

# The Fashion Industry and Textile Recycling

A Service Design Project from a Recycler's Point of View

MASTER'S THESIS IN INDUSTRIAL DESIGN ENGINEERING

ANNA KARLSSON & JONAS LARSSON

Department of Industrial and Materials Science  
Division of Design and Human Factors

Chalmers University of Technology  
Gothenburg, Sweden 2023  
[www.chalmers.se](http://www.chalmers.se)



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**Anna Karlsson  
Jonas Larsson**

Company supervisor: Elin Kristell  
Chalmers Supervisor: Helena Strömberg

Master of Sciences Thesis

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In collaboration with Stena Recycling

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# Abstract

Fashion consumption is at an all time high, leading to a substantial negative environmental impact. Textile recycling is one of the solutions necessary for a more sustainable textile industry, but currently a very small share of textiles produced are recycled into new fabrics. The project initiator Stena Recycling has been working with waste management, recycling and sustainability for decades in a wide range of industries.

The aim of this project was to explore the needs and sustainability processes of fashion companies and through that create a service concept that Stena Recycling could offer to become a partner to fashion companies, providing support through the entire product lifecycle. The project was conducted using service design methodology, focused on including stakeholders and users. This was achieved through an interview study, a market analysis, concept development, internal and external evaluations, and finalization of a service portfolio.

To create a foundation for understanding fashion companies, company personas were created and their customer journey was mapped along with needs, objectives and goals for each section of the journey. The customer journey consists of five sections: Sustainability Goals, Design, Sales, Disposal and Circularity, of which Sustainability Goals and Circularity span across the entire journey. Further, gaps between producers and recyclers were identified, the main ones being knowledge and intermediaries.

A service portfolio consisting of three concepts was developed to meet the needs and gaps identified. Stena Collect connects producers and recyclers through textile collection and logistics, making it easier for fashion companies to recycle textile waste. Stena Consulting helps fashion companies plan and execute sustainability work. Finally, Design for Recycling is a digital tool supporting fashion companies in creating garments that can be recycled.

*Keywords: Service Design, Textile Recycling, Fashion Industry, Sustainability, Customer Journey*

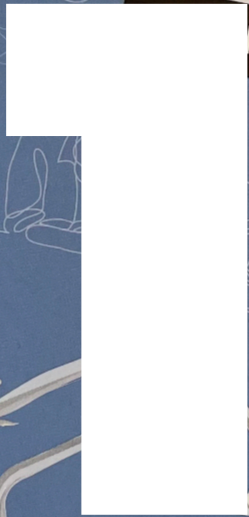
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# TJÄNSTEDESIGN

TEORIER OCH PRAKTIKER



STEFAN HOLMLID KATARINA WETTER-EDMAN

# Introduction

There are more textiles being sold today than ever before, and along with each item there is a production chain causing waste and emissions. Additionally, garments are worn for shorter and shorter periods of time before ending up in the garbage, leading to textile consumption having the fourth highest negative impact on the environment from a global life cycle perspective (European Commission, 2022). The fashion industry at large is starting to approach this problem by acting more sustainably, but there is a long way to go toward sustainability and circularity (Mistra Future Fashion, 2019).

Today the majority of end of life textile, of which 70% is clothing, in Sweden ends up in the household garbage and is incinerated (Hultén et al., 2016; Naturvårdsverket, n.d.-b). This is far from optimal disposal of the textile since it can generally be reused, remanufactured or at least recycled instead. The problem is that textile recycling is an industry in development where not all parts of the chain, from textile in use to recycled fiber, have fallen into place yet (Mistra Future Fashion, 2019).

Stena Recycling, from here on referred to as Stena, has been working with waste management and sustainability in the retail industry for decades. Today their retail customers include multinational companies as well as small retailers, in a wide range of businesses producing many different kinds of waste, from metals to plastics to textiles (Stena Recycling, 2022a). As society moves towards more circular consumption models, the volumes of waste will decrease, and Stena will need to adapt to this change. One way Stena aims to do this is by being a circularity partner to their retail customers, providing support in increasing recycling rates, reducing climate impact, sourcing recycled materials, designing for recycling, and more (Stena Recycling, 2022b).

This project aims to explore the possibilities for Stena to become a circularity partner in the fashion industry, a developing area when it comes to sustainability and recycling. This requires in-depth knowledge about both the technical aspects of recycling and materials as well as the potential customers and their development processes. The targeted customer group for this project is fashion companies based in Sweden, which onward will be referred to as potential customers or fashion companies. The project will be centered around how the fashion companies work with sustainability, specifically within Sweden and at their headquarters. In this report, sustainability refers to environmental sustainability.

## 1.1 Aim

The aim of the project is to explore the entire customer journey, from product development to end of life, of fashion companies in Sweden. The goal is to identify needs and problem areas of fashion companies, understand Stena's strengths and competencies, and finally develop a service concept that Stena can offer potential customers for more sustainable textile use and recycling. The goal of this research and service design project is to illustrate how Stena can participate earlier in the product life cycle than a traditional waste management company, and through this become more of a circularity partner, prepared to compete in a future with decreasing volumes of waste. This project has been conducted with the aim of reaching the following objectives:

- Use service design methodology to develop a service that Stena could offer to become a circularity partner for textile retail customers.
- Explore the sustainability and product development processes in the Swedish fashion industry and synthesize these into customer needs and journeys.
- Identify where the fashion production and recycling chains do not match and why.

## 1.2 Service Design Methodology

A part of the project aim is to use service design methodology to explore the current situation of, and potential future service concepts for, fashion companies. According to Holmlid & Wetter-Edman (2021), service design is often viewed as a way to improve the customer experience of a certain product through post-its and customer journeys in order to create additional selling points. Contemporary literature on the subject argues that service design contains a lot more than that; a design practice synthesizing competences from interaction-, industrial-, graphic-, as well as participatory design. Further, it requires multidisciplinary collaboration with other fields, such as psychology and systems science. In order to conduct a successful project a conscious effort has been made to include stakeholders from Stena as well as customers, to receive multidisciplinary input, and elements of participatory design.

The Service Design Network (2017) defines service design as "a collaborative process of researching, envisaging, and then orchestrating experiences that happen over time and multiple touchpoints." Notably, service is not defined, the result of the service design process is touchpoints, the interaction sites between a service provider and a customer. The focus is a collaborative process resulting in experiences distributed in time.

Josina Vink (2019) describes three horizons for service design: *Design of Services*, *Design for Service* and *Service Ecosystem Design*.

Design of services is the current prevailing view and is focused on creating better market offers through development of services. It is characterized by being limited to a phase of development, and generally conducted by experts, such as managers or designers.

Design for services is a transitional view of service design which has emerged in the last decade. The focus lies on service not as an end product, but rather on establishing platforms for co-creating value. In this view, design is not bound by a phase, but iterative and occurs through co-design (Sanders & Stappers, 2008), where both service providers and users participate.

Service ecosystem design is more dynamic and holistic, focusing on value being co-created by several actors through collective design, and that value is determined through the social structures the actors exist within. In this view, the social structures, such as norms, rules, beliefs and roles, are the subject of design. Due to the inherent resource and time constraints of this project, the focus has been on the design of services and design for services horizons, with many of the concepts developed requiring activities in both. However, the authors recognize the need for a service ecosystem design approach in order to adequately address the excessive consumption which dominates the fashion industry today.

### 1.3 Project Structure

The project is divided into three larger phases, as seen in figure 1.1. At the end of each phase a presentation was held for the supervisor at Chalmers and Stena employees in order to update them on the progress as well as involve them and validate the direction of the project. However, the design process was iterative and the phases overlap more than illustrated, yet each of the phases represent one section of the report.

The report is divided into six main sections: Introduction, Fashion and Textiles, Research, Ideation, Delivery, and Discussion & Conclusion. The Introduction provides the reader with the background and aim of the project as well as a brief explanation of service design. In Fashion and Textiles a frame of reference for the project is presented with a focus on describing current textile flows, textile recycling as well as relevant laws & regulations. The Research, Concept Development, and Delivery sections correspond to the project phases and contain a description of the methodology used, and results produced in those phases. The Research section describes interviews and market analysis as well as customer needs and a customer journey. In Concept Development, ideation, conceptualizing and evaluation of service concepts is outlined. The Delivery section presents three final service concepts and guidelines to implement these. Finally, in Discussion & Conclusion the entirety of the project and its execution is discussed.

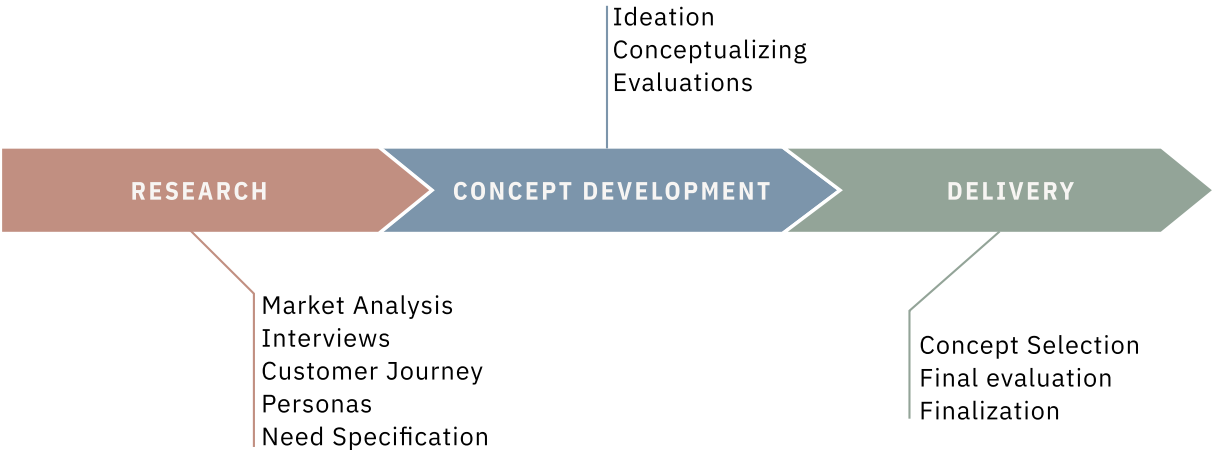


Figure 1.1. A schematic representation of the project structure.



2

# On Fashion & Textiles

This section is an overview of the textile flows in the fashion industry, textile end of life in Sweden, as well as regulations pertaining to textile producers and recyclers. The information was gathered through a literature study described in section 3.1. The focus is on end of life and coming regulations as these aspects directly influence the services a recycler is expected to offer, and a fashion company needs.

## 2.1 Textile Flows in the Fashion Industry

While the targeted group is fashion companies registered in Sweden, their production of clothing is usually situated outside the EU (Naturvårdsverket, n.d-a). These companies have their headquarters in Sweden where the garment is designed and developed. The production process is complicated and differs depending on the fashion company and garment in question. In general, the production phase includes fiber production, yarn production, fabric production, wet treatment and manufacturing, i.e cutting, sewing & adding trims (Sandin et. al., 2019). Trims are details added to a garment either for functional or aesthetic reasons, such as sewing thread, buttons, and rivets (Dimosky, 2022). Nearly 80% of the climate impact in a garment life cycle comes from these stages (Mistra Future Fashion, 2019). After production the garment is packed and shipped to distribution centers, then stores, and finally sold to consumers (Sandin et. al., 2019). The use-phase of garments does not have a significant environmental impact and is typically ended by the garment either being donated to an aid organization, sold, or placed in the household trash (Mistra Future Fashion, 2019).

## 2.1.1 Aid Organizations

A significant group of actors on the textile disposal market in Sweden today are aid organizations that finance their charity through textile collection. These companies mainly collect post-consumer textiles through municipal bins or in second-hand stores. Some of these organizations also manage their own sorting facilities where they sort garments for the second hand market in Sweden, export and incineration. Around 80% of the sorted textile is exported to buyers around Europe for a second sorting and is then sold second hand abroad or sent to recycling (Myrorna, 2022; Erikshjälpen, 2022; Ivarsson, K. & Björkåfrihet, 2022). Aid organizations are relevant actors to study in this project since they are experienced textile collectors and sorters that understand the value of post-consumer textile.

## 2.1.2 End of life

Today, the majority of post-consumer textile in Sweden ends up in the household garbage and is incinerated (Naturvårdsverket, n.d.-b), and there are reports that the same happens with unsold stock and returns from fashion companies (Roberts et al., 2023). This is far from ideal, as reuse, resale and repair should be the first options, and recycling utilized when these no longer are feasible, with incineration as the least desirable option. In the cases where recycling is necessary, the entire recycling process needs to be conducted in an efficient way in order to ensure that the environmental footprint of the recycled fabric is lower than that of virgin material (Mistra Future Fashion, 2019).

Today less than one percent of textiles are recycled in Sweden (Naturvårdsverket, n.d.-b). Recycling textiles is difficult due to textiles often being composed of several materials and are often part of products with multiple parts made from different materials. There is a lot of innovation in the field of textile recycling, with several emerging technologies, and the future of textile recycling is promising. However, currently the recyclers at scale are few, and discerning between what is currently possible and what is likely to be possible in a few years is hard due to conflicting messages from advertisers and recyclers (Roos et al., 2019).

There are two main categories of textile recycling, chemical and mechanical recycling. Chemical recycling is generally the preferred method for recycling both natural and synthetic materials, as these processes can generate textile fibers with properties similar to the virgin material. The downsides with chemical recycling are that these methods are only available for specific materials, sensitive to contaminants, and pure material streams are required for high efficiency (Roos et al., 2019). Through mechanical recycling almost all types of textile fibers are recyclable (Rester, 2023). However, the output material of mechanical recycling is of lesser quality than virgin materials, and is often not suited for the same usages, or needs to be blended with virgin material to have similar properties (Roos et al., 2019). A large Scandinavian mechanical recycling plant is Rester. They recover fibers and manufacture different kinds of products like yarn, insulation and composite from both pre- and post-consumer textile (Rester, 2023).

### 2.1.3 Textile Recyclers

In Sweden there are three large actors within textile recycling and disposal. While there are other emerging actors and international companies in textile recycling (Roos et al., 2019), these three are the ones of most interest to fashion companies and this project. Partly due to them operating in Sweden, and partly because they have the capacity to handle large volumes and generate high output quality.

Siptex is a part of the waste management company Sysav and is an automatic textile sorting facility. Textiles are sorted by color and fiber using infrared light, packaged, and sent to recycling at other facilities across Europe (Sysav, 2021).

Renewcell is a Swedish chemical textile recycler that recycles cotton into a new, biodegradable raw material that can be turned into viscose or lyocell. Today their material is largely made of pre-consumer textile waste (Renewcell, 2023).

Södra, an international forest industry concern, is also a chemical textile recycler creating new material from 20% recycled post-consumer textile and 80% wood (Södra, n.d-a). A part of the process of making the mass is separating polyester and cotton in blend textiles, allowing them to accept textiles containing up to 50% polyester (Södra, n.d-b).

## 2.2 The Waste Hierarchy

When dealing with waste and circularity, a common concept is the waste hierarchy, which outlines the best to worst options for handling waste. The overall goal is to act in a way which makes end of life materials end up as high as possible in the hierarchy (European Commission, 2023). Today, textiles end up in all stages of the hierarchy, but the majority in Recovery, meaning that there is significant potential for improvement (Mistra, 2019). The hierarchy is as follows (European Commission, 2023):

- Prevention: Preventing waste generation
- Reuse: Reusing products/materials
- Recycle: Recycling materials
- Recovery: Generating heat by incinerating waste
- Landfill: Disposing waste in landfill

Waste prevention can mean different things but generally implies prolonging products' lives through design, remanufacturing them into new products or repairing them, meaning less new products need to be produced (European Environment Agency, 2021).

## 2.3 Laws & Regulations

The European Union has created a strategy for more sustainable and circular textiles by 2030. The vision is for the textile market in Europe to consist of: long lived and recyclable materials, products made from recycled fibers, widely available re-use and repair, and textile producers taking responsibility along the entire life cycle, including waste, minimizing landfill and incineration. This strategy contains proposed regulations and incentives to curb problems within the textile industry (European Commission, 2022). A selection of the ones relevant to this project are presented below.

According to the European Union waste directive, all member states are to begin collecting textiles separate from other types of waste before 2025. According to the directive, the member states are to ensure that the textile is reused or recycled in some way, and not incinerated or sent to landfill (Naturvårdsverket, n.d.-b). In Sweden, the responsibility will fall on municipalities to manage the textile waste from households, while non-municipal waste, for example from garment production, will be the responsibility of the original producer of the waste (Swedish Ministry of Climate and Enterprise, 2023). This will mean that the volumes of collected textile will increase dramatically in Sweden, changing the conditions drastically for recyclers and collectors (Kjellsdotter Ivert, 2022).

To increase reuse and recycling, and decrease landfill and incineration, an extended producer responsibility (EPR) for textiles is proposed. EPR is a type of regulation which gives manufacturers responsibility over the end of life of their products, forcing them to have a solution in place for collection and recycling of their products (European Commission, 2022).

The Green Claims Directive is a proposed directive to ensure that environmental claims on products are accurate. This regulation would require environmental claims to be specific to a product and substantiated, as well as related to current environmental performance in an objective and verifiable way (Forwood et al., 2023). For fashion companies this means increased demands on traceability throughout their supply chain, as well as increased demand on primary source data on emissions.

Digital Product Passports (DPP) are a proposal from the European Commission to have a product specific data set available digitally for all new garments. The mechanisms of how it would work in practice are not set, but the idea is for it to contain information on material composition, origin, and end of life options. The idea is that it would increase transparency which would improve communication between producers, recyclers, and consumers (CISL & Wuppertal Institute, 2022).

In Sweden large companies are required by law to publicly report on their sustainability work in an annual sustainability report. The report shall give the reader an understanding of the company's effect on the environment, on social aspects including their staff, on human rights and on corruption (Bolagsverket, 2019).

## 2.4 Summary

In this section the textile flows of the fashion industry have been described, giving a brief overview from design in Sweden, to production abroad and finally end of life back in Sweden. The end of life processes are complicated and today the main actors working with collection are aid organizations. Textile recycling is complex and can have many types of output depending on the recycling process and should mainly take place when neither reuse nor remanufacturing is suitable. Finally, there are several regulations planned intended to put pressure on fashion companies to act more sustainably and force a change in the industry. This background provides a valuable knowledge base for understanding the fashion industry and the challenges they face.



# Research

This chapter describes the first phase of the project, which included conducting, analyzing and compiling research to gain a broad understanding of sustainability within the fashion industry. A section outlining the methodology used is followed by a section containing the results.

## 3.1 Research Methodology

Below, the aim of the research phase is described, followed by explanations of the methodology used to reach said aim.

### 3.1.1 Aim

The primary aim of the research phase was to get a market overview of the fashion industry in Sweden as well as an in-depth understanding of the sustainability and product development processes of fashion companies. Thus, the aim was to identify the challenges different actors face, as well as their abilities and needs regarding sustainability. In order to reach the aims a market analysis as well as an interview study were conducted. These insights would then be compiled to illustrate the needs of the fashion companies and the deficiencies in the market. An additional objective was to gain insight into other relevant actors in the field, as well as the project initiator, in order to provide a multidisciplinary knowledge and cooperation beneficial for service design.

## 3.1.2 Execution

### Literature Study

To gain insight into the fashion industry and textile recycling, a literature study was conducted. Legislation, technicalities of textile recycling, basic material properties and brief life cycle analyses of garments and textiles were explored. This information was gathered by searching online, and through recommendations from interviewees. Some of the subjects were directly relevant for the project, but the main goal was to deepen the understanding of the field. Reading literature was a continuous activity throughout the project as new knowledge gaps were identified.

### Organizations Studied

The market analysis covers twenty-one Swedish clothing producers and four aid organizations that have second hand stores, see table 3.1. The studied companies were chosen to achieve an even distribution of company size, targeted customer segment, e-commerce versus physical stores and sustainability profile.

Requests for interviews were sent via email to fifty-seven fashion companies and eight aid organizations, all companies based in Sweden that could be identified. Company representatives for sustainability and sustainability related topics were primarily contacted, if their contact information could not be found other channels were used, such as customer support. Out of these, nine companies and three organizations agreed to be interviewed, see table. 3.2 for the roles of the interviewed representatives. All of the companies interviewed were included in the market analysis. The interview study also included meetings with several Stena employees as well as other experts in the field.

#### Organizations Studied

Asket	Gina Tricot	NA-KD
Cellbes	H&M group	Nudie Jeans
Craft	Houdini	Varner
Dedicated	House of Dagmar	Åhlens / Carin Wester
Ellos Group	ICIW	<i>Björk &amp; Frihet</i>
Eton	Kappahl	<i>Erikshjälpen</i>
Filippa K	Lager 157	<i>Human Bridge</i>
GANT	Lindex	<i>Myrorna</i>

Table 3.1. An overview of studied and organizations. Aid Organizations in Italics

#### Roles of Interviewed Representatives

Sustainability Coordinator	CEO
Sustainability Manager	Head of sustainability
Head of CSR	Circular Product Manager
Sustainability Director	<i>Climate Strategist</i>
Head of sustainability	<i>Collection &amp; Sustainability</i>
CSR and Quality Manager	<i>Sales &amp; Logistics</i>

Table 3.2. An overview of the roles of interviewees. Aid Organizations in Italics

## Market Analysis

Information was collected from fashion company websites and from yearly sustainability reports. Information that was considered relevant included sustainability goals as well as how the companies work with materials, textile collection, recycling and circularity. The purpose of this was to get a thorough and comparable image of how mature the companies' sustainability processes were. An additional purpose of the market analysis was to prepare for customer interviews and adapt the template to the specific company.

## Interviews with Fashion Industry & Aid Organization Representatives

The main focus of the interview study was fashion companies, as they were the intended customers and users of the developed service. The interviews were kept at thirty minutes in length, and conducted via video call, in order to enable as many corporate representatives as possible to participate in the study. Additionally, they were recorded for future transcription.

A general interview template was developed for the interviews with the goal of covering sustainability processes, challenges, needs and product development processes. Before each interview, the template was adapted to the company based on their individual sustainability processes in order to obtain as much relevant information as possible. Further, as the interviews proceeded the contents and topics of the interview template evolved along with the understanding of the field. This yielded a fuller picture of the fashion industry than if the template had been static. See appendix A for an example template.

Three aid organizations with textile collection and sorting operations were interviewed. The template for the interviews with aid organizations was developed to provide information on how they work with textile collection, sorting and sales. Similar to the fashion companies the interview templates were tailored to each organization in order to extract as much relevant information as possible. See appendix B for an example of the template.

## Interviews with Stena Representatives

Several representatives from the project initiator, Stena, were interviewed during the project. The most significant ones are listed below.

### Alternative Raw Materials

Textiles are included in the category Alternative Raw Materials at Stena and thus it was essential for the project to include that branch of the company in the project. The person responsible for textiles was consulted throughout the project, providing insight into textile end of life, as well as the fashion industry as a whole.

### Stena Borås Branch

A visit was made to the Stena Borås branch, a local waste handling establishment, in order to get an understanding of how the Stena operation works in practice. The manager and a representative from sales provided information on how their day-to-day processes work as well as what their customers ask of Stena on a local level.

### Key Account Managers & Business Developers

To ensure that this project was conducted in a way that would be beneficial to Stena, key account managers and business developers were consulted throughout the project on important decisions and delimitations.

## Other Interviews

To get a holistic picture of the fashion industry and related areas, representatives from other stakeholder groups were interviewed.

### Re:newcell

An interview was conducted with a Swedish textile recycler in order to gain an understanding of the end of life aspects of textiles in Sweden, and to get the perspective of a recycling company.

### Head of the Swedish government's EPR—Investigation

An interview with the head of the Swedish government's EPR-Investigation, and sustainability strategist at University of Borås, was held in order to get a deeper understanding of likely developments in regulations regarding end of life and textiles. This information was useful to gain more insight into what the future could contain, and gave an additional perspective on the challenges the industry faces.

### Fashion retail store employee

An interview was held with a retail employee at a large Swedish fashion chain in order to provide insight into the sales section of the customer journey, and to supplement the information provided by the fashion companies.

## Analysis

A perceptual map (Jobber & Ellis-Chadwick, 2016) was used to illustrate the distribution of the studied companies. Based on the market analysis the companies were ranked and mapped by size and sustainability progression. To facilitate this, four levels of sustainable maturity were established, those that await laws and regulations, those that do a little, those that do a lot and those that are leaders in the field. Approximate information about the sizes of the companies in the analysis were retrieved from an online database. These two datasets were then combined in order to create the perceptual map.

The data from the interviews were analyzed in a series of steps, see figure 3.1. starting with transcription of the interviews. Quotes from the transcriptions were then selected in order to gather what the respondents had said succinctly. The focus when selecting quotes was answers regarding challenges with sustainability, their development processes, and their needs from potential partners. These quotes were then compiled through a clustering analysis (Dam & Siang, 2022), grouping quotes with similar themes, first into main categories and then into subcategories. These categories and subcategories were then processed once more and named according to their content. They were then placed chronologically to create a first version of a customer journey, shown in figure 3.2.

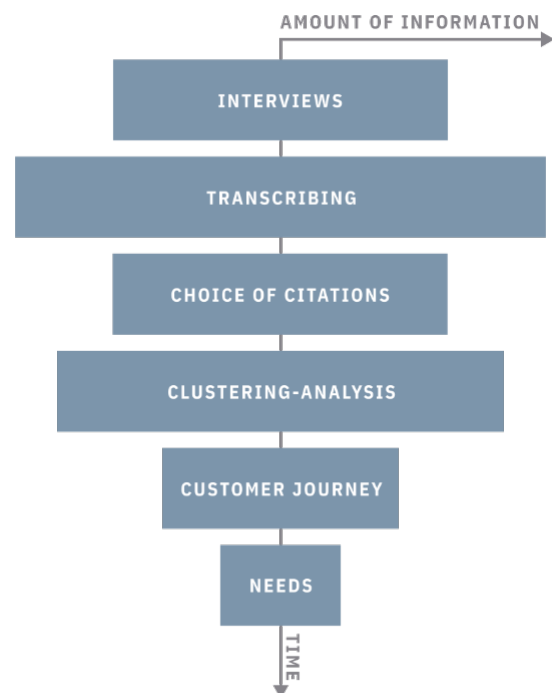


Figure 3.1. A schematic overview of the research and analysis process.



Figure 3.2. Above: Images from the interview analysis. Below: The first version of the Customer Journey

## Demonstrating Results

Personas were used to concretize the data from both market analysis and interviews into a few typical potential customers. Since Stenas customers are companies, the personas are three archetypal companies. A guide was used as inspiration where features of people were translated into features of a company (ProductPlan, 2020). For example, socioeconomic status was translated to revenue and garment price, goals became sustainability goals while challenges and frustrations remained the same. Additionally, interesting persona features included the type of company, targeted customer group and how they work today, including sustainability work and circular business models.

With the results of the clustering analysis as a base, a customer journey was created. This is a visual storyline of the processes that a customer goes through to get from point A to point B (Holmlid & Wetter-Edman, 2021). In this case the customer journey covers all the steps from the creation of a garment to it reaching its end of life, from a sustainability perspective. The focus was, however, not on the exact actions in each step but rather on the customer experience of moving through the steps, what goals they have, problems they encounter and where they collaborate with other actors.

Finally, customer needs spanning the entire journey were gathered to form a need specification list. Based on the interviews and the clustering analysis the needs deemed most important and relevant to the project were sorted out. Only needs considered relevant for Stena and the development of a potential service concept were included in the specification.

## 3.2 Research Results

The results from the research phase are presented in this chapter. These include a perceptual map, three company personas, a customer journey, a section on aid organizations and finally a summary of the customer needs as well as a description of Stena.

### 3.2.1 Perceptual Map & Personas

The perceptual map (fig.3.3) shows the distribution of companies studied in the market analysis. Notably, the companies were evenly spread out in three of the quadrants, with few companies in the small size and low sustainability maturity quadrant. An explanation for this might be that it is necessary to produce large volumes in order to push down production costs, making it difficult for small companies to keep prices low. There could be an expectation from end-consumers that more expensive garments are more sustainably produced, which could put pressure on small companies to focus on sustainability.



Figure 3.3. The Perceptual Map. The studied companies are blurred, and the personas highlighted.

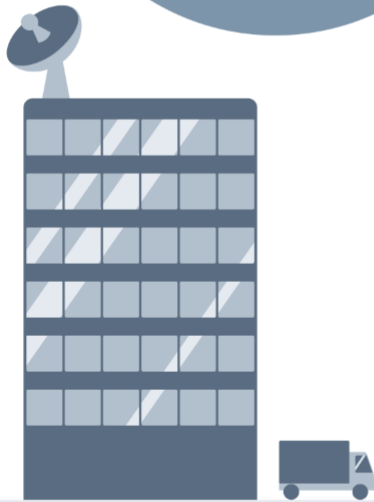
The personas were created to summarize the market analysis and are loosely based on each of the three quadrants identified in the perceptual map. On the following pages the three personas, including their target consumer group, sustainability maturity and challenges are presented.

# STYLEHIVE

They target the general public with a wide range of cheap garments. They are purely an e-commerce company, which enables a wide range of products, many campaigns and a large outlet.



*"We are not quite at circularity yet, doing what many others are doing - thinking about how to move forward there."*



## SUSTAINABILITY

**Maturity** Their sustainability manager is new at the company and is trying to start up the sustainability work. They are aware that they will need to work more with circularity in the future, but do not currently have a plan for how to do so.

**Goals** They have clearly set sustainability goals, such as reducing their carbon emissions by 50% by 2030, and having the majority of their garments be "more sustainable" by 2027.

**Materials** They are currently working towards obtaining certificates and have recently defined their own standard for "more sustainable" materials. To classify a garment as "more sustainable", it needs to contain at least 50% sustainable fibers. In general they work a lot with blends containing polyester.

## CHALLENGES

- Upcoming laws may affect them a lot, and they know that they will have to rely on external solutions for this.
- Since their business concept today is offering a wide selection of cheap garments, it will require a large effort to change their economic model to make a profit from circular business models.
- More sustainable and circularity-adapted garments are more expensive, which does not fit their profile.

*"Obviously external help is needed, such as climate impact calculations which they have people helping them with, they don't have time for that themselves."*

# ALMA & CO

A large clothing chain that targets the average person both with trendy collections and basic garments.



*"It's great that the textiles are coming in again, but no one knows how to handle them. Currently no one can recycle the millions of mixed fibers that we have put on the market for decades."*

## SUSTAINABILITY

- Maturity** They conduct and fund many different projects to reduce their emissions and explore circular models, such as garment rental. Their core business is based on linear consumption, which makes the transition to sustainability slow. They have had textile collection in stores for several years where all garments are accepted.
- Goals** They have clearly specified sustainability goals, such as reducing their carbon emissions by 50% by 2030 and designing their garments for longevity and circularity.
- Materials** Their list of sustainable materials is not very strict and includes recycled polyester and "better" cotton. They are involved in, and fund, projects for new, more sustainable and recycled materials.



## CHALLENGES

- They are a fast fashion company at their core, which makes it difficult and time-consuming to change their business model from linear to circular.
- Today's recyclers are few and small, with varied specifications for what they can take in, making design for recycling tricky and confusing.
- Especially difficult to combine design for circularity and recyclability.

*"If rivets are trendy, we will have a lot of rivets. How do you make a garment that has rivets but is still easy to disassemble and recycle?"*

# WHAT IF

A relatively small company with a strong brand that targets a fashion-conscious customer who wants to shop sustainably, focusing on fewer and longer-lasting garments.



## SUSTAINABILITY

**Maturity** They are market leaders in sustainability issues and see themselves as *disruptors*. They want to fundamentally change the fashion industry, and have several initiatives to move from a linear model to more circular flows. They offer repairs of, and collect their own clothes in-store, where they are sold as vintage garments or used for other circularity projects.

**Goals** Their focus going forward is not a specific goal or concrete figure, but a holistic perspective on sustainability work.

**Materials** They work mainly with organic cotton, recycled and recyclable materials, and strive to create biodegradable garments. They have strict bans on certain materials, such as conventionally produced cotton.

*"It's a problem that the industry and customers do not see the real value of a garment"*



## CHALLENGES

- It is a fairly small company that lacks a widespread network of stores which makes it difficult to scale up their circular models. For example, they are unable to scale up their textile collection program beyond their own garments.
- Their sustainable material choices and manufacturing methods make their garments expensive. They question if it is economically sustainable and whether their customers think the garments are worth the price.

### 3.2.2 Customer Journey

The customer journey is divided into five main phases; Sustainability Goals, Design, Sales, Disposal and Circularity. The processes involved in Sustainability Goals and Circularity apply to all phases and therefore span the entire journey, see figure 3.4. Each phase can be divided into several steps, or sub-categories, for which customer objectives, challenges and needs were identified. In this chapter each section of the customer journey is described in detail, and the objectives, challenges and needs are summed up for every phase.

A notable delimitation was to not focus on the textile and garment supply chain. This was mainly due to the Production part of the journey taking place outside of Sweden and Europe and thus being outside the project scope. Similarly, the Use phase has not been studied as the targeted group has been fashion companies, and not end-consumers.

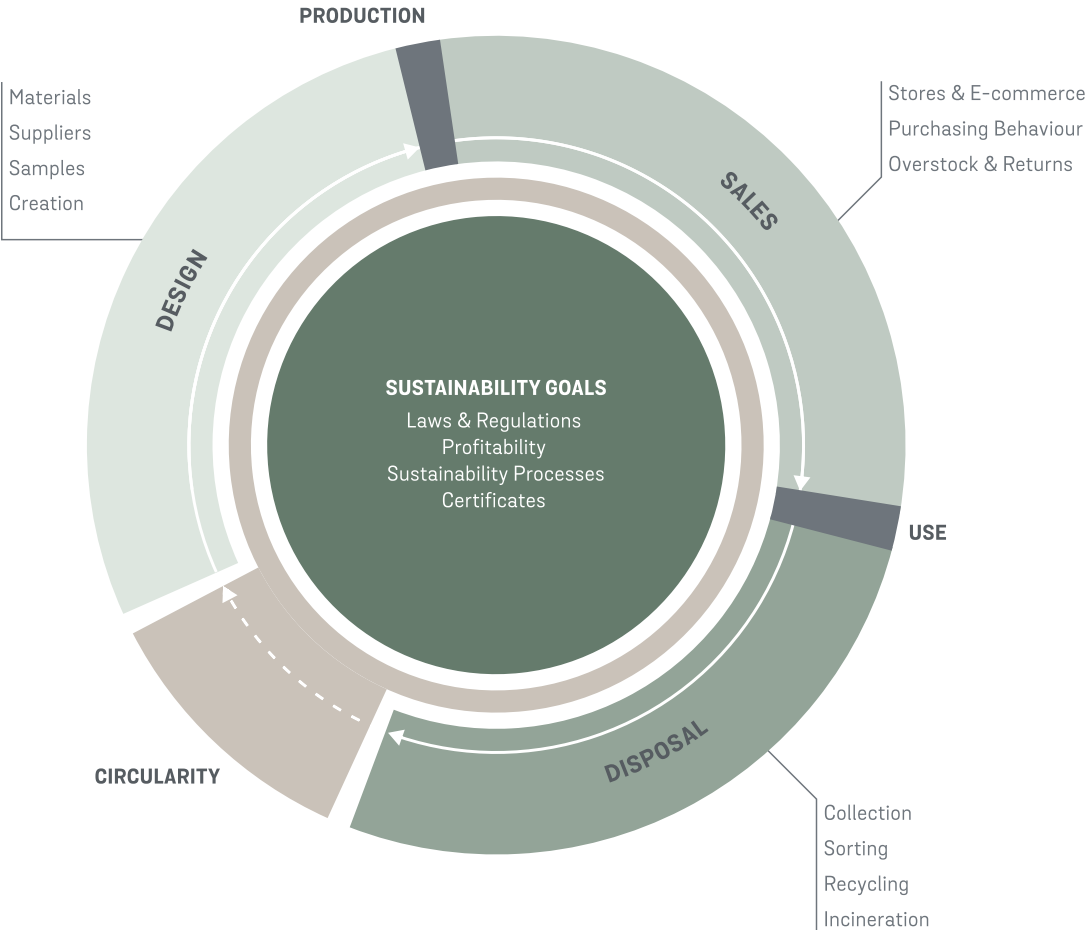


Figure 3.4. An illustration of the customer journey, its phases and what they contain. The grey, small segments represent phases which have not been studied in this project

## Sustainability Goals

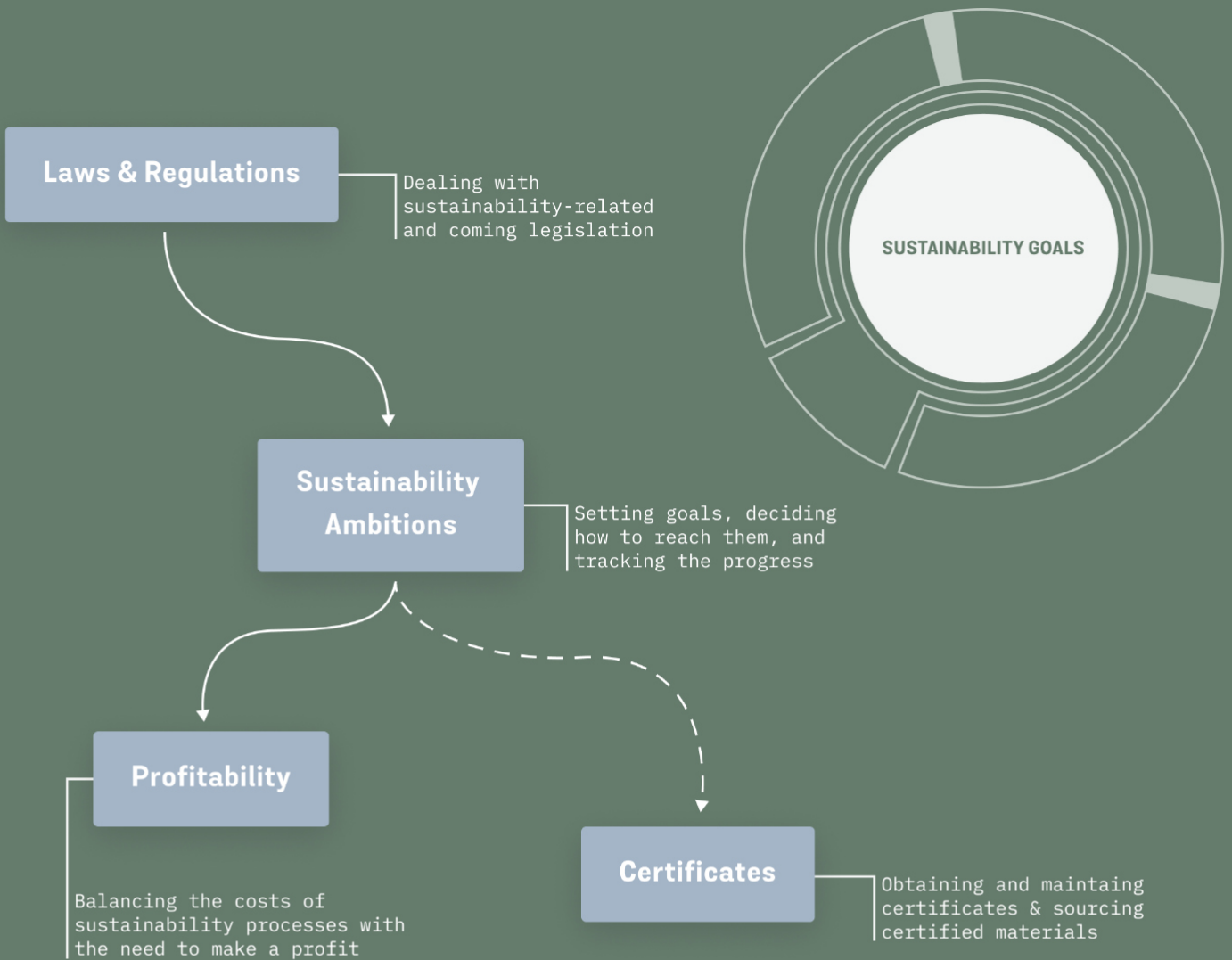
This phase treats the strategic sustainability processes and planning at fashion companies, see figure 3.5. The companies continuously work with setting both long and short term sustainability goals for themselves. The goals are typically varied within a company and include both abstract ones such as “design for more circularity”, as well as measurable ones such as “reduce emissions by thirty percent before 2030”. For larger companies, these are disclosed in the yearly sustainability reports.

Different companies measure their sustainability efforts in different ways and there is not really any functioning international standard for how to track ones’ performance. This makes comparison between companies difficult and increases the risk of greenwashing.

Sustainability goals can also involve third party certifications, for example only purchasing certified materials, such as ecological cotton. Certifications are a way of displaying transparency through the entire supply chain, but require extensive administrative work. Moreover, availability of certificated material can vary.

Upcoming domestic and EU regulations are important factors affecting the way the companies set their sustainability goals. Looking beyond regulatory demands, sustainability can be a selling point for the end-consumer, which also drives the need for sustainability goals. However, sustainability processes are expensive and profitability is key.

*Figure 3.5. A Summary of the results from the customer journey section “Sustainability Goals”.* ►



## OBJECTIVES

- Be, and appear as, a sustainable company
- Set ambitious yet reachable sustainability goals
- Reach sustainability goals
- Shift away from fast fashion towards slower economical models

## NEEDS

- Understand coming laws and regulations
- Act sustainably
- Measure sustainability progress
- Streamline sustainability processes

## CHALLENGES

- Methods for measurement of sustainability efforts are not consistent throughout the industry
- Sustainability processes require a lot of administrative work

## Design

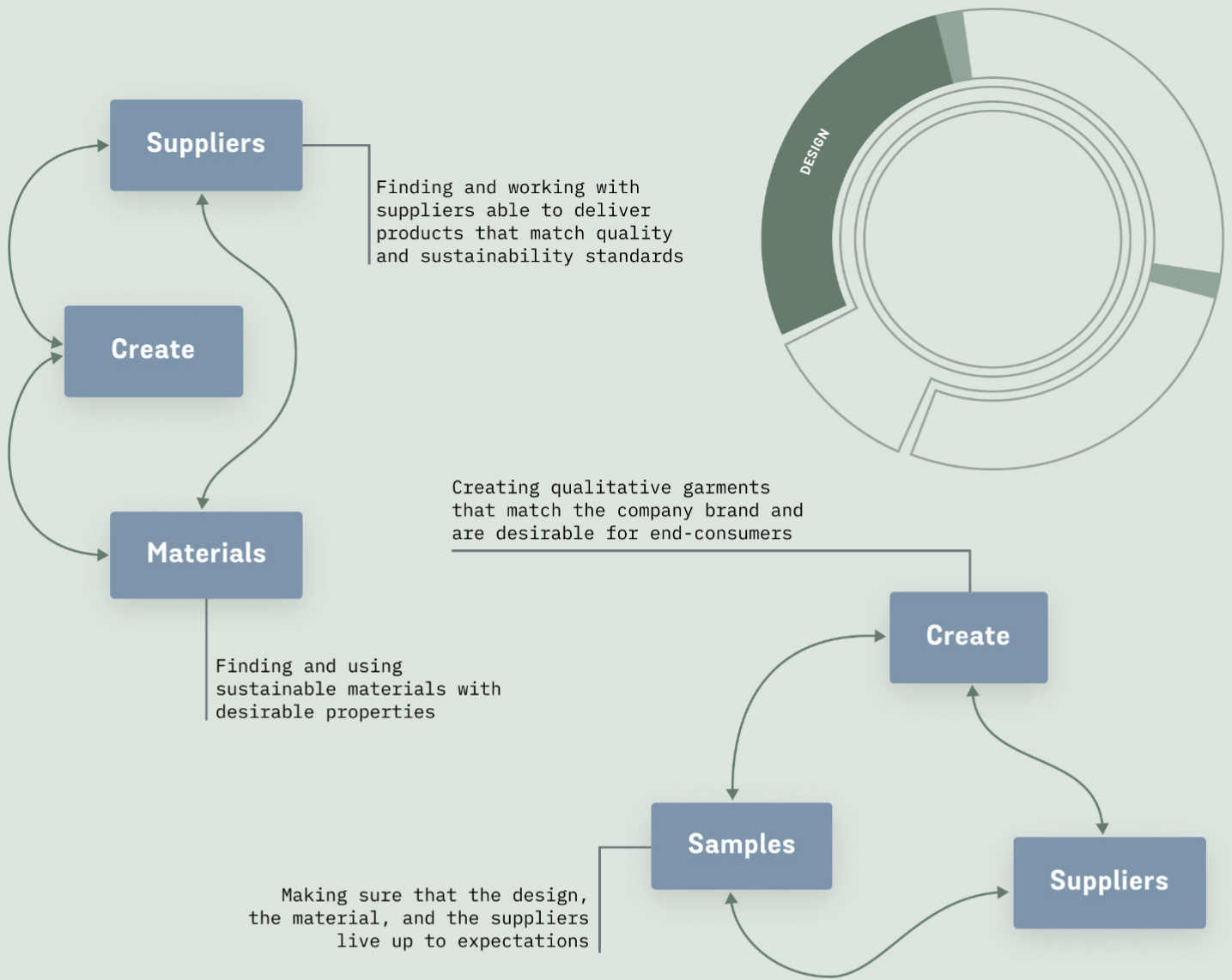
This phase describes the activities commonly involved in developing a garment, from the idea stage to a finished product ready to be manufactured, see figure 3.6. This includes selection of materials, suppliers, design of the garments, trims, and sampling. In this project a supplier refers to the companies which spin threads, weave and dye fabrics, manufacture trims, as well as the ones sewing the finished products.

The materials and the manufacturing processes are the largest sources of emissions for fashion companies, and thus the first things they address in their sustainability processes. Generally, fashion companies work with different suppliers for different garments and different parts of the manufacturing process. This makes the mapping of their supply chains very resource intensive. Since the suppliers mostly reside abroad, the supply chain has not been further explored in this project.

During the design phase, designers aim to create sellable garments that fit the company brand. The sustainability team often has some influence in the design decisions, for example through lists of preferred materials or partaking in meetings. Preferred materials are materials fashion companies classify as sustainable, or in some cases more sustainable. What is classified as a preferred material and to what extent they are chosen over other materials varies between companies. In case of conflicting opinions between design and sustainability teams, the designers usually have the last say.

During the design phase garments are tested by creating development samples which act as clothing prototypes. They are usually sent back and forth between designers and suppliers a couple of times in order to achieve the right fit, material properties and quality.

*Figure 3.6. A Summary of the results from the customer journey section "Design".* ►



## OBJECTIVES

Produce garments that meet sustainability and quality goals

Make a profit of produced garments

## CHALLENGES

Uncertain availability and quality of recycled materials

Qualitative materials may be less sustainable, and vice versa

Conflicts between sustainability and design team

The supply chain is often outside of Europe

## NEEDS

Understand which materials are sustainable and why

Procure sustainable materials

Ability to trace the origin, and measure the impact of, garment production

Understand how to design for sustainability and quality

Create sellable garments that fit the company brand

Verify designs through sampling

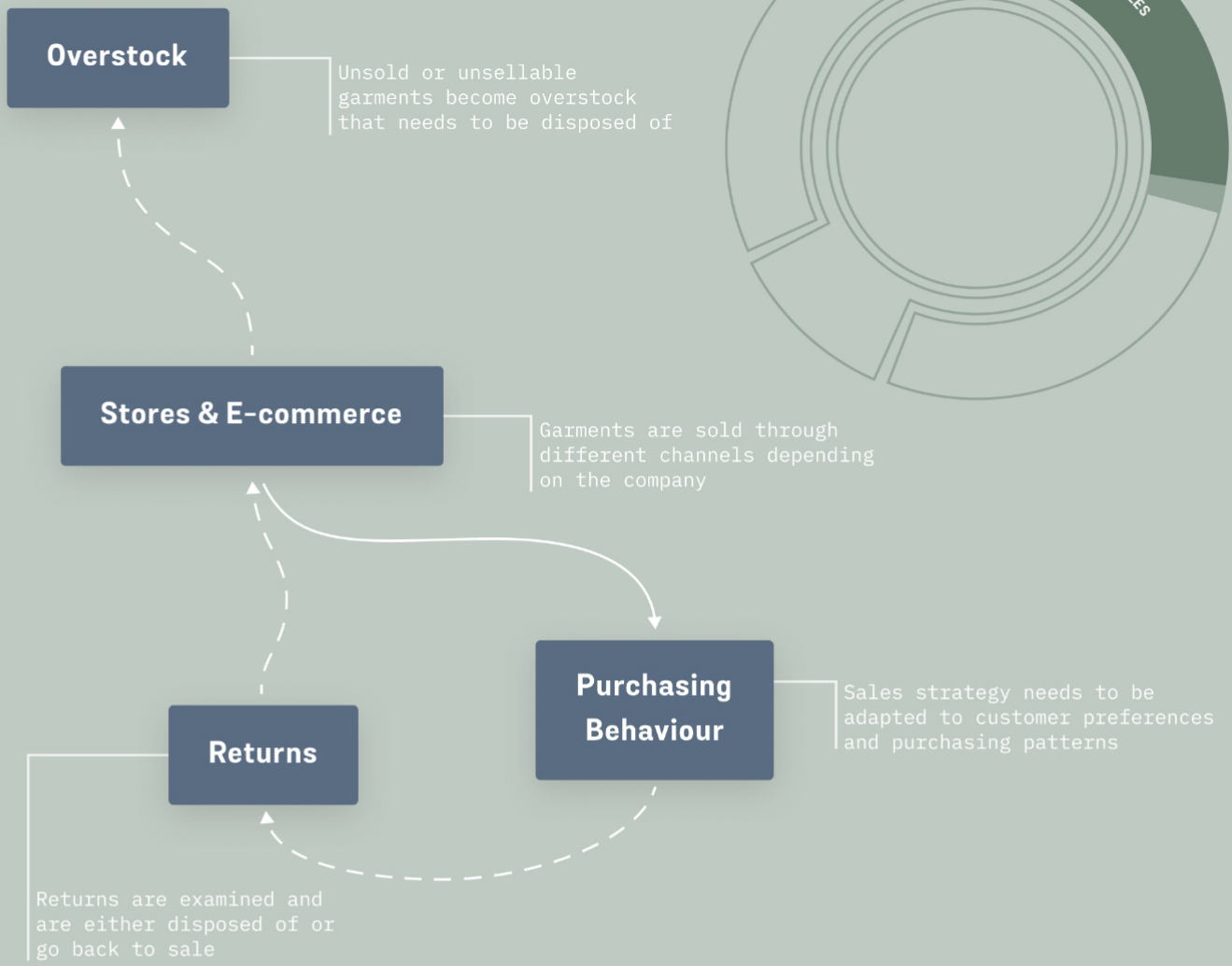
## Sales

This part of the customer journey concerns sales, including how companies handle overstock and returns, see figure 3.7. Due to fashion companies having different profiles and selling points, expectations from customers and market strategies at this stage vary. One way these differences take shape is through sustainability as a selling point, as it costs more to manufacture sustainable products, and a constant question is whether the customers are willing to pay for it. A common theme among fashion companies is that they wish to retain their customers and cater to them to the best of their abilities.

In broad terms, the journey of the garment from supplier to end-consumer is the same for all fashion companies. The clothes arrive at distribution hubs from the company's international suppliers. From these hubs the clothes are sent to stores and to e-commerce warehouses, from where they are sold to the end-consumer. Some companies have both e-commerce and physical stores while others are pure e-commerces.

The way returned goods are treated differ depending on the state of the garment and the company in question. In-store returns typically go directly back to sale, while there is some variation among e-commerce warehouse return processes, either back to sale, to an outlet or disposed of in some way. Unsold or unwanted garments are typically sold to buyers specialized in utilizing discarded clothes, or donated to aid organizations. According to the companies interviewed in this study the amount of textiles being discarded is very small.

*Figure 3.7. A Summary of the results from the customer journey section "Sales".* ►



## OBJECTIVES

- Sell products
- Make maximal profit of products
- Minimize the amount of wasted textile

## NEEDS

- Offer attractive garments at an attractive price
- Have attractive stores and e-commerce platforms
- Convince the end-consumer to buy one's products

## CHALLENGES

- Motivate end-consumers to buy more sustainable garments to a higher price
- Predict sales rates
- It is difficult to control the state of e-commerce returns

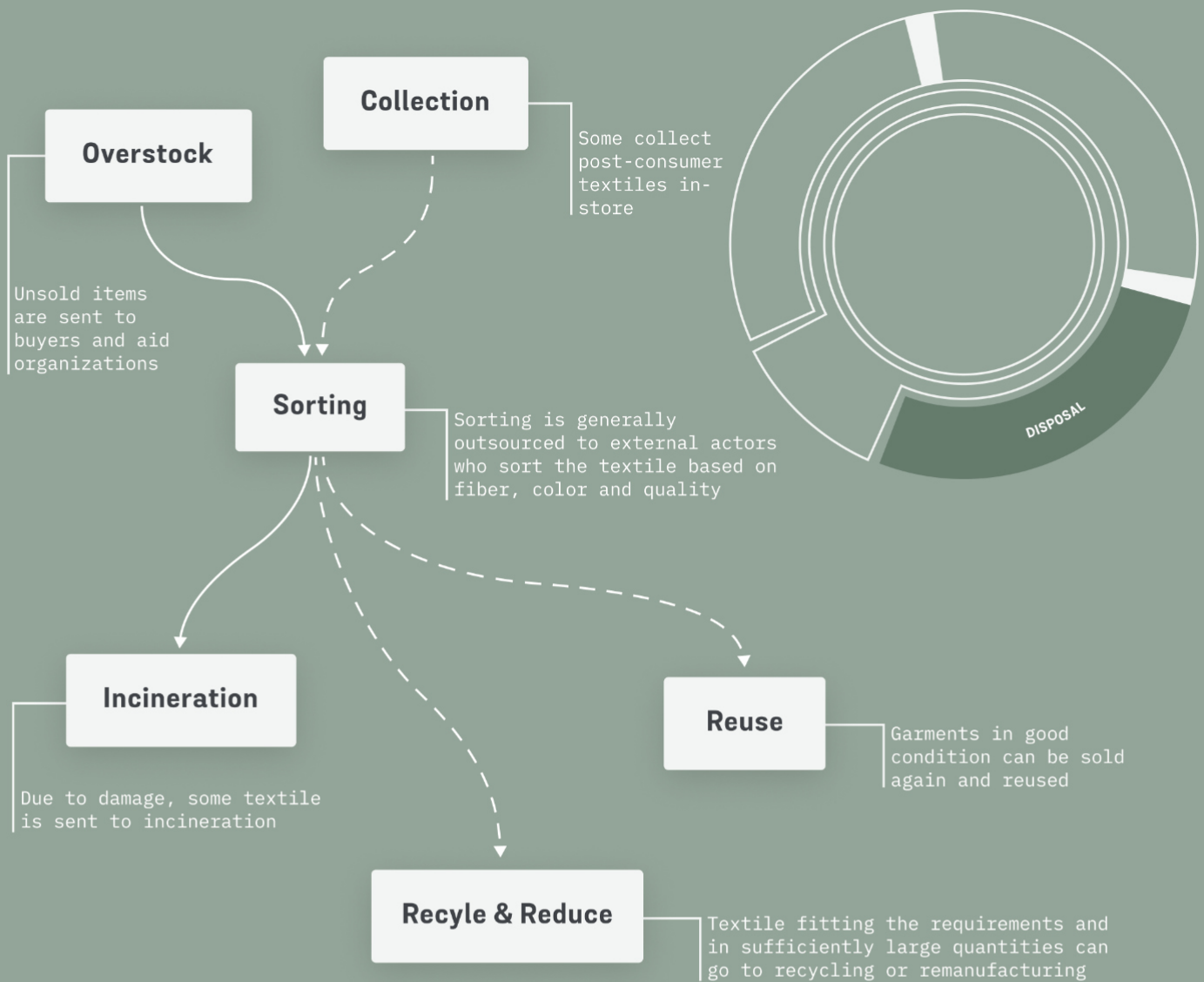
## Disposal

This stage of the journey regards the end of a garment's lifecycle, i.e production, sales, use, and disposal, from a fashion company's perspective, see figure 3.8. This does not necessarily mean that the garment will become waste, as it might be sold second hand or recycled, but it marks the end of its first lifecycle. This includes both pre- and post-consumer textiles that the companies wish to dispose of in different ways.

Some fashion companies have collection programs for clothes, either as a preparation for a coming EPR, or because they perceive an ecological or economical value in the collected textiles. In general they outsource the sorting of the textiles, either to aid organizations or foreign sorting industries within the EU. Some of the companies pick out desirable garments for vintage sales in their own stores before disposing of the textiles. The companies which have not started collection programs either do not see the value of it, or face logistical challenges in collection and disposal of the textiles.

The fashion companies want to know what happens to their garments after disposal, whether they have been sold again in Sweden, in the EU or if they have gone to chemical recycling, mechanical recycling or incineration. When disposing of textiles, second hand sales are prioritized, both for financial and ecological reasons, after which the waste hierarchy is followed. Only textile that is unfit for recycling, due to mold or other damages, should go to incineration.

*Figure 3.8. A Summary of the results from the customer journey section "Disposal".* ►



## OBJECTIVES

- Be, and appear as a sustainable company
- Prepare for EPR
- Make a profit off collected fabric and minimize losses of unsold garments

## NEEDS

- Follow current and coming laws and regulations
- Dispose of textile waste as high in the waste hierarchy as possible

## CHALLENGES

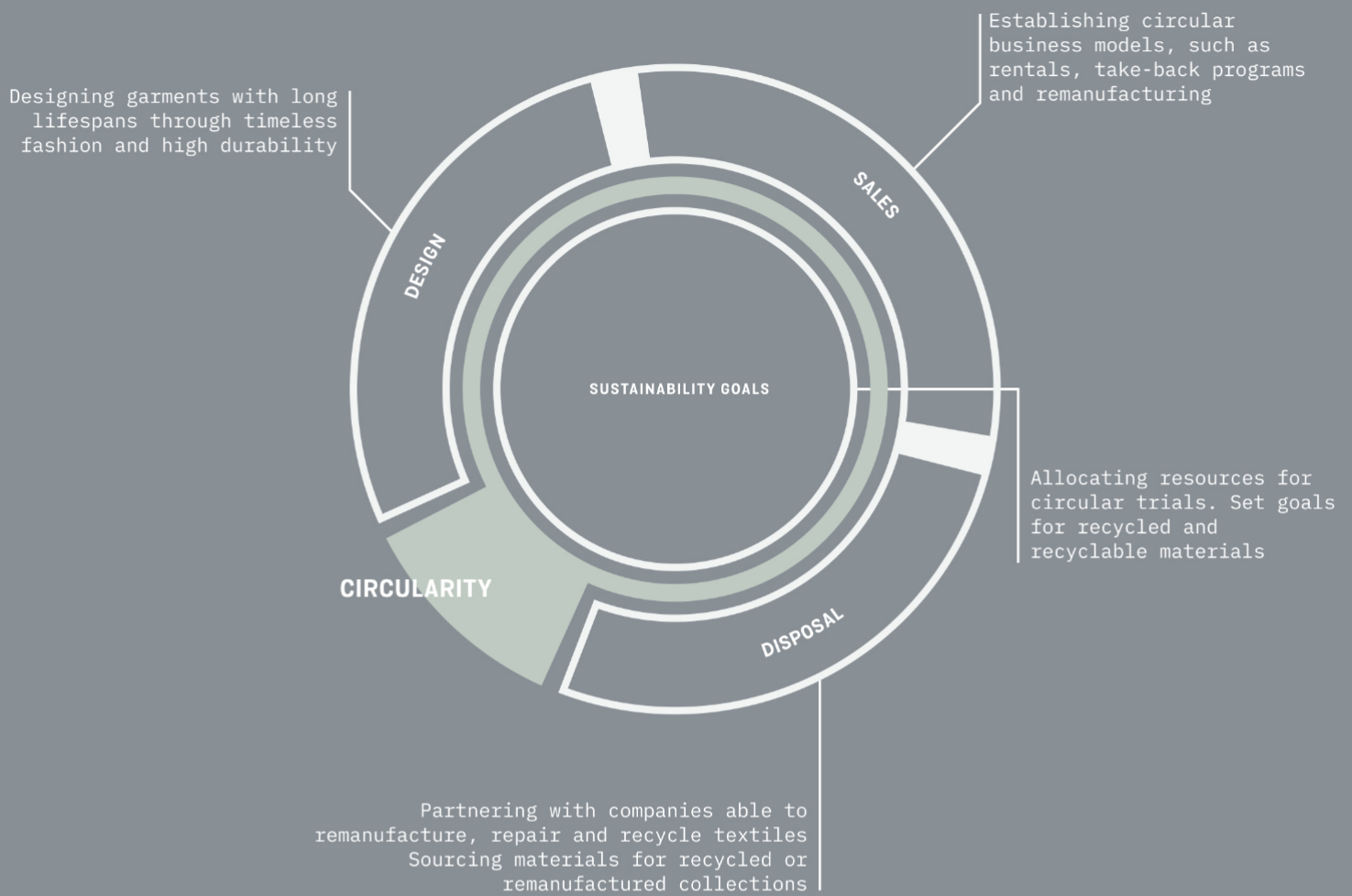
- Logistics for disposing of unsold or collected textile
- It is expensive and difficult to sort textile for reuse and recycling
- Knowledge gaps surrounding recyclability of garments

## Circularity

The concept of circularity refers to keeping materials and resources in a loop of use and recycling, retaining their value for as long as possible, see figure 3.9. Most, if not all companies in the Swedish fashion industry have business models dependent on linear consumption, and thus a lot of the content of this section is speculative. Because of this, circularity has been separated from the rest of the customer journey.

Several fashion companies are testing circular business models, and a few have ones that are up and running. Examples of such business models are repair of garments, renting out garments for special occasions and remanufacturing old garments into new collections. Remanufacturing has large environmental benefits as no new fabric needs to be used, but there are challenges that need to be faced, mainly securing enough fabric of desired qualities to be able to make an entire collection. Finding suppliers able to manufacture new clothes from old textiles, and transporting the old textiles to these factories in an efficient way are two other big challenges. Circular business models can be implemented in all phases of the customer journey and product life cycle, which is why this phase spans the entire customer journey.

*Figure 3.9. A Summary of the results from the customer journey section "Circularity".* ►



## OBJECTIVES

- Keep up with trends, stay relevant in a changing industry
- Be, and appear as a sustainable company
- Make profit through circular business models

## NEEDS

- Finding circular business models suitable to one's brand
- Find qualitative textile in sufficient volumes for creating new collections or running vintage shops
- Knowledge and resources for curating, collecting and logistics

## CHALLENGES

- Circular business models do not generate money in the same way as linear ones
- End-consumers are not used to circular business models
- Not all garments are adaptable to circular models

### 3.2.3 Customer need specification

The customer need specification can be viewed as a distillation of the customer journey, and is presented in full in appendix C. The needs are formulated from the perspective of potential customers with the ambition to be utilized in service development and ideation, mainly for this project, but also as a resource for further development in the area. In order to be useful to work with, it was divided into three categories; General: Needs pertaining to the fashion companies' sustainability processes overall; Textile Collection: Needs for clothing collection and on collection partners; Information: Needs regarding information in textile collection, sustainability, and end of life.

### 3.2.4 Aid Organizations

Aid organizations collect pre- and post-consumer textiles both with the main goal of selling them to generate resources for charity, but also to contribute to more recycling and reuse. The customer journey of aid organizations differs from fashion companies mainly because they do not have any production. Instead, their journey begins with collection and sorting, before the garments are either sold second hand, exported, or disposed of. Similar to fashion companies, these organizations set sustainability goals for themselves, and these span over the entire journey.

The aid organizations typically collect textiles in bins at local recycling stations, in their own second hand stores, or from fashion companies with overstock or textile collections. Having textile bins is an efficient way to gather large volumes of textiles but require logistics for pick-up as well as waterproof containers. In-store collection yields higher quality of collected material, but costs more to operate, and limits the amount and opening hours of the collection sites. When receiving textiles from fashion companies, the aid organizations usually do not have to pay for the textile or the delivery of the textile. In turn, the fashion companies expect to be able to drop off varied volumes in varied states, and some request data on what happens with their textiles. Being associated with an aid organization is a way for fashion companies to improve their public relations. Because of this aid organizations are careful when selecting which companies to collaborate with in order to not become associated with, and thus help, harmful companies.

The aid organizations either sort collected textiles in stores or ship all their collected textiles to sorting hubs. Sorting in-store is efficient as it reduces the need for transportation of the collected textiles, but centralized sorting becomes more efficient per garment, and ensures coherently set prices for garments going for sale in Sweden.

An issue all actors collecting garments in Sweden face is that Swedish people are better at donating clothes than buying second hand, with only about 10% of collected textiles being sold again in Sweden, the rest exported or incinerated. Being able to determine which clothes are attractive on the Swedish second hand market, and at what price, is difficult and this type of sorting requires expertise. For this reason, sorting of textiles is expensive, and the aid organizations depend on volunteer work for some, or all of their operations to function.

The demand for second hand textiles is higher in parts of Europe than in Sweden, and because of this textiles can be exported for second hand sales abroad. This, however, yields lower profits as the clothes are sold at lower prices, and that transport and further sorting generate additional costs. Because of the higher demand, there are developed sorting industries in Europe where clothes are sorted efficiently into different categories for reuse and recycling. An overview of the textile flows for aid organizations is shown in figure 3.10.

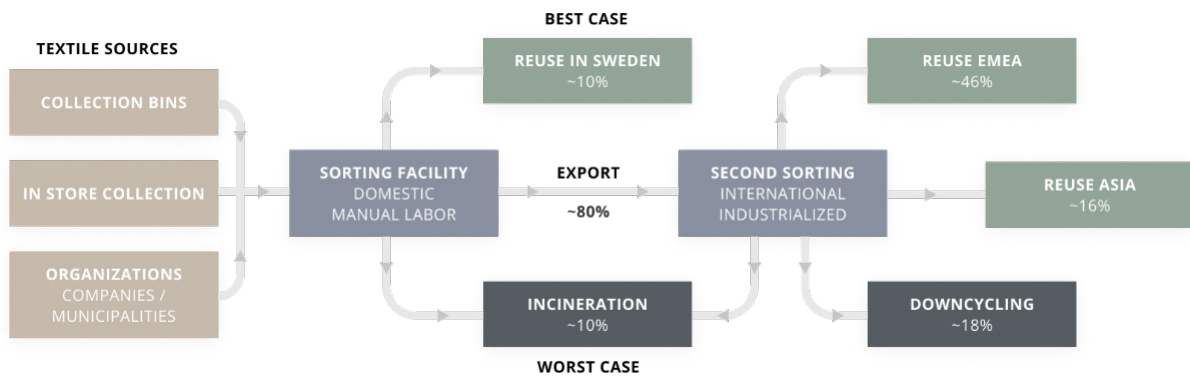


Figure 3.10. An illustration of the textile flows coming in to and leaving aid organizations in Sweden.

### 3.2.5 Stena Recycling

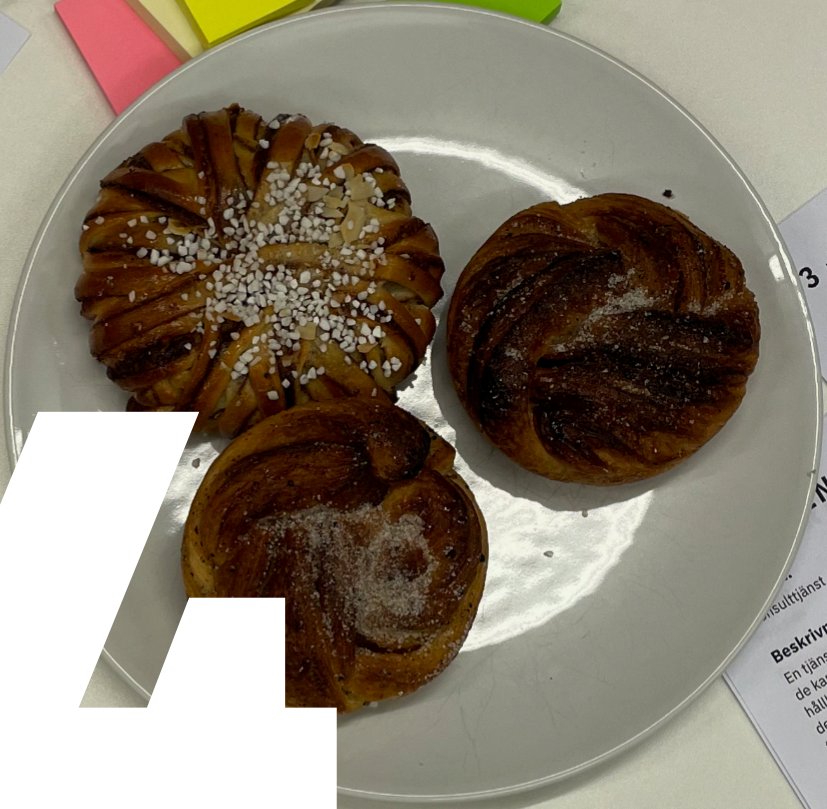
Stena Recycling's core business is waste management, meaning that they collect various kinds of waste, gather it in different branches and then dispose of it in a favorable way, from both ecological and economical perspectives. As the company name suggests, they work largely with different recycling partners to transform waste into new material. Presently, however, textile is not one of their main focus areas (Stena Recycling, 2022a).

Principally being a logistics and sales company, Stena's strength lies in practical services. For example, collecting waste from customers and providing them with data on how the waste is disposed of, or through consultancy services assisting companies in creating circular solutions (Stena Recycling, 2022a).

4

4

7



### C - ORD TILL HANDLING

**Kundbehov:** Många företag saknar resurser till den digitala omställningen. Samtidigt är hållbarhetsmål ofta svårare att nå än någonsin tidigare. Detta innebär att företag måste hitta nya sätt att nå sina mål på ett hållbart sätt.

**Success Factors:** Kompetenta konsulter som kan hjälpa företag att nå sina mål på ett hållbart sätt.

**Beskrivning:** En tjänst där stena gör det möjligt för företag att nå sina mål på ett hållbart sätt. Detta innebär att företag måste hitta nya sätt att nå sina mål på ett hållbart sätt.

### B - MATERIAL

**Form:** Konsult

**Beskrivning:** En tjänst där stena gör det möjligt för företag att nå sina mål på ett hållbart sätt. Detta innebär att företag måste hitta nya sätt att nå sina mål på ett hållbart sätt.

**Success Factors:** Kompetenta konsulter som kan hjälpa företag att nå sina mål på ett hållbart sätt.

### 1 - CIRCULAR STARTERS

**Format:** Konsulttjänst

**Beskrivning:** Hjälpa företag med att komma igång med cirkulära affärsmodeller såsom 2nd hand, utyrning och reparationer. Stena kan bidra med visa tilläggs, t.ex. en white-label-app för 2nd hand eller kontakter till potentiella partnerföretag.

**Success Factors:** Konsulter med kunskap om cirkulära affärsmodeller & service design. Samarbetspartners.

**Kundbehov:** Många företag upplever att de har svårt att komma igång med cirkulära affärsmodeller, det saknas ofta kunskap, resurser och driv. De som är igång har svårt att skala upp sina projekt.

### 3 - TREND

**Format:** Konsulttjänst

**Beskrivning:** En tjänst där stena gör det möjligt för företag att nå sina mål på ett hållbart sätt. Detta innebär att företag måste hitta nya sätt att nå sina mål på ett hållbart sätt.

### NDSP

**Beskrivning:** En tjänst där stena gör det möjligt för företag att nå sina mål på ett hållbart sätt. Detta innebär att företag måste hitta nya sätt att nå sina mål på ett hållbart sätt.

**Success Factors:** Kompetenta konsulter som kan hjälpa företag att nå sina mål på ett hållbart sätt.

# Concept Development

This chapter contains the main results and methodology of the Concept Development phase. Based on the customer journey and needs developed in the Research phase, several concepts were developed, combined and evaluated with both Stena and potential customers, resulting in five concepts.

## 4.1 Concept Development Methodology

This section contains the methods used for synthesizing the results of the research phase into service concepts. The starting point and focus during concept development was meeting customer needs throughout the entire customer journey. To do this, the need specification, customer journey, and personas developed in phase one were used as guiding material.

### 4.1.1 Ideation

#### Ideating with the Multilevel Design Model

The Multilevel Design Model (MDM) as described by Joore & Brezet (2015) is a model that can be applied to support design thinking on different system levels. In this project, the model has been used to understand the different system levels of Stena as well as the fashion companies' organizations. The model was applied during ideation to generate ideas on various system levels.

The MDM consists of four system levels: the product-technology system, the product-service system, the socio-technical system and the societal system. The base level, product-technology system revolves around physical products with technical aspects. The next system level, product-service, contains physical and service components, and how they are interconnected. The third level, socio-technical system, can include anything from products to knowledge to infrastructure to supply networks, and how they cooperate to create a specific societal function. The last level is the societal system, consisting of the people that share customs, culture, and laws. This level fulfills several functions that do not necessarily depend on one another and designing on this level requires complete societal changes such as new mindsets or laws (Joore & Brezet, 2015).

To explore a large solution space, ideation was based on the MDM-framework and the need specification. For every customer need each of the MDM levels were considered and ideas to fulfill the need on the specific level were gathered. This way, a wide selection of ideas, on both higher and lower system levels and spanning the entire customer journey were collected. At this stage some consideration was given to Stenas current operations and how realistic the ideas were, but it was not a deciding factor.

### Concretizing Concepts

The material from the ideation was combed through and assembled into more concrete concepts. Some of the ideas were more evolved than others, but overall, the ideas were simple and not particularly detailed. For this reason, it was decided to go through all the ideas and develop them further. This way all the ideas were explored and developed to the same level, making them comparable.

To achieve this, each idea was developed to consist of a short description, a chosen format for the service, crucial success factors, a summary of the customer needs it fulfills and potential alternate formats for the service. Additionally, a note on which of the personas the service would be best for was added to clarify how they addressed the customer needs, see figure 4.1.

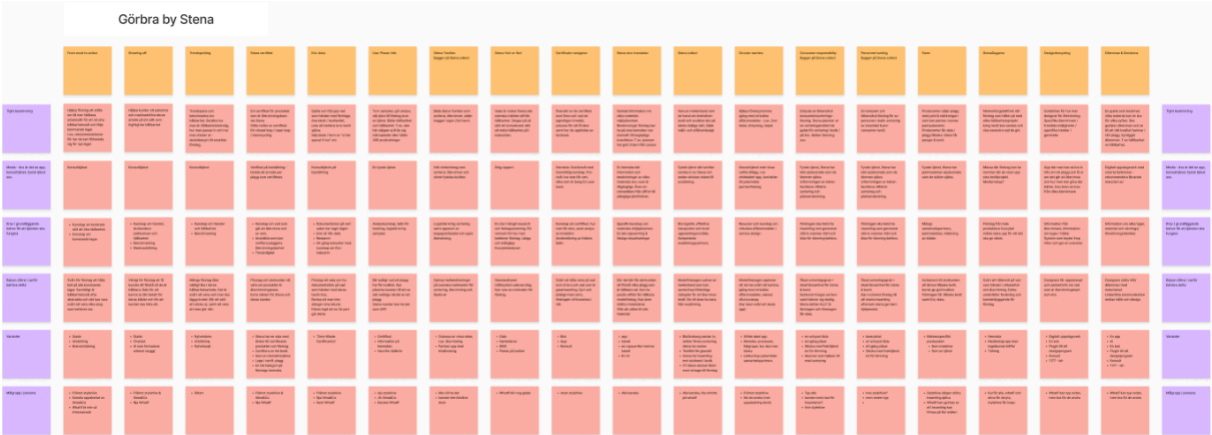


Figure 4.1. An overview of the results of the concept concretization. The purple boxes are categories, the orange ones are concepts and the red ones are each concepts details.

### 4.1.2 Matrix Evaluation

In order to move forward the concepts were rated with a method inspired by the matrix evaluation described by Österlin (2003). The concepts were evaluated based on six criteria on a scale from 1 to 6, after which the total scores for each concept were calculated and compared. The chosen criteria for the assessment were:

- How critical the customer need is
- How well the concept fulfills the need
- How feasible the concept is
- How well the concept aligns with Stena’s operations
- How much of a market gap there is
- How willing the customer would be to pay for such a service

### 4.1.3 Development of Early Concepts

#### Combination & Reduced redundancy

To reduce redundancy as well as to create new concepts, the existing concepts were combined into new configurations. From these new concepts as well as the previous ones, a selection of eight concepts was made. This selection was made based on the concept evaluation, as well as to include a wide array of distinct concepts to continue to explore a large solution space.

#### Workshop

A workshop was held with seven Stena employees with varying backgrounds in the organization, knowledge of the project, and the textile industry, see table 4.1. The purpose of the workshop was to receive feedback on a selection of concepts as well as to give the participants the opportunity to further develop and adapt the concepts to better fit Stena's operations. Additionally, in service design it is important to involve relevant stakeholders in the design process to manifest the service development in the organization (Holmlid & Wetter-Edman, 2021).

#### Workshop Participants

<b>Role at Stena</b>	<b>Textile Industry Experience</b>	<b>Insight in Project</b>
Customer Support	Yes	Low
Digital Business Development Lead	No	Medium
Digital Business Development Lead	No	Medium
Head of Digital Business Development	No	Low
Junior Business Specialist	Yes	High
Project Leader	Yes	Medium
UX & Service Designer	No	High

*Table 4.1. An overview of the participants in the workshop..*

During the workshop the participants were divided into two groups. The division was organized so that there were a variation of designers and people with knowledge about the project and of the fashion industry in the groups. The groups were provided with four concepts each and asked to rate them based on potential. The purpose of this was to force the participants to choose their favorite concepts and then motivate why during discussions. The participants were also encouraged to further develop the concepts. To aid with this they were given several questions to discuss, such as "Does the concept go with Stena's brand?" and "what can be added to improve the concept?". The participants were also instructed that they had to choose two of their concepts to present to the other group after 30 minutes.

After the groups had presented their concepts to each other a discussion on all the concepts was held. During the discussion the participants could freely express their opinions about all the concepts as well as provide general feedback on the project.

## Concept Selection

After the workshop the concepts were narrowed down from eight to five. The selection was based on the input received from the workshop as well as other factors such as the concepts' value for customers, their complexity, and their proximity to Stena's core business.

### 4.1.4 Concept Evaluation

Evaluations were held with four fashion companies to receive input on the remaining concepts. The evaluations were held individually with some of the company representatives from the interviews in the research phase, which meant they already had some insight into the project. Each evaluation was a 30-minute video call. The purpose of the evaluation was to investigate if potential customers saw value in the concepts and if they could imagine using them. The aim was to further develop the concepts with the assistance of the customers, and to support the selection of a final concept.

During the evaluation the concepts were presented one at a time to the potential customer. After hearing a short description of the concept, the customer was asked a selection of questions about how well the concept matched the needs of their company and why, if they knew of any similar solutions that already exist, and if the concept could be improved to suit them better. At the end of every evaluation the interviewees were asked to choose one or several of the concepts as their favorite. See appendix D for the full evaluation template.

### Customer Evaluation Analysis

The feedback from the customer evaluations was analyzed through categorization into positive aspects, negative aspects, uniqueness of the concept, and potential for further development. The purpose of this analysis was to compile, evaluate and provide a basis for comparison of the concepts. To accomplish this the responses from each interview were gathered into groups corresponding to each concept, and then sorted into the categories.

### Service Walkthrough

To clarify and develop the concepts a service walkthrough was created for each of the concepts. The walkthrough describes how a customer would use the concept step by step, and highlights which steps are taken by the customer and what is delivered by Stena. This method helped concretize the implications and required actions for all the concepts.

## Stena Internal Evaluation

The five concepts were presented to a group of Stena employees working in sales, business development, and alternative raw materials. The concepts were presented with a basic description, a service walkthrough, as well as an explanation of how the concept matched the customer needs from the interview study. After each concept the group was asked to express their opinions of the concept in an online survey. A mix of qualitative and quantitative prompts were used to obtain a high response rate as well as constructive feedback on the concepts. The following prompts were used for each concept in the survey:

- On a scale of one to five, how well aligned is this concept with Stena's operation?
- On a scale of one to five, how promising is this concept from a business perspective?
- Can you see any potential benefits of this concept?
- Can you see any potential downsides to this concept?
- Additional thoughts?

Finally, when all the concepts had been presented, the employees were given the opportunity to express additional thoughts, asked to select their favorite concept and motivate their choice.

Similarly, to the customer evaluation analysis, the results from the Stena internal evaluation were divided into positive aspects, negative aspects and other interesting comments, and recurring feedback was noted. The results from the two quantitative questions were summarized and average scores were calculated. Finally, the selection of favorite concepts and motivations were compiled.

# 4.2 Concept Development Result

This chapter outlines the results of the concept development phase, spanning from initial ideation on potential services, through workshops and evaluation, to the creation of five concepts.

## 4.2.1 Textile Collection

An important need that was identified in the research phase was that of a textile collector that acts as an intermediary between fashion companies and textile recyclers. This is a role that would be natural for Stena to take since it is something that they already do with other materials and have extensive experience of. It is, however, not the main focus for this project since the aim is to create a service concept that allows Stena to take on a role earlier in the customer journey. For this reason, a textile collection solution was not prioritized during ideation and evaluations. Nevertheless, because of its importance to the customers and for increased textile recycling overall it has a role in the final concept.

## 4.2.2 Ideation & Evaluation

Concept ideation was done in several steps. Continuous ideations alternated with evaluations led to the concepts becoming fewer and more evolved. In the beginning, the purpose was to explore ideas spanning the entire customer journey, and with time focus shifted to refining the concepts into something that was realistic and in line with Stenas daily operations. A guideline when ideating was to find solutions that the potential customers need and are not on the market today. During the ideation phase a number of loose ideas were combined into eighteen simple concepts spanning the entire customer journey see figure 4.2.

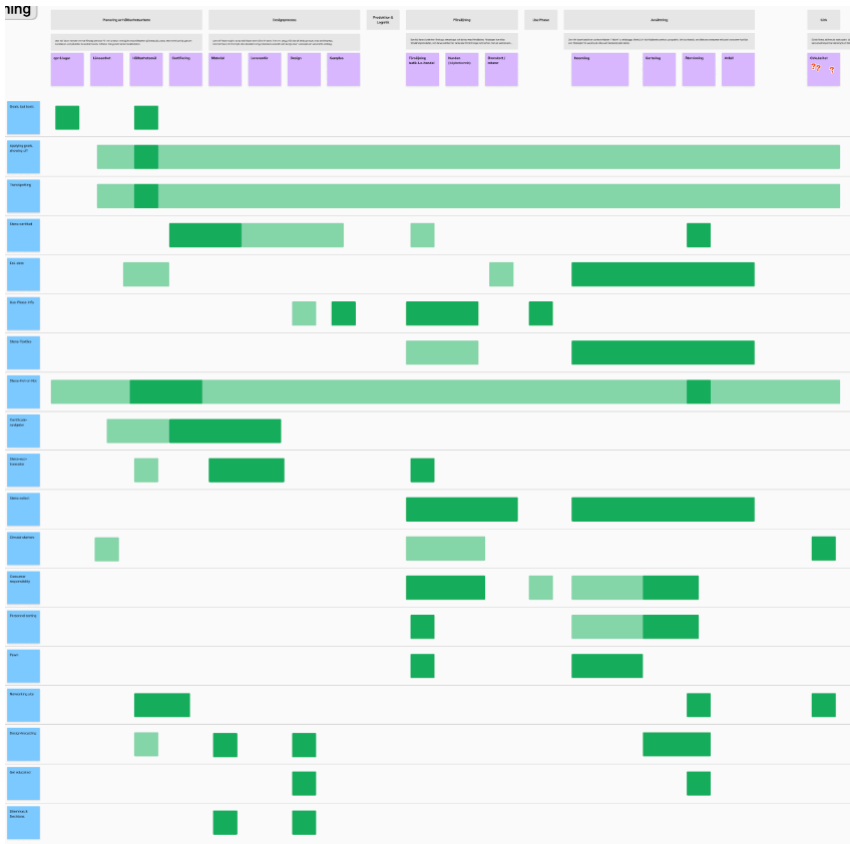


Figure 4.2. A representation of 18 concepts along the y-axis and how they correspond to the customer journey on the x-axis.

To rate these concepts an evaluation matrix was used, see appendix E, after which the two lowest ranking concepts were eliminated. After further discussion surrounding feasibility and suitability with Stenas organization a few concepts were combined and another few concepts were discarded which led to eight remaining service concepts.

## Workshop

To evaluate and further develop the eight remaining concepts a workshop was held with Stena employees. The concepts consisted of two consultancy concepts, two versions of material guides, two certificate concepts, an exhibition concept and a circularity starter pack concept. After the workshop, the eight concepts were narrowed down to five, which are presented in the following chapter, 4.2.3. To facilitate overview for the participants, the similar concepts were separated so that one group got to evaluate one consultancy concept, one certificate concept et cetera. This way the groups received two similar yet not identical selections of concepts.

An interesting take away from the workshop was that the participants saw that some of the concepts could be combined into a service portfolio, a collection of services complementing each other, to appeal to many customers with different needs. This is something that both workshop groups came up with independently. Both groups wanted to combine one consultancy concept and one material guide concept, so that smaller companies that potentially could not afford consultants could subscribe to the cheaper material guide concept.

The two concepts that were considered the least suitable were the circularity starter pack and the exhibition. These were estimated to be the most difficult to start up and after the workshop the decision was made to discard these two concepts. Another concept that was discarded at this point was one of the certificate concepts. The concept was a certificate navigator where the idea was to provide a website with information regarding all existing certificates in textile today. The main reason for discarding the concept was that it would require a lot of continuous research and analysis.

This led to the five concepts that are presented below. Despite the input that the best solution might be a combination of concepts, the decision was made to keep the concepts separate for the remainder of the concept evaluations. Presenting each concept as a standalone idea during concept evaluations enabled specific feedback on each of the concepts. This would in turn facilitate deciding which concepts to combine for a final service portfolio.

### 4.2.3 Five Concepts, Two Evaluations

The concepts are presented on the following pages in terms of a short summary of what they are, a service walkthrough of how they would be used, and how they address the customer journey as a whole. Further, a summary of the customer and Stena evaluations is presented below for each concept, separated into positive and negative comments.

#### Design for Recycling

##### The Service

Design for Recycling is a concept consisting of guidelines for how to design for recyclability, in the form of a digital application. The guidelines include information about specific recyclers, future prospects and general recommendations when designing. During the design phase, a designer can insert information about a garment or textile in the app, which then provides feedback regarding if the garment will be recyclable and how it can be designed differently for better recyclability. See figure 4.3 for an illustration of the usage in the form of a service walkthrough.

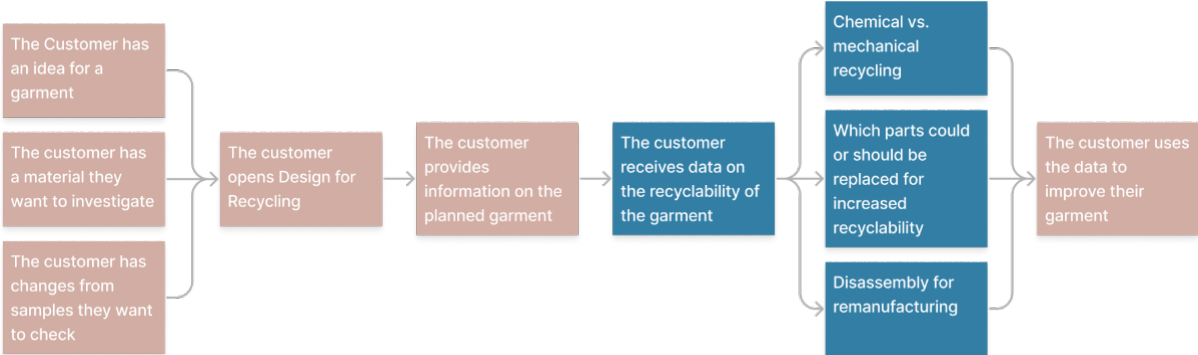


Figure 4.3. A service walkthrough for the concept Design for Recycling. The blue boxes represent actions by Stena, and the beige ones actions by customers.

##### Customer Needs

Fashion companies want to create garments that are recyclable, however, it is difficult for customers to keep track of all recyclers and their specific requirements. This leads to them not knowing what to prioritize when designing, for example if it is most important to exclude buttons or avoid blends for a garment to be recyclable. Additionally, there are a lot of developments in textile recycling and it would be beneficial to have a service that updates customers on the latest news.

##### Customer Journey

This solution primarily addresses problems that the customer has in the design and disposal phases, as it revolves around designing for a product's end of life, but through this it also affects circularity.

##### Evaluation Results

Results from the evaluations are presented in table 4.2 on the next page.

	Positive	Negative
Customers	<p>This concept is useful since there are knowledge gaps regarding textile recycling in the industry.</p> <p>Designers have a focus on other aspects than recyclability, and this tool could make design for recycling more accessible.</p> <p>There are no tools like this in use today.</p>	<p>Reuse and remake are better alternatives than recycling from a sustainability perspective, and a solution like this may encourage disposal unnecessarily low in the waste hierarchy.</p> <p>Designers might not be able to find fabric that both matches their standards and is recyclable.</p>
Stena	<p>This would be a new type of service for Stena, enabling them to provide value to a larger part of the customers operations.</p>	<p>Software development is difficult and requires large investments.</p> <p>It would require a lot of resources to gather and continuously update the information on textile recycling.</p>

Table 4.2. Results from the evaluations of the concept Design for Recycling, divided into positive and negative comments from potential customers and Stena.

## Stena Consulting

### The Service

Stena Consulting is a consultancy service that Stena provides to help companies reach their sustainability goals through specific action plans. They offer support with following up on sustainability processes, for example through gathering data and tracking products end of life. Additionally, they offer regulatory support by staying updated on, and informing about, upcoming laws and regulations. Figure 4.4 is a walkthrough of how the service is used.

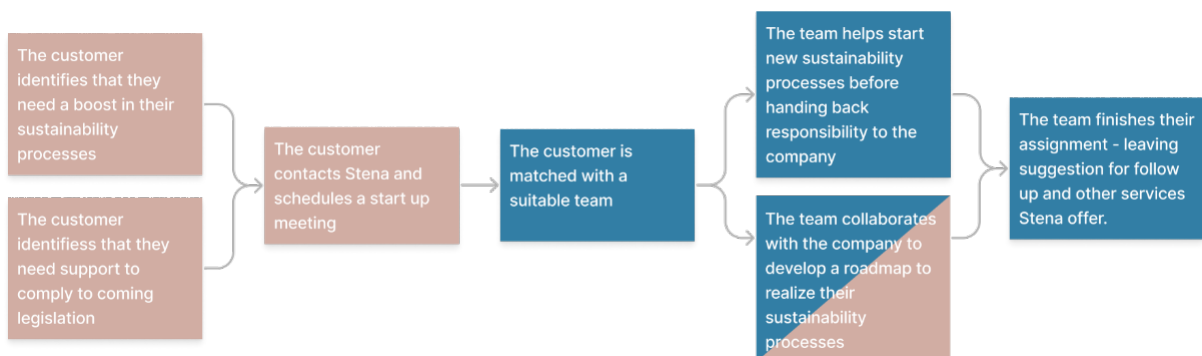


Figure 4.4. A service walkthrough for the concept Stena Consulting.

### Customer Needs

Some fashion companies lack the resources required for this kind of transformative sustainability efforts. Furthermore, sustainability goals can be abstract and it can be difficult to know how to reach them. Lastly, companies struggle with staying updated on upcoming laws and could benefit from clarity surrounding these.

### Customer Journey

This concept focuses on the sustainability goals-phase of the customer journey, but since these involve the entire journey the concept also affects all of the phases.

### Evaluation Results

Results from the evaluations are presented in table 4.3 below.

	Positive	Negative
Customers	<p>A good foundation for a concept but it needs a clear niche. A full service offer which is adaptable to different customers would be attractive.</p> <p>Smaller companies do not have the resources to keep track of both current and coming laws.</p>	<p>There is already a multitude of similar services on the market</p>
Stena	<p>A version of this exists through Stena Circular Consulting, making this a good addition to the core business.</p>	<p>Services like these require expensive personnel.</p> <p>Services like these have inherent risk as they depend on the competence and knowledge of individual employees.</p>

Table 4.3. Results from the evaluations of the concept Stena Consulting, divided into positive and negative comments from potential customers and Stena.

### Stena Certified

#### The Service

In this concept Stena offers a certificate for recyclable textiles, assuring that a garment can be recycled via Stena. The concept also includes a simple guide for how to design for Stena to be able to recycle the garment. A proposal for the usage of such a service is illustrated in figure 4.5.

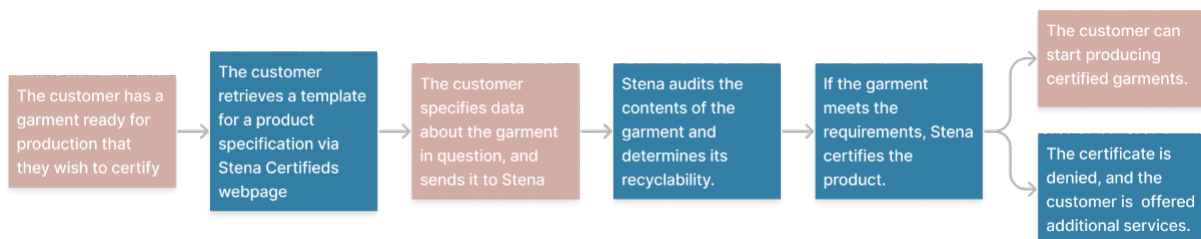


Figure 4.5. A service walkthrough for the concept Stena Certified.

### Customer Needs

Fashion companies and end-consumers want to know if garments are recyclable or not. In the fashion industry certificates are a common method of guaranteeing quality of different kinds, but today there are no certificates for recyclable textiles. Stena Certified could also help customers stay updated about recyclers and their requirements, since it is an ever changing field.

### Customer Journey

This concept mainly affects the design phase since it is an extra step the customers have to go through when designing garments. It equally affects the disposal phase, since the garments must be recyclable, and touches upon the phases circularity and sales.

### Evaluation Results

Results from the evaluations are presented in table 4.4 below.

	<b>Positive</b>	<b>Negative</b>
<b>Customers</b>	<p>There are no certificates in use for the recyclability of clothes.</p> <p>This would be a good and clear way of distinguishing recyclable garments.</p> <p>It would be desirable if Stena could guarantee the collection and recycling of these garments as well, similar to a deposit system.</p>	<p>The certification process would need to be simple for this to be attractive.</p> <p>The fashion industry is already cluttered with different sustainability certificates, it could be difficult for this to find its place.</p> <p>There is a clear risk of greenwashing.</p>
<b>Stena</b>	<p>This would be a good way to increase the volume of collected end of life textiles.</p> <p>It would be beneficial for Stena to increase their presence earlier in the product life cycle.</p> <p>This could be a good way of reaching new customers.</p>	<p>Keeping track of the entire textile recycling industry would require a lot of work.</p> <p>It would require a lot of work to police all of the certified garments.</p> <p>A certificate like this may need a separate brand to reduce risk and increase credibility.</p>

*Table 4.4. Results from the evaluations of the concept Stena Certified, divided into positive and negative comments from potential customers and Stena.*

### Material Guide

#### The Service

The material guide is a website with compiled information about the climate impact and suitable uses for different materials. The purpose of the site is to guide designers at fashion companies in dilemmas, and make sure that the right materials end up in the right garments. The site also includes sustainability metrics such as water usage translated into understandable quantities. See figure 4.6 for an illustration of the usage in the form of a service walkthrough.

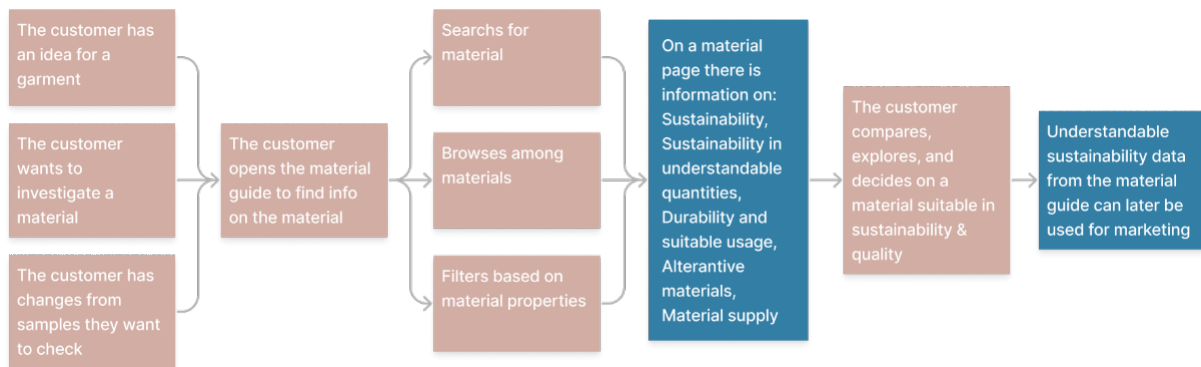


Figure 4.6. A service walkthrough for the concept Material Guide.

### Customer Needs

A problem identified in the research phase was that designers face dilemmas in the choice of material due to contradicting factors such as price, quality, and climate impact. This website will help with decisions as well as with the communication between sustainability teams and design teams. Additionally, there is a need to communicate to the end-consumer why they should buy specific garments and motivate them to make more sustainable choices, something that climate impact data translated into understandable measurements can help with.

### Customer Journey

The concept primarily affects the design phase, since it is in this phase that the guide will be used and has the biggest impact. The choices a designer makes in this phase will however affect the following phases as well: how well the garment sells, if it is recyclable and if the quality allows it to be used and reused several times.

### Evaluation Results

Results from the evaluations are presented in table 4.5 below.

	<b>Positive</b>	<b>Negative</b>
<b>Customers</b>	<p>This solution would be good for the end-consumer.</p> <p>Providing a standardized way of presenting sustainability data would be good for the industry.</p> <p>There are not any material libraries combining material properties with sustainability data.</p>	<p>There are several material guides on the market, both for sustainability and material properties.</p> <p>The sustainability data in similar guides can be imprecise and hard to depend on.</p> <p>Taking action to change materials and manufacturing processes requires more than knowledge. Finding and switching to new suppliers takes time and effort.</p>
<b>Stena</b>	<p>This concept works well as a complement to the other services.</p> <p>It would be a positive development if Stena became a go-to partner for information.</p>	<p>It could be hard to make a concept like this profitable.</p> <p>This concept would require a lot of internal competence development on textiles.</p>

Table 4.5. Results from the evaluations of the concept Material Guide, divided into positive and negative comments from potential customers and Stena.

## Trendspotting

### The Service

Trendspotting is a consultancy service where Stena provides strategies for how companies can fit in or stand out through their sustainability profile. The strategies are customized to each company's business through trendspotting and benchmarking. In figure. 4.7 below a representation of the service walkthrough is presented.

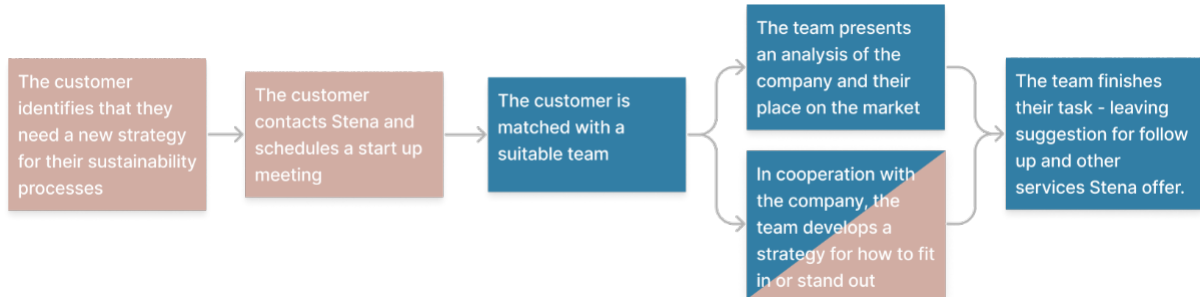


Figure 4.7. A service walkthrough for the concept Trendspotting..

### Customer Needs

Many companies in the fashion industry have similar sustainability profiles today, which means that there is potential for standing out from the competition and appeal to more end-consumers. Further, it can be difficult for fashion companies to know what to focus on when it comes to sustainability. For this reason they can benefit from a strategy for how sustainability efforts can be better adapted to their specific company and that way compete on the market.

### Customer Journey

This concept mainly addresses strategic work with sustainability goals but spans the entire customer journey. This is because the benchmarking and trendspotting can touch any of the phases.

### Evaluation Results

Results from the evaluations are presented in table 4.6 below.

	Positive	Negative
Customers	Good for the companies with low sustainability maturity, in how they should focus their resources and express themselves.	There are already a lot of sustainability consultants and marketing consultants.
Stena	A version of this service exists through Stena Circular Consulting, making this a good addition to the core business.  Interesting to take more responsibility earlier in the customer value chain.	Similar solutions are already on the market from established actors.  Needs to be more precise and niche in the way the service offer is formulated to be marketable.

Table 4.6. Results from the evaluations of the concept Trendspotting, divided into positive and negative comments from potential customers and Stena.

### Conclusions

Both the customers and Stena employees were asked to select their favorite concepts and motivate why, their selections are shown in figure 4.8. There was no limit on how many concepts they could select. Among the customers there was a clear preference for Design for Recycling as this clearly met a knowledge gap they had. Stena Certified was popular for the same reason, whereas the rest of the concepts did not have as clear benefits. An overall wish from the customers was to combine some of the offers to create a Service package.

The Stena employees were most keen on the Material Guide as they viewed it as simple to start up and sell to many customers. Stena Consulting, and to an extent Trendspotting, were rated favorably as they bear resemblance to an existing consulting division at Stena. Design for Recycling and Stena Certified were appreciated due to being digital concepts with clear selling points, both of which would bring Stena earlier into the customer journeys. The employees expressed an interest in combining some of the concepts into a service package to give as complete of an offer as possible to their potential customers, without hearing that the customers held the same opinion.

### Evaluation Scores

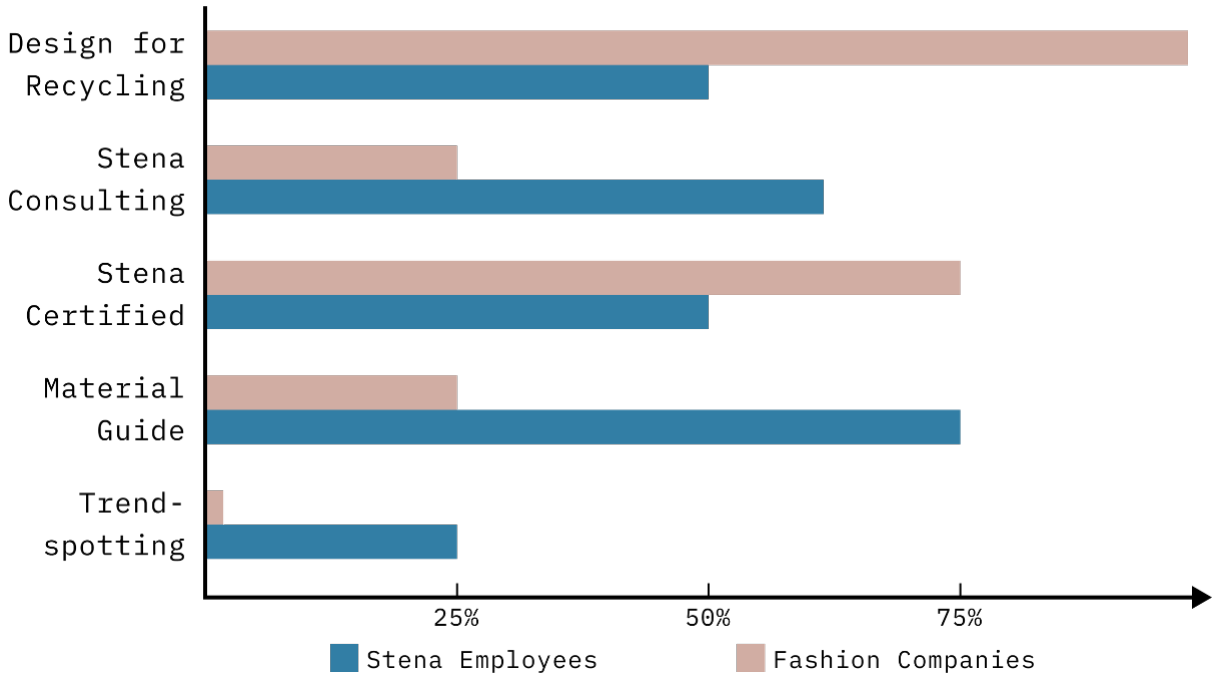


Figure 4.8. A graph of the scores from the evaluations with Stena and potential customers.





# Delivery

The delivery chapter of this report contains results and methodology of the last project phase. This phase resulted in a final service portfolio in three parts which are described in the result section. The methodology for reaching this result includes concept selection, evaluation and further development, all described in the methodology chapter.

## 5.1 Delivery Methodology

In this methodology chapter the steps and methods used to select, develop and refine a final service portfolio concept are described. The chapters describe concept selection, evaluations of the final concepts as well as further development.

### 5.1.1 Concept Selection

The results from the Stena internal evaluation and the customer evaluation were summarized and categorized into positive and negative aspects for each concept. Each concept was then discussed and compared from both the perspective of Stena and the potential customers, coming from the workshop and the evaluations. Using these perspectives, a final concept combination was selected, consisting of one main concept, and two complementary concepts.

### 5.1.2 Final Evaluation

Final evaluations were held with sustainability directors from two fashion companies. The goal of these evaluations was to assess, validate and further develop the final service. During the evaluations, approximately 45-minute-long video calls, the three final service concepts were presented individually, and the participants were interviewed about them. The purpose of the questions was to deepen the understanding of the customer needs. For the full interview template, see appendix F.

### 5.1.3 Concept Development

The methodology for further development of the three service concepts varied between the main concept and the other two. The reason for this was that the complementary concepts were considered closer to Stena's current operations, and thus needed less explanation, whereas the main concept is further from their core business.

Holmlid & Wetter-Edman (2021) describe how design heuristics, or principles, can be developed to summarize accumulated knowledge and insights. This way, a designer can deliver material that a company can continue working with when a project is finalized. To deliver a clear picture of how Stena can develop the final concepts further, design heuristics were formed for each concept.

The main concept was developed and designed in more detail than the other two concepts, focusing on creating the interaction points between the concept and the user, as described by the Service Design Network (2017). A more detailed service walkthrough was created to describe how the user interacts with the service as well as some examples to illustrate how the digital solution could look.

## 5.2 Final Concept

In this chapter the final service portfolio is described, along with the motivation behind the selected concepts. First the selection is outlined, after which the concept is described in three parts with design heuristics and short summaries for each.

### 5.2.1 Choosing the Final Concept

Design for Recycling was a clear favorite in the customer evaluations. It was considered a unique idea that solved a real problem. Stena Certified got high ratings from the customers as well, and it was mentioned that this idea could be added to Design for Recycling for a combined design tool and certificate for recyclable garments. Both concepts were however significantly less popular at Stena.

Among the customers an important piece of feedback was that materials guides exist and require extensive research and expertise to develop. For this reason, the Material Guide concept was deemed too complex and discarded.

An objective of the project is to meet the customers' needs, and thus Design for Recycling was chosen as the main, final concept. The ratings from Stena were average for this concept, partly because they saw difficulties in implementing a more technical solution. The conclusion was drawn that some adjustments of the concept would make it easier to implement while still solving a significant customer problem. It was also decided to further explore the idea of combining Design for Recycling with Stena Certified, as a way of providing feedback on the recyclability of a garment.

The idea to create a service portfolio was further supported by the customers and the second evaluation with Stena. Because Stena already has a consultancy service for other products, a solution was to combine the final concept with a consultancy service. The proposed consultancy services, Trendspotting and Stena Consulting, received varying feedback from Stena and the customers. For this reason, it was decided to further explore exactly what kind of consultancy would be the most attractive in the final phase of the project.

### 5.2.2 A Service Portfolio

The final concept is a service portfolio, divided into three service concepts; Stena Collect: a textile collection service, Design for Recycling: a digital design tool and Stena Consulting: a consultancy service.

There are multiple reasons for delivering a service portfolio instead of a single service concept. Primarily, providing several different services can attract a broad group of customers, catering to all three company personas identified in the research phase, since there is a better opportunity of meeting diverse needs. Secondly, the range of services enables Stena to meet need in several phases of the customer journey, as is illustrated in figure 5.1. Additionally, offering a full-service-package can be a selling point for Stena that makes it easier to compete on an already mature market. There are for example already many consultancy services working with sustainability today, but if Stena also offers other services there is a greater chance of companies using their consultancy service.

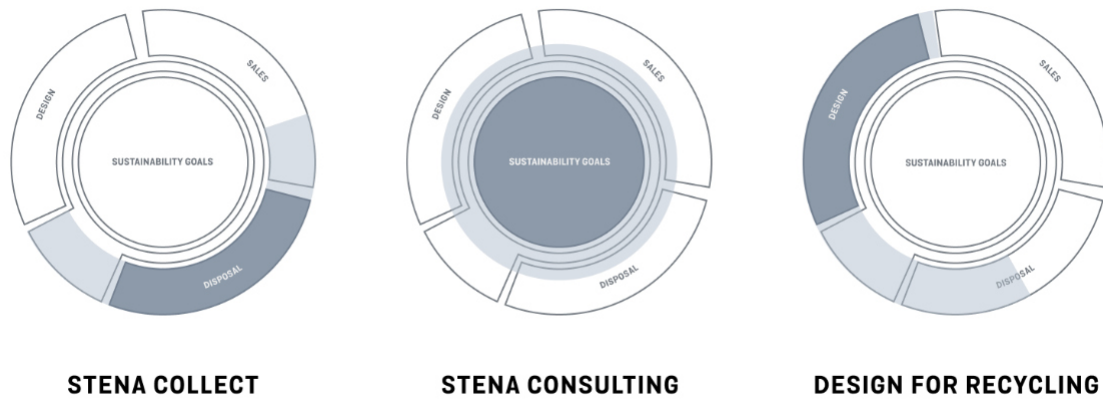


Figure 5.1. An illustration of what phases of the customer journey each service concept affects.

A benefit of having a service portfolio is that several system levels can be addressed, which is beneficial when addressing complex problems where changes are desired (Joore & Brezet, 2015). The three concepts in this portfolio match three different system levels of the Multi Level Design-model: Design for Recycling on the product-technology level, Stena Consulting on the Product-Service level, and Stena Collect on the Socio-Technical level.

Collecting textiles and acting as an intermediary between textile producers and recyclers was identified as a significant need for fashion companies. This is a natural role for a waste management company to take and would match a relevant market gap. Further, designing for recycling and collection of textiles are two concepts that work well together. Being able to assure recycling of the textile through Stena makes the design tool credible source. Long term it also increases the likelihood that the garments can come back to Stena, providing inbound textile in the future.

The concepts are described individually in the following chapters, first with a short description of the concepts, and with design heuristics for further development and deployment.

### 5.2.3 Stena Collect

This concept is based on an identified gap in the cooperation between fashion companies and recyclers. The recyclers have specific requirements and only accept shipments of large quantities. Meanwhile, textile recycling should be the last resort for old textile, as reuse is better when possible both environmentally and economically. Fashion companies can often make a small amount of money on selling old textiles for reuse, while textile recycling usually costs a little. Because of this, the fashion companies have quite small amounts of textile to recycle. It can take months for them to collect enough textile to be accepted by the recyclers, which requires valuable storage space in the companies' warehouses. This gap leads to fashion companies not cooperating with recyclers, and consequently valuable textile not being recycled properly. This concept is well suited to all three company personas, as it meets an elemental need.

This is an opportunity for Stena, as they could take the role of an intermediary between the fashion companies and the recyclers, see figure 5.2 for an illustration. Stena would then collect textile from fashion companies and gather it at a suitable branch, as they already do with other materials. There, they have the necessary storage space and equipment for handling the textile.

When there is enough collected textile at the branch, Stena can package it according to the recycler's requirements and transport it to their recycling facilities. Through partnership with several fashion companies their textile supply could quickly add up to the necessary volume. A notable aspect is that textile is a living material and needs to be handled separately to not spoil the material. Another factor to consider is that textiles can have a substantial second hand and remanufacturing value, which is different from other materials Stena typically deals with, and mechanisms to take advantage of this would need to be put in place.

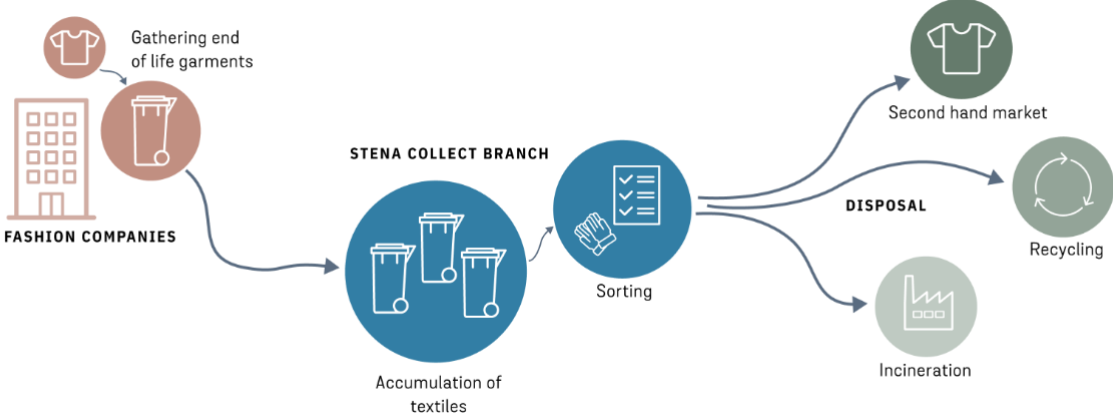


Figure 5.2. An illustration of the textile flow enabled by Stena Collect.

Equally, this would be beneficial for the textile recyclers since they want to increase their flow of inbound textile. During an interview with a Swedish textile recycler, it was mentioned that they import a large fraction of the textile they recycle from textile producers in for example East Asia. Because of the climate impact and costs of this transport it would be of interest for them to acquire the textile more locally.

**Design Heuristics**

*Dispose textile as high in the waste hierarchy as possible* - Ensuring that the collected textile is disposed of in the most sustainable way possible is key to become an attractive partner to fashion companies. Trustworthiness is equally important and can be achieved through fulfilling the heuristics below.

*Recycling Partnerships* - In order to ensure recycling of as much of the collected textile as possible, partnerships with a wide network of recyclers will be required. This includes both chemical and mechanical recyclers, since chemical recycling leads to higher quality products, but mechanical recyclers have less strict intake requirements.

*Textile end of life data* - Potential customers want to know what happens to their products at the end of their lives. A part of the solution should therefore be tracking the collected textile and reporting back to the customer where and how it has been disposed of.

*Logistics* - For an intermediary between fashion companies and textile recyclers, responsibilities include logistics of collecting mixed textile, sorting and storing it, and transporting it to the correct recycler. This requires methods of collection, transportation, sorting and storage facilities and established partnerships. Additionally, the collected textiles must be kept clean and dry.

*Sorting* - Because fashion companies do not have the resources to sort their collected textile this will become the collector's responsibility. Sorting is necessary for the textile to go to the correct recycler since their requirements vary. An option is to partner with Siptex as they have automated sorting of fiber and color, but because of their intake requirements a first sorting will still be necessary. Sorting should include screening of whether the textile is at the end of its life and should be recycled, or if it could be sold for reuse.

*Second life value* - In case the collected textile is still of good quality, the garment should be put to reuse, either through second hand sales or charity. This could for example be done through establishing a partnership with an aid organization or second hand e-commerce.

## 5.2.4 Stena Consulting

This is a consultancy concept that Stena can provide to their customers to aid them in their sustainability processes. This concept is likely most appealing to customers similar to the persona StyleHive, as they have the resources necessary and low sustainability maturity. The other two personas would mainly benefit from this concept as an add on to the other services of the portfolio. Figure 5.3. Illustrates the envisioned interaction between fashion companies and Stena when using the service. The idea is that this concept would be integrated into a division of Stena Recycling called Stena Circular Consulting which works with sustainability consulting. To aid in the development of the consultancy service, a set of potential niches are described below. These are based on the needs identified in customer interviews and evaluations.

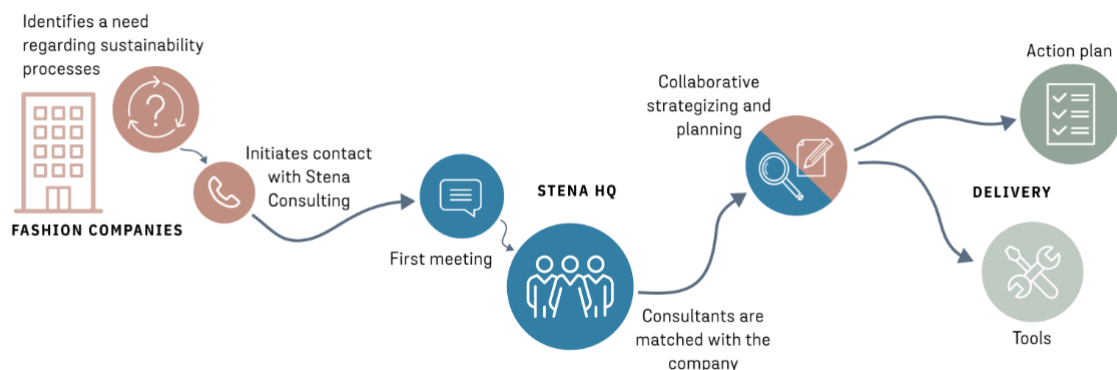


Figure 5.3. An illustration of the interaction between fashion companies and Stena Recycling when using the service Stena Consulting.

## Potential Consultancy Niches

*Traceability in end of life-clothing* - Traceability of textile production is an important topic in the fashion industry, the knowledge of what happens to garments after they are purchased by the end-consumers is limited. If Stena could offer ways to improve how potential customers work with end of life traceability it would be an interesting niche.

*Design for recyclability and remanufacturing* - While the concept Design for Recycling partially addresses this need, there are some challenges in recycling which could benefit from consultancy, such as assisting in dilemmas between garment functionality and recyclability. Garment disassembly and remanufacturing of clothes is not covered in Design for Recycling due to their complexity but has large environmental and economic potential.

*Compliance with coming laws & regulations* - Sustainability efforts are rapidly transitioning from nice-to-do to must-do in the fashion industry, and some companies are struggling to keep up. In addition to this there are laws currently on the drawing board which no one knows how to face yet, and guidance in how to tackle these would be very attractive to potential customers, for example how to approach the digital product passports.

## Design Heuristics

*Knowledge of the textile value chain* - The textile value chain is complex, and to provide value to fashion companies a deep understanding of the entire chain is necessary. Generating this knowledge is a natural part of realizing the other concepts, and a consultancy service could be a way of keeping this competence in the organization.

*Adaptability to specific customers* - While they are in the same industry, the needs, sustainability processes and size of fashion companies vary greatly, and to succeed adaptability is key.

*Stand out from the crowd* - Sustainability consultants are common in the fashion industry, and to be attractive one has to offer more than just a consultancy service. A way to accomplish this is to offer a package with textile recycling and a design tool.

## 5.2.5 Design for Recycling

This is a concept for an interactive digital tool for how to design recyclable clothes, primarily developed with designers at fashion companies as the primary users. It is based on the identified lack of knowledge regarding textile recycling and aimed at bridging the gap between recyclers and producers. Figure 5.4. is an overview of how the service can be used by fashion companies. The concept would mainly be beneficial for Alma&Co and StyleHive segments, as they often use blends and follow trends. This means that they have many types of materials and trims which leads to uncertainties of the garments' recyclability. The focus of the concept is textile recycling and the criteria posed on garments for textile recyclers to accept them. However, this does not ensure the recyclability of all components of a garment. For example, a garment with metal buttons might be accepted by a textile recycler, but the buttons will not necessarily be recycled. The concept is described in two parts below: design heuristics for further development, and a description of how the concept would be used, along with examples on how it could look.

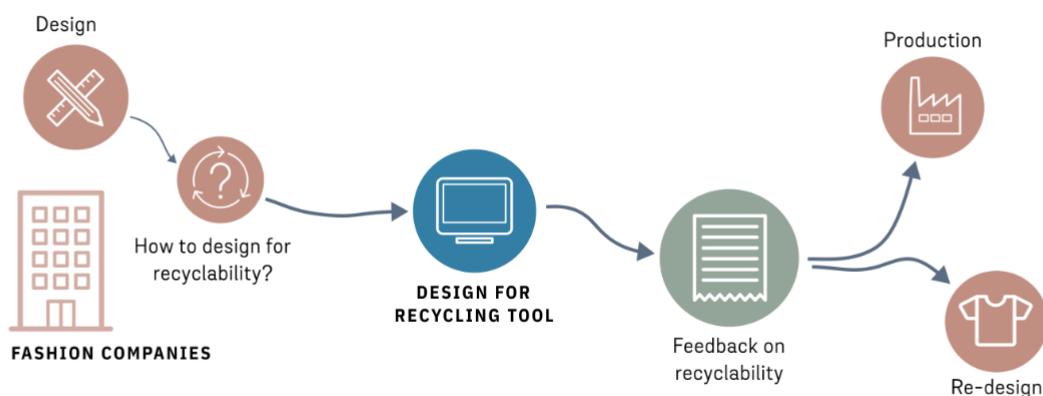


Figure 5.4. An illustration of how the Design for recycling concept is used by fashion companies.

## Design Heuristics

*Efficient and effective usage* - Designers already use design tools and material guides, and have many factors to consider when designing garments. In order to be useful, this tool needs to be easy and quick to interact with, and give clear results.

*Accurate and updated* - Textile recycling is a rapidly developing field and there are a lot of promising technologies and bold claims. This makes it hard to keep track of what is possible now, what is possible in five years, and what is just marketing. A key to the success of this concept is accurate, up to date, and reliable information on textile recyclers. Updated information also encourages recurring use of the tool and makes it less likely to be used once and then forgotten.

*Informative and transparent* - How recyclable a garment is needs to be presented clearly, for example via a percentage or a score. This information needs to be coupled with details on which recyclers can recycle the garment, into what, along with explanations of why certain textiles are not recyclable and how to improve the recyclability.

*Green Claims* - To be compliant with the Green Claims Directive primary sources on sustainability marketing are required. Stena is in a great position to provide this as their role as an intermediary is to be the link between recyclers and fashion companies.

*Digital Product Passports* - These are likely to include information on the how, where and if garments are recyclable, and if this tool could provide accurate information ready to be used in DPPs it would be valuable for fashion companies.

## How it Works

This concept is inspired by e-commerce, but designers, hereafter referred to as users, add fabrics and trims to a garment instead of items to a shopping cart. The recyclability of the garment is then summarized on a separate page where all components, i.e fabrics and trims, are gathered, similar to the check out on an e-commerce website. There is also a news section to keep the designers up to date about the latest news in textile recycling and Stena. Access to the website is subscription based and the user can only access the design tool while logged in. Full-length versions of the news also require the users to be logged in, whereas short versions of the news can be read without subscribing

### Home Page

When opening the website, the user lands on a homepage with two main sections, as can be seen in figure 5.5., one which directs them to the *Design for Recycling*-tool, and one to the *News* section. If the user is not already logged in, they are prompted to do so when clicking on the tool or the news.

### Header

Throughout the interface there is a header at the top of the page for navigation, see figure 5.6. On the left side of the header there is a Stena-logotype which if clicked, leads the user to the home page. To the right of the logo there is a link to the *Design for Recycling*-tool, and to the right of that there is a link to the *News* section. On the right side of the header there are two pictograms, one in the shape of a person, and one in the shape of a clothes hanger. Clicking on the person leads the user to *Account Settings*, and the clothes hanger leads to *Garment Summary*. When a component is added to a garment, a digit is added to the clothes hanger to represent the number of components of the garment. Development of the account settings page has not been included in this project, as it is not essential to the functionality of the concept.

In the Design for Recycling-tool a subheader is shown beneath the header with three links. These correspond to the three parts of the tool, which are presented in detail below. The links lead to the pages *Fabric Selection*, *Trims Selection*, and *Garment Summary*.

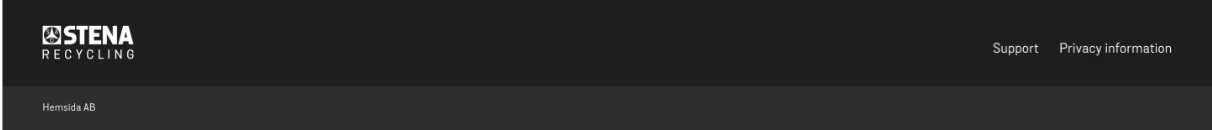
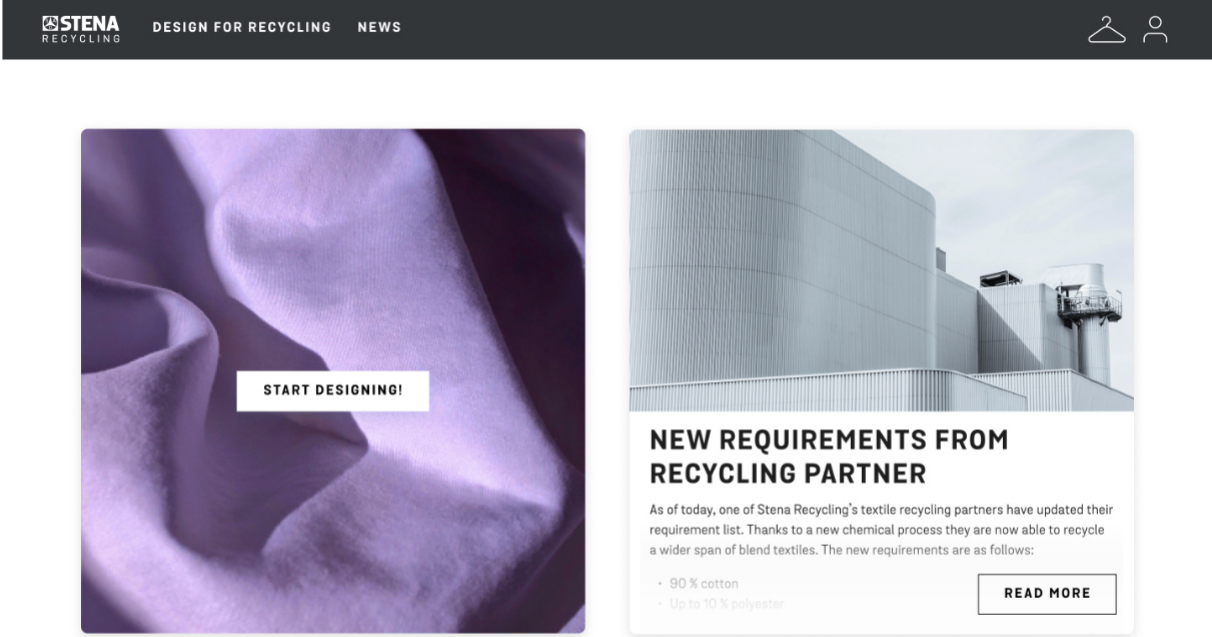


Figure 5.5. The home page.

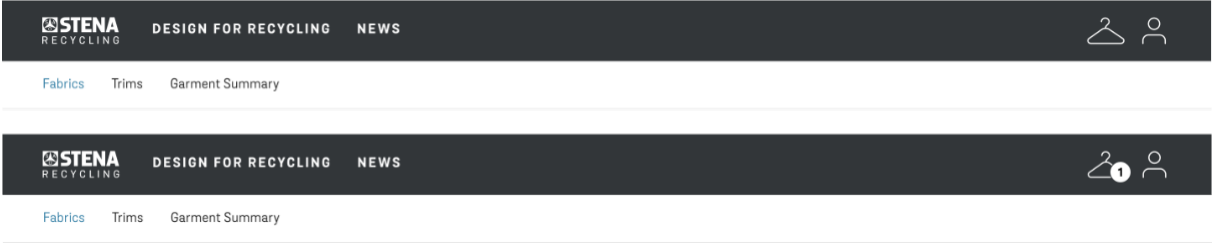


Figure 5.6. The header and subheader with and without an added component

### Fabric Selection

Clicking on “Design for Recycling” in the header or on the homepage, leads the user to the Fabric Selection-page of the design tool. On this page the user adds one fabric at a time to their garment, specifying composition and treatments for each fabric before moving on to Trims Selection. On the Fabric Selection-page the user is presented with a list of textile fiber types and asked to select the types of fibers composing the fabric. When one or more fibers has been selected, a button labeled “Add Fabric” becomes activated and clickable as is shown in figure 5.7.

After the user has selected fiber types and clicked the “Add Fabric”-button, a dialogue window appears, see figure 5.8., where the user is asked to provide more details on the fabric. The details are: the ratio of the selected fiber types, the color of the fabric, and additional treatments, such as prints. When these have been specified, the user adds the material to the garment by clicking on a button labeled “Add to Garment”, after which the window closes and a notification confirms that the fabric has been added, also shown in figure 5.8.. Further confirmation is provided through the digit on the clothes hanger-pictogram in the header. After completing one fabric the user can either add another fabric or move on to adding trims to their garment by clicking on Trims in the subheader.

#### Trims Selection

The Trims Selection works similarly to the Fabric Selection, with some adjustments. To ensure simple navigation among the many types of trims, the trims are grouped into categories, such as buttons, zippers and sewing threads. The user adds trims to their garment by first clicking on a category, leading them to a page with trims belonging to that specific group of trims, as is shown in figure 5.9.

When clicking the plus-icon on a trim, a dialogue window appears, similar to the one used in fabric selection, prompting the user to provide more information. The details needed to determine recyclability differ between categories of trims, and thus the contents of the dialogue window differ. In figure 5.10. an example for stud buttons is shown, where the user is prompted to specify the type of material and fastening method. Once the required information has been specified the user presses a button labeled “Add to Garment”, the window closes, and a notification confirms that the trim has been added to the garment. Further confirmation is provided through the digit on the clothes hanger-pictogram in the header. The user can then add more trims to their garment or proceed to the Garment Summary-page.

#### Garment Summary

Clicking on the clothing hanger-pictogram in the header or on “Garment Summary” in the sub-header brings the user to the Garment Summary-page, shown in figure 5.11., where a summary of the garment’s recyclability is presented. At the top of the page there is a table with information on specific recyclers. For each recycler an aggregate score is presented based on the fabric and trims, along with a short description of what is not recyclable. The score is shown as the number of recyclable components divided by the total amount of components. The table is split in two parts, one for chemical recyclers, and one for mechanical recyclers, as the output quality may differ substantially between the two.

Beneath the summary, the fabrics and the trims are presented one by one with a brief description. For each component there are icons symbolizing the recyclers which are able to process that particular component. Chemical recyclers are indicated with green icons, and mechanical recyclers are indicated by red icons. There is also an information-button on each component indicated by an “i” in a circle. The user can click this button and receive information about why or why not that particular component is recyclable. This feature exists to give the users a better overview of which components are recyclable and why, enabling them to change their designs, and get a better understanding of how to design for recyclability. In this section there is also the possibility to edit or remove components from the garment. The entire summary can be downloaded via a button on the bottom of the page.

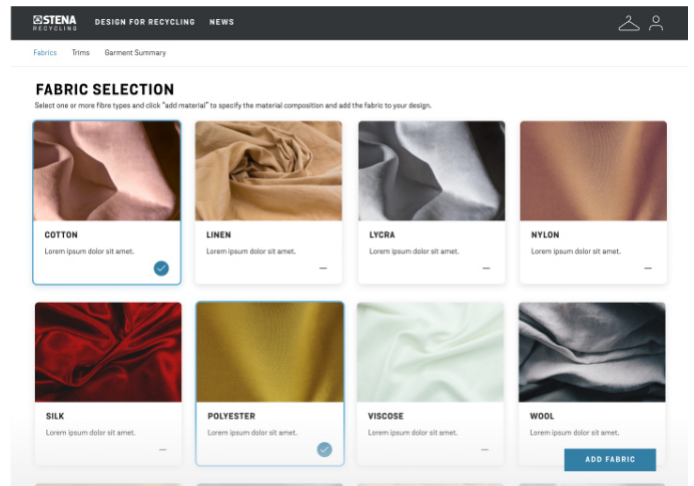
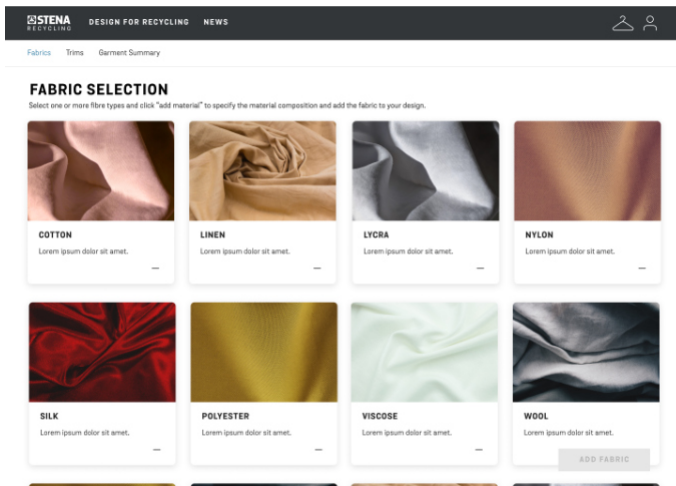


Figure 5.7. Fabric selection page. The images illustrate what it looks like when fabrics have been selected.

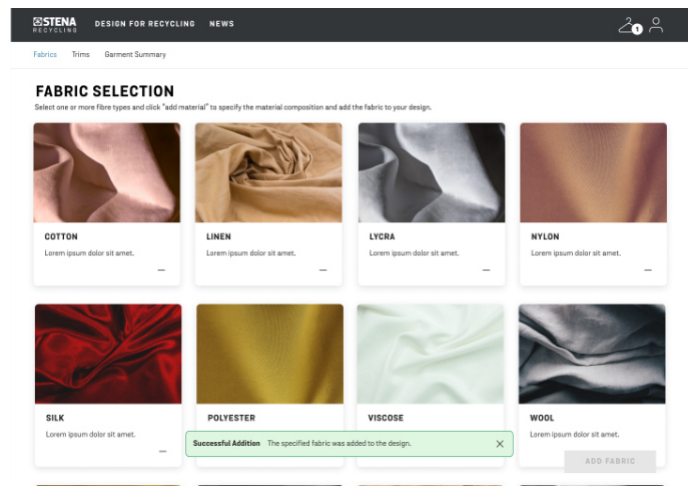
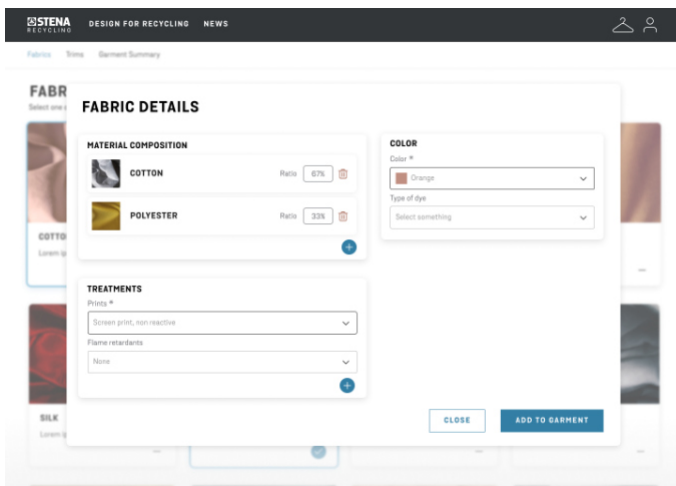


Figure 5.8. Fabric details dialogue window where fabric specifications are made & confirmation once a fabric has been added to the garment.

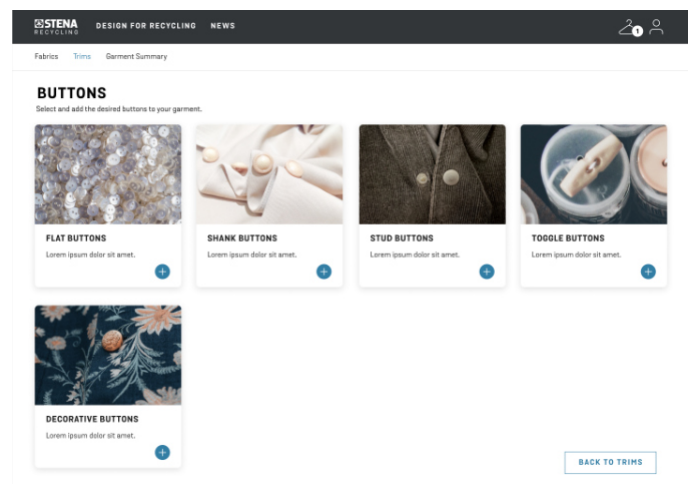
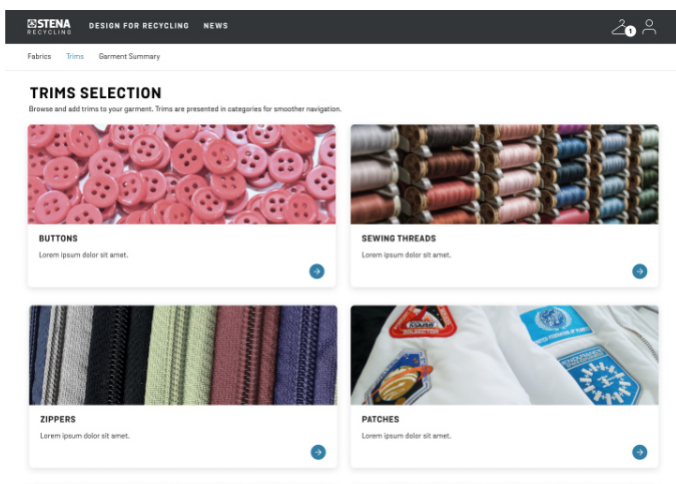


Figure 5.9. Trims selection page. The user chooses the trims category which takes them to the specific trims page, in this case Buttons.

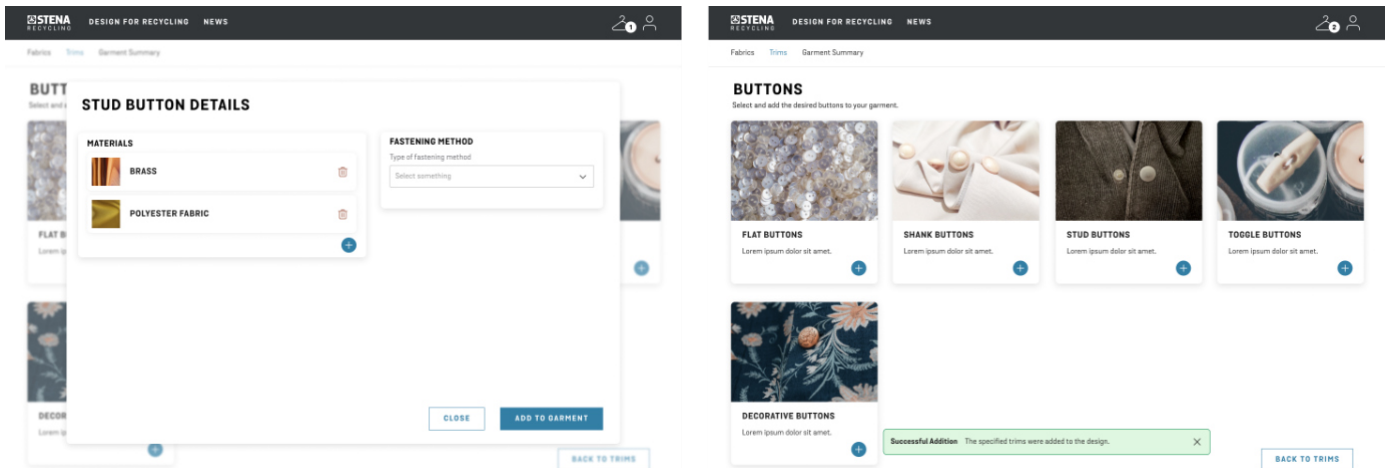


Figure 5.10. Trims details dialogue window where trims specifications are made & confirmation once a trim has been added to the garment.

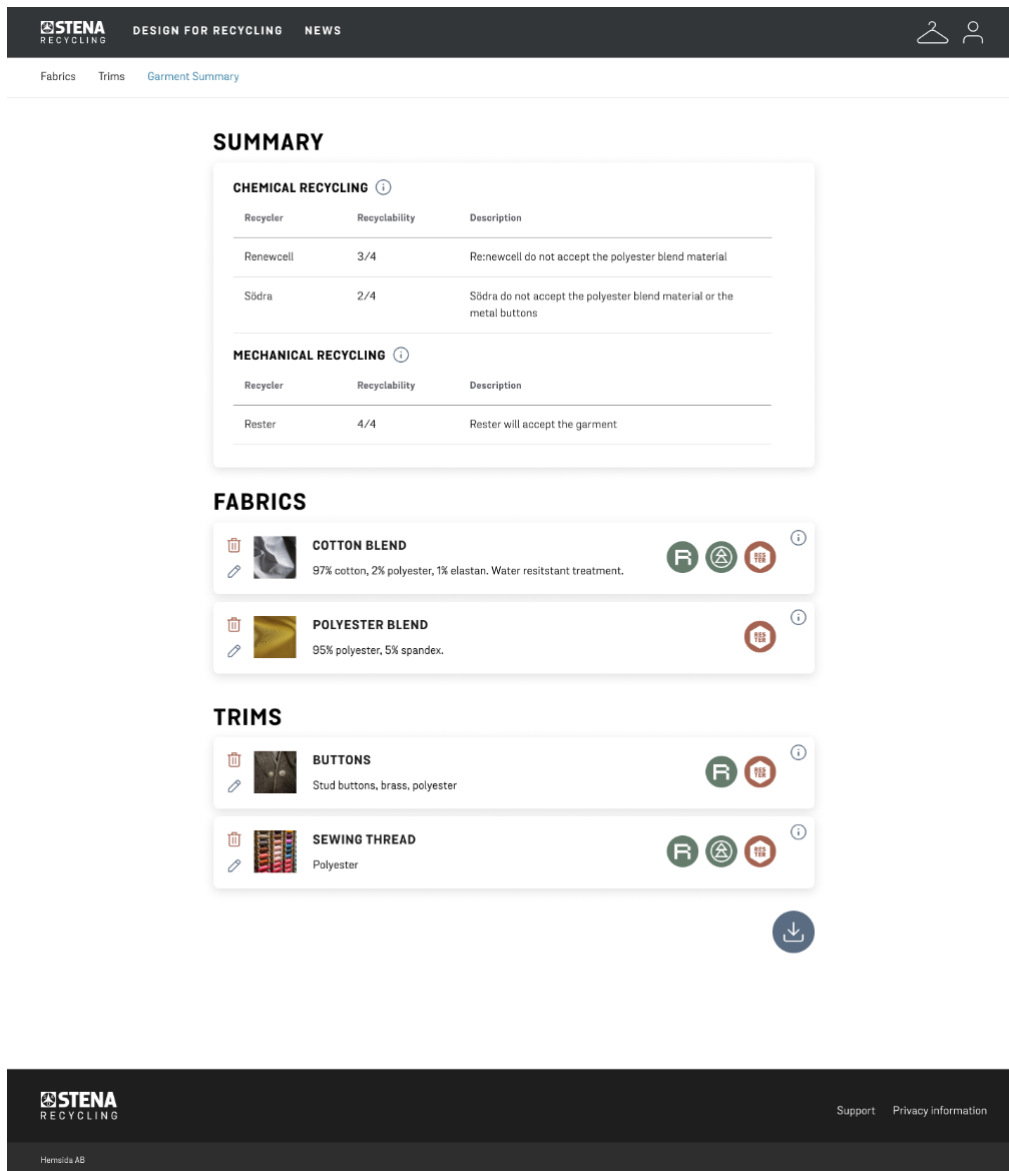


Figure 5.11. Garment summary. The user must scroll to see the entirety of the page.



**STENA**



6

# Discussion & Conclusion

This chapter concludes the report with a discussion on the project and its results, along with final conclusions on its impact.

## 6.1 Discussion

This project aimed to reach three main objectives, all of which can be considered to have been accomplished. The first objective was “Use service design methodology to develop a service that Stena could offer to become a circularity partner for textile retail customers.” The project was planned and conducted according to contemporary literature on service design, and a service portfolio was developed, giving Stena the opportunity to participate in a larger part of the customer journey.

The second objective was “Explore the sustainability and product development processes in the Swedish fashion industry and synthesize these into customer needs and journeys.” These processes were explored through an in-depth study of sustainability reports from fashion companies, along with a thorough interview study. The results of this exploration were then synthesized into a customer journey, company personas, and a need specification, reaching the second objective.

Finally, the third objective was “Identify where the fashion production and recycling chains do not match and why.” This objective was reached through the literature study, the interviews with aid organizations and fashion companies and the subsequent analysis. Several gaps between producers and recyclers were identified, for example the absence of an intermediary textile collector and the producers’ lack of knowledge regarding what is recyclable. These gaps, along with the customer needs mapped, were addressed in the service portfolio.

## 6.1.1 Methodology

Design methodology, more specifically service design methodology, has been used as a base for the project planning and execution. Overall, the methods used have worked well and led to interesting results, ultimately achieving the objectives set in the beginning of the project. Some changes to the methodology might however have led to different results, the most significant of which are discussed below.

Something to consider is if the correct company representatives have been interviewed. The majority of the representatives from both fashion companies and aid organizations were Heads of Sustainability, and thus very invested in the sustainability processes of the company. This was positive for gaining a deep understanding of how the company tackles sustainability, seeing as these are the company experts on the matter and have a great interest for sustainability. It could however lead to them painting a biased picture of what they work with, and what their company needs. Speaking to someone in another role at the company might have led to different answers. Nonetheless, the interviewees having similar roles was positive since it increased the chance of receiving consistent answers.

On a similar note, there is the question of the honesty of the interviewees. The participants were guaranteed anonymity, and informed that the interviews were held with the purpose of developing new services, not evaluating their sustainability processes. However, the interviews were recorded, and it did not lie in the companies interest to expose themselves as unsustainable. An example of a discrepancy that was identified is that the fashion companies all claimed that almost none of their textile waste went to incineration or landfill. This opposes literature on the subject, exposing fashion companies sending large quantities of returns and overstock to incineration (Roberts et al., 2023). An explanation for this might be that this is more common among luxury brands, none of which have been studied in this project, that do not want their merchandise to end up on the second hand market since it can lower its value. Another explanation could be that the companies that volunteered to partake in the interview study were ones that have more mature sustainability processes. They might therefore not be representative for the entire fashion industry.

An important source of information for this project has been the sustainability reports of fashion companies. These have been useful for gaining insight into how the different companies work and the current state of the industry. They may however lack nuance, as they tend to present the company's best sides. To compensate for this, speaking to more impartial experts on the industry would have been interesting, and could also have been helpful in determining the transparency of the interviewees.

## 6.1.2 Relevance of the Project Aim

A natural question to ask is whether the right project has been conducted. This is especially relevant when working with sustainability as avoiding greenwashing is imperative.

This particular project has been recycling-centered, which is relevant considering how much textile is sent to incineration, and that recycling is a better alternative. Moreover, recycling is close to Stenas core business, and thus a natural subject in this project. However, the waste hierarchy illustrates that the options waste prevention and reuse are more sustainable alternatives than recycling, and that recycling should only be the solution if a product has truly reached the end of its life. A risk with the proposed service portfolio is that textile that could be used again is disposed of unnecessarily. For this reason, it is important that Stena understand the value of the textile that they collect, as

well as collaborate with not only recyclers but with resellers and remanufacturers. Additionally, a future development of the design tool would be to include remanufacturers along with the recyclers. This way designers could find out if the garments they design would be accepted by companies working with remaking the garments into new garments.

This project targets fashion companies, as that was the brief from the project initiator. However, it was discovered that the largest fraction of textile waste is post-consumer waste, and that the fashion companies do not have control over this fraction unless they have textile collection. The conclusion is that there would be a greater environmental value, and likely more value for Stena if they started up a municipal textile collection. On the other hand, there is still a need among the fashion companies to dispose of the textile they have, and there will probably be a shift in who controls the large textile fractions if an EPR is put in place.

Early on, it was identified that the supply chain is the largest source of emission when it comes to textiles (Mistra Future Fashion, 2019). In this project, a delimitation was made not to focus on the textile production phase due to it taking place outside the reach of the project initiator. It can be argued that this leads to the project targeting the wrong problem, as it explores phases of the product life cycle that have substantially less climate impact. However, the problems within the textile industry are many, and therefore many solutions are required. This project has focused on recycling as it lies within the competencies of the project initiator, and the solutions can hopefully be a part of a larger change in the fashion industry.

### 6.1.3 Exploring Changes on Other System Levels

One thing that became clear early in the project is that the main sustainability challenge in fashion is not any individual garment or fabric, but rather the consumption patterns of textiles embedded in our culture. Clothes are being bought and disposed of at an unsustainable pace, and to address these changes need to happen on a societal level. This project has used two theoretical perspectives on design, the MDM (Joore & Brezet, 2015) and Josina Vinks (2019) service design horizons, which can be used to explore how to achieve such a change. The societal aspects of these frameworks were deemed too extensive and open-ended to be included in this project but would be interesting to explore further.

The focus in this project has been on the three lower levels of the MDM (Joore & Brezet, 2015), but the highest system level could be explored to see how overconsumption can be faced as a societal problem, through changes in legislation and infrastructure. Looking at the service horizons, this project centered on Design of Services and Design for Services. The third horizon, Service Eco System Design focuses on changing norms, rules, beliefs and roles. It was developed to approach complex cultural problems, and using that framework, alternate ways of approaching fashion and clothing consumption could be explored. Doing so could enable new ways to create value between clothing producers and consumers which does not put as heavy a toll on the environment.

## 6.1.4 Further Developments

To take the project further, the next step would be to continue developing the service portfolio. Due to the variation between the concepts and their levels of refinement, they need different kinds of further development.

Stena Collect is in a way the easiest one for Stena to start up. In order to be able to begin collecting textiles Stena needs to establish partnerships with different actors, mainly recyclers, but also actors that can sell garments for reuse. An idea is to start a collaborative venture with either a fashion company or an aid organization, which could be beneficial in order to learn more about the industry and its needs. Further, Stena needs to begin selling the service to potential customers, and together with them set up the logistics required for collection, for example what kind of containers the customers want and how often they require pick-ups.

Stena Consulting is dependent on the company knowledge base, which will deepen automatically as Stena Collect and the Design for Recycling tool are developed further. To expedite this Stena could seek and employ more people with expertise in textiles, or further educate their current consultants.

The Design for Recycling tool needs to be evaluated with the intended users, i.e., garment designers at fashion companies, in order to ensure that the tool would be used. This is important since no designers have been interviewed in this project, and their requirements could contradict what the company representatives have expressed. The concept designs are only sketches at this stage, and an evaluation could lead to new needs or deficiencies in the usability being identified. Another important step when developing the concept further is formulating criteria together with recyclers to ensure that the information about a garment's recyclability is accurate and up to date. After this the final step would be finalizing the interface design and developing the tool before selling it to potential customers.

## 6.2 Conclusion

The aim of the project, to explore the needs and sustainability processes of fashion companies and through that create a service concept that Stena could offer to become a circularity partner, has been reached. The creation of company personas and mapping of the customer journey gives Stena a solid foundation for understanding Swedish fashion companies and their needs. Using a thorough service design methodology, relevant stakeholders have been included and multidisciplinary knowledge has been gathered to explore a vast solution space of service concepts. Finally, a service portfolio consisting of three concepts has been developed to meet the fashion companies needs and enable Stena to become a circularity partner in the fashion industry.

- Stena Collect connects producers and recyclers through textile collection and logistics, making it easier for fashion companies to recycle textile waste, as well as increasing inbound textile for recyclers.
- Stena Consulting helps fashion companies plan and execute sustainability work, adaptable to the needs of different companies, and with a thorough understanding of the textile value chain. Contributing with in-depth knowledge of coming laws & regulations, design for recycling and traceability in end of life for clothing.
- Design for Recycling supports fashion companies through enabling them to design products that can be recycled at the end of their lives. Further, it allows Stena to create value for their customers in new ways, earlier in the customer journey.

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# Appendix A - Interview Template Fashion Companies

## Introduction

\*Brief introduction to the project\*

Is it okay with you if we record this interview?

What is your title?

What tasks and responsibilities does that include?

## Sustainability

What is your company's main sustainability challenge when it comes to textiles?

In what ways do you work with sustainability during your product development process?

For example, how do you go about selecting materials? Manufacturing processes? Partners?

In what ways are you keeping track of your sustainability progress?

(company specific question) We have heard that the prices on ecological cotton are rising rapidly - what are your thoughts on that?

How long does it take for a product to go from idea to market launch?

## Circularity

Are you working with circularity in any capacity today?

Future plans for circularity projects?

Is there anything you're missing in order to transition to more circular business models? (knowledge, resources, services?)

What is missing in the industry overall?

## End of life

Are you considering products end of life during product development? If so, how?

Are you collecting post-consumer clothes today?

How are you handling the collected clothes?

Where do they end up?

Are you collaborating with any textile collection companies today?

If so: what types of goods and services are traded? Who is paying who for what?

What are you currently doing with unsold/unsellable garments today?

How are you handling returns?

What are your thoughts around the anticipated extended producer responsibility?

Are you planning for it?

## End

Is there anything you would like to add?

How would Stena/Anyone help your company with textile/waste/sustainability in your dream scenario?

# Appendix B - Interview Template Aid Organizations

## Introduction

\*Brief introduction to project\*

Can we record the interview?

What is your job title?

What kind of tasks does it involve?

What does the cooperation with your waste management company look like? What do they do for you?

Are you missing anything from your waste management company at the moment?

## The garment's journey

What type of goods do you receive?

How is the sorting of textiles done?

How much of the collected textile is sold?

What happens to the goods that are not sold in your stores?

What organizations or companies do you cooperate with to take care of textiles you can't sell in your stores?

Do you keep track of what happens to the clothes after that? If so, how?

## Cooperation partners

What kind of companies provide you with textile?

What requirements do they have on you?

What requirements do you have on them?

Why do companies give their collected materials to you and not to another second-hand chain?

Do you compete to receive clothes from companies or do companies compete to donate clothes to you?

## Challenges

What are some major challenges that you face regarding textile collection and 2nd hand?

What are some challenges that the industry faces?

What do you have difficulties with or what do you need help with?

What is missing in Sweden today? For example, to reduce the amount of textile that is exported.

What do you think of the possible future producer responsibility?

How would it affect you?

What do you think your business will look like in 2030?

# Appendix C – Customer Need Specification

## General needs

Appear to be a sustainable company

Set achievable sustainability goals

Follow legal requirements & internal sustainability goals

Document sustainability efforts

Streamline sustainability work

Work towards effective goals

Reduce administrative tasks

Inform customers about garment quality and environmental impact

## Textile Collection

Collect sufficient volumes to make it profitable to do something with them

Storage space for collected volumes

Retail space for collecting, and potentially reselling, collected volumes

Have a system for textile collection and proper disposal

Get rid of unusable materials as high up as possible in the waste hierarchy

In varied volumes, In varied qualities , From many pick-up points, Without having to sort textiles based on fiber type

Collect high quality clothes

Incentivize end-consumers to provide clothes in good quality

Find the right use for the right type of garment

Utilize collected material

Not have unnecessary items in stock

Get rid of excess stock

Reliable data on garment end of life

Detailed data on collected volumes

## Information

Understand how to design for recyclability

Understand which textile fibers are sustainable and why

- In production / In use / In end of life / Biodegradable / Recyclable

Information about textile recycling

Specific information from recycling plants

Stay in the loop on future developments in recyclability

# Appendix D - Customer Evaluation Template

## Intro

We have a total of 5 simpler concepts that we would like your input on. If you think they are good ideas, could be useful for Dedicated and if they need modification.

We will go through the concepts one at a time and you can tell us your spontaneous thoughts on each of them. If we have the time we will ask some questions about each concept.

Is it ok if we record this interview?

## Design for recycling

Guidelines for how to design for recyclability. Including information about specific recyclers, future prospects and general recommendations. A digital solution where the designer can insert information about a garment and receive feedback regarding if it is recyclable and how it can be designed differently for better recyclability.

Initial thoughts and opinions?

In what ways is this concept good / bad for you?

Are there similar solutions out there today? Are there any that you use?

Do you check if your clothes are recyclable in any way?

Could this concept be modified in any way to suit you better?

How would you like to receive feedback on recyclability? Points? Percentage? Cert?

Why is this information relevant to you? Do you want it for your own sake or to market your brand towards consumers?

Would you like to know who / where / how clothes could be recycled? Or only that it is possible?

## From word to action

A consultancy service where Stena helps companies to reach their sustainability goals through concrete action plans. They offer support with following up on sustainability processes through gathering data and tracking products end of life. They also support by keeping track of and informing about upcoming laws and regulations.

Initial thoughts and opinions?

In what ways is this concept good / bad for you?

Are there similar solutions out there today? Are there any that you use?

Could this concept be modified in any way to suit you better?

Do you have any concrete examples of what such a consultant could help you with?

What is the most important thing for your company to receive help from a consultant with?

How should the consultant pass over their work to you when they are "done"? How can the consultant help the company to keep up the good work?

### Stena Certified

A certificate for recyclable garments (via Stena recycling). Including a simple guide for how to design for Stena to be able to recycle the garment.

Thoughts and opinions?

In what ways is this concept good / bad for you?

Are there similar solutions out there today? Are there any that you use?

Could this concept be modified in any way to suit you better?

What would you like the certification process to look like?

Send garments for analysis? Send product specifications?

Certify per garment? Per collection? Company wide certificate?

What is required for you to trust a certificate?

Why are certificates used in the industry?

To feel ok about putting a product on the market or to appeal to customers?

### Material Guide

The material guide is a website with compiled information about the climate impact and suitable uses for different materials. The purpose of the site is to guide in dilemmas, and make sure that the right materials end up in the right garments. This site would also include sustainability metrics such as water usage translated into understandable quantities.

Initial thoughts and opinions?

In what ways is this concept good / bad for you?

Are there similar solutions out there today? Are there any that you use?

Could this concept be modified in any way to suit you better?

When is it worth it to pay for knowledge and when do you expect it to be free?

What information would be most important to access in a tool like this?

### Trendspotting

A consultancy service where Stena provides strategies for how companies can fit in and stand out through their sustainability profile. The strategies are customized to each company's business through trendspotting and benchmarking.

Initial thoughts and opinions?

In what ways is this concept good / bad for you?

Are there similar solutions out there today? Are there any that you use?

Could this concept be modified in any way to suit you better?

Is this something you have a need of? Do you think there is a need in the market overall?

### Avslut

If you were to choose one of the concepts, or a version / combination of them, which one would it be?

Have we forgotten anything? Missed any needs you have?

## Appendix E - Evaluation Matrix

Concepts / Criteria	From word to action	Showing off	Trendspotting	Stena certified	EoL-data	Use-Phase-Info
How substantial is the need	4	3	3	5	5	2
How well is the need addressed	3	2	4	4	4	5
Realizability	3	4	4	2	3	1
Compatability with Stenas business	5	2	3	3	3	2
Market gap / uniqueness	2	3	4	4	2	3
Would the customers see the value of it?	3	4	3	5	3	3
Total	20	18	21	23	20	16
Average	3,33	3,00	3,50	3,83	3,33	2,67
Concepts / Criteria	Stena-Textiles	Stena-Hot-or-Not	Certificate-navigator	Stena-eco-translator	Stena collect	Circular starters
How substantial is the need	6	5	4	3	6	3
How well is the need addressed	5	4	4	4	5	5
Realizability	1	1	3	3	3	3
Compatability with Stenas business	5	1	2	2	5	5
Market gap / uniqueness	2	4	4	3	4	4
Would the customers see the value of it?	5	1	3	3	5	3
Total	24	16	20	18	28	23
Average	4,00	2,67	3,33	3,00	4,67	3,83
Kriterier / Koncept	Consumer responsibility	Personnel sorting	Pawn	StenaDagarna	Design4recycling	Dilemmas & Decisions
Hur stort är behovet	4	3	5	4	6	4
Hur väl uppfylls behovet	4	4	5	4	4	4
Genomförbarhet, hur lätt att starta upp	3	4	1	2	3	2
Fungera med Stenas verksamhet	5	5	3	2	3	2
Market gap - unik idé	4	3	5	3	4	5
Ser kunden ett värde i det? Villiga att betala	3	3	5	5	4	3
summa	23	22	24	20	24	20
medel	3,83	3,67	4,00	3,33	4,00	3,33

## Appendix F - Final Customer Evaluation Template

\*Present the project briefly\*

Are you okay with us recording this evaluation?

Design for Recycling

\*Present the concept briefly\*

Spontaneous thoughts?

What are potential advantages with this concept?

Disadvantages?

Do similar solutions exist today? Do you use them?

Do you, in any way, check if your garments are recyclable?

*Usage*

Would it be used at your company?

Who in the company would use it?

When would it be used?

Is it something you could consider paying for?

*Content & Interaction*

What do you want to get out of a service like this? Is it enough to be sure that your garments are recyclable, or do you want a certificate?

If so, how do you want to get confirmation of recyclability? Scoring / percentage, a certificate?

What support do you need to make claims about your products?

How do you want to interact with a service like this?

Similar but you get back how recyclable the garment is as a whole?

Do you want to know where and who can recycle? Or just THAT it is possible?

Stena Consulting

\*Present the concept briefly\*

What potential niches could be interesting?

Spontaneous thoughts?

What would you like a consultant to help you with? Any of the suggestions? Something completely different?

Are there any consulting services missing on the market today?

Do you use consultants today in sustainability issues? Why / why not?

Advantages/disadvantages of consultancy services?

What kind of service would go well with the Design for Recycling tool? If you see it as a package. Are there any supplements needed?

How should the consultant hand over the work when it is "done" / How can the consultant help the company to take over?

Do you know what happens to your clothes post-consumer today?  
Is it something you are interested in?

Stena Collect

\*Present the concept briefly\*

Is this interesting for you?

If not, are the other services still of interest?

How would you like the collection to proceed? Should Stena come to you? You send textiles to Stena?

How often?

How big are the volumes? Pre- or post-consumer textiles?

Is it desirable for a collector to handle the sorting?

By material?

By reuse / recycling?

Is it an option to have customer sorting? Or that you sort yourself?





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