyester/cotton. These are all industrial symbiosis practices, improving circularity and collaboration among businesses.

Post-consumer waste collection/ recycling in the fashion industry:

This consists of collection systems, either at sale points or other collection points through collection bins, and of implementing other methods such as leasing or take-back systems. Collected items are sorted, rewearables are diverted to re-use channels, and the remaining material goes to recycling facilities. Currently, the most common recycling activity consists of producing insulation materials for the automotive and construction industries and using absorbent textiles to produce cleaning cloths, which are in essence downcycling activities. Quite a small portion of waste has been recycled back into yarn production in the form of regenerated fibers, mainly because of the complexity of mixed fibers and lack of a scalable technology.

Business Model Canvas





Key Partners / Stakeholders

- Customers: garment manufacturers, brands&retailers, recycled textile buyers, and municipalities
- Suppliers: logistics companies and cooperating collection or recycling partners
- Retailers that cooperate to collect used garments and accessories (for post-consumer only)
- Partners that organize re-use channels (for post-consumer only)
- Equipment and technology suppliers that collect and recycle pre and post-consumer textile wastes
- R&D centers and universities that improve sorting and recycling techniques
- Certification organizations
- Banks, investors and other organizations that provide access to funding
- Municipalities and NGOs that cooperate to collect end-of-life garments and accessories (for post-consumer only)
- Employees
- Public organizations: municipal, regional, and national governments that implement measures to encourage businesses
- Other public organizations that provide policy support and licenses for waste collection and acquisition
- Citizens that benefit from sustainable practices

Key Activities

- Identifying and characterizing the textile waste to be collected and recycled
- Identifying, sorting and recycling needs and technologies
- Engaging with waste producers (yarn/fabric/garment producers and consumers), collection partners, and other suppliers
- Identifying collection points and network
- Identifying the suitable recycled fiber/yarn market and engaging with potential buyerss
- Identifying or arranging re-use channels for rewearable items that would be sorted from wastes (for post-consumer only)
- Purchasing equipment and tools to collect and recycle pre and post-consumer textile wastes
- Setting up the collection, sorting, and recycling infrastructure
- Sales and distribution activities especially relevant to the communication of collection and recycling practices
- Completing relevant permit/license procedures for taking and processing wastes, if applicable
- Certifying recycled materials
- Cooperating with suppliers, municipalities, NGOs, and customers; training partners/stakeholders and raising their awareness
- Communicating with consumers, suppliers, public institutions, NGOs, and other stakeholders

Value Propositions

Pre-Consumer:

- Provide textile manufacturers with the opportunity to sell their waste rather than paying to dispose of it
- Provide textile manufacturers with recycled fibers
- Provide textile manufacturers with recycling services so their textile waste can be converted into fiber and re-introduced into their production
- Provide brands&retailers with the opportunity to valorize their unsold garments for which a more efficient way of utilization does not exist
- Provide municipalities with collection and recycling services

Post-Consumer

- Provide brands&retailers with collection, sorting and recycling services for their own products, increasing extended producer responsibility
- Provide textile manufacturers with fibers recycled directly from their own products that have been discarded by consumers
- Provide municipalities with collection and recycling services

Customer Relationships

Collection-Recycling:

- Effective collection systems, intermediaries, and networks
- Long-term agreements and commitments
- Business-to-business commercial relationships

Selling recycled materials:

- Strong and trustful relationships through standardized materials and the ability to meet customers' specific needs
- Business-to-business commercial relationships and offline/online points of sale that provide opportunities to create CE-related relationships with customers
- Commercial networks
- Using customer references

Channels

Collection and recycling: direct collection, intermediaries, e-business portals

Selling recycled materials: websites, fairs, e-business portals, offline sales

Communication: websites, email, phone calls, social media

Customer Segments

Pre-Consumer:

- Textile manufacturers generating yarn/fabric wastes
- Yarn, fabric and garment manufacturers willing to use recycled materials
- Brands&retailers willing to valorize their unsold garments
- Municipalities or municipality companies looking for solutions for pre-consumer wastes they receive

Post-Consumer:

- Brands&retailers willing to collect end-of-life garments from consumers and valorize them
- Manufacturers, brands &retailers which aim to take the responsibility of their products and have a circular supply chain
- Yarn, fabric and garment manufacturers willing to use recycled materials
- Municipalities or municipal companies interested in managing post-consumer wastes

Key Resources

- Human resources
- Textile scraps and clothes and accessories from textile/garment producers and consumers
- A reliable supplier and cooperation network
- Logistics infrastructure and vehicles for collection and distribution
- Machinery and equipment for collection and recycling
- Premises (factories, workshops and storage)
- Energy and water
- Offline and online sales infrastructure (website, social media, apps, physical shops)
- Office equipment
- Investment capital

Cost Structure

There are possible cost items associated with feasibility/R&D, investment, and operation/sustainability:

- Human resources
- Purchase of wastes (pre and post-consumer textile wastes and other)
- Purchase and setting up of a production line for recycling
- Logistics and transportation costs
- Costs associated with R&D, pilot productions, tests, analyses and monitoring
- Rental or acquisition of physical infrastructure (workshops, factories) and office materials
- Logistics infrastructure
- Transportation and distribution costs
- Production costs (energy, water, maintenance, etc.)
- Permit/license and certification procedures
- Costs for customer-supplier network management
- Development and maintenance of sales and communication activities

Revenue Streams

There are revenue streams associated with services and sales:

Services:

- Collection and collection system management services
- Sorting and recycling services
- Recycling services for manufacturer-specific wastes

Sales:

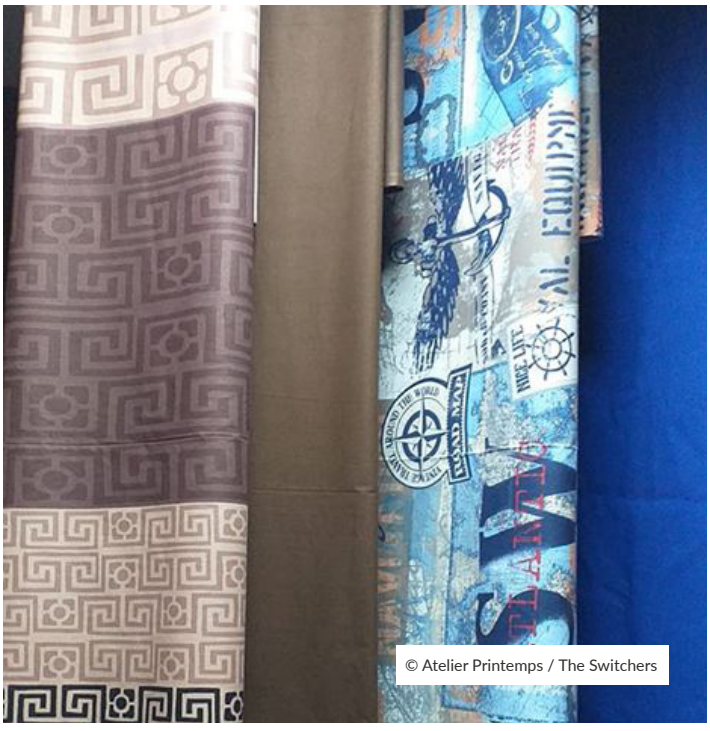
- Recycled material sales
- Rewearable garments sales

Pre-consumer wastes is generally feasible for several reasons:

- Waste producers would have to pay for the disposal of their wastes if they didn't sell it to recyclers
- Pre-consumer wastes are generally in good quality and have not been worn, and their composition is known, yielding easily and efficiently regenerated fibers
- There is a good market for regenerated fibers, and their price may even be higher than virgin materials

For post-consumer wastes, feasibility depends on several factors:

- Consumer habits related to using end-of-life garments collection systems
- Content and structure of the collected items
- Whether the technologies for sorting and recycling are sufficiently advanced
- The infrastructure available for collection and sorting
- The number of available partners to collaborate with



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Potential Impacts

Economic

- Expansion of the garment collection and recycling sector
- Expansion of recycled materials market
- Increase in demand for recyclable materials
- Value and savings created through recycled materials
- Value created through separating rewearable products

Environmental

- Reduction in the overall environmental impacts stemming from the extraction and processing of virgin materials
- Reduction in the overall environmental impacts stemming from the management of the textile and garment wastes
- Reduction in the garment wastes landfilled or incinerated

Social

- Safer and cleaner environment for the community
- Job creation in the garment collection and recycling sectors
- Raising consumer awareness of recycling and recyclable products
- Job creations and an increase in the demand for sustainable fashion designers

Relevance to Other Circular Economy Strategies and Business Models

- **Collection and recycling** is directly linked with **designing for disassembly, reassembly, and recycling,** another business model for this same strategy. Both business models promote each other.
- It also goes hand in hand with the fifth strategy, **shifting to circular supplies and renewable resources**, because recycling promotes the use of recycled materials and helps close loops.
- Internal recycling of a producer's pre-consumer waste by means of an external recycler is a cleaner production practice and hence supports the first strategy: **preventing pollution and saving resources**.
- Since it is possible to separate rewearable garments from the collected post-consumer items, collection also paves the way for **reselling**, which is a business model for the third strategy: **extending resource use and reducing disposal**.

Upcycling

Recycling is a general term used for the processes of collecting and processing waste, by-products, or other materials that would otherwise be discarded and converting them into new products. In contrast to recycling processes, where the new products have a lower value than the original, upcycling processes transform the material into products with greater value. Thus, as a business model, upcycling is the transformation of useless or unwanted products into new materials or products of better quality.

In the fashion industry, only 13% of textile inputs are converted into new materials or products. Just 1% is recycled back into the fashion industry, where it maintains its value, while the remaining 12% is used in other industries generally as insulation material or cleaning cloth, meaning that it has been downcycled. These figures show that upcycling practices in the fashion industry are rather limited as far as waste and other unwanted materials generated throughout a product's life cycle are concerned.

On the other hand, it is also known that 2% of all textile inputs are feedstock recycled from other industries, so that's where the current upcycling examples and opportunities in the fashion industry can be found. Producing synthetic fibers from PET bottle waste is a good example. The fashion industry continues to show high potential for increasing fashion-to-fashion recycling as well as using upcycled feedstock from other industries[10].

[1] The possible leakage of plastic microfibers from the washing of plastic-based textiles should be assessed, as indicated in the section 'Environmental hotspots within fashion value chains in the South Mediterranean'. Innovative solutions to this issue are currently in development, such as the Cora Ball from Rozalia Project. The Cora Ball is a device that collects microfibers as well as hair during washing, preventing them from flowing out with the drain water (SCP/RAC, 2017)

Business Model Canvas

Key Partners / Stakeholders

- Waste suppliers: textile companies, waste managers, NGOs that collect waste, and individuals that bring in old clothes
- Equipment and technology suppliers that manufacture garments and accessories
- Customers: consumers and brands&retailers
- Employees
- Banks, investors, and other organizations that provide access to funding
- Public organizations: municipal, regional, and national governments that implement measures to encourage businesses
- Other public organizations that provide policy support and licenses for waste collection and acquisition
- Citizens that benefit from sustainable practices

Key Activities

- Identifying materials to be upcycled for production (textile scraps, used clothing, and non-textile waste streams such as plastic bottles)
- Engaging with potential waste suppliers, including implementing collection methods
- Identifying required and suitable design features, including conducting test productions and getting feedback from potential customers
- Purchasing equipment and tools to manufacture garments and accessories
- Garment and accessories manufacturing processes (dying, cutting, sewing, and ironing)
- Setting up the infrastructure to manufacture and sell clothes
- Sales and distribution activities especially relevant to the communication of upcycling practices
- Completing relevant permit/license procedures for taking and processing waste, if applicable
- Communicating with consumers, suppliers, public institutions, NGOs, and other stakeholders

Value Propositions

- Provide consumers with upcycled garments and accessories, allowing them to reduce the environmental footprint of their fashion purchase practices
- Provide brands&retailers with upcycled clothes that support and improve their circularity strategies

Key Resources

- Human resources
- Wastes (textiles or other products likely to be transformed into fabric)
- Other materials needed to manufacture garments and accessories such as dyes, buttons, etc.
- Machinery and equipment for upcycling the product through dying, cutting, sewing, and ironing
- Energy and water
- Vehicles for collecting materials and/or distributing clothes
- Premises (factories and workshops)
- Offline and online sales infrastructure (websites, social media, apps, and physical shops)
- Office equipment
- Investment capital

Customer Relationships

- Relationships with consumers that are more trustful and last longer
- Usually, stronger relationships and greater commitments between retailers and manufacturers
- Powerful communication required to convey the quality of upcycled products
- Business-to-business commercial relationships and offline/online points of sale that provide opportunities to create CE-related relationships with customers

Channels

For consumers:

- Points of sale: websites, apps, shops, markets
- Communication: websites, social media, email

For businesses:

- Points of sale: fairs, e-business portals
- Communication: websites, email, phone calls

Customer Segments

- Consumers interested in purchasing garments and accessories produced from upcycled materials
- Brands&retailers willing to sell upcycled clothes and engaged in circularity and sustainability practices

Cost Structure

There are possible cost items associated with feasibility/ design, investment, and operation/sustainability:

- Human resources
- Purchase of waste (textile or other)
- Purchase of other materials (fabrics, buttons)
- Purchase of equipment for creating fabrics
- Purchase of equipment and tools for dying, cutting, sewing, and ironing
- Rental or acquisition of physical infrastructure (shops, workshops, factories) and office material
- Production costs (energy, water maintenance)
- Logistics infrastructure
- Transportation and distribution costs
- Permit/license procedures
- Development and maintenance of sales and communication activities

Revenue Streams

There are revenue streams associated with sales to consumers and/or brands&retailers:

The feasibility of this business model depends on finding favorable materials, in terms of cost, access, and continuity, as well as creating innovative, attractive, and value-added products from them. Such businesses generally start as a small-scale initiative and grow based on the market, demand, and creation of new collections/products

Potential Impacts

Economic

- Creation of new products and new markets
- Expansion of the recycling sector
- Expansion of the recycled materials market
- Value and savings created by recycled materials

Environmental

- Reduction in the overall environmental impacts stemming from the extraction and processing of virgin materials
- Reduction in the overall environmental impacts stemming from the management of the upcycled waste
- Reduction in amount of waste landfilled or incinerated

Social

- Safer and cleaner environment for the community
- Reduced prices probably due to low-cost raw materials
- Job creation in the recycling sectors
- Job creation and increased demand for sustainable fashion designers
- Job creation for women particularly, with some working from home
- Raising awareness among consumers of upcycled products

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Relevance to Other Circular Economy Strategies and Business Models

- **Upcycling** is linked with **collection and recycling**, another business model for this same strategy, since upcycling also requires collecting waste material and upcycling opportunities can be identified for suitable materials before they are channeled to recycling.
- It also goes hand in hand with the fifth strategy, **shifting to circular supplies and renewable resources**, because upcycling promotes the use of recycled materials.

Strategy 3 :
Extend Resource Use and Reduce Disposal

The third strategy is concerned with the usage and maintenance phases. It aims at extending a product's lifetime, to the greatest possible extent, and avoiding its disposal. Achieving this starts at the design stage. Circular features such as durability, longevity, and modularity as well as repairability, upgradability, and reusability can all be implemented through eco-design principles. Modular design, for instance, can facilitate the repair and substitution of a product's components, extending its life.

Maintenance and repair services as well as upgrading opportunities are also critical for the user's continued use of the product. Certain types of products can be remanufactured and refurbished, which helps restore product's initial functionality. Another option for extending product lifetime is reuse and reselling practices such as second-hand commerce.

Relevant business models:

Design for durability, long lasting and modularity
Repairing and upgrading
Reselling

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Design for Durability, Long Lasting and Modularity

In this business model, design is key for shaping how a product is manufactured and used and what happens when it is no longer needed or wanted. In other words, design features determine a product's circularity. For garments and accessories, product longevity is one of the biggest opportunities for reducing environmental footprints and enhancing circularity. If products have a longer usable life, they need to be replaced less frequently, facilitating less resource consumption and less waste generated.

Durability, long lasting and modularity are all interconnected and promote each other, being linked with several other features and practices associated with repair, upgrading, and resale. There are two types of durability, physical and emotional. Design for physical durability aims at creating garments and accessories that are resistant to wear and tear, and emotional durability is associated with generating product attachment and trust for consumers.

Durability helps products last longer, but there are several other factors. Ease of repair, disassembly, and reassembly; opportunities for upgrading; and usability for different occasions and in different ways are some other examples. Modular and standardized designs enable consumers to use garments and accessories in a flexible way, interchangeably in different combinations and styles, as well as easily repair, upgrade, substitute, and adapt them.

Business Model Canvas

Key Partners / Stakeholders

- Suppliers of fabrics, finishes, buttons, zips, and other materials
- Equipment and machinery suppliers for dying, cutting, sewing, and ironing
- Designers and consultants, R&D centers, and universities for eco-design support
- Employees
- Customers: consumers, brands&retailers, and resale and rental companies
- Banks, investors, and other organizations that provide access to funding
- Citizens that benefit from sustainable practices

Key Activities

- Implementing a life cycle thinking approach and eco-design measures to ensure the circularity of garments and accessories through durability, longevity, modularity, standardized designs, etc
- Identifying and developing suitable construction (stitching, assembly, etc.) techniques
- Sourcing suitable raw materials, finishes, buttons, zips, and other materials
- Purchasing equipment and tools to manufacture clothes
- Garment and accessories manufacturing processes (dying, cutting, sewing, and ironing)
- Setting up the infrastructure to manufacture and sell clothes
- Preparing and conveying use and maintenance guidelines that increase durability and longevity
- Sales and distribution activities especially relevant to the communication of eco-design practices
- Communicating with customers and other stakeholders

Value Propositions

- Provide consumers with garments and accessories that can be used for a long time and are easy to repair, upgrade, adapt, and resell, which reduces the environmental footprint of purchasing and using clothes and saves consumers' money
- Provide brands&retailers with durable, long-lasting, and modular garments and accessories, thus supporting and improving their brands and circularity strategies
- Provide resale and rental businesses with garments and accessories that can be used by multiple users and stand up to frequent maintenance

Key Resources

- Human resources
- Strong eco-design capabilities
- Materials that facilitate durability and longevity
- Construction techniques that facilitate durability, longevity, and modularity
- Machinery and equipment for dying, cutting, sewing, and ironing
- Energy and water
- Vehicles for distributing clothes
- Premises (factories and workshops)
- Offline and online sales infrastructure (websites, social media, apps, and physical shops)
- Office equipment
- Investment capital

Customer Relationships

- Greater product attachment and trust from consumers as well as longer-lasting relationships
- Stronger relationships with and greater commitments from brands, retailers, and resale/rental companies
- Potential communication of instructions regarding usage, maintenance, repair, etc., resulting in continuous interaction with all types of customers
- Business-to-business commercial relationships and offline/online points of sale provide opportunities to create CE-related relationships with customers

Channels

For consumers:

- Points of sale: websites, apps, shops
- Communication: websites, social media, email

For businesses:

- Points of sale: fairs, e-business portals
- Communication: websites, email, phone calls

Customer Segments

- Consumers interested in purchasing durable and long-lasting garments and accessories, with sustainability and/or economic expectations
- More common for sportswear, high-quality and luxury-premium segments, especially for the middle-aged group
- Brands&retailers interested in selling clothes that are durable and last long
- Resale and rental businesses looking for durable, long-lasting, and high-quality garments and accessories that can be used by multiple users and stand up to frequent maintenance

Cost Structure

There are possible cost items associated with eco-design practices, production, and communication:

- Human resources for eco-design, manufacturing, and selling
- External experts and designers for eco-design and manufacturing
- Costs related to trials and tests of eco-design measures
- Purchase of materials such as fabrics, zips, buttons, and other garment components
- Purchase and setting up of equipment and tools for dying, cutting, sewing, and ironing
- Rental or acquisition of physical infrastructure (shops, workshops, factories) and office material
- Production costs (energy, water, maintenance, etc.)
- Transportation and distribution costs
- Development and maintenance of sales and communication activities

Revenue Streams

There are revenue streams associated with sales and maintenance/repair services, if applicable:

Feasibility and pay-back periods depend on the market and demand for durable, long-lasting and modular products. The spread of slow fashion principles is expected to promote this business model as well. Strong design capabilities are also critical

Potential Impacts

Economic

- Increase in the demand for durable, high-quality materials
- Expansion of the sustainable garment and accessories market
- Value and savings created through reduced production and use of virgin materials
- Expansion of the garment and accessories repair and maintenance industries
- Expansion of the resale and rental sectors
- Reduction in costs associated with landfilling and incinerating end-of-life products

Environmental

- Reduction in the overall environmental impacts stemming from the extraction and processing of raw materials and from waste management of end-of-life products
- Reduction in the amount of garment and accessories waste landfilled or incinerated
- Improvement in the eco-design and sustainability perspective at both company and value chain levels

Social

- A safer and cleaner environment for the community
- Job creation and an increase in the demand for circular fashion designers
- Job creation in the repair and maintenance industries
- Economic advantages for consumers obtained by using products for longer times
- Raised consumer awareness of eco-designed products

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Relevance to Other Circular Economy Strategies and Business Models

- **Design for durability, long lasting and modularity** is linked with **repairing and upgrading**. Repair and upgrading opportunities and relevant services help products last longer and be more durable. Modularity facilitates repair and upgrade practices.
- The more durable and long-lasting a product, the more potential it has in the resale and rental markets. Therefore, this business model supports **reselling** as well as the fourth strategy and its business model, associated with **renting and leasing**.

Repairing and Upgrading

Repairing is vital to extending the life span of products and making the most of them. As a business model, this means restoring a defective product's original function by renewing or replacing the problematic parts as well as through corrective maintenance activities. For fashion products, this may include replacing zippers, fixing tears or broken seams, replacing buttons or buckles, patching, etc.

There are several features and measures that facilitate a product's repairability:

- Design features such as easy disassembly, reassembly, standardization, etc.
- Availability of repair guides and information, together with repair kits, if applicable.
- Availability of spare parts and accessories at a reasonable price and that are easily accessible.
- Repair services.

Upgrading is also a way to extend product lifetime. It aims at updating and modernizing a product's function and introducing new features, modifying products according to the changing needs or taste of users. Upgrading fashion products includes restyling, customizing, making changes or additions that make the used products more fashionable, or creating higher quality garments or accessories out of the unwanted ones.

Repairing and upgrading as a business model creates different business opportunities and can be implemented in different ways. Brands and retailers can improve their brands by integrating repair and upgrade services for their products or providing support for the durability and longevity aspects of their products. And service providers can set up businesses that specialize in repairing and upgrading defective or unwanted products from different brands. They can service both consumers directly and also businesses (brands, retailers, rental and resale companies) as a supplier.

Business Model Canvas

Key Partners / Stakeholders

- Designers that design garments and accessories for reparability/ upgradability
- Suppliers of materials and spare parts like zips, buttons, etc.
- Equipment and machinery suppliers for dying, cutting, sewing, ironing, and other repairing/upgrading operations
- Service providers that repair/upgrade, collect, and deliver garments and accessories
- Customers: consumers, brands, retailers, and second-hand and rental businesses
- Employees
- Banks, investors, and other organizations that provide access to funding
- Citizens that benefit from sustainable practices

Key Activities

- Identifying repairing/ upgrading needs and contexts
- Identifying a guarantee and pricing system
- Identifying technical needs, materials, and spare parts like zips, buttons, etc.
- Identifying required design features and conducting test productions for repairable/upgradable designs
- Engaging with suppliers, including service providers
- Engaging with brands, retailers, and second-hand and rental businesses (applicable to service providers)
- Setting up the infrastructure/network for repairing/upgrading, collection, and delivery
- Purchasing equipment and tools to repair/ upgrade garments and accessories
- Preparing repairing/ upgrading guides and kits for consumers and informing consumers about the system (applicable to brands&retailers)
- Providing repairing/ upgrading services in collaboration with service providers
- Collecting information about the most frequent repairs made and giving feedback to designers, producers, and suppliers for possible product improvements (applicable to brands&retailers)
- Continuously communicating with consumers, other customers, and suppliers

Value Propositions

- Brands&retailers can provide consumers with repairable/upgradable garments and accessories as well as the ability to easily repair and upgrade or access repairing and upgrading services
- Service providers can offer consumers repairing and upgrading services for their existing defective or unwanted garments and accessories
- Service providers can also offer brands, retailers, and second-hand and rental companies repairing and upgrading services as part of their supply chain

Key Resources

- Human resources
- Strong design and tailoring capabilities
- Materials, spare parts, etc. needed for repairable/upgradable designs as well as repairing and upgrading processes and kits
- Machinery and equipment for dying, cutting, sewing, ironing, and other repairing and upgrading operations
- Energy and water
- A collection and delivery system including delivery points and channels
- Workshops for repairing and upgrading
- Guides and kits for self-repairing and upgrading
- Offline and online service infrastructure (websites, social media, apps, and workshops)
- Office equipment
- Investment capital

Customer Relationships

Brands&retailers:

- More trustful, longer-lasting, and continuous relationships with consumers
- Communication with consumers regarding guidelines for repairing and upgrading
- An opportunity to get feedback from consumers about weaknesses and most needed repairs

Service providers:

- Possibility to create long-term relationships with consumers, through creative and good work
- Long-term relationships with businesses as a service provider and value chain supplier
- Business-to-business commercial relationships and offline/online points of sale provide opportunities to create CE-related relationships with customers

Channels

For consumers:

- Collection and delivery: points of sale, repair points, through couriers
- Repair and sale of spare parts: repair points, repair service providers
- Communication: websites, apps, social media, email, phone calls

For businesses:

- Collection and delivery: through couriers
- Communication: websites, social media, email, phone calls

Customer Segments

- Consumers willing to use garments and accessories for longer by repairing and upgrading
- Consumers looking for repairing and upgrading services for their existing defective or unwanted garments and accessories
- Brands, retailers, and second-hand and rental companies willing to outsource repairing and upgrading services

Cost Structure

There are possible cost items associated with design, investment, and operation/sustainability:

- Human resources
- Purchase of materials (fabrics, leather, yarn, etc.) and spare parts (zips, buttons, etc.) for repairing/upgrading
- Purchase and setting up of equipment and machines for repairing/upgrading
- Production of repair kits and necessary parts for repairing and upgrading
- Service providers for repairing and upgrading (applicable to brands&retailers)
- Rental or acquisition of physical infrastructure (workshops, repair points) and office material
- Repairing and upgrading operational costs (energy, water, maintenance, etc.)
- Collection and delivery costs
- Development and maintenance of service and communication activities

Revenue Streams

There are revenue streams associated with sales and repairing/upgrading services:

Brands&retailers: selling repairable/upgradable products and spare parts as well as repairing/upgrading services to consumers

Service providers: selling repairing/upgrading services to consumers, retailers, brands, and second-hand and rental companies

For brands&retailers, the feasibility of this model depends on the balance between production and repairing costs and pricing. In general, the market and demand for long-lasting, repairable/upgradable products as well as the consumers' approach to repairs are quite determinant. The spread of slow fashion principles is expected to promote this business model as well

Potential Impacts

Economic

- Increase in demand for durable, long-lasting, and high-quality materials
- Expansion of the sustainable garment and accessories market
- Value and savings created through reduced production and use of virgin materials
- Expansion of the garment and accessories repair, upgrading, and maintenance industries
- Promotion of the resale and rental sectors
- Reduction in costs associated with landfilling and incinerating end-of-life products

Environmental

- Reduction in the overall environmental impacts stemming from the extraction and processing of raw materials and from waste management of end-of-life products
- Reduction in the amount of garment and accessories waste landfilled or incinerated
- Improvement in the eco-design and sustainability perspective at both company and value chain levels

Social

- Safer and cleaner environment for the community
- Job creation and icrease in the demand for circular fashion designers
- Job creation in repair, maintenance and upgrading industries
- Economic advantages for consumers obtained by using products for longer times
- Raised awareness of consumers for the value of repairing and upgrading

Relevance to Other Circular Economy Strategies and Business Models

- **Repairing and upgrading** is linked with **design for durability, longevity, and modularity**, another business model for this same strategy. Repair and upgrading opportunities and relevant services help products last longer and be more durable. Modularity facilitates repair and upgrading practices.
- The resale and rental markets need durable, repairable products and regular maintenance and repair services. Therefore, this business model supports **reselling**, another model for this strategy, as well as supporting the four strategy and its business model, associated with **renting and leasing**.

Reselling

Reselling is one of the most popular and well-known ways of promoting reuse and reducing disposal. It mainly refers to selling and buying second-hand garments and accessories. In the fashion industry, reselling is already widely adopted all over the world. In 2019, the resale market had grown 21 times faster than the retail market over the five preceding years. In 2018, 56 million women bought second-hand products, up from 44 million in 2017 (thredUP, 2020).

As a business model, reselling appeals to businesses of different sizes, from big retailers to small retailers, from seed-stage investors to large buyout firms. Second-hand shops have existed in many countries for many years. Today this model generally functions as an online platform where users can buy and sell second-hand garments and accessories. These items can be sold through the platform for either credit or money. The platform's owners are responsible for managing the system and ensuring that the items sold on the platform are in good condition and meet the relevant criteria. Reselling opportunities encourage consumers to take good care of their garments and accessories so they can retain as much of their value as possible.

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Business Model Canvas

Key Partners / Stakeholders

- Garment and accessories providers: consumers/customers, municipalities and NGOs collecting used products, post-consumer waste collectors and recyclers, brands&retailers that provide their second-hand products
- Online platform and technology suppliers and maintenance service providers
- Suppliers that check, repair, clean, and maintain garments and accessories
- Logistics suppliers that provide storage, transportation, and packaging
- Communications and branding partners
- Insurance and legal services partners
- Customers that provide feedback and comments
- Employees
- Banks, investors, and other organizations that provide access to funding
- Citizens that benefit from sustainable practices

Key Activities

- Identifying the model details, i.e. selling/buying terms, and a credit system (if applicable)
- Establishing the technological infrastructure and a digital platform, and continuous maintenance thereof, and tracking and/or establishing an offline store (if applicable) for second-hand garments and accessories
- Engaging with brands, retailers, and other sources to create and regularly update an inventory of second-hand garments and accessories
- Setting up the infrastructure for logistics (storage, packaging, and transportation)
- Managing demand, inventory and deliveries
- Establishing a system for quality checking, maintenance, cleaning, tagging, registration, and repair activities for the garments and accessories
- Developing an effective collection and distribution scheme
- Managing agreements and other legal relationships (warranty procedures, brand approvals, etc.) with the customers and providers of garments and accessories
- Communication and marketing activities with special focus on the advantages of the second-hand clothing markets

Value Propositions

- Provide consumers with the opportunity to buy and sell second-hand fashion products, reducing their environmental footprint and benefitting them economically
- Provide brands&retailers with the opportunity and infrastructure to create and implement a second-hand market for their garments and accessories

Key Resources

- Human resources
- Online platforms and technological infrastructure (websites, apps, and social media capabilities) or offline shops
- An inventory of garments and accessories (stock)
- Offline shops (if applicable), storage, and other logistics infrastructure
- Office equipment
- Investment capital

Customer Relationships

- Long-term and strong relationships with consumers through selling/buying options and credit systems
- Trust and attachment generated through an attractive inventory and intense cleaning and maintenance services
- Opportunity to share experiences and interact through an online platform
- Business-to-business commercial relationships and offline/online points of sale provide opportunities to create CE-related relationships with customers
- Long-term and strong partnerships with brands&retailers

Channels

- Sales: websites, apps, shops, markets
- Communication: websites, social media

Customer Segments

- Consumers that want garments and accessories at low cost (generally high-quality—luxury, premium—pieces)
- Consumers willing to sell their used garments and accessories which are in good condition
- Consumers who consciously choose second-hand as a way of decreasing their environmental footprints
- Brands looking for a second-hand market for their products (generally luxury, premium products)
- Rental businesses seeking second-hand garments and accessories for their inventory

Cost Structure

There are possible cost items associated with establishment, operation, and communication:

- Human resources
- Purchase of garments and accessories for creating and updating stock
- Investment capital and supplier costs for digital infrastructure and an online platform, including maintenance and management
- Rental or acquisition of physical infrastructure (storage, office space, and physical shops (if applicable))
- Supplier costs for clothes cleaning, repairing, and maintenance
- Transportation, distribution, and other logistics costs
- Development and maintenance of transactions and communication activities

Revenue Streams

There are revenue streams associated with sales through online and offline shops and service fees from brands&retailers which use the infrastructure for reselling of their products (if applicable):

This business model is generally feasible based on the relatively low investment costs and the increased interest in consumers for second-hand in the fashion industry. It is still critical to assess the demand and habits of the community, as well as to build up attractive inventory, supported by reliable infrastructure. Online systems work better for this model. Businesses currently conducting online sales and rental/leasing activities have the option of adding reselling to their systems

Potential Impacts

Economic

- Expansion of the garment and accessories second-hand and rental/leasing markets, including associated services
- Expansion of the garment and accessories e-business market
- Value extension through reuse and the associated repair/maintenance activities
- Value creation with the opportunity of reselling pieces which are sorted from the post-consumer waste collected for recycling
- Reduced costs at the value chain level (waste management, raw materials usage, manufacturing)
- Garment production cost reduction by limiting overproducing

Environmental

- Reduced pressure on virgin resources
- Reduction in garment waste generation and landfill/incineration diversion
- Reduction in overall environmental impacts through the limited production of new items (water, GHG, chemicals, energy, waste, etc.)
- Reduction in the overall environmental impacts stemming from the management of garment and accessories waste

Social

- A safer and cleaner environment for the community
- Job creation in second-hand, collection, maintenance, and repair operations
- Job creation in the e-business sector
- Economic advantages for consumers through lower-priced products and the ability to sell their used products
- Promotion of donating used products
- Consumers encouraged to reduce their purchases of new products and to better take care of their products during the use phase
- Raising consumer awareness of sustainable shopping and the value of reusing

Relevance to Other Circular Economy Strategies and Business Models

- **Reselling** requires relatively durable and high-quality products, considering the long-term use and the increased need for cleaning. Hence, it makes space for **designing for durability and longevity**. Reselling also generally requires the **repairing and upgrading** of used products beforve they can be re-marketed.
- Additionally, this model facilitates collecting used products, and in this respect, is closely related and complementary to the **collection and recycling** business model. From another perspective, rewearable products sorted from collected post-consumer waste represent a source for second-hand markets.
- Reselling and rental/leasing businesses can be executed together and in coordination with each other. Therefore, the **reselling** model cross-cuts the fourth strategy and its business model, which aim at **increasing resource utilization rate**.

Strategy 4 :
Increase Resource Utilization Rate

This strategy is essentially linked with the use and maintenance stage and proposes focusing on functionality and use rather than product and ownership. The customer becomes more of a “user” of a service as opposed to a “consumer” of a product. The concept replaces personal attachment with product use and places control overconsumption, reducing the dependency on natural resources while increasing product quality and longevity.

One essential strategy for selling functionality instead of ownership of products is servitization. Companies evolve from selling products towards “product as a service” models which provide functionality through a combined delivery of products and services. To implement servitization, firms must shift from product-oriented business models to use-oriented ones. Instead of striving to sell the maximum number of products, companies are motivated to make a profit by extending product lifetime and facilitating usage by multiple users. One tool often used for this strategy is shared use or shared ownership, often made possible through online platforms. A large and growing number of products and services are now shared by multiple users, often called the sharing economy or collaborative economy.

In the fashion industry, the business models implemented for increasing product utilisation rate are also based on sharing products. They include rental/leasing and subscription models, generally provided through online shops.

Relevant business model:

Rental/Leasing and Subscription

Rental/Leasing and Subscription

Rental/leasing, sometimes supported by subscription systems, is the main business model for implementing the fourth strategy in the fashion industry. In this model, the provider, who typically maintains ownership of the product, becomes responsible for all the maintenance and cleaning operations,

- **Rental:** Customers pay for the rights to access a product for a short period of time, typically less than 30 days.
- **Leasing:** Customers pay for contractual rights to use a product over a longer period of time. At the end of the contract period, they are generally given the option of owning the product or giving it back.
- **Subscription:** A commitment tool that charges customers a recurring fee—typically monthly or yearly—to access a product or products, mainly through a digital platform. There are different types of subscription options based on different time periods, prices, individual style, or consumer needs and expectations.

Garment and accessories rental services have recently attracted increased attention from major global companies as well. Many different online sharing platforms are offering high-quality brands or children's or maternity clothing, while a number of boutiques and shops provide rental or leasing options to their customers. Rental and leasing also help businesses and brands keep track of their products and facilitate their collection for when they become unwearable.


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Business Model Canvas

Key Partners / Stakeholders

- Garment and accessories providers: brands, retailers, boutiques, garment manufacturers, small producers, second-hand sellers, etc.
- Online platform and technology suppliers and maintenance service providers
- Suppliers that repair, clean, and maintain garments and accessories
- Logistics suppliers that provide storage, transportation, and packaging
- Communications and branding partners
- Insurance and legal services partners
- Customers that provide feedback and comments
- Banks, investors, and other organizations that provide access to funding
- Citizens that benefit from sustainable practices

Key Activities

- Identifying the details of the model, i.e. renting/leasing terms and the subscription system (if applicable)
- Establishing technological infrastructure and a digital platform and its continuous maintenance and tracking and/or establishing an offline store (if applicable)
- Engaging with brands, retailers, and other sources to build up a garment and accessories inventory and its continuous improvement
- Setting up the infrastructure for logistics (storage, packaging, and transportation)
- Managing demand, inventory, and deliveries
- Establishing a system for the regular maintenance, cleaning, tagging, registration, and repairing of garments and accessories
- Developing an effective distribution and take-back scheme
- Managing agreements and other legal relationships (warranty procedures, etc.) with customers
- Communication and marketing activities especially focused on the advantages of rental/leasing systems

Value Propositions

- Give consumers access to a shared wardrobe, reducing the environmental footprint of using fashion products
- Offer consumers the flexibility and convenience of wearing a variety of garments and accessories that can be used on different occasions, eliminating the need to purchase new items
- Provide brands&retailers with an infrastructure through which to rent out their garments and accessories
- Help brands keep track of their garments and accessories and collect them when they become unwearable, supporting their circularity strategies

Key Resources

- Human resources
- Online platforms and technological infrastructure (websites, apps, and social media capabilities)
- An inventory of garments and accessories (stock)
- Offline shops (if applicable), storage, and logistics infrastructure
- Office equipment
- Investment capital

Customer Relationships

- Long-term and strong relationships with consumers through subscriptions
- Trust and attachment generated through an attractive inventory and intense cleaning and maintenance services
- Opportunity to share experiences and interact through an online platform
- Business-to-business commercial relationships and offline/online points of sale provide opportunities to create CE-related relationships with customers
- Long-term and strong partnerships with brands&retailers

Channels

- Sales: Website, app, shops
- Communication: websites, social media

Customer Segments

- Consumers wanting high-quality garments and accessories and unlimited wardrobes at a low cost
- More common for fast fashion wearers, millennials, young to middle-aged, from upper to middle class, or individuals that have temporarily/rapidly changed sizes
- Consumers who consciously choose renting as a way of decreasing their environmental footprints
- Brands willing to rent/lease their products (generally luxury, premium products)

Cost Structure

There are possible cost items associated with establishment, operation and communication:

- Human resources
- Purchase of garment and accessories for stock creation and improvement
- Investment capital and supplier costs for digital infrastructure and online platform including maintenance and management
- Rental or acquisition of physical infrastructure (storage area, office and physical shop (if applicable)
- Supplier costs for product cleaning, repair and maintenance
- Transportation, distribution and other logistics costs
- Development and maintenance of transactions and communication activities

Revenue Streams

There are revenue streams associated with renting/leasing fees, subscription/ membership fees, sales and services:

Subscription/Membership fees:

- One-time payment for a continuous access to garments and accessories for a certain period of time (generally annual)
- Subscription fee for becoming a member (then rental fees will be paid for each transaction)

Renting/Leasing fees:

- Pay per use payments for short time rentals (on the basis of transaction)
- Recurring payments for long term leasing (e.g. monthly payments)

Renting/Leasing fees:

- Product sales after renting/leasing period is ended, if preferred by the customer
- Service fees from brands&retailers for using the rental/ leasing infrastructure

This business model is generally feasible based on the raising interest of consumers for renting/leasing in fashion industry. Relatively longer pay back periods and cashflow challenges should be taken into account. It is also critical to assess the demand, habits of the community, as well as creating an attractive inventory, supported with a trustworthy infrastructure. Online systems work better for this model. Businesses currently making online sales can add the rental/leasing option to their systems and grow it over time based on demand and reactions

Potential Impacts

Economic

- Expansion of the rental/ leasing and second-hand markets, including associated services
- Expansion of the e-business market
- Value extension of garments through use by multiple users and the associated repair/ maintenance activities
- Value creation with the opportunity to rent pieces that haven't been sold at the end of each season
- Reduced costs at the value chain level (waste management, raw materials usage, manufacturing)
- Production cost reduction by limiting overproducing

Environmental

- Reduced pressure on virgin resources
- Reduction in garment waste generation and landfill/incineration diversion
- Reduction in overall environmental impacts through the limited production of new items (water, GHG, chemicals, energy, waste, etc.)
- Reduction in the overall environmental impacts stemming from the management of garment and accessories waste

Social

- A safer and cleaner environment for the community
- Job creation in rental/ leasing, maintenance, and repair operations
- Job creation in the e-business sector
- Lower-priced products for consumers and the ability to rent for special occasions instead of buying
- Consumers encouraged to stop purchasing unneeded clothes at such a rapid rate
- Raising consumer awareness of sustainable shopping and the value of sharing

Relevance to Other Circular Economy Strategies and Business Models

This strategy appears to be conducive to the synergistic application of multiple circular strategies. Renting/ leasing models are often outlined as a potential enabler for configuring new business models for a circular economy, stimulating lifetime extension and product take-back.

- Firstly, it requires relatively durable and high-quality products, considering the long-term use and increase in cleaning, and thus supports **design for durability and longevity**, a business model for the third strategy.
- It also cross-cuts the **repairing, upgrading** and **reselling** models under the same strategy.
- Additionally, this model facilitates collecting used products and thus is closely related and complementary to **collection and recycling**, a business model for the second strategy.

Strategy 5 :
Shift to Circular Supplies and Renewable Resources

This strategy aims at shifting from finite resources and energy to renewable resources and energy, respecting natural regeneration cycles. It concerns not just the raw material extraction stage but all other life cycle stages of a product/service. The objective is to utilize renewable energies as well as bio-based and locally and fully recyclable materials in closed loops, at every stage of a product/service life cycle. Closing the loops starts with using recyclable and circular supplies, but it also covers the use and maintenance stages. Controlling the entire value chain including suppliers as well as ensuring traceability is quite critical for efficient and safe circularity. Fully achieving that is closely related to a design stage that focuses on biological (bio-based/organic) and technical (inorganic) cycles.

The fashion industry uses both natural bio-based materials such as cotton, linen, viscose, and leather and plastic-based inorganic materials. Therefore, both biological and technical cycles should be taken into account when shifting to circular supplies and value chains. This strategy is mainly associated with two main approaches in the fashion industry: one uses circular and eco-friendly fibers and other input materials such as cotton, linen, viscose. Or recycled/recyclable inorganic materials so that circularity can be achieved at the value chain level; and the other one exerts full control over the value chains through eco-design and slow fashion perception.

Relevant business models:

Value chains driven by alternative, low-impact fibers or recycled materials

Slow fashion in full control of the value chains

© Haptic Path / The Switchers

Value Chains Driven by Alternative, Low-impact Fibers or Recycled Materials

This business model focuses on the inputs and their impacts on the circularity of value chains. The eventual goal is to achieve full recyclability and biodegradability of the materials flowing and being transformed throughout the value chain. Since textile and leather value chains include both bio-based and inorganic materials, the circularity of both types of materials and their impacts should be considered. This approach includes targeting unblended materials and cycles which are fully traceable and enable closed loops. Using certified organic cotton, recycled/recyclable cotton and polyester, and non-hazardous/bio-based dyes and finishes as well as other sustainable and natural fibers such as linen, bamboo, hemp, viscose, etc. are some of the ways this business model can be applied in the fashion industry. Organic, non-hazardous, and recycled material certifications, such as Global Organic Cotton Standard (GOTS), Global Recycled Standard (GRS), Oeko-Tex Standard 100, etc., play a critical role in ensuring traceability and safe circularity (biodegradability/recyclability). For traditional leather, in which animal skin is tanned chemically, there are also sustainable alternatives such as vegetable-tanned leather stemming from animals and bio-sourced leather-like materials made from mushrooms, rubber trees, algae, pineapple, etc.

This business model is applicable primarily to yarn, fabric, garment and accessories producers. It is possible both to start a new business with this model and to apply it to an existing business, for all products or just specific collections.

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Business Model Canvas





Key Partners / Stakeholders

- Suppliers of circular inputs and materials, such as organic cotton, linen, bamboo, recycled cotton and polyester, and non-hazardous/bio-based dyes and finishes
- Equipment and machinery suppliers for garment and accessories manufacturing
- Designers and consultants, R&D centers, and universities for eco-design support
- Employees
- Customers: individual consumers, garment producers, and brands&retailers
- Certification organizations that approve a product's compliance with relevant standards
- Banks, investors, and other organizations that provide access to funding
- Public organizations: municipal, regional, and national governments that implement measures to encourage businesses
- Citizens that benefit from sustainable practices

Key Activities

- Analyzing current supply/value chains and customer expectations to identify circular input requirements and opportunities for ensuring circular value chains
- Sourcing alternative raw materials and inputs and doing supplier checks to ensure product and material certification
- Designing, conducting R&D on, and testing the new products based on the new alternative inputs
- Getting feedback from potential customers
- Purchasing (new) equipment and tools suitable for processing the new inputs and applying new garment and accessories manufacturing methods if required
- Setting up the infrastructure to manufacture and sell fabric and/or garments and accessories
- Garment and accessories manufacturing processes (dying, cutting, sewing, and ironing)
- Identifying applicable standards, completing required product certification procedures, and getting certified
- Sales and distribution activities especially relevant to the communication of circular and sustainable inputs and products
- Communicating with consumers, suppliers, public institutions, NGOs, and other stakeholders

Value Propositions

- Provide consumers with garments and accessories that are fully biodegradable/recyclable, thus reducing the environmental footprint of purchasing and using garments and accessories
- Provide brands&retailers and garment producers with traceable fabrics or garments and accessories made of circular/sustainable materials, thus supporting them in closing the loops in the value chains of their products

Key Resources

- Human resources
- Strong eco-design capabilities and material expertise
- Circular, natural, and sustainable inputs and materials such as organic cotton, linen, bamboo, recycled cotton and polyester, and non-hazardous/bio-based dyes and finishes
- Machinery and equipment for dying, cutting, sewing, and ironing
- Energy and water
- Vehicles for distributing clothes
- Premises (factories and workshops)
- Offline and online sales infrastructure (websites, social media, apps, and physical shops)
- Office equipment
- Investment capital

Customer Relationships

- Relationships with conscious consumers that are more trustful and longer-lasting
- Stronger relationships with and greater commitment between brands&retailers and their manufacturers
- Trust generated by providing material and product certifications and standards
- Business-to-business commercial relationships and offline/online points of sale provide opportunities to create CE-related relationships with customers

Channels

For consumers:

- Points of sale: websites, apps, shops
- Communication: websites, social media, email

For businesses:

- Points of sale: fairs, e-business portals
- Communication: websites, email, phone calls

Customer Segments

- Consumers interested in purchasing garments and accessories made of circular and renewable and recyclable inputs
- Brands, retailers, and garment and accessories producers seeking traceable, circular/sustainable inputs, materials and products for closing the loops in their products' value chains

Cost Structure

There are possible cost items associated with eco-design practices, production, and communication:

- Human resources
- External experts and designers for eco-design and R&D
- Costs related to trials and tests of new products
- Certification costs
- Purchase of circular materials and inputs such as fibers, yarns, fabrics, finishes, dyes, etc. and other components
- Purchase and setting up of equipment and tools for manufacturing
- Rental or acquisition of physical infrastructure (shops, workshops, factories) and office material
- Transportation and distribution costs
- Development and maintenance of sales and communication activities

Revenue Streams

There are revenue streams associated with sales:

- For designers and small brands: revenue from selling to individual consumers
- For manufacturers: revenue from selling to garment producers and brands&retailers

Feasibility and pay-back periods depend on the availability and cost of new inputs that support circularity, the extent of the additional investments required, and the relevant markets that can be reached

Potential Impacts

Economic

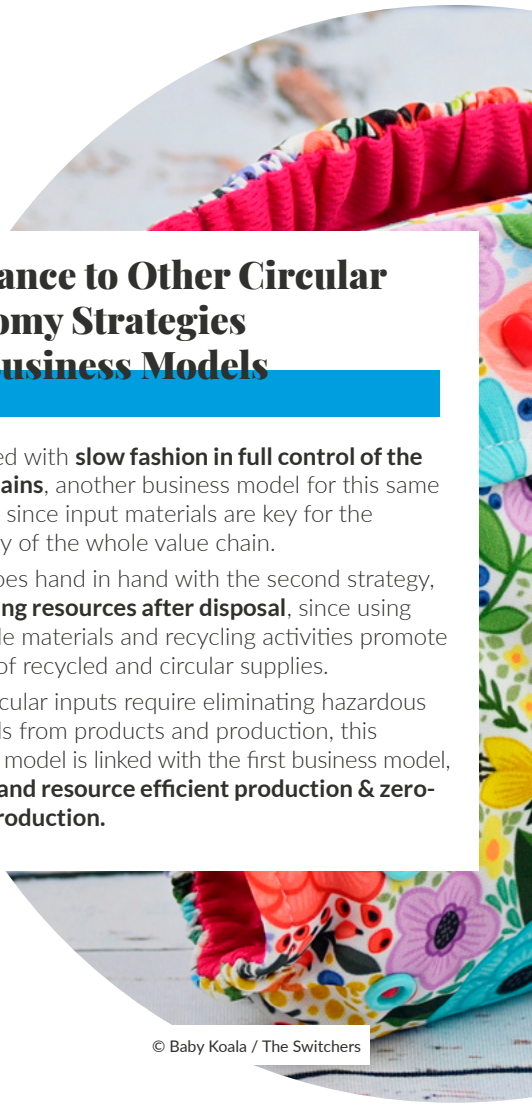
- Increase in demand for sustainable inputs and materials
- Expansion of the sustainable garment and accessories market
- Value and savings created through recycled materials and the elimination of virgin materials
- Reduction in costs associated with landfilling and incinerating end-of-life products

Environmental

- Reduction in the overall environmental impacts stemming from the extraction, processing, and waste management of non-recyclable/ biodegradable materials/ products
- Reduction in the amount of garment and accessories waste landfilled or incinerated
- Improvement in the circularity and sustainability perspective at both company and value chain levels

Social

- A safer and cleaner environment for the community
- Job creation and an increase in the demand for sustainable fashion designers
- Job creation in sustainable and circular materials and products
- Raised consumer awareness of circular products



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Relevance to Other Circular Economy Strategies and Business Models

- It is linked with **slow fashion in full control of the value chains**, another business model for this same strategy, since input materials are key for the circularity of the whole value chain.
- It also goes hand in hand with the second strategy, **recovering resources after disposal**, since using recyclable materials and recycling activities promote the use of recycled and circular supplies.
- Since circular inputs require eliminating hazardous chemicals from products and production, this business model is linked with the first business model, **cleaner and resource efficient production & zero-waste production.**

Slow Fashion in Full Control of the Value Chains

This business model is directly linked with the previous model, which mainly focuses on sustainable, renewable, and circular input materials for enabling the circularity of the value chain. This model, however, takes a wider approach and has full control of the entire value chain to ensure its sustainability and circularity.

The slow fashion approach is a response to the dominance of fast fashion and aims mainly at designing and producing sustainable, functional, durable, yet stylish garments and accessories that consumers would trust and get attached to. This is done by applying eco-design measures at every life cycle stage of a product and is generally characterized by the following features:

- High-quality, non-hazardous, sustainable materials.
- Locally sourced and produced products.
- Small batches of stylish and timeless collections released two to three times a year.
- Products sold locally, generally in relatively small shops.
- Sustainable supply chains.
- Production based on confirmed orders for efficient manufacturing and allocation of resources.

Businesses following this model generally develop their own input materials starting from extraction and/or cultivation. Alternatively, they can create a supply chain that is closely controlled and continuously supported. In addition, such businesses take into account the post-production phases and extend their responsibility accordingly to achieve a fully controlled value chain in line with the principles of life cycle and slow fashion approaches.

Business Model Canvas

Key Partners / Stakeholders

- Designers and consultants, R&D centers, and universities for eco-design support
- Suppliers of circular inputs and materials such as organic cotton, linen, bamboo, recycled cotton and polyester, and non-hazardous/bio-based dyes and finishes
- Equipment and machinery suppliers for garment and accessories manufacturing
- Suppliers that distribute and sell garments and accessories
- Employees
- Customers: individual consumers and brands and boutiques
- Certification organizations that approve a product's compliance with relevant standards
- Banks, investors, and other organizations that provide access to funding
- Public organizations: municipal, regional, and national governments that implement measures to encourage businesses
- Local stakeholders that take part in the value chain
- Citizens that benefit from sustainable practices

Key Activities

- Identifying eco-design features and critical aspects of supply and value chains according to slow fashion criteria
- Identifying suitable raw materials and inputs and production methods and designing post-product phases
- Extracting and producing circular materials or creating a reliable supply chain
- Doing supplier checks and audits to ensure product and material certification, and supporting and closely cooperating with them
- Conducting eco-design, R&D and product testing on the products obtained and getting feedback from potential customers
- Purchasing suitable equipment and tools that can process the selected inputs and applying the suitable garment and accessories manufacturing methods
- Setting up the infrastructure to manufacture and sell garments and accessories
- Garment and accessories manufacturing processes (dying, cutting, sewing, and ironing)
- Identifying applicable standards, completing required product certification procedures, and getting certified
- Sales and distribution activities especially relevant to the communication of slow fashion and eco-designed products
- Communicating with consumers, suppliers, public institutions, NGOs, local networks, and other stakeholders

Value Propositions

- Provide consumers with slow fashion products that are eco-designed, reducing the environmental footprint of purchasing and using garments and accessories
- Provide brands and boutiques with slow fashion products that are eco-designed, thus supporting them in closing the loops in the value chains of their products

Key Resources

- Human resources
- Strong eco-design capabilities and material expertise
- Sustainable raw materials and inputs, such as organic cotton, linen, bamboo, recycled cotton and polyester, and non-hazardous/bio-based dyes and finishes, that can be developed in-house or otherwise fully traced
- Machinery and equipment for dying, cutting, sewing, and ironing
- Energy and water
- Vehicles for distributing products
- Premises (factories and workshops)
- Offline and online sales infrastructure (websites, social media, apps, physical shops)

Customer Relationships

- Relationships with conscious consumers that are more trustful and longer-lasting
- Potentially stronger relationships and greater commitments between brands and other sellers
- Strengthened relationships through providing material and product certifications and standards
- Business-to-business commercial relationships and offline/online points of sale provide opportunities to create CE-related relationships with customers customers

Channels

For consumers:

- Points of sale: websites, apps, shops (generally local small shops), markets
- Communication: websites, social media, email, local networks

For brands-businesses:

- Points of sale: fairs, e-business portals
- Communication: websites, email, phone calls, local networks

Customer Segments

- Consumers interested in slow fashion and eco-designed products
- Brands or boutiques willing to sell slow fashion and eco-designed products

Cost Structure

There are possible cost items associated with eco-design practices, production, and communication:

- Human resources
- External experts and designers for eco-design and R&D
- Costs related to trials and tests of new products
- Certification costs
- Supply chain management and support for suppliers
- Purchase and/or extraction/cultivation of materials and inputs such as fibers, yarns, fabrics, finishes, dyes, etc. and other components
- Production costs (energy, water, maintenance, etc.)
- Purchase and setting up of equipment and tools for manufacturing
- Rental or acquisition of physical infrastructure (shops, workshops, factories) and office material
- Transportation and distribution costs
- Development and maintenance of sales and communication activities

Revenue Streams

There are revenue streams associated with sales to individual consumers, brands, boutiques, and other sellers:

Feasibility and pay-back periods depend on the market and demand (especially local) for slow fashion and eco-designed products as well as the availability and cost of associated inputs, supplies, and services supporting circularity and government support

Potential Impacts

Economic

- Expansion of the eco-designed slow fashion market
- Increase in demand for sustainable inputs and materials
- Value and savings created through recycled materials and the elimination of virgin materials
- Reduction in costs associated with landfilling and incinerating end-of-life products

Environmental

- Reduction in the overall environmental impacts stemming from the extraction, processing, and waste management of unsustainable materials/products
- Reduction in environmental impacts across the whole life cycle
- Reduction in the amount of garment and accessories waste landfilled or incinerated
- Improvement in the circularity and sustainability perspective at both company and value chain levels

Social

- A safer and cleaner environment for the community
- Job creation and an increase in the demand for eco-designers
- Job creation in sustainable and circular materials and products
- Raised consumer awareness of slow fashion

Relevance to Other Circular Economy Strategies and Business Models

- As a business model, **slow fashion in full control of the value chains** is linked with **value chains driven by alternative, low-impact fibers or recycled materials**, with both working towards the same strategy, since input materials are key for the circularity of an entire value chain.
- It also goes hand in hand with the third strategy, **extending resource use and reducing disposal,** in that **designing for durability and longevity** form part of slow fashion and eco-design approaches.
- Since circular inputs require the elimination of hazardous chemicals from products and production, this business model is linked with the first one, **cleaner and resource-efficient production & zero-waste production.**

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Example Cases for Circular Business Models

Strategy 1 -
Prevent Pollution and Save Resources

Cleaner, Resource-Efficient, and Zero-Waste Production
Kilim Denim / Textil Santanderina

Strategy 2 -
Recover Resources After Disposal

Design for Disassembly, Reassembly and Recycling
Rakha / Freitag

Collection and Recycling
I:CO (I:Collect) / Deniz Tekstil Grup

Upcycling
Elvis & Kresse / DYR

Strategy 3 -
Extend Resource Use and Reduce Disposal

Design for Durability, Long Lasting, and Modularity
Flavialarocca / Houdini

Repairing and Upgrading
Houdini / E-terzi

Reselling
Thred Up / Tarz2

Strategy 4 -
Increase Resource Utilization Rate

Rental/Leasing and Subscription
Ohlook / MUD Jeans

Strategy 5 -
Shift to Circular Supplies and Renewable Resources

Value Chains Driven by Alternative, Low-impact Fibers or Recycled Materials
Orta / Darwin's Botanicals

Slow Fashion with Full Control Over the Value Chains
Kilomet109 / One Square Meter

Kilim Denim - Turkey

Kilim Denim was the first denim factory in Turkey, founded in 1953, and has been making fabric for over 60 years. The manufacturing plant is located in Edirne. Having turned to exports in addition to a domestic market in the last seven years, Kilim Denim has sold Turkish fabric all over the world in its years of experience. It produces fabric and finished garments and has an annual production capacity of 12 million meters of denim and 6 million meters of non-denim fabric. It has supplied several pioneering brands like G-Star, Hugo Boss, Jack & Jones, etc.

http://kilimdenim.com/[2]

Resource-Efficient and Cleaner Production in Kilim Denim

Kilim Denim's approach to sustainability focuses on eco-friendly inputs and resource-efficient processes during fabric production. This influences their waste treatment, separation, and recycling practices as well as how they dye their fabric. Since 2015, Kilim Denim has taken several steps towards better production processes and more efficient resource use. Their primary motivations have been to increase productivity and cement their place among leading brands in sustainability, through global certification standards.

Improvements in yarn manufacturing and weaving machines

Kilim Denim modernized their yarn manufacturing and upgraded their weaving machines with an investment of 4 million EUR. New yarn manufacturing technology has enabled the manufacture of dual-core yarns, especially useful for stretch fabrics. New weaving machines have sped up the process of weaving denim fabric, increasing both the quality and diversity of fabrics produced, and all such improvements have significantly reduced resource consumption since 2015.

Improvements in indigo dyeing process

More recently, the indigo dyeing process of denim fabric has seen improvement. Previously, unfixed indigo dye that could not hold on to the warp was rinsed out during washing (overflow rinsing). This corresponded to 117 tons of water consumption and wastewater generated for one lot of indigo dyeing. Recently, Kilim Denim developed the Cactus technique in collaboration with Pulcra Chemicals to reduce water consumption by improving the overflow rinsing process. This technique uses a new chemical compound instead of a caustic bath before the first rinse and again during the first rinse after the dyeing process. This process helps all of the dye fix to the warp, no overflow rinsing is required, and water consumption drops to 8.4 tons per lot. Caustic consumption is fully eliminated and dye consumption is reduced as well. In addition to that, Kilim Denim has launched projects to eliminate hydrosulfide from the new generation of indigo dyes.

[2] All of the information contained in the present publication has been acquired through the company's official website and other public sources.

Beyond Process Innovation Towards Product Eco-design

Kilim Denim has recently developed and launched their special Re-create collection that includes all license-guaranteed pieces manufactured with organic cotton and cotton yarns recycled from used denim products (post-consumer jeans) that are GRS-certified (Global Recycle Standard). The jeans from this product line are made of 80% organic cotton, 10% cotton, and 10% post-consumer denim. Chemical finishes are not used in this collection. In addition, Kilim Denim has acquired a patent to use recycled plastic bottles from the oceans to make denim yarn and collaborated with G-Star to implement the Raw project and manufacture denim fabric from recycled polyester for their collections.

Impacts and Added Value

The cleaner production improvements Kilim Denim has made helped reduce operational costs as well as environmental impacts:

- Since 2015, improvements in yarn manufacturing and weaving machines have reduced electricity consumption by 40%, steam by 66%, fuel by 70%, and water by 65%.
- The recently developed indigo dyeing process has the potential to decrease the associated water consumption by 93% as well as caustic and dye consumptions.

For their Re-create collection, Kilim Denim uses recycled and recyclable materials, which diverts from landfills and reduces virgin material consumption. This also helps the demand for sustainable materials increase in the market.

Textil Santanderina – Spain

Textil Santanderina was established in 1923 in Cantabria, Spain, and has been manufacturing yarn and fabric since then. With its 320 employees, Textil Santanderina produces fabrics for fashion brands, industrial purposes, and protective clothing. It has a total capacity of about 20 million meters of fabric per year. Its products mainly include fabrics based on cotton and blends with linen and polyester as well as fabrics based on TENCEL™ and blends with linen and cotton. Approximately 65% of its product is exported to customers in Europe, the USA, and Asia. It works with suppliers from Spain and Europe as well as Turkey, Pakistan, and China.

https://textilsantanderina.com/

Resource-Efficient and Cleaner Production in Textil Santanderina

In its commitment to innovation and ecology, Textil Santanderina has focused on optimizing resources in production and using sustainable inputs like eco-friendly dyes and chemicals that meet REACH[3] criteria. They regularly carry out environmental audits to improve their processes and products from this perspective. The company's primary motivations are creating new products and markets, gaining reputation in the sustainable fabrics market, and cost reduction.

An integrated approach for water and energy efficiency

Especially during the last decade, Textil Santanderina has invested in energy reduction, water consumption minimization, and CO_2 emission reduction. As a part of such cleaner production practices, water and energy-efficient machines and equipment have been used and both production and administrative buildings have been renovated with elements such as automation systems and rainwater catchment, which significantly reduces water consumption.

Waste reduction and internal recycling

Through eco-efficient and cleaner production, Textil Santanderina has reduced waste generation and improved their management as well. They have focused particularly on recovering their yarn and fabric waste through the Internal Recycling Project. Internal recycling mainly covers the TENCEL™ and cotton yarns and fabric scraps generated during textile production processes such as spinning, weaving, and manufacturing. These scraps are ground up and turned into new fabrics again. Textil Santanderina cooperates with grinding companies to recycle their own waste. In addition to production waste, post-consumer garments discarded by their owners are also integrated into the recycling system because such materials are tracked at every step.

Use of eco-friendly chemicals and dyes

Textil Santanderina has developed eco-friendly dyeing and finishing methods using eco-friendly chemicals and dyes. These four methods are summarized below with the environmental benefits they provide during production.

[3] The EU regulation and standard for the Registration, Evaluation, Authorisation and Restriction of Chemicals.

	Ecolandye Ecological and efficient dyeing process, with new colors and wash effects	**Vital** Ecological and efficient dyeing process, compatible with all kinds of materials	**Naturdye** Innovative dyeing with colors obtained from natural colorants (leaves, nutshells)	**Iris** Environmentally friendly reactive dyeing process, with reactive colorants free of arylamine
Water/wastewater reduction (%)	20	92	20	50
Energy reduction (%)	40	40	40	50
Formaldehyde elimination (%)	100	-	100	-
Other specific benefits	-	-	100% of natural waste used in the dye	25% reduction in cycle time

A Wide Range of Certified, Eco-friendly Fabrics

Textil Santanderina's scrap recycling practices as well as eco-friendly dyeing and finishing processes contribute to its focus on producing a wide range of certified eco-friendly fabrics. They have produced a wide collection of fabrics based on organic and recycled fibers, complemented with new processes and the use of sustainable chemicals and dyes. They use organic cotton, recycled cotton, BCI cotton, TENCEL™, recycled polyester, etc. and eco-friendly dyes, all traceable in the supply chain.

Impacts and Added Value

Textil Santanderina has reduced its operational costs through cleaner production measures and increased its turnover with the help of sustainable fabrics. New eco-friendly products have given them the opportunity to open new markets.

Cleaner production measures, including internal scrap recycling, have saved resources and reduced associated environmental impacts, especially through the reduction of virgin raw material, water, and pesticides as well as CO_2 emissions. By using eco-friendly chemicals and dyes Textil Santanderina could save water by 20 to 92%, energy by 40 to 50%, and up to 100% of formaldehyde, based on the type of the chemicals and methods used.

For its eco-friendly collections, the company uses recycled and recyclable materials, diverting from landfills and reducing virgin material consumption. This also helps the demand for sustainable materials increase in the market.

Rakha – UK

Rakha was first established in 2010 in Istanbul, Turkey, and launched its sister company in London in mid-2011. They claim responsibility for every garment they produce by focusing on the sustainability and natural degradation of materials. They produce contemporary and delicate garments for women who are design conscious and like to wear comfortable but stylish clothing year-round. Their target customer segment is 35 to 45-year-old women in the premium price segment of between 70 and 275 EUR. Gözde¸Taskın, the founder of the brand, has continuously developed more sustainable business models for the company and its products. While Rakha's home market is the UK, they are reaching a considerable number of customers on the USA West Coast and in Northern Europe. They have also maintained a long-term relationship with their suppliers based mainly in Turkey but also Germany, Italy, and India.

https://rakha.co.uk/

Design for Recirculation with a Life Cycle Thinking Approach

Rakha's main focus is a life cycle thinking approach for product designs that enable circularity in every life cycle phase. The goal of the brand is to ensure that all products and components can be recirculated on an on-going basis without compromising design or aesthetics.

Rakha products are sold through its own physical and online shops as well as by several other sellers that have social and environmental priorities.

Biodegradable (naturally recyclable) materials

Rakha ideally aims to redirect every product into a biological cycle after its use. They ensure biodegradability to protect against consumers throwing their clothes away, considering that currently only 1% of clothing is recycled, and only 0.1% of this 1% is post-consumer waste at a global scale. In line with the aim, Rakha makes an effort to use only unblended materials to create its garments, ensuring that all of its products are either biodegradable or recyclable. Their materials include natural or recyclable/recycled fibers, such as organic cotton, linen, or poplin, as well as complementary components like wooden or seashell buttons, palm tree seeds, and organic prints. Products hold various certifications such as the GOTS, PETA Vegan and, GRS labels.

Circular design

For Rakha, it is important to implement circularity from the very beginning of a product's life cycle. So in addition to using circular materials and components, Rakha takes cares to design for disassembly as part of its circular design principles. This includes using minimal components that are easy to separate as well as plain and simple designs.

Rakha has also recently collaborated with the University of Cambridge's Institute for Manufacturing on a project called In the Circle. The purpose is to identify and experiment with circular economy business model innovations that are relevant to each of Rakha's product segments. With a life cycle thinking approach, the project aims to enable circularity from conception and through every life cycle phase, through the design and development of a circular capsule collection that could be integrated in both biological and technical cycles.

Slow Fashion Approach

Rakha is for women who want to shop contemporary and premium collections but also prefer more sustainable products. Instead of following seasons and trends, the focus is on re-designing classic pieces, regarded as timeless, basic, and inspired by classic shapes. The pieces are generally casual and comfortable while conveying sophisticated style. Many of them are a guaranteed go-to for a variety of occasions and can effortlessly transition from day to night. Durable fabrics such as strong linen are used. In addition, production is based on confirmed orders for an efficient manufacturing process that allocates all their products to buyers.

Impacts and Added Value

Rakha has increased their turnover and in the last four years expanded their customer base in over 15 different countries. This growing business helps increase the demand for sustainable materials thanks to the 3.5 tons of organic and biodegradable textile materials Rakha uses per year.

That is 3.5 annual tons of non-renewable materials that are not extracted and processed, and thus, diverted from landfills and incineration. All environmental impacts associated with these processes are eliminated.

Rakha's In the Circle project has a social dimension as well, supporting Syrian refugee women in Turkey by allocating part of the project's production to the women via a charity organization. This provides them with support and helps them gain experience in the industry.

Freitag – Switzerland

Freitag was established in 1993 as a start-up in Zurich by two designers, Markus and Daniel Freitag. Inspired by the multi-colored heavy traffic that rumbled through the intersection in front of their Zurich flat, they developed a messenger bag out of used truck tarpaulins, discarded bicycle inner tubes, and car seat belts. This was how the Freitag brothers started their business. Their bags are well-known, but they have expanded their product range over time to include apparel for women and men as well as accessories. All garments they produce are made of natural materials and are biodegradable. Currently they produce 700,000 pieces per year and have around 250 employees. Freitag products are sold in 347 stores (Freitag shops and retailers) all over the world, mainly in Europe and Asia, in addition to their online store.

https://www.freitag.ch/en/

Design for Composting and Disassembly

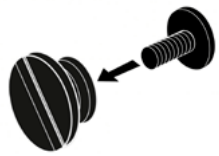
Natural fibers

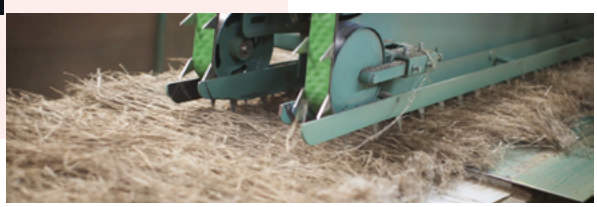
In their search for suitable workwear fabric—made of tough, sustainably produced, and compostable materials—for their employees, the Freitag team decided to develop their own textiles from the fiber up that would fulfil 100% of their requirements. They called it F-ABRIC. F-ABRIC is made of bast fibers of linen, hemp, flax, and modal and is 100% compostable/biodegradable. The buttons for the F-ABRIC shirts are also made from natural materials, namely tagua nuts.

All the natural materials used are grown in Europe and do not require excessive amounts of water. As few chemicals as possible are used during cultivation (flax and hemp require almost no pesticides), meaning that F-ABRIC meets the class I standards of the Standard 100 by Oeko-Tex®[4]. Compared to common textile production processes, this journey from fiber to finished product is a short one, since all production stages take place within a 2,500 km radius of the factory in Zurich.

A design solution for non-biodegradable parts: the F-BUTTON

Using F-ABRIC denim, composed of 81% linen and 19% true hemp, Freitag has developed five-pocket jeans without using rivets or polyester thread. Like their other garments, Freitag's jeans use natural fibers and threads and are 100% compostable/biodegradable—except for the button. The Freitag team has made extensive efforts to find a biodegradable material befitting of raw material for a pants button, but have not been successful. So they settled for metal and invented a very simple button that can be used forever and ever. These metal buttons have a patented screw system and can be unscrewed by hand from one pant and screwed onto another. This makes it easy to separate the non-biodegradable metal part from the bio-degradable remainder, as well as to re-use the metal parts again and again.





[4] STANDARD 100 by OEKO-TEX® is a globally standardized product label for textiles and accessories that have been tested for harmful substances. Class I products meet the strictest criteria, suitable enough for babies.

Upcycled Accessories

Freitag's flagship product is its bags, made from used truck tarpaulins, discarded bicycle inner tubes, and car seat belts. Each bag is durable, made of recycled material, and unique.

Their bags undergo a five-step production process:

1. **Truck spotting:** this refers to the collection of tarps. Freitag employees called "truck spotters" source the best tarps from trucks, truckers, and shipping companies.
2. **Tarp cutting:** the large tarps are cut into "recycled individual products" and freed of eyelets, straps, belts, and anything else that a Freitag bag doesn't need.
3. **Washing:** washing transforms "used" into "patina" and "old" into "vintage" in addition to thoroughly cleaning the materials. Rainwater is used to wash the tarps, after which they are dried and bundled.
4. **Bag design:** bag designers carve out the most beautiful and interesting designs possible from the tarps, ensuring that one-of-a-kind products are not just unique but uniquely beautiful as well.
5. **Completion:** prototypes and test bags are sewn at Freitag's factory. The manufacturing is done by partners in Portugal, the Czech Republic, Bulgaria, Tunisia, and Switzerland.

Freitag also runs a swap system through its online website for those who want to exchange bags with each other.

Impacts and Added Value

Freitag has created a business from waste materials and expanded it significantly over the years, an important contribution to the sustainable products market. Economic value is created out of 800 annual tons of waste in lieu of virgin material. F-ABRIC production strengthens the organic and biodegradable materials and products market as well.

From an environmental perspective, water and chemical use is minimized in the cultivation of F-ABRIC fibers and their processing. Pesticide usage is almost eliminated. Used items do not go to landfills nor are they incinerated, but are instead naturally recycled, eliminating waste generation. Producing bags from waste saves 800 annual tons of virgin material from being produced and used, so it doesn't get the chance to impact the environment, and from being landfilled or incinerated as waste.

Freitag has created jobs for 250 people from different parts of the world.

I:CO (I:Collect) – Germany

I:CO has been a leading global solutions provider for the collection, certified sorting, reuse, and recycling of used clothing and shoes since 2009. It is a subsidiary of SOEX, which specializes in collecting used textile and shoes all over the world, sorting, domestic sales and exports of second-hand clothing, and recycling used textiles. I:CO has more than 2,000 employees, and processes more than 700 tons of material every day[5]. Through their in-store take-back system and a partner network, I:CO offers fashion brands and retailers an end-of-life solution for their products. I:CO is based in Germany, operates in more than 60 countries, and has offices in the USA, UK, China, and Japan.

https://www.ico-spirit.com/en/[6]

Collecting, Sorting, and Circular Supply Chains

System approach

I:CO has developed a system for collecting used clothing and shoes as well as accurate and certified sorting for either reuse or recycling. The main objective is to ensure the maximum reutilization of these materials. The I:CO take-back system collects used clothing and shoes at a retailer's point of sale. The collected items are then carefully sorted and directed towards reuse or recycling, irrespective of the producing brand. Wearable items go to new wearers, whereas unwearable ones become cleaning cloths or get recycled into fibers for insulation, carpet padding, toy stuffing, and new clothing.

Collection:
the I:CO take-back system

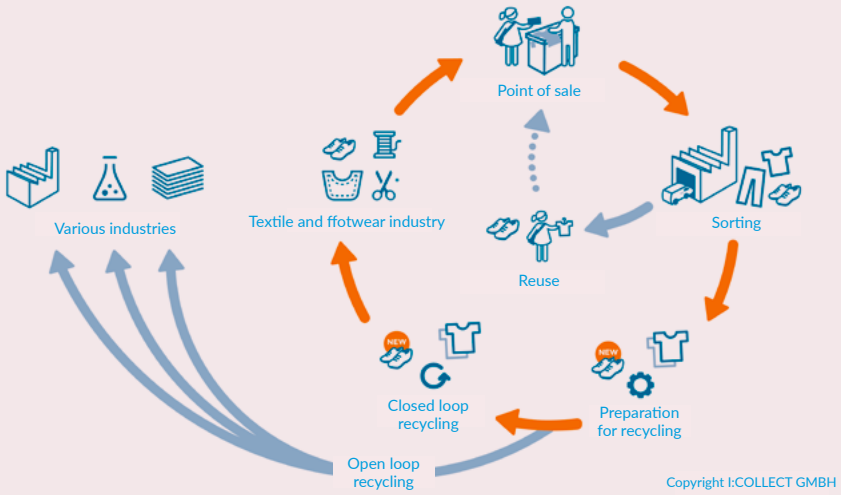
I:CO partners with local retailers wherever they operate. The idea is to use the retailers' points of sale as collection points for used items, with bins that are branded according to partners' preferences. In this system, consumers bring in their used clothing or shoes to the partner retailers' stores and are given a reward incentive, like a voucher for their next purchase (e.g. 10 to 15% discount coupons). Any garment regardless of brand that is dry and clean is accepted. Thus, used clothing and shoes are collected in the same place where new ones are purchased.

Sorting:
the basis of efficient reutilization

I:CO also has a network of logistics partners and certified sorting facilities on a global scale. All items collected at partner stores are transported to the nearest sorting facility, by means of individually tailored logistics. Every item is sorted by hand and categorized according to up to 420 different criteria (quality, materials) for identifying how it can best be utilized. Using this approach, I:CO guarantees precise, high-quality sorting and evaluation.

After the sorting process, the clothes and shoes are either given a new life through reuse as second-hand goods or recycled to become new products. At present, the majority of fibers are made into insulation material for the automotive and construction industries. Particularly absorbent textiles are used for the production of cleaning cloths. Other textiles are mechanically recycled (shredded into fibers) and serve as the raw material in the production of insulation materials or painters' drop cloths. Even the dust produced during the mechanical recycling process is pressed into briquettes for the cardboard industry. Textiles not suitable for any of these purposes are used as combustibles for energy production.

[5] All of the information contained in the present publication has been acquired through the company's official website and other public sources. [6] UrbanWINS Project funded by the Research and Innovation Program Horizon 2020 – Best Practices/ I:CO Textiles and Shoes Take-Back System: https://www.urbanwins.eu/i-co/



Potential for a circular supply chain

One way to close a circle in the fashion industry is to spin recycled fibers into yarn to make new textiles, but currently only a small portion of recycled fibers can be used to produce new yarn. I:CO uses its years of experience and strong infrastructure to support partners in creating their own circular supply chains and gets involved in international research projects in collaboration with various partners. One such project for denim-to-denim recycling that I:CO developed with a retail partner successfully produced 1,000 tons of recycled cotton from post-consumer waste in 2016 and rerouted it to the manufacturing of new denim.

Impacts and Added Value[7]

I:CO has contributed significantly to the expansion of the collection and recycling sector for end-of-life clothing and shoes. The corresponding value added has increased with the reevaluation of 225,000 tons of collected used items. Around 142,500 tons per year of wearable items were sorted from the collected garments and supplied to the global resale market.

I:CO's collection and recycling business has diverted 225,000 annual tons of used clothing and shoes from landfill and incineration, reducing the environmental impacts associated with managing that amount of used clothes and shoes. This also saved the corresponding 225,000 annual tons of virgin material (cotton, plastic, leather, etc.) from being extracted and processed, eliminating associated environmental impacts.

I:CO's take-back system motivates consumers to contribute to recycling efforts, raises their awareness, and rewards them with an incentive. Sorting out wearable items and directing them to re-use channels strengthens the habit of using second-hand clothing and shoes. New jobs are created in logistics, sorting, recycling, and second-hand markets, in addition to I:CO's 2,000 employees. Their partner companies donate 2 cents of a euro to a charity fund for every returned kilogram of shoes, linen, clothing, and other textiles, amounting to a total fund of 5 million EUR per year designated for charitable projects.

[7] Figures are based on the data that 700 tons of waste are processed every day; of this waste, 57% is resold, 33% recycled or reused, and 10% becomes residue.

Deniz Tekstil Grup – Turkey

Deniz Tekstil is an affiliate of the Deniz Group, which in addition to textiles operates in the automotive, construction, and insurance industries. It was established in 1994 and currently operates in the Textile Organized Industrial Zone in the Turkish province of Uşak, which has become a hub for the national textile recycling industry in the years since 1984. Deniz Tekstil specializes in pre-consumer textile waste recycling and is one of the largest companies of its kind. It has a daily production capacity of 100 tons of recycled fiber and employs 180 people. The facility processes cotton, polyester, lycra, and polyester/cotton blends. 70% of the regenerated fiber they produce serve the local market, and the remaining 30% is exported. Deniz Tekstil's customers are mainly yarn producers that can process regenerated fibers.

https://www.deniztekstilgrup.com/

Pre-consumer Textile Waste Recycling

From waste to regenerated fiber

The Textile Organized Industrial Zone in the province of Uşak hosts a cluster of around 150 companies and more than 10,000 employees that participate in the textile recycling value chain. They account for 75% of the textile recycling market in Turkey. The companies mainly recycle yarn and fabric waste for fiber production as well as produce yarn and felt from recycled fibers. There are a few companies converting PET bottle waste into fiber and manufacturing felt production machines. Deniz Tekstil is one of the key members of this cluster, an active part of the region's 30 years of tradition, and is motivated to decrease the need for virgin materials, particularly cotton, and maintain its share of the growing recycled-fiber market. The basic challenges that the company faces are the problems of finding qualified staff, the supply of raw material, and the continuous need to keep up with recent technologies.

Deniz Tekstil generally receives textile waste from garment producers all over Turkey, through intermediary companies licensed for waste collection and transportation. Waste is sorted manually by color and type and then fed to cutting and opening machines to be separated into their fibers. The waste-to-product conversion rate is roughly 70%, with 30% representing waste deemed unsuitable for production and textile dust generated during the mechanical cutting and opening processes. These residues are given back to waste collectors to be disposed of.

The color and type of material of the produced fibers is determined by the color and type of the waste received. No additional dyeing processes are implemented and no chemicals are used in production. About 160 different colors of fiber, GRS-certified (Global Recycle Standard), are produced and sold to open-end yarn production companies as a raw material.

Fabric waste that is mixed in color and type is used to produce a lower quality of recycled fiber for nonwoven (felt) production, sold to felt producers for use in the automotive, furniture, white goods, and construction industries. The better the quality of the waste and the more efficient the sorting, the higher the added value obtained from the regenerated fabric.

The company's product range includes 100% cotton fiber, cotton/lycra blended fiber, and cotton/polyester blended fiber, which are all suitable for yarn production, besides different types of felt fibers. 75% of Deniz Tekstil's fibers are sold to yarn producers, while the remaining 25% goes to felt producers.

Impacts and Added Value

The net amount of fabric waste converted to product is roughly 36,000 annual tons. Disposal would cost the producers of this waste around half a million EUR a year, but selling it to Deniz Tekstil through intermediary companies earns them roughly 2.6 million EUR a year, resulting in an additional annual income of 3.1 million EUR. Moreover, the price of recycled fiber in the market is around 870 EUR per ton, and selling recycled fibers generates significant turnover and expands the recycled materials market.

Those 36,000 annual tons of industrial textile waste are diverted from landfill and incineration, and the environmental impacts associated with managing that waste are reduced. This also saves the same tons of virgin material (cotton, lycra, polyester, etc.) from being extracted and processed, eliminating associated environmental impacts.

Deniz Tekstil currently employs 180 people in Usak as well as other neighboring provinces.

Elvis & Kresse – UK

Established in 2005 in Kent, England, Elvis & Kresse is a sustainable luxury company which turns industrial waste into innovative lifestyle products. The business was established by two partners, James Henrit and Kresse Wesling, driven by environmental and social concerns. Their key motivation was recovering London's damaged fire-hoses, which were being discarded and going to landfills every year, and using them to manufacture a range of wallets, bags, belts, purses, and accessories for men and women. Elvis & Kresse is a certified Benefit Corporation (B Corp). The company employs 25 people full-time and many more on an outsourcing basis.

https://www.elvisandkresse.com/

From Trash to Turnover: Upcycling

Sourcing waste materials for production

The innovativeness of Elvis & Kresse's business model lies in manufacturing products from waste streams that are not traditionally recyclable, helping to solve niche waste problems. The company currently manufactures products from ten different waste streams/materials on a regular basis:

- When London's hoses are damaged beyond repair, they are collected and upcycled into sustainable luxury bags and accessories such as belts, wallets, etc.
- The handles, sides, and base of the bags are crafted from decommissioned fire-hoses and the outer panels from rescued leather off-cuts.
- Failed parachute panels and auction banners are used as lining materials and dust covers.
- The peripherals are made with reclaimed materials such as coffee and tea sacks, closed-cell foam, and old auction banners.
- Waste parachute silk is used to line bags and wallets.
- Additional packaging and labelling is made from second-hand shoe boxes and coffee sacks.
- Their range staples include printing blankets, split scaffolding wood, and reclaimed leather off-cuts.

Elvis & Kresse also turn parts of their own wastes into biomass, while other waste such as fire-hose off-cuts are used for flooring or other products such as cufflinks and key rings.

Creating luxury items

All Elvis & Kresse pieces are handmade and strictly quality controlled. Starting with the design process, they prioritize the durability of their products and through craftsmanship extend their life as much as possible. They use a technique that emulates kintsugi, the Japanese art of repairing broken pottery with gold. Timeless, ultra-durable design, and the uniqueness of their products allow them to market their items to the luxury segment. They also offer the option to personalize items, inspiring personal attachment. In addition, the company offers samples of new products for review before they enter into actual production.

Partnerships

Elvis & Kresse have developed a number of key partnerships which have been essential for the company's success, in terms of both sales and sourcing materials for production. As part of their partnership approach, the company collects fire hoses directly from the London Fire Brigade across the entire UK, which thereby prevents waste from heading to the landfill and saves the brigade money. Interest from the London Fire Brigade, as well as the Firefighters Charity, who receive donations based on Elvis & Kresse's profits, helps minimize their own marketing efforts and costs. In some cases, the waste partnerships that companies create also enable a sales relationship. In 2017, Elvis & Kresse entered a five-year partnership with the Burberry Foundation to recraft 120 tons of leather off-cuts from the production of Burberry products into a range of new luxury leather items, designed and sold by Elvis & Kresse.

Impacts and Added Value

Elvis & Kresse's growing turnover was 300,000 EUR in 2011[8]. They create added value out of waste and sell their products at an average price of around 220 EUR, expanding the upcycled products market. In parallel, waste-generating partners save money because they no longer need to dispose of their waste.

As of 2020, Elvis & Kresse have saved 225 tons of waste from landfills, reducing the environmental impacts associated with managing that waste. The corresponding tons of virgin materials (plastics, leather, etc.) were saved from being extracted and processed, eliminating associated environmental impacts.

The waste-associated charity partners benefit from Elvis & Kresse's profit; 50% of profits are donated back to charities. Elvis & Kresse have has also created jobs, apprenticeships, and work experience opportunities through their partnerships.

[8] ERA-Net ECO-INNOVERA – Green Business Model Innovation/ Business Case Study Compendium: https://www.eco-innovera.eu/publications@lwlt_338cmd=download&lwlt_338id=195

IDYR – Morocco

In Morocco, there are almost 32,000 women living in poverty and vulnerable situations, mainly in rural areas with no work opportunities for their experience and skills. With this in mind, the two entrepreneurs Fadwa Moussaif and Amal Kenzari established IDYR in 2017, a social and green enterprise which transforms textile scraps into useful products. They created the IDYR brand to give rural craftswomen the chance to be self-sustaining and more independent. IDYR not only respects the social conditions of these women artisans but also creates sustainable fashion products by highlighting Moroccan know-how. The products are targeted at active urbanites, who shop online. Partnering with international shopping platforms, they have plans to export their products, primarily to China, Netherlands, England, France, and Italy, where they already have some connections.

https://idyrdesign.com/[9]

Giving Scraps a New Life with Upcycling

IDYR's main business is based on the practices of reinventing unwanted materials and transforming them into useful products. Each IDYR product is woven by hand from scrap fabrics collected from the clothing and textile industries. These scraps become new, original fashion accessories (such as handbags, rugs, and pillows), and open up the possibility to employ women. IDYR's upcycling technique is based on Boucherouite, an ancient weaving technique invented by poor Berber families. Each item is unique and is imbued with culture, history, and exceptional human value.

The production steps are as follows:

- Design of the collection.
- Purchase of raw materials (scraps, zips, leather parts, etc.)
- Transportation of materials by delivery partners or their suppliers.
- Sorting of fabric and storage of different materials.
- Transformation of fabric into weaving by women artisans.
- Assembly of the parts (weaving, leather, and other parts).
- Delivery of products by partner agencies.

Production especially requires handcrafted weaving and leather application. IDYR works closely with garment and leather companies through different types of collaborations according to the needs of both parties:

- Purchasing fabric falls from garment factories when needed and creating a new product under the IDYR brand.
- Purchasing end-of-collection coils to line accessories (consists of purchasing leather collection ends for making capsule collections and/or their linings).
- Partnering with companies under the Corporate Social Responsibility (CSR) program and transforming their scraps into new accessories for them to offer their customers.

[9] All of the information contained in the present publication has been acquired through the company's official website and other public sources.

Products and production capacities

Product	Selling price	Production capacity
Bags	Approx. 30–150 EUR	300 pieces per month
Leather goods	Approx. 8–30 EUR	800 pieces per month

Impacts and Added Value

IDYR reduces its production costs by using waste instead of virgin material and offers slightly cheaper products compared to other similar brands. This business generated a total turnover of approximately 75,000 EUR in 2019, up 80% from 2018. IDYR makes its business even more efficient by selling 90% of its production (100 items on average) on a monthly basis, avoiding overstock.

IDYR has so far saved over 10 tons of fabric scraps from landfill and incineration and annually recovers more than 3.5 tons of textile waste and leather offcuts, giving them a new life by upcycling them. This saves those same tons of virgin materials from being extracted and processed, eliminating the associated environmental impacts. In addition, IDYR has increased awareness in five companies of the importance of recycling and upcycling.

With this innovative business, IDYR has breathed new life into Moroccan heritage. More importantly, IDYR has provided employment opportunities for ten women artisans and a leatherworker from rural areas, as of 2020. They also help raise awareness in society of slow fashion and circularity.

Flavialarocca – Italy

Flavia La Rocca founded her brand in Italy in 2012 under her own name. She focuses on sustainability when designing her womenswear collection, and makes clothes in a responsible, dynamic, and innovative way. Every collection is made in Italy by local artisans, and the garment design is built on modularity using recycled, natural, and regenerated fabrics (100% eco-certified).

https://flavialarocca.com/[10]

Modularity with Interchangeable Parts

Flavialarocca's business model uses modularity to extend the life of its garments: each piece in a collection is interchangeable and compatible with other pieces. This is so that the wearer can mix and match these convertible, multifunctional clothes to create a versatile set of looks for different situations and social occasions, in varying weather and through changing seasons.

Design is key for extending garment lifespan

Flavialarocca's dynamic product is a set of modular garments that can be transformed into different types of pieces. The key design strategy involves using hidden zippers, ties, and other no-sew fastenings that allow components to be attached and detached. Thus, sleeves and hemlines can be changed and style and details switched up to create a never-ending wardrobe[11].

There are also many color options for buttons and adjustable buttonholes for different combinations.

A standard modular garment can be used 40 different ways. Interchanging parts also facilitate disassembly, reassembly, and repair in case of damage, and upgrading garment modules is easy.

Impacts and Added Value

Modular design extends the useful life of garments so they retain their highest economic value. Increasing functionality prevents the production and purchase of new garments and decreases the associated costs.

As increased reuse of garments decreases new garment production, the environmental impacts (use of water, raw materials, chemicals and energy, waste and emissions) associated with production processes are reduced. Overall waste is reduced because transformability limits consumption. In addition to implementing modularity, Flavialarocca also uses natural fibers and helps decrease overall environmental impact before and after disposal.

Modularity offers convenient and flexible garment use, and consequently reduces clothing needs and uses fewer resources. Wearing garments in different combinations for different occasions saves on budgets by reducing individual consumption.

[10] All of the information contained in the present publication has been acquired through the company's official website and other public sources.

[11] The Living Wardrobe: Fashion Design for an Extended Garment Lifetime, thesis by Cramer J., RMIT University: https://researchrepository.rmit.edu.au/discovery/delivery?vid=61RMIT_INST:ResearchRepository&repId=12248228530001341#13248374120001341

Houdini – Sweden

Houdini Sportswear was founded in 1993 in Sweden by Lotta Giornofelice, who saw there was a need for products for outdoor life and activities with all-purpose performance. Houdini began its journey as a start-up and moved towards becoming an SME. Today, it is operated by 50 employees in 18 markets. The company also follows sustainability criteria in bringing their functional and innovative approach to the outdoor industry. The Houdini Sportswear's business model is future-oriented, with a circular economy at its core. Today, 80% of Houdini's clothes are circular. Their ultimate goal is 100% circular production in the near future, focusing on product durability and lifespan extension through repair.

https://houdinisportswear.com/en-gl[12]

Product Durability

Producing long-lasting products is the fundamental strategy at Houdini, and its design philosophy focuses on the durability and high performance of garments. To achieve this, Houdini prioritizes durable, environmentally friendly materials in their production. The average lifetime of Houdini garments is between 10 and 15 years, and durability is technically based on production methods and type of materials used. All garments are made with tight-gauge knitting and an inner fleece (composed of three separate yarns) for greater strength and produced using double threads.

To achieve their desired quality and durability, Houdini does its sourcing through a highly selective partnership strategy based on long-term relationships with world-leading fabric and technology supplier partners and manufacturers. Houdini particularly focuses on a partnership strategy that improves trust and transparency, which makes analysis of current practices possible, facilitates improvement plans, and attracts investment in innovation projects. Manufacturing takes place at selected and specialized European manufacturing partners in accordance with Houdini's quality and durability standards and requirements.

Houdini has incorporated repair services into its business model for greater durability and longevity and to facilitate the long-term use of their products. (See the repairing and upgrading business model).

[12] All of the information contained in the present publication has been acquired through the company's official website and other public sources.

Houdini – Sweden

Houdini Sportswear's business model incorporates design for durability with repairing services in order to ensure product longevity. For company information, see the business model design for durability, long lasting and modularity.

https://houdinisportswear.com/en-gl[13]

Long-Term Use Through Repairing

According to Houdini's philosophy, "a little repair can often add years to a product's lifetime". As such, Houdini provides a repair service free of charge should any part of the garment break before the garment itself is worn out. If the product is damaged, the same service is available for a reasonable price. The most common repairs include replacing zippers, fixing tears or broken seams, and replacing buttons or buckles.

In 1995 Houdini launched the Houdini Repair project, adopting a minimalist design philosophy that gives every garment reparability functions and features, with replaceable parts that facilitate repair[14]. Houdini continues to complement its business concept of extending product lifespan with repairing opportunities.

Impacts and Added Value

Houdini's durability and repairing-based business has triggered the expansion of the functional and sustainable outdoor apparel market. Houdini had a turnover of 15.5 million EUR between 2017 and 2018, with a current turnover of 20 million EUR[15]. Each year saw a 20 to 30% increase in growth. Product durability and repairing prevents the production and purchase of new garments and decreases the associated costs.

Houdini's design practices and production methods are reducing the overall environmental impact of standard textile production while saving natural resources. The figure below shows Houdini's circular business approaches and their impacts on environmental issues. A double plus (++) indicates very relevant/positive impacts on selected criteria, whereas a single plus (+) shows positive relevancy[16].

[13] All of the information contained in the present publication has been acquired through the company's official website and other public sources.

[14] Business model development for sustainable apparel consumption - The case of Houdini Sportswear, by Holtström J., et al, Linköping University: http://www.diva-portal.se/smash/get/diva2:1368182/FULLTEXT01.pdf

[15] If You Pollute, You Have to Pay, by Koester V. and Karlsson E., Chemistry View Magazine: https://www.chemistryviews.org/details/ezine/11161691/If_You_Pollute_You_Have_to_Pay.html

[16] Planetary Boundries Assessment 2018, This is Houdini by Houdini Sportswear, Albaeco, Mistra Future Fashion: https://api.houdinisportswear.com/storage/2A69199BFCBA925CC9260D61F41301EA566C760FB9A727B5DABB2C330C13D1BC/08df8496f36f49f0bb821fdeafdd775e/pdf/media/e5eec5e201b242e9a2aa14aba9c3b696/Houdini_Planetary_Boundaries_Assessment_2018.pdf

	Climate charge	Novel entities	Stratospheric ozone deoletion	Atmosphric aerosol loading	Ocean acidification	Biogeo-chemical flows	Fresh water use	Land-system change	Biosphere integrity
Recycled fibres	+	+	+	+	+	++	++	++	++
Repairs	++	++	++	++	++	++	++	++	++
Rental	++	++	++	++	++	++	++	++	++
Reuse	++	++	++	++	++	++	++	++	++
Long lasting (style and endurance)	++	++	++	++	++	++	++	++	++
BlueSing	+	++			+	?	+		
pH Pure™		++							

Longevity and repair services create customer attachments through reliability and long-term relationships. They also help raise end-user awareness of durable products.

E-Terzi – Turkey

E-Terzi was founded in 2015 by Erdal Eryılmaz in Istanbul as an online tailor servicing all of Turkey. Its premise was that "everybody needs a tailor because everybody has garments". E-Terzi aims to be a trustworthy tailor and establish long-term relationships with its customers, offering a high-quality repair and modification service and being easily accessible online. The team consists of three highly experienced tailors, two support members, and a webmaster. E-Terzi repairs and modifies all types of garments and particularly leather products. They can also sew custom-made leather garments for clients.

https://www.e-terzi.com.tr/

Value Creation Through High-Quality Garment Repairs and Modifications

E-Terzi has modernized traditional garment repair and tailoring: they are easily accessible through their website, which is their main advertising and marketing channel.

The value proposition E-Terzi makes is to provide customers who want to get their garments repaired or modified with a way to communicate easily and a high-quality service that includes follow-ups. The most significant success factor is the very experienced and qualified tailors in charge of the repairs and modifications. Customers seeking a service for a certain product send E-Terzi a photo and receive a prompt reply detailing the process and price. If the customer accepts, the product is picked up from their home and delivered back once repaired or modified. E-Terzi specializes in leather garments, which require special skills and machines, and generates even higher value due to the high cost and environmental footprint of leather.

A contemporary approach for a traditional business

Based on increasing internet usage rates in Turkey and the technological trends in this direction, the founder of E-Terzi foresaw that in ten years' time 95% of the population would be shopping online and on mobile phones and shaped his business model accordingly. He first researched the number and types of internet searches for tailoring services. Based on those results, the service categories were created and the necessary equipment and machines set up. He made visual examples and references for each service category on the website in order to show customers how repairs and modifications are done.

Impacts and Added Value

E-Terzi has developed significantly in five years' time. Today they receive more than a thousand inquiries each month. In 2019, they repaired and/or modified 3,128 items, including both leather and textile garments, preventing the production and purchase of new garments and decreasing associated costs. Especially for leather items which cost more than 100 EUR each, this option provides considerable savings for the consumers as well.

In 2019, E-Terzi repaired 1,217 leather and 1,911 textile garments of various types. This roughly corresponds to 1.5 tons of leather and 1 ton of textiles that were retained in the system, preventing the production and processing of that amount of material. This reduces the overall environmental impacts associated with that production as well as waste and diversion from landfilling/incineration.

E-Terzi gives consumers a low-cost option for reviving their defective or unwanted garments. This has an emotional aspect as well, since consumers can get family keepsakes repaired by E-Terzi and wear them once again. Moreover, E-Terzi has plans to expand its team by creating a network of experienced and qualified tailors from different parts of Turkey, both facilitating their services in different provinces and providing such artisans with a professional opportunity to carry out their skills.

thredUP – USA

ThredUP was launched as a peer-to-peer sharing service for men's shirts in San Francisco, USA, in 2009. The idea behind the business was formed when CEO James Reinhart spotted the potential hidden in piles of unwanted clothes in everyone's wardrobe. At first, only men could swap clothes through thredUP. After further developing their business, thredUP is now named one of the world's largest fashion resale platforms that offer men's, women's, and kids' second-hand clothes and accessories from millions of brands. thredUP simply aims to promote reuse over purchasing new. Its business model is based on resale/second-hand together with the resale-as-a-service (RAAS) platform. With four distribution centers, thredUP moves nearly 100 million garments from closets across the USA and has millions of customers.

https://www.thredup.com/[17]

A Fashion Resale Marketplace

As of 2018, the value of the global resale market was calculated at 20 billion EUR and is estimated to reach 44.5 billion EUR in five years[18]. In order to capture this value, thredUP has introduced an online thrift shop, which lists 30,000 new items every single day. The platform's many features help users benefit from the different sides of the market as a buyer or seller. Customers can give their unwanted clothes a second chance and earn money doing so. The thredUP business model includes garments and accessories mainly from big fashion brands, a high number of which can be found on the online platform. A seller can earn 5 to 90% of the listing price on accepted items, where high fashion brands net a higher percentage. Besides the cash payment or credits option, the platform gives the seller the option to donate (4.30 EUR per kit) to a charity of their choice.

How does it work?

There are six steps for people who want to sell their unwanted clothes through the platform:

1. **Order a bag online:** the seller orders a pre-paid "Clean Out Kit", or a "Donation Clean Out Kit" for donation, from the thredUP website.
2. **Fill it up:** the bag is filled with the items and sent back to thredUP.
3. **Quality control and assessment:** received items are carefully inspected by thredUP for certain criteria: no signs of wear, no damage, and no alterations.
4. **Acceptance:** on average 40% of items are accepted, and others are returned to the customer or recycled.
5. **Listing items and pricing:** accepted items are professionally photographed and listed in detail. The pricing changes based on seasonality, quality, retail price, and brand.
6. **Payment:** once the items are sold, the seller is paid or gets credits for the items on the platform.

The resale-as-a-service (RAAS) platform

threadUP has powered its resale business with an innovative approach by developing a new platform for a resale-as-a-service (RAAS) model. This platform offers other companies the ability to implement the resale model without investing in developing it. Partners can directly connect to thredUP's technical infrastructure and expand their business through resale. thredUP is already partnered with some big brands. The brands gain new customers and increase their sales, and retailers can receive a constant stream of new arrivals by adding thredUP's products to their store. The number of partnerships is expected to increase, as 90% of retailers have stated that they are planning to adopt a resale model into their business.

[17] All of the information contained in the present publication has been acquired through the company's official website and other public sources.
[18] thredUP 2019 Resale Report: https://www.thredup.com/resale?tswc_redir=true

Impacts and Added Value

thredUP has developed an online marketplace that generates approximately 43.7 million EUR through buyers, sellers, and retail partners. It has raised more than 277.7 million EUR in funding in ten years[19]. thredUP ranked 44th among other American online stores, with approximately 332 million EUR of global net sales in 2019[20].

Total Impact	Comparison
0.64 million tons of CO_2	48 million cars off the road for a day
2.7 billion kWh of electricity	Lighting up the Eiffel Tower for 340 years
22 million tons of water	Filling up the Bellagio fountain 29 times

This business has been reducing waste generation and the use of virgin resources by extending the lifespan of garments and accessories. By sending unaccepted items to recycling, it increases the recycling rate of garments which would likely end up in landfills.

thredUP's business provides consumers with a creative solution to consume responsibly while attaining fashionable garments and accessories at advantageous costs. thredUP has made it easy for customers and retailers to participate in the second-hand market and created a significant number of jobs in the form of employees and suppliers. Moreover, thredUP facilitates donation, through which the related partners benefit from.

[19] Crunchbase business information platform: https://www.crunchbase.com/search/funding_rounds/field/organizations/funding_total/thredup

[20] E-commerce revenue analytics: https://ecommercedb.com/en/store/thredup.com

Tarz2 – Turkey

Tarz2 was founded in 2017 by an entrepreneur, Ahmet Senol, who has been using second-hand goods since childhood. Based on a growing interest in the second-hand market in Turkey, he decided to set up an online platform for buying and selling second-hand garments. He aimed to help change the perception of consumption and promote resale markets. The process started with R&D studies conducted in a university technology park where the company was initially established. Today, Tarz2 is one of the most active resale platforms used in Turkey, offering all types of second-hand garments and accessories for women, men, children, and babies.

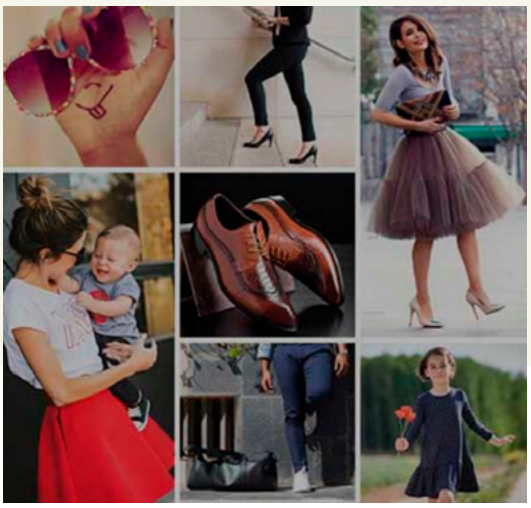
https://www.tarz2.com/

Second-Hand Like New

Tarz2 provides customers with buying and selling opportunities for second-hand garments and accessories. They mainly focus on offering original, "like-new" products from more than 4,000 popular and premium brands, requiring a very delicate selection and quality-check process for the items from sellers. The only thing that a seller needs to do is to order a delivery kit online, fill the bag up with the items to be sold, and send it to Tarz2 free of charge. The rest of the process is managed by Tarz2. As the items are sold, the sellers get their share, varying between 50 and 80% of the price of the product. Based on the preferences of sellers, earnings are either paid to them or donated to an NGO of their choice. The buyers get significant discounts, quality assurance, and free returns on purchased items. Technology and innovation are an inseparable part of the Tarz2 business, and the team makes continuous efforts to keep their services up to datet.

Efforts to raise awareness and change mindsets

Tarz2 places special emphasis on raising awareness, underlining their sustainability approach and how reselling contributes to global sustainability. They try to change the perception of wearing second-hand and prompt consumers to adopt slow-living and slow fashion practices through their blog and social media accounts. Customer comments and experiences are also published on the website, helping the concept to spread and be adopted.



Impacts and Added Value

Tarz2 has played an important role in developing the second-hand garment and accessories markets in Turkey, and as a business, it is continuously growing. In giving so many garments and accessories a second life, Tarz2 helps prevent the production and purchase of new garments and decreases associated costs.

By extending the lifespan of garments and accessories, the use of virgin resources and waste generation are reduced and all environmental impacts associated with extraction, production, distribution, and waste management are decreased.

Tarz2 particularly focuses on changing mindsets about second-hand shopping and helps people adopt a slower way of living, through its reliable, functional system and awareness raising efforts. With the help of Tarz2, consumers can find high-quality, like-new products from well-known brands, at significantly lower costs compared to average market prices.

OhLook – India

OhLook was launched in 2016 as a start up in India. OhLook is a fashion platform offering a men's clothing rental subscription service. It is the first "everyday fashion rental subscription and styling service for men" that lets them wear different clothes every single day, handpicked by stylists. The primary intent of the model is to make fashion accessible and easy for the everyman. They are mainly targeting men between the age of 21 and 35 in India's upper middle class. Today they have 45,000 users. Currently, the company employs 19 people and operates 100% domestically. OhLook plans to shift to sustainable and biodegradable clothes and create their own brand.

http://www.ohlook.in/

An Everyday Fashion Rental Subscription for Men

Today, the average number of wears over the lifetime of a garment has dropped down to just seven. OhLook's founders thought that an everyday fashion rental service would be an apt solution to users and the increasing environmental risks of fast fashion. Their subscription-based style curation and clothing rental service lets men wear different fashion garments from the top brands and latest trends each year. Through this service, the user gets to wear a different and unique shirt every day as the average number of wears per shirt successfully increases from 7 up to around 70 to 75 times. OhLook enables users to rent clothes from their website through a subscription rental model. Users are provided with an unlimited closet with multiple novel offerings. In addition to renting, their services include delivery, cleaning, and styling. The price starts at approximately 20 EUR a month.

How does it work?

There are five stages in OhLook's business model:

1. **Selecting the clothes:** upon signing up, the user fills out a style form and chooses from over 12,000 garments; then prepares the box and checks out.
2. **Receiving a package:** every week, the user receives a box of five shirts, which will later be exchanged for a box of five the subsequent week. The shirts are neatly packaged and shipped to customers' doorsteps.
3. **Exchanging a package:** the package is exchanged for a new set of clothes. The user will not receive the same clothes again.
4. **Cleaning and hygiene:** clothes are cleaned at OhLook's cleaning unit to the best washing standards, to retain quality and increase lifespan. Then, the clothes are sanitized and steam ironed, in a 100% hygienic cleaning process.
5. **Preparation for the next user:** after the cleaning process, the clothes are repacked and sent to OhLook's style house.

A technology-based styling service

OhLook only offers their services through the internet. Users can access all services through an app on their online devices (laptops, smartphones, etc.). OhLook's artificial intelligence technology, built on the expertise of multiple stylists, understands what shirts would look good on which customers based on their personality and style preferences; then it auto-chooses shirts for them. Selected items are then reviewed by an actual stylist before being shipped to the user.

On-demand luxurywear rental

OhLook provides an additional service for luxurywear (suits, blazers, etc.) on an on-demand rental basis, where the user can wear an expensive piece of garment for a specific date. The users choose from an array of clothes listed and reserves their choice for a particular date. The garment gets delivered to the customer's doorstep the day before and is picked up within four days from the date of delivery. This offer enables users to enjoy the luxury of an unlimited wardrobe "in the cloud" at just 12% of the maximum retail price.

Impacts and Added Value

OhLook's business model has created a profitable business in a short time. Each shirt earns OhLook 12 times its price. After the major expenses of inventory, logistics, packaging, and laundry are deducted, 60% of the gross profit is saved.

The life of each garment is increased tenfold, as they are reused over 70 times. Typically a shirt is discarded after seven washes. This reduces resource consumption and the overall environmental impacts associated with extracting and processing raw materials by roughly 90%; the corresponding 90% of garment waste is diverted from landfill and incineration. So far, 4,000 shirts have been used 70 to 75 times each over their lifetime in OhLook's business, and 12,000 more items are still in their inventory.

Consumers get fashionable clothes at advantageous prices and simultaneously adopt the concepts of sharing and sustainability. All the clothes retired from OhLook's services (4,000 shirts so far) are donated. Job opportunities have been created for over 30 people.

MUD Jeans – The Netherlands

MUD Jeans was founded in 2012 by Bert van Son on the belief that there should be an alternative to fast fashion. Its mission is to change the fashion industry by producing premium quality jeans in a fair and circular way and to inspire others to go circular. The basis of its business model is leasing jeans, which has been implemented using different circular practices. MUD Jeans is headquartered in Laren, the Netherlands, and they have 11 employees. Currently they have three main supply chain partners: one recycles the jeans, the other makes new fabrics, and the last one focuses on stitching and washing. Their jeans are sold in 300 stores in over 29 countries and shipped worldwide but the majority of the sales come from the Netherlands, Germany, Belgium, Austria, and Switzerland.

https://mudjeans.eu/

A Way to Maximize a Product's Use: "Lease a Jeans!"

MUD Jeans introduced the innovative concept of leasing a pair of jeans in 2013, allowing their subscribers to lease instead of purchase jeans. MUD Jeans' Lease A Jeans service includes cleaning, maintenance, and repair. Accordingly, MUD Jeans has also transformed its operations to develop longer lasting jeans.

Through design and material selection, jeans can be used by multiple users several times and returned ones can be repaired to extend product lifespan or reprocessed into valuable material for new jeans. Consumers can use the jeans without owning them, and return them after a period of time. This also ensures the products are collected at their end of life. They increase resource efficiency by closing the loop through their concept, supported by their reverse supply chain and mechanical recycling scheme.

How does the system work?

Customers pay a one-time sign-up fee of 29 EUR to start leasing. They can lease a pair of jeans for 7.50 EUR a month for 12 months and then decide to keep the jeans or switch them for a new pair on a new lease. Customers are especially encouraged to send the jeans back at the end of their use to prevent them from ending up as waste. They are also given the option to send in their old jeans (as long as they are 96% cotton) to obtain a 10 EUR discount or a month free on their lease. MUD Jeans applies the never-out-of-stock principle by having no seasonal collection. This limits design costs and avoids dead stock by producing on demand. They always have jeans in stock and retailers can (re)order small quantities.

Use products for longer through a free repair service

The leasing system involves a repair service as well. During the leasing period, the subscriber can benefit from the free repair service in case of damage. The service is free during the leasing period only and in the free shipping zone (NL, BE, FR, and DE).

The repair service is also an option for jeans owners. MUD Jeans offers a repair service for their subscribers to encourage them to use their products as long as possible. Accordingly, jeans owners are provided the service free of charge for one year.

Circular Design and A Circular Value Chain

The circularity of MUD Jeans is not limited to their leasing and repair services. They aim to design the products and entire value chain accordingly, starting with the design phase. The materials are kept very simple; leather patches are not used. There are only two fabric compositions: one is 40% post-consumer recycled cotton and 60% GOTS-certified organic cotton; the other is 23% post-consumer recycled cotton, 75% GOTS-certified organic cotton, and 2% elastane. MUD Jeans have created a very simple supply chain with three supply chain partners, helping MUD Jeans better control the value chain. The loop is closed when they take the jeans back from consumers through the leasing system and use them for vintage or recycling, where the life cycle starts all over again.

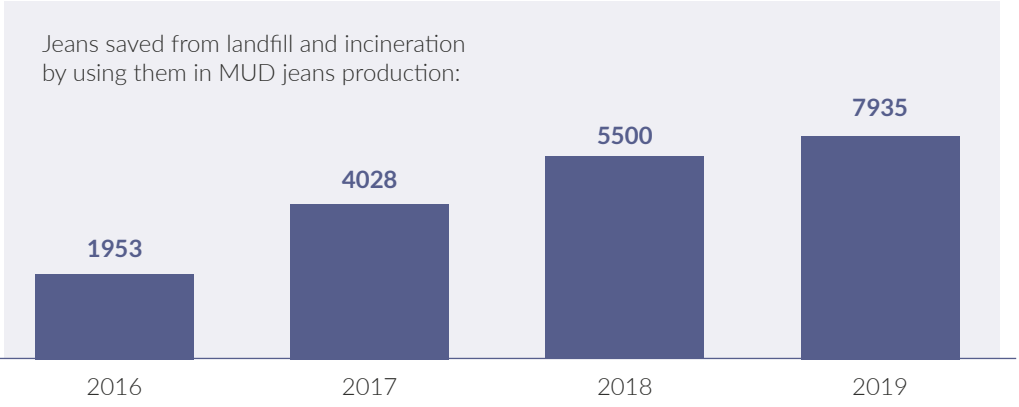
Impacts and Added Value

MUD Jeans' business has created an impact not only in the leasing but also the recycling and circular design markets. All of its circularity efforts have ensured a growing business, with a turnover that increased from 800,000 EUR in 2017 to 1.5 million EUR in 2019. It is expected to increase even further in the coming years and make a similar impact on the supply chain and relevant markets. Efficient utilization of each pair of jeans as well as material recycling have saved a significant amount of virgin material use and associated costs. Through a take-back system and circular value chain, MUD Jeans retains ownership of the raw materials, potentially protecting them from volatile cotton prices.

MUD Jeans' leasing model basically aims to prevent overproduction and overconsumption; hence it makes a significant difference in terms of environmental impacts compared to standard jeans.

Impact *(average per pair of jeans)*	**MUD Jeans**	**Standard Jeans**
Water consumption	2016: 1.500 lt 2019: 581 lt	7.000 lt
CO_2 emission	2016: 8.88 Kg 2019: 7.14 Kg	23.45 Kg

Besides, the materials saved from landfill and incineration increases by the year. In 2019, 7,935 pairs of jeans could be saved by MUD Jeans production. MUD Jeans is exhibiting an integrated approach for sustainable resource management and use. Its business helps cotton's value chain be more efficient and circular.



MUD Jeans has created a community of jeans leasers (3,500 members in 2018) who have become part of this circularity effort and gained awareness of the circular economy and sustainability. Consumers feel the empowerment of consuming sustainably without generating any waste, and this motivates them to adopt more sustainable forms of living. By monitoring and reporting their impacts and sharing their experience, they continue to inspire and educate different segments of the community.

ORTA – Turkey

Founded in 1953 as a spinning and weaving company, ORTA transformed into a denim manufacturer in 1985. Today, ORTA operates at an annual production capacity of 60 million meters of denim in its Turkish factory with 1,500+ employees. It is a B2B company and supplies denim to garment manufacturers and brands. ORTA's main customers are denim brands around the world, but they also work with retailers. The company started its sustainability journey at the beginning of 2000 by using organic cotton. As an early supporter and adopter of sustainable fiber usage, ORTA founded its sustainability platform, Orta Blu, in 2010 (www.ortablu.org). Their mission is to drive the denim industry towards a more sustainable future.

http://www.ortaanadolu.com/

Circular Value Chains Through Sustainable Materials

ORTA's sustainability and innovation approach uses organic, BCI (Better Cotton Initiative)[21], and Fairtrade cottons as well as other sustainable fibers (TENCEL™ Lyocell, LENZING™ Modal, LENZING™ Viscose, LENZING™ ECOVERO™, hemp, linen, and bamboo) as well as post/pre-consumer recycled fibers, in certain ratios, based on product types and customer demands. ORTA's products containing recycled fiber are certified with the RCS (Recycled Claim Standard) and GRS (Global Recycle Standard), which applies to products with a minimum of 5 and 20% recycled content, respectively, and provides verified assurance. ORTA's efforts also include creating demand for sustainably grown cotton and other natural fibers, and stimulating eco-friendly fiber and chemical production.

Post-consumer recycling

To increase recycled fiber and close the loop, ORTA, an early adopter of circularity in its sector, collaborated with Levi's in collecting post-consumer jeans in 2012. Then they engaged a group of local women in a small village to remove the seams, labels, and metals on these post-consumer jeans before sending them to shredding facilities to be spun into yarns. The recycled yarns have been used to produce new fabric.

Life cycle assessment (LCA) for improving circularity

ORTA uses a life cycle assessment (LCA) tool for quantifying the environmental footprint of their products and the potential areas for a more sustainable and circular value chain. The tool allows them to fully see the impact of their systems through a holistic approach that looks at both the negative and positive effects of using different fibers and processes. Based on the results, ORTA improves its input materials and processes. LCA analysis of produced fabrics is also shared with customers through QR codes on hangtags. This way customers can choose denim based not just on its physical properties but also its potential environmental impacts.

Recently, ORTA digitalized its LCA studies to publish on a platform and created a smartphone app where users can design their denim by choosing characteristics such as elasticity, weight, composition, color, and finishing and assess its environmental performance through LCA methodology compared to standard denim. With this app, ORTA takes the first step toward designing for sustainability.

ORTA partnered with Circle Economy, VF Corporation, and Auping and contributed to the development of the Circle Fashion Tool which is a decision-making tool for evaluating closed loop options for textile waste.

[21] The Better Cotton Initiative (BCI) is a not-for-profit organization that exists to make global cotton production better for the people who produce it and for the environment. BCI farmers implementing this system are licensed to sell Better Cotton, and the products bearing the BCI logo have met BCI criteria.

Impacts and Added Value

In responding to the circularity expectations of its customers and meeting the relevant standards, ORTA has continuously increased sales and expanded its customer base. ORTA's step-by-step conversion to low-impact and recycled inputs have increased demand and promoted the markets for sustainable inputs and materials. Value and savings have been created through recycled materials and the elimination of virgin materials.

The circularity and sustainability at both company and value chain level has improved. Overall environmental impacts stemming from the extraction, processing, and waste management of non-recyclable/biodegradable materials/products have been reduced.

ORTA has stimulated job creation in sustainable and circular materials and products.

Darwin's Botanicals – Turkey

Darwin's Botanicals was founded in 2015 as a family-owned company with only two employees. Based in Istanbul, Turkey, they produce fabric accessories such as scarves, headbands, headwraps, and bowties, and plan to expand their product line. Darwin's business has three main aspects: hand-dyeing fabrics with colors extracted from plants and food waste without using any chemicals; designing and sewing products using those fabrics; and raising awareness about the importance of botanical and food waste dyeing via workshops and talks. Their customer profile is eco-conscious urbanites who seek to add thoughtful pieces to their conscious closets.

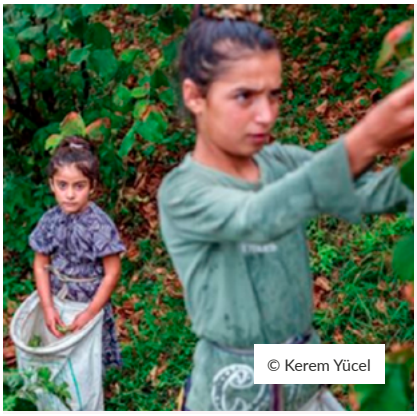
http://darwinsbotanicals.net/

A Niche Business with 100% Natural Fibers and Dyes

Darwin's Botanicals' motto is adopting the way nature works to their business model: there is no concept of "waste" in nature. Darwin's produces accessories using only 100% natural fibers and natural dyeing materials. Dyeing materials include plants, flowers, fruits, and leaves at the end of their life cycles in addition to food waste. To upcycle dyes from plants and food waste, Darwin's has created a "network of waste" from cafes, restaurants, catering firms, and local florists who collect their waste and deliver it to Darwin's. No chemicals and synthetic dyes are involved in the production. All items are hand-dyed, making each of them unique. Although it is quite challenging, Darwin's strives for local suppliers and local manufacturers when choosing fibers. They primarily prefer hand-loomed if possible, or reclaimed and dead-stock fabric. They actively cooperate with an NGO to upcycle used natural fabrics.

Eco-friendly and gentle processing

Darwin's focuses not only on the input materials they use but on how they are processed as well. They try to minimize environmental impact by optimizing the process and using the same dye several times, storing the excess dye in a cold place for future reuse, and using rain and sea water and conducting solar dyeing when possible.


© Kerem Yücel

Trying to attract attention and point out a "gap" in the market

Since sustainable fashion and upcycling are pretty new concepts in Turkey and the target audience is not mature enough, Darwin's has needed to implement a push strategy since the beginning. They use their website and social media accounts to interact with like-minded brands and consumers. They have been supporting each other through several local retailers and concept stores who are interested in eco-conscious brands. In addition to such stores and online sales through the website, Darwin's is planning to open their atelier for visits and sales as well. They are also looking for opportunities to export in the future.

Impacts and Added Value

Darwin's Botanicals is quite a niche and small business. It has started to interact with certain brands and local retailers and given them sustainable, 100% natural accessories to add to their product lines, as a new business area.

By upcycling plant and food waste and using 100% natural materials besides eco-friendly production processes, Darwin's minimizes its environmental footprint compared to the impacts associated with a standard product's material extraction, production, distribution, and waste management processes.

Darwin's has created a community of eco-conscious consumers, NGOs, local retailers, stores, and other businesses. They raised awareness about sustainable and natural materials and at the same time benefit from the collected plants and waste for upcycling.

Kilomet109 – Vietnam

Kilomet109 is a contemporary fashion brand founded in 2012, based in Hanoi, Vietnam. They currently have eight full-time employees involved in the clothing design/production and sales for the brand. In addition, they collaborate with local artisans. Kilomet109 produces high-end handmade sustainable fashion pieces for both men and women. In addition to their flagship store in Hanoi, they sell their collections online through their website, across social media platforms, and at some partner boutiques in the USA, Korea, and Germany.

https://kilomet109.com/home/[22]

From Traditions to Circular Value Chains

The starting point for Kilomet109 was discovering that the traditional way of producing textiles in Vietnam was incredibly eco-friendly and could show the world an alternative approach to circular production in fashion. Today, to produce high-end, sustainable garments, Kilomet109 works with organic fiber, traditional vegetable dying techniques, and 37 artisans, representing five different artisan communities in Vietnam. These communities, each of which represents one of 54 Vietnamese ethnic groups, produce the sustainable textiles used in the collections. Each artisan community brings the mastery of a different set of traditional textile techniques and skills that the company incorporates into their collections. Those techniques include, but are not limited to, natural dyeing (indigo, yam root, lac beetle resin, ebony fruit, etc.), batik drawing, beeswax fabric calendaring, silk/cotton/hemp weaving, and hand embroidery. The products feature innovative details such as flexible panels, folds, hoods, detachable scarves, and pleats, making garments usable in different ways.

Fully controlled local sourcing

Kilomet109's entire production chain is locally sourced. They participate directly in each aspect of the production of their clothes, from planting seeds (cotton, hemp, indigo), growing fibers, and harvesting natural dyes, all the way to the production of the final textiles and fashion pieces at their design studio in Hanoi. As such, they maintain full control and visibility of each step in the value chain used in the production of their clothes.

[22] All of the information contained in the present publication has been acquired through the company's official website and other public sources.

Impacts and Added Value

Since its establishment, Kilomet109 has been a 100% independently owned and self-funded business. It is profitable and looks for new financing options for further growth. Kilomet109 is expected to expand their retail presence in Vietnam and potentially abroad. With this business, Kilomet109 has created a new business area for local artisans, creating value out of their traditional capabilities.

Using only locally produced, natural fibers and fully avoiding harmful chemicals at every phase, Kilomet109 minimizes its environmental footprint compared to impacts associated with a standard product's material extraction, production, distribution, and waste management processes. Their production is resource-efficient in that they only produce as much as they need, and generate little to no waste or excess inventory.

Kilomet109 has created jobs for 45 people, including company staff and local artisans. They pay the artisans and employees above-market rates, providing a livable wage and a safe work environment. 37 of the 45 people are women. They also plan to add more staff in the coming year. In addition, Kilomet109 helps preserve Vietnam's culture, using contemporary design to innovate fashion pieces that help to raise the value of traditional Vietnamese craftsmanship.

One Square Meter – Turkey

One Square Meter was founded in 2016 in Istanbul, Turkey, by two founders that currently manage the business. It is a slow fashion brand, and their collections include garments and bags. The company initially produced bags printed with a woodblock print technique and later expanded their product line. They make both domestic and international sales, with 90% being domestic. Their fabric suppliers are the well-known fabric producers of Turkey, in addition to local fabric producers that use natural fibers. Their target segment is mainly women between the ages of 23 and 55.

https://onesquaremeter.co/

A Sustainable and Slow Fashion Approach

One Square Meter uses eco-friendly materials and a pre-ordering system to avoid excess production. The entire design and production process is carried out in-house. One Square Meter uses fabric made with natural fibers and eco-friendly dyes as well as their modern interpretation of a traditional woodblock print technique, to obtain unique and beautiful prints. All the collections they produce include basic, multifunctional, and universal pieces. Taking a stand against fast consumption and fast fashion, One Square Meter aims to produce valuable collections that are a pleasure to wear for years. They aim to make their production process transparent so that consumers can find the answer to their question: "Who is producing my garments?" One of the key issues in the business model is sourcing high-quality fabric, which requires One Square Meter to maintain relationships with existing suppliers and find new sources.

A pre-order system

Using their pre-order system, the company does not create stock but produces only to meet orders. This way they can keep their pricing under a certain level, since they do not need to pass the costs of mass production on to the customer. As such, they create patterns for all sizes and produce a single garment from each model based on the pre-orders made online. These orders influence production estimates and plans, which makes efficient use of materials.

Impacts and Added Value

One Square Meter is a small business which has seen a return on their investment and makes a profit.

In using natural fiber and a pre-order system that prevents overproduction, One Square Meter minimizes its environmental footprint compared to impacts associated with a standard product's material extraction, production, distribution, and waste management processes. A zero-waste approach to production also minimizes waste.

One Square Meter is among the companies that raise awareness of sustainable and slow fashion.

References

1 . Chapagain, A. K., Hoekstra, A. Y., Savenije, H. H. G., Gautam, R. (2006). *The water footprint of cotton consumption: An assessment of the impact of worldwide consumption of cotton products on the water resources in the cotton producing countries*, Ecological Economics 60(1), 186–203. 1 Nov 2006. <https://doi.org/10.1016/j.ecolecon.2005.11.027>

2. Demirer, G., Alkaya, E. (2018). *Cleaner production guide for the textile sector: efficiency in use of resources, a decrease in costs, harmony with the environment*. WWF Turkey. <https://wwfeu.awsassets.panda.org/downloads/wwf_guideline_cleaner_production_textile_2018_2.pdf>

3. Republic of Turkey's Ministry of Foreign Affairs (2020). Turkey's Policy on Water Issues. <http://www.mfa.gov.tr/turkey_s-policy-on-water-issues.en.mfa>

4. Ezz, M., Arafat, N. (2015). *'We woke up in a desert' – the water crisis taking hold across Egypt*. The Guardian. 4 Aug 2015. <https://www.theguardian.com/world/2015/aug/04/egypt-water-crisis-intensifies-scarcity>

5. BCI (Better Cotton Initiative) (2019). *Better Cotton Pilot Project Launches in Egypt*. 7 Mar 2019. <https://bettercotton.org/better-cotton-pilot-project-launches-in-egypt/>

6. Franke, N., Mathews, R. (2013). *C&A's Water Footprint Strategy: Cotton Clothing Supply Chain*. Water Footprint Network.<https://waterfootprint.org/media/downloads/CA_Strategy_Final_Report_Formatted_06.08.2013.pdf>

7. Abdel-Dayem, S. (2011). *Water Quality Management in Egypt*. International Journal of Water Resources Development 27(1), 181–202. 6 Feb 2011. <https://doi.org/10.1080/07900627.2010.531522>

8. Devrent N., Palamutçu, S. (2017). *Mini review on organic cotton*. Journal of Textile Engineering & Fashion Technology 3(2), 610-614. 27 Oct 2017. <https://doi.org/10.15406/JTEFT.2017.03.00093>

9. Nayak, P., Rout, T. K., Nagle, U. (2013). *Global trade analysis of synthetic fiber*. Textiles Committee of Ministry of Textiles Government India. <http://textilescommittee.nic.in/writereaddata/files/ GTASF.pdf>

10. Turkey Ministry of Trade (2019). *Fibers and Yarns*. Directorate General of Exports. <https://www.trade.gov.tr/data/5b8fd6d913b8761f041feee0/Fibers%20and%20Yarns.pdf>

11. Ormak, H. (2019). *Keten ve kenevirde yeni dönem (New age for linen and hemp).* Tarım Orman Dergisi. 11 Jul 2019. <http://www.turktarim.gov.tr/Haber/304/keten-ve-kenevirde-yeni-donem->

12. Buz, E. (2020). *Hemp fiber can provide the desired sustainability in textile*. Textilegence International Textile Magazine. 17 Jan 2020. <https://www.textilegence.com/en/hemp-fiber/>

13. KEMI (2014). *Chemicals in textiles – Risks to human health and the environment*. Report 6/14, Swedish Chemicals Agency, Stockholm. ISSN 0284-1185.

14. United Nations (2014). *Morocco Environmental Performance Reviews*. Environmental Performance Reviews Series No. 38. United Nations, New York and Geneva, 2014. <https://www.unece.org/fileadmin/DAM/env/epr/epr_studies/ECE_CEP_170_En.pdf>

15. EREK (2020). *Making use of leftovers - remanufacturing in the global fashion industry.* European Resource Efficiency Knowledge Center.<https://www.resourceefficient.eu/en/measure/making-use-leftovers-remanufacturing-global-fashion-industry>

16. Altun, S. (2015). *Türkiye'deki tekstil ve hazir giyim atik miktarlari ve geri kazanim imkanlari (Textile and apparel waste amounts in Turkey and recovery opportunities).* <http://www.temizuretim.gov.tr/Files/haberfiles/d120215/ Prof.%20Dr.%20%C5%9Eule%20ALTUN-T%C3%BCrkiyedeki%20Tekstil%20ve%20Haz%C4%B1r%20Giyim%20At%C4%B1k%20Miktarlar%C4%B1%20ve%20Geri%20Kazan%C4%B1m%20%C4%B0mkanlar.pdf>

17. UNIDO (2018). MED TEST II. *Transfer of Environmentally Sound Technology.* Project Summary and Achievements. <https://www.switchmed.eu/en/corners/service-providers/actions/med-test-ii- countries/regionalpublicationmedtest2_digital.pdf>

18. Turkey Ministry of Industry and Technology (2017). *Sanayide kaynak verimliligi potansiyelinin belirlenmesi projesi sonuç raporu (Identification of resource efficiency potential in industry project final report).* Sep 2017. ISBN: 978-605-4889-27-3.

19. Possible Future (2018). *Sustainability for Textile and Leather Goods: Redesigning the Fashion Industry.*

20. Holding, A., Gendell, A. (2019). *Polybags in the Fashion Industry: Evaluating the Options*. Fashion for Good in Collaboration with the Sustainable Packaging Coalition. <https://fashionforgood.com/wp-content/uploads/2019/12/FashionforGood_Polybags_in_the_Fashion_Industry_Whitepaper-1.pdf>

21. Holding, A., (2019). *Polybags in the fashion industry: evaluating the options*. Fashion for Good in collaboration with the Sustainable Packaging Coalition. December 2019. <https://d2be5ept72nvlo.cloudfront.net/2019/12/FashionforGood_Polybags_in_the_Fashion_Industry_Whitepaper-1.pdf>

22. EMF (Ellen MacArthur Foundation) (2017). *A new textiles economy: Redesigning fashion's future*. <https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-EconomyFull-Report_Updated_1-12-17.pdf>

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