

# CIRCULAR ECONOMY IN THE TEXTILE INDUSTRY: CONSUMER BEHAVIOUR IN THE NETHERLANDS

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M-EEM Environmental

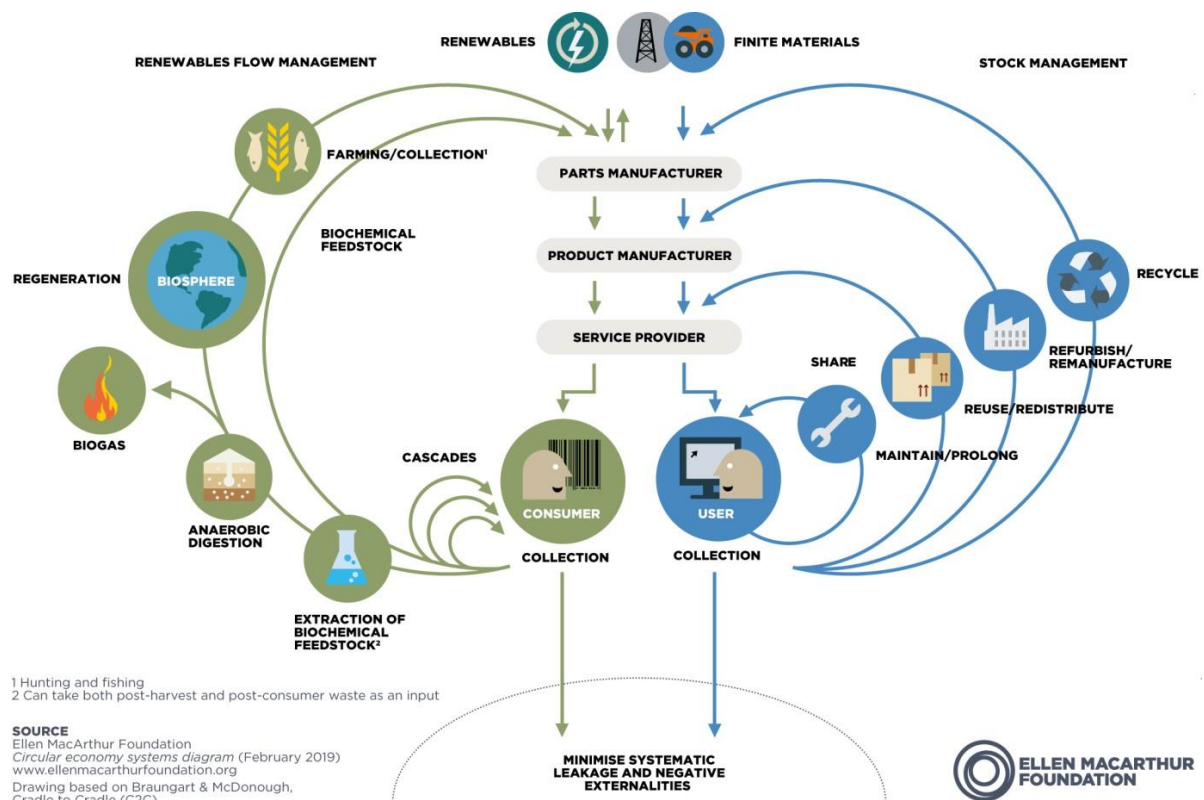
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## Abstract

For this report the extensive amount of waste that is created in the textile industry is analysed. The production of textiles requires an extensive amount of non-renewable resources. The over-exploitation of materials and resources is causing pollution to the environment. To improve this situation, there are different strategical approaches mentioned in this report. The current textile industry is not circular (enough). Only a small percentage of textile waste is recycled, 73% ends up on landfills or is incinerated. This research aims to find aspects from the industry, that could lead to a more circularity. To reach this goal, all aspects involved with the textile industry, circularity and consumer behaviour are examined. A theoretical framework integrating the trends in circular textile and consumer behaviour model is used as the baseline of this research. A mixed research method approach was designed to gather data from, literature review, interviews and surveys.

In the Netherlands, initiatives and policies are set in place, but can be improved and elaborated. Several initiatives are contributing to circularity goals with the textile containers as most potential option. Consumer awareness is growing and the survey results show that the majority of consumers has some knowledge on the effects of the fast fashion model and recycling textile. Consumer values, internal and external factors also play a role in their purchasing behaviour. Circular textile goals can be reached by using different initiatives and influencing these factors and consumer values. Changing the current 'fast fashion' model to a circular one also requires communication and collaboration.

# Table of content

Abstract .....	3
Table of figures .....	6
Table of tables .....	6
Acknowledgements .....	7
1. Introduction.....	8
1.1 Background.....	8
1.2 Problem statement.....	8
1.3 Research objective .....	9
2. Literature review .....	10
2.1 The Textile industry and its environmental impact.....	10
2.2 Circular economy in the fashion industry.....	11
2.3 Sustainable consumption .....	13
2.4 Consumer behaviour .....	13
2.5 Sustainable fashion initiatives.....	16
2.5.1 Textile collection in the Netherlands.....	18
2.5.2 Textile collection through the provinces.....	18
3. Research methodology.....	20
3.1 Conceptual framework.....	20
3.2 Research questions.....	21
3.3 Defining concept.....	21
3.4 Research strategy .....	22
3.4.1 Research units .....	23
3.4.2 Selection of research units .....	23
3.4.3 Research boundaries .....	23
3.5 Research material and accessing methods .....	23
3.6 Data analysis.....	25
3.6.1 Methods of data analysis.....	25
3.6.2 Validation.....	25
3.6.3 Reliability .....	26
3.6.4 Ethical aspects .....	26
3.6.5 Limitations .....	26
3.7 Analytical framework .....	27
4. Findings.....	29
4.1 Circular textile industry in the Netherlands .....	29

4.2 Recycling initiatives and how they reach consumers.....	34
4.2.1 Textile containers .....	36
4.2.2 Reselling clothes online .....	37
4.2.3 Store collection.....	38
4.2.4 Repairing clothes .....	38
4.2.5 Thrift and vintage stores .....	39
4.2.6 Downcycling .....	41
4.3 Awareness level of consumers .....	42
4.4 Perception level of consumers .....	47
4.4.1 Perceived consumer values.....	47
4.4.2 Internal factors .....	49
4.4.3 External factors.....	50
4.5 Reaching circular textile goals through consumers.....	51
4.5.1 Circular textile goals .....	51
4.5.2 Reaching consumers.....	52
5 Conclusion .....	55
6 Recommendations .....	58
6.1 Recommendations for practitioners .....	58
6.2 Recommendations for future research .....	58
6.3 Personal elaborate research .....	59
References.....	60
Appendices .....	66
Appendix A: Consent form interviews.....	66
Appendix B: Opening statement online survey.....	67
Appendix C: Interviewees.....	68
Appendix D: Interview transcripts.....	69
D.1 Transcript Interview municipality of Ooststellingwerf .....	69
D.2 Transcript Interview Carol Mungo .....	71
D.3 Transcript Interview Peter Bos.....	74
D.4 Transcript interview Wouter Reedijk .....	77
D.5 Transcript Luuk Duursma .....	80
D.6 Transcript Tsjora Bos & Marije Mulder .....	82
Appendix E: Consent forms .....	85
E.1 Consent form Mayte Leinenga .....	85
E.2 Consent form Carol Mungo .....	85
E.3 Consent form Peter Bos.....	86

E.4 Consent form Wouter Reedijk.....	87
E.5 Consent form Luuk Duursma.....	87
E.6 Consent form Tsjora Bos .....	87
Appendix F: Survey questions .....	89
Appendix G: Survey calculations .....	91

## Table of figures

Figure 1: Textile process (MacArthur foundation, 2017) .....	10
Figure 2: Linear vs circular material flow (Fischer & Pascack, 2019).....	12
Figure 3: Methods of textile disposal and reason for discard .....	16
Figure 4: Conceptual framework.....	21
Figure 5: Analytical framework .....	27
Figure 6: AIDA model (corporate finance institute, 2020) .....	28
Figure 7: Textile waste in the Netherlands (CPB 2020).....	30
Figure 8: Clothing collection Sympany in the Netherlands (2020).....	31
Figure 9: Survey results: consumer behaviour regarding textile waste .....	31
Figure 10: Survey results: consumer behaviour regarding purchasing frequency.....	32
Figure 11: Survey results: sustainable fashion purchasing.....	33
Figure 12: Survey results: most common recycling method.....	34
Figure 13: Survey results: use of recycling methods.....	35
Figure 14: Circular material flow textile container.....	36
Figure 15: Circular material flow reselling clothes.....	37
Figure 16: Circular material flow repairing clothes .....	38
Figure 17: Circular material flow thrift & vintage stores.....	39
Figure 18: Survey results: purchasing second-hand clothing.....	40
Figure 19: Breakdown of recycled materials (textile exchange & corporate citizenship 2020).....	40
Figure 20: Circular material flow downcycling .....	41
Figure 21: Survey results: environmental impact.....	42
Figure 22: Survey results: social impact .....	42
Figure 23: Survey results: economic impact.....	43
Figure 24: Survey results: recognising sustainable clothing.....	44
Figure 25: Survey results: awareness level of consumers.....	45
Figure 26: Consumers on the AIDA scale.....	45
Figure 27: Survey results: purchasing decisions.....	46
Figure 28: Survey results: drivers for sustainable clothing .....	47
Figure 29: Survey results: purchasing price.....	49
Figure 30: Circular textile goals (European union, 2020) .....	50
Figure 31: Clothing pressure machine Sympany .....	78

## Table of tables

Table 1: Information required and accessing methods.....	23
Table 2: Required information and analysing method.....	24

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# 1. Introduction

The introduction will provide the first initial information on the subject of this research. This chapter includes background information on the current textile process and what the effects are of this current production process on the environment. Secondly the problem statement will be addressed which explains the importance of the research and why the current textile production process should be analysed and changed. With a focus on the post-consumer section and the textile recycling initiatives.

## 1.1 Background

The current linear process of textile production is easily formulated as 'take-make-waste'. This process uses extensive amounts of energy, water and chemicals and, is therefore responsible for extensive amounts of CO<sub>2</sub> emissions and solid waste. Concerning water consumption, it has been reported that to dye one pound of textile uses approximately 133L of water (Hiller, Connell, & Kozar, 2012). Production of one polyester t-shirt creates 5.5 kg of CO<sub>2</sub> emission, and one cotton t-shirt emits 2.1 kg of CO<sub>2</sub> (Goossensen, 2019). The production of cotton is accountable for 10% of the worldwide usage of synthetic pesticides, which are harmful for the health of the farmers and cause degradation of the land (Gam, 2010). Lastly, less than one percent of the materials used are afterwards recycled (EllenMacArthur foundation, 2017). There are several options for addressing those environmental issues, but one in particular that is discussed here: Circular economy<sup>1</sup> (hereinafter: CE). CE has gained more and more interest over recent years and is, through support of the European union (EU), one of the main frameworks to increase resource efficiency with beneficial effects to the environment. CE principles are grounded in the form of the "closing the loop" action plan (European Union, 2015). CE is foreseeing as the approach of changing the textile industry and other aspects of our social and business life. Moving towards a circular textile industry has multiple advantages on the social, environmental and economic scale, however it requires changes all along the different stages of the production and consumption in the textile system to create these advantages. The social benefits of textile recycling are an increase in jobs in the textile industry. On economic terms, costs will be saved with the recycling of materials instead of producing them (Shore, 1995). And the environmental benefits are the reduction of water, energy, CO<sub>2</sub>, chemicals and solid waste (Cuc & Vidovic, 2011). This research analyses multiple articles through a systematic literature review with the goal to determine what the concrete and measurable benefits from a circular economy in the textile industry are. Simultaneously the work in hand aims at analysing the influential factors to adapt consumer behaviour towards circular economy purposes in the textile industry.

## 1.2 Problem statement

The production of textile requires an extensive amount of raw materials, water and other resources. The 'take-make-waste' process and the 'fast fashion'<sup>2</sup> economy, that is experienced mainly in developed countries, creates loads of waste and is either exported to developing countries, or according to the research from "make fashion circular" is incinerated or transferred to landfills, as much as 73 percent (EllenMacArthur foundation, 2017). The production process and production waste create different forms of pollution in the air, soil and groundwater. 8% of the world's total greenhouse gasses in the air, 10% of pesticides and 25% of insecticides in the water and soil. There are various possibilities and innovations that can either reduce waste generation during the production processes or recycling initiatives to recover used textile. The main challenge in this scenario is that the innovative sustainable production processes have to be viable in order for producers to change their current way of producing. Secondly the recycling initiatives can only

<sup>1</sup> Circular economy is based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems" (Ellen MacArthur Foundation, SD).

<sup>2</sup> Fast fashion refers to "clothes that are made and sold cheaply, so that people can buy new clothes often" (Cambridge Dictionary, 2019)



reduce the textile waste when consumers actively make use of these initiatives. In some specific contexts, this can be an additional problem to recover the value of used fibres. The research question in this report is *“what are the levels of consumer awareness and perception and their likeliness to take action towards CE initiatives, and how can this be influenced?”* Answering this question will show how the consumer circular textile goals in the Netherlands can be achieved by means of textile recycling initiatives. It analyses the potential and effectiveness of these initiatives by identifying the most important factors and perceived values of the consumers and their knowledge on the effects of textile recycling and fast fashion.

### 1.3 Research objective

With the purpose to identify in-depth information to contribute to revealing solutions to the problem expressed in the problem statement, the objective of this research is to use CE tenets as the main lens to analyse the textile industry in the perception of Dutch consumers. In particular, consumer behaviour, values and motivation to embrace transitional initiatives towards circular economy will be studied. This research aims to find and analyse the relations between the waste reduction in the textile industry and consumer behaviour. Trends in consumer behaviour in relation to the awareness of textile waste will be researched. Additionally, the trends in circular economy that have a positive effect on consumer behaviour and textile waste will be further discussed. The report is structured in the following manner:

Chapter 2 presents the literature review which is an overview of the literature researched to develop the research design and gain knowledge on the current situation and previous research performed. The literature review is divided into several parts explaining the current situation regarding the effects on the environment, CE in the textile industry, the consumer behaviour and the situation in the Netherlands.

Chapter 3 presents the methodology where the research questions and topics are determined based on chapter 2, and a research design is developed. The research design determines how the research is carried out and what data needs to be gathered to answer the main research question.

Chapter 4 presents the findings of the research which are the results to the interviews, the information from the literature review and the results from the survey.

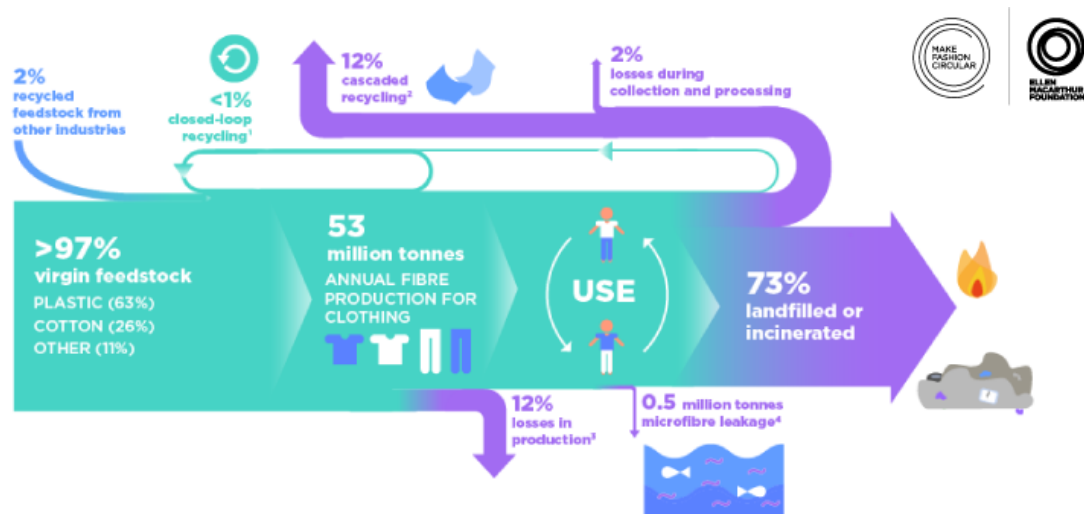
Based on the findings in chapter 4, chapter 5 states the conclusion to this research in which a solution is provided to the problem statement of this research.

Lastly, chapter 6 presents recommendations to create a more circular textile industry and recommendations for future research. Because not all the information can be visualized in the report, there is a section of appendices after the conclusion where transcripts, survey questions and other information can be found.

## 2. Literature review

### 2.1 The Textile industry and its environmental impact

According to prior research (Global fashion agenda, 2020; Koszewska, 2018; Ellen MacArthur foundation, 2017) the fashion industry is the second largest polluter in the world. *“The industry accounts for 8% of greenhouse gas emissions, 20% of industrial water pollution globally and workers face issues such as hazardous environment and low wages”* (Global fashion agenda, 2020). Not only the production of textiles is harming the environment but the process of dealing with textiles after use creates waste in the form of landfills and harmful emissions. *“Less than one percent of the materials that are used to produce clothing are recycled into new clothes”* (EllenMacArthur foundation, 2017). The process of the production, use, and disposal of fabrics can be seen in figure 1.



**FIGURE 1: TEXTILE PROCESS (MACARTHUR FOUNDATION, 2017)**

According to Leinenga (2018), the production and consumption of clothes can be seen as unsustainable since it does not comply with the definition of sustainable development<sup>3</sup>. As Poldner et al. (2015) state: *“Sustainable fashion can be seen as an oxymoron because sustainability is about longevity and fashion is about change”* (Poldner & Branzei, 2015, p. 4). On a positive note, currently there are numerous companies that are working towards sustainable ways of producing and selling textiles. Nevertheless, not all sustainable brands are as sustainable as they claim to be. According to research by Chen and Burns, there are many labels such as; environmentally friendly, environmentally responsible, eco-safe, recycled etc. which have been used to describe and promote products that are supposed to have a minimal environmental impact. However, these terms are loosely described creating questionably environmentally responsible products. Labelling products without clear definition of these terms is called ‘greenwashing’ (Corcione & Adryan, 2020), and is not only done in the textile industry but countless other industries as well.

<sup>3</sup> sustainable development is *“being able for present generations to meet their needs without compromising the ability of future generations to meet their needs”* (Brundtland commission, 1987).

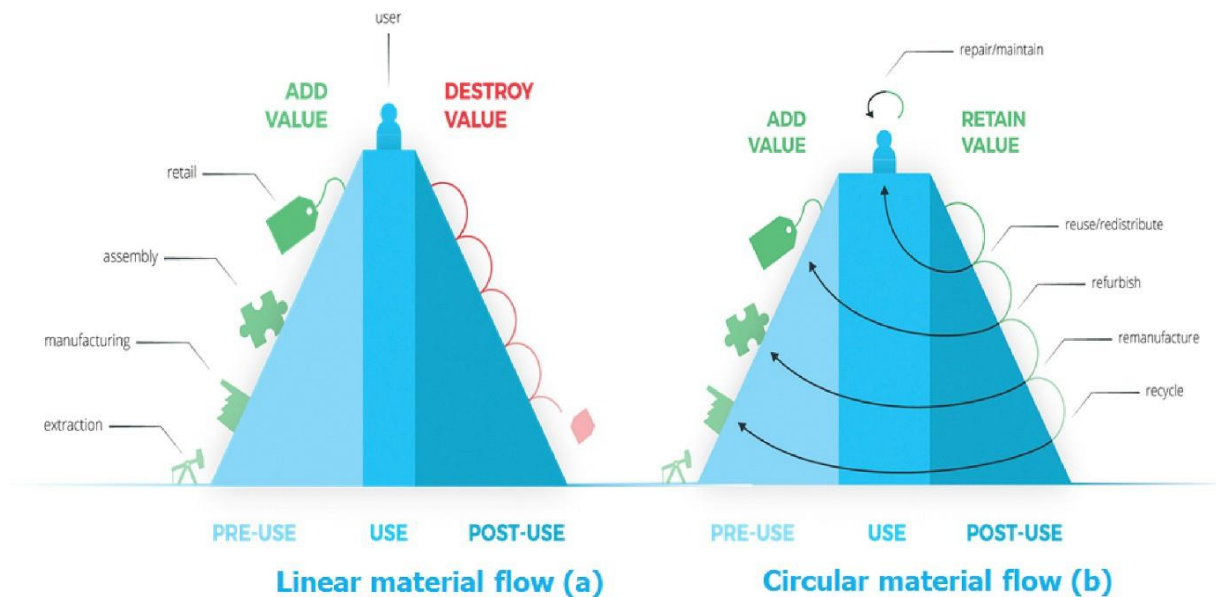
In the paper by Chen and Bruns the textile industry is being analysed by its ability to address the environmental issues based on the 3-R's: renewable resources, reduce pollution and recycling (Chen & Bruns, 2006). In terms of renewable resources, the textile industry has made some developments in the production phase. The use of alternative/natural materials is used by an increasing number of textile developers. They try to reduce the amount of petroleum used in their textiles. In each aspect of the industry the possibility exists for pollution to arise, such as the production, fibre finishing, the user phase and the maintenance and disposal. Textile waste can be divided into two parts; pre-consumer and post-consumer. Pre-consumer waste consists of the by-product materials from textile production. Post-consumer waste consists of textiles and worn out fabrics that the consumers discards when he/she has no need for the product anymore. 73% of the pre-consumer waste is diverted from the landfills and recycled. With post-consumer waste this percentage is only 48% (Chen & Bruns, 2006).

According to Koszewska, cotton is considered the second biggest textile fabric. The environmental footprint of cotton is significant (Koszewska, 2018). The production of cotton includes large amounts of water, land, pesticides and fertilizer. *"10% of the world's pesticides, 25% insecticides and 2,5% of the world's water resources is used for the production of cotton"* (Koszewska, 2018). Cotton is a biodegradable fibre, but the chemicals used in the manufacturing of clothes and textiles impairs the quality of soil and groundwater after disposal. The negative effects of the linear process of textile production is creating negative impacts on the environment. To reduce these negative effects a more circular approach in the textile industry is required.

There are companies currently developing sustainable strategies and participating in environmental initiatives. *"The environmental initiatives can be divided in two categories. One category focuses on the technical environmental aspects of the product and material. The other category focuses on environmental management and organization (social initiatives only focus on management and organization)"* (van Bommel, 2016). Because this research focuses on the consumer aspect and the post-consumption section, the environmental management and organisation category is most relevant for this study. According to the research by van Bommel (2016), there is a correlation between the environmental management and organizational initiatives with the innovation capacity level. It is slightly higher than the correlation between the innovation capacity level and the technical environmental initiatives. What this insinuates is that the capacity and willingness to innovate is more related to management and organization aspects than it is to technical.

## 2.2 Circular economy in the fashion industry

*"A circular economy is based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems"* (MacArthur foundation, 2019). The goal of circular economy is to go from the take-make-waste approach to a circular one. The difference between a linear material flow and a circular material flow can be seen in figure 2.



**FIGURE 2: LINEAR VS CIRCULAR MATERIAL FLOW (FISCHER & PASCUCCI, 2019)**

CE and environmental responsibility in the textile industry applies to fibres, fabrics, manufacturing process, energy, materials used and disposables. Recycling textile waste can serve as a possible solution to many financial and environmental problems such as, high cost of waste disposal and diminution of natural resources. There are benefits and disadvantages to all three aspects that define sustainability: economic, social and environmental. The positive economic impact of recycling is that it costs less than disposal processes, and additional income can be made from recycled textiles. The social benefits of recycling are that it creates jobs. Recycling centres create four jobs for every one job in the waste disposal industry (Shore, 1995). The environmental benefit will be further elaborated on, but it is clear that recycling textiles requires less resources, water and energy (Cuc & Vidovic, 2011). Circular economy also involves the introduction of principles such as sustainable design strategies, zero-waste design, product-life extension, resource recovery, repair and remanufacture services. An important step towards circular economy transition is the creation of the circular economy package and its adoption by the EU in 2015. This package involves an action plan for circular economy in each step of the value chain.

Chiras, Donnell and Freeman have provided a framework by which to assess the environmental quality of a product (Chen & Bruns, 2006). This framework can be compared to the 3 R's (reduce, reuse and recycle) method mentioned above. The criteria are:

- a) Non-polluting to obtain, process and fabricate
- b) Made from renewable resources
- c) Reusable/recyclable
- d) Fully biodegradable

As mentioned before in the two papers from Chen and Bruns as well as the paper from Koszewska; the integration and transition towards CE depends on the analysis of the 3R's throughout each step in the circular economy of textile production. The goal of the CE is to limit the amount of waste that end up on landfills. Here some numbers, currently around 20% of the textile waste is recycled and 80% either ends up on landfills or is incinerated (Koszewska M., 2018). Leinenga (2019) mentions that several sustainability guides and policies have been developed, some at global and other at national level, such as WRAP's 'Sustainable Clothing Guide' (Gray, 2017) and the 2016 Dutch Textile Covenant, focusing on sustainable design, sustainable clothing production and supply and recycling

of fibres (Brouw & Koppert, 2017). These processes are the first steps in the transition toward CE in the textile industry.

‘Make fashion circular’ is a collaboration between industry leaders and other stakeholders to create a fashion industry that fits with the goals of sustainable consumption and CE. *“Its ambition is to ensure clothes are made from safe and renewable materials, new business models increase their use, and old clothes are turned into new. This new textile economy would benefit business, society, and the environment”* (EllenMacArthur foundation, 2017).

## 2.3 Sustainable consumption

In the current economy, consumer products are at the centre. The products can be divided into two different categories: convenience products which are inexpensive and bought in a daily basis, and secondly shopping products. The second type of products are bought less often and are often more expensive (Andrade de Oliveira Alcantare, 2016). The Oslo symposium in 1994 defined sustainable consumption and production (SCP) as: *“The use of services and related products, which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of further generations”* (United nations, 2020). This definition was later recognised and adopted by the World Summit on Sustainable Development (WSSD) in 2002. The Johannesburg conference called for a 10-year plan where all participating countries were requested to promote sustainable consumption and production patterns and change unsustainable patterns of consumption and production. This 10-year framework was also adopted by the Rio+20 conference (United nations, 2020).

The sustainable development goals developed by the EU are developed to motivate and control the sustainable consumption and production of the member states of the EU and the United Nations. Goal 12 (responsible consumption and production) is specifically focussed on sustainable consumption and production patterns. The Netherlands as member state of the EU accepted the sustainable development goals and has implemented them in the rules, regulations and policies of the country. *“Promoting sustainable consumption requires improved understanding of consumer behaviour and attitudes. Consumers have different needs with respect to information and their potential to be influenced by instruments and tools varies. Most consumers have a positive but passive view of sustainable consumption. Policy tools and instruments may need to be targeted to different types of households, individuals or groups. Many variables should be considered, including income, age, biases, attitudes and gender”* (OECD, 2008).

According to van Bommel (2016), the external pressure of the clothing industry is caused by many stakeholders at the same time. *“The consumer is often seen as the most important stakeholder for demanding improvements through the use of their buying power”* (van Bommel, 2016). This suggests that the consumer plays an important role in the innovations and environmental initiatives companies make. Since other literature also suggests that the use phase and the disposal phase of clothing consumption account for two thirds of environmental impact of textiles (Gray, 2017), it justifies the in-depth research into the consumer behaviour towards textile products, mentioned in the following section.

## 2.4 Consumer behaviour

In recent years the public awareness related to environmental issues has risen, forcing the textile industry to gradually introduce more environmentally safe textile manufacturing processes.

However, it is important for consumers to have knowledge on textile products. As mentioned before, the term environmentally responsible is very loosely described. Additionally, consumers often have a poor understanding of these terms. Another important aspect to consider in relation to consumer behaviour, is the *perceived* environmental impact vis à vis the *actual* impact. According to Chen and Burns, many consumers indicate that the environmental impact of the products is important for their purchasing decision. However, when consumers have a different perception on the environmental impact, which can be less than the actual impact, it can influence their behaviour. *“Consumers are said to be more concerned about unethical and environmentally friendly behaviour. However, this attitude does not always result into behaviour that is in line with the attitude”* (McNeil, 2015). Consumers have the intention to buy sustainable products, however based on the numbers of sustainable fashion bought, not all consumers that claim to invest in sustainable clothing actually buy it. (McNeil, 2015) The importance of consumers in the textile industry is larger in developed countries compared to developing countries. Developed countries are in an economy that is considered as ‘fast fashion’, whereas developing countries already buy second-hand products from developed countries (Lewis Thomas, 2014). Fashion in itself does not have to be unsustainable, but the fast-fashion development creates an unsustainable way of producing and using textiles. This was mentioned by Hsiou-Lien Chen (2006), from which the following quote stresses this statement: *“Despite the increased awareness of environmental issues, recycling of solid waste is still not a priority of the public. In addition, research had found that there is no general environmental behaviour among consumers”* (Hsiou-Lien Chen, 2006). In recent years the prices of textiles have increased, the reason for this are the changes towards more environmentally responsible production.

A prior study in the Netherlands, from the University of Twente found that; *“at the moment of purchase, consumers are more inclined towards the price of the product and its ability to meet their immediate need compared to the added sustainable value”* (Mungo, Sichiweza, Kariuki, & Zhang, 2017). This Thesis study also found that the personal and direct gains a consumer can receive from a purchase are perceived higher than the benefits that come from sustainability in as a more general concept (such as a purchase that creates the ability to reduce pollution). Additionally, consumers have a high acceptance of companies that produce sustainable products if they display transparency of their operations and their value chain (Mungo, Sichiweza, Kariuki, & Zhang, 2017).

Consumer perception is becoming more important in the textile industry. Consumer perception is mainly based on the consumer values, which influences the buyer behaviour. According to the study carried by Mungo, et al. (2017): consumer value has different definitions from different authors/experts. In order to understand the perceived customer value, several scholars’ work was studied and one of them (Colgate & Smith, 2007) classifies the consumer value into five different categories which are briefly introduced:

- I. Functional value → usefulness of the product.
- II. Social value → advantages of a product in terms of image and correlation to a socio-cultural group.
- III. Emotional value → satisfy the feelings or affective states of a consumer.
- IV. Epistemic value → provide novelty or satisfy the need of knowledge of the customer.
- V. Conditional value → value depending on the specific (social/physical) conditions of the customer.

On the other hand, there are several studies also looking at the aspects that influence consumer behaviour (Nielsen, 2014; Young, 2009; Wiederhold & Martinez, 2018). In the study done by Mungo et al. (2017), it is mentioned that according to Young: CE knowledge, green product knowledge and environmental concern are all factors that influence consumer behaviour and with this also the



purchase intention of this consumer (Young, Hwang, McDonald, & Oates, 2009). Moreover, a study conducted by Nielsen in 2014 shows that *“55% of global online consumers across 60 countries are willing to pay more for products and services provided by companies that are committed to positive social and environmental impacts”* (Nielsen, 2014).

Sustainable clothing consumption<sup>4</sup> is dependent on consumer behaviour which is influenced by internal and external factors (Goossensen, 2019). The internal factors are coming from the consumer and his/her experiences and the external factors are coming from the environment surrounding the consumer. Internal factors that can influence the consumer is personal preference or brand loyalty, this influences the objective view of the consumer about this brand (Martinez & Wiederhold, 2018). Knowledge is another important factor, because when a consumer is not aware of an issue, he/she is not likely to act on it. The feeling of obligation is another important factor, this determines if the consumer feels responsible to make more sustainable purchasing decisions, as well as the feeling of individual power of the consumer. When he/she believes that they can make a difference as an individual, they are more likely to make more responsible choices (Austgulen, 2015).

One of the most prominent external factors is the price of the product. Consumers often tend to think first about the benefits for themselves and only afterwards on the environmental impact. Institutional factors, meaning the means to be able to purchase sustainable items, needs to be present. Lastly the social environment of an individual plays an important role, as well. Generally speaking, younger people tend to care more about their image and trends which often plays a more significant role than choosing the item with the best environmental benefits (Martinez & Wiederhold, 2018). However, there are young consumers who are focussing on the environmental impact of their clothing decisions rather than price, brand or image.

A research conducted by Koch and Domina (1999), analysed the recycling methods of textile and the frequency of the methods used. This study was conducted in the USA but provides some insight in the frequency and reasons for individuals to make use of a certain method. Figure 3 shows pie charts of the different methods of recycling with the reason for discard in percentage. Each pie chart shows a different form of textile recycling and presents which percentage of this method, consumers believed to be either valuable or not useful due to several reasons such as the clothes not fitting or being worn out or out of style. What can be concluded from the chart is that not all the textile collected and presented for recycling or reuse will actually be reused and that the consumer plays a big part in how large this percentage of valuable clothes is. The research concluded that: *“Increasing attention to the recycling of consumer textiles may be one way of further reducing the amount of solid waste that is ultimately channelled to landfills. Information regarding consumer textile-disposal behaviour is a necessary precursor to the establishment of organized textile-recycling programs”* (Domina & Koch, 1999). The difference shown between the households with and without curb side collection also shows the importance of convenience for increasing the participation in recycling activities. Next to this education plays an important role, people informed of the possibilities are more likely to participate than those who don't know the possibilities (Domina & Koch, 1999).

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<sup>4</sup>Sustainable clothing consumption is defined as *“a way for consumers to make the current linear fashion system more circular”* (Goossensen, 2019).

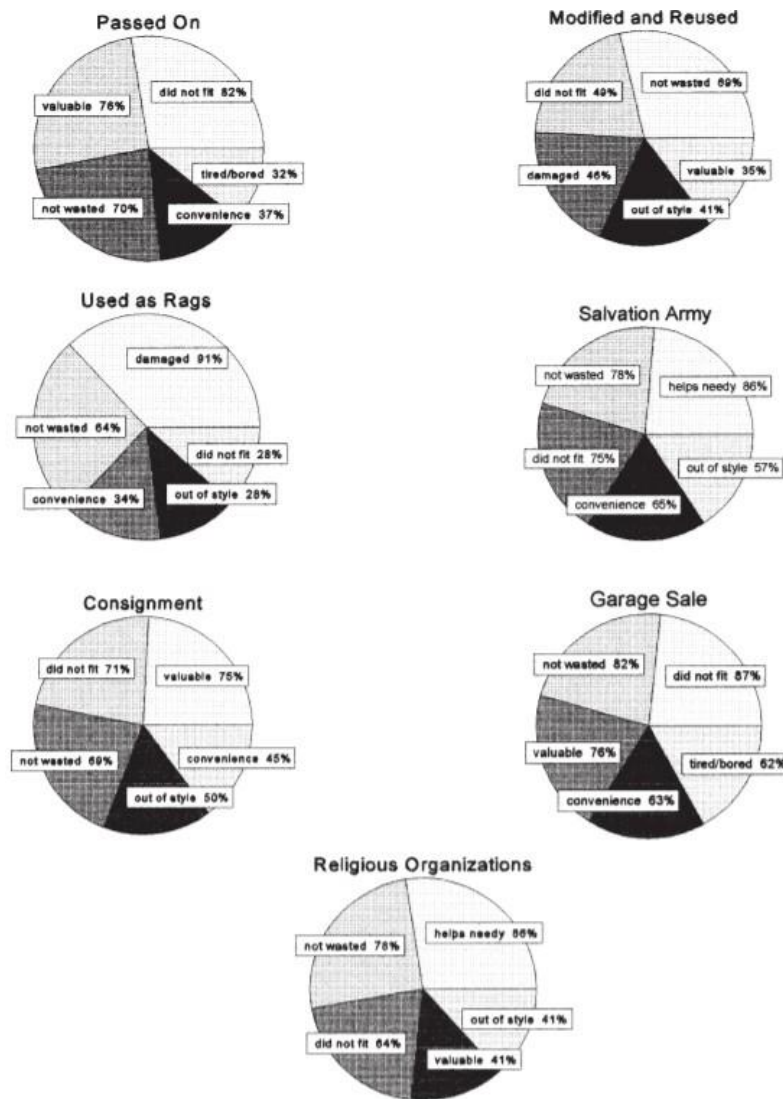


FIGURE 3: METHODS OF TEXTILE DISPOSAL AND REASON FOR DISCARD (Domina & Koch, 1999)

## 2.5 Sustainable fashion initiatives

The sustainable consumption and production plan from the United Nations, the sustainable development goals from the EU as well as the *'Make fashion circular cooperative'* are all initiatives that try to create a more circular and sustainable fashion industry and promote waste reduction practices amongst suppliers and consumers. These and other organisations provide the opportunity to create a new way of dealing with worn out clothes. These initiatives are focussed on the post-consumption part of the process and require input and action from consumers in order to become successful.

To name a few examples of these initiatives that are present in the Netherlands. One of the recycling options is selling clothes that are not worn out but have no value for the consumer anymore. With the trend of 'fast fashion' new clothes are bought before the old ones are worn out which means that used clothes can be sold and worn again. *Vinted* is an organisation that provides a platform for individuals to sell the clothing they do not wear anymore. In this line of thoughts, *Vinted* can be mentioned as one initiative stating that they are "open to everyone who believes that good clothes



*should live long*" (Vinted, 2020). With this initiative clothes of sufficient quality are worn for a longer period of time before being discarded. *Vinted* is just one of the organisations that offer a platform like this, in the Netherlands and worldwide there are more online marketplaces where individuals can sell and purchase second-hand clothing.

Related to the online marketplaces to sell or purchase old clothing online, there are also more initiatives for selling vintage<sup>5</sup> or second-hand clothing in stores or on markets. *"The current economic climate appears to have contributed to the trend of acquiring and reusing vintage clothing, accessories, and home-ware products, particularly with young consumers. The popularity of vintage has also been linked to a change in consumer attitudes towards wearing and utilizing second-hand goods"* (Bennett & Cassidy, 2012). Reselling and purchasing vintage or second-hand clothing also contributes to less waste and a longer lifespan of clothing.

Tailors, repair shops and repair cafés have also increased in popularity. The Dutch government has provided a grant for repair café foundation, with this and other donations they have been able to start 30 repair cafés across the Netherlands (McGrane, 2012). Their goals are not only to fix clothing but also other items that people use on a daily basis and would otherwise throw away. Their goal is to recycle materials and decrease the waste people produce. The repair café is one of the foundations, however there are many organisations and start-ups similar to this who have become more popular in recent years.

There are multiple stores in the Netherlands that allows consumers to deliver their old and worn out textiles and recycle this into new clothing. One example is a store which is part of the H&M group, Weekday. The organisation has an I: Collect movement where consumers can hand in their used textiles and receive a 10% voucher for their next purchase. Weekday handles the textiles as follows: *"Reselling the ones in usable conditions, reusing them as other products (for instance cleaning clothes) or transforming them into fibres that can be used for isolation and stuffing, as well as textile fibres for future collections. We invest all profit from recycling into circular innovations"* (Weekday, 2020). This and other information on their actions towards more sustainable fibre use is found on their website and on their social media pages however it is not actively communicated to customers in the stores.

In addition to dealing with post-consumer waste collected in stores, there are other initiatives and ways in which clothing stores and brands are trying to become more sustainable. Keeping Weekday as an example, they produce swimwear from recycled PET bottles and production waste, use leftover fabrics from the textile industry, and made different collection made from 100% recycled waste and fabrics. The sustainable collection from Weekday are called "there is no planet B" and "limited edition collection recover" (Weekday, 2020). Other brands also have their own eco- or sustainable lines; Vero Moda has a sustainable fashion line called 'Aware', ESPRIT has a line called 'I am sustainable', Only has a line called 'only live'. Like this there are many other brands and stores with sustainable initiatives. The actual sustainability compared to the advertisements is not determined. How these sustainable lines are reaching the consumer and making them aware is to be determined by this research.

Companies from H&M group, Inditex and other stores in the Netherlands are working on different ways to make use of textile waste and to limit the negative environmental impact of the textile industry. Consumers can help in this process; however, it is to be determined how large their influence

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<sup>5</sup> *"the time that something of quality was produced or of high quality and lasting value, or showing the best and most typical characteristics of a particular type of thing, especially from the past"* (Cambridge dictionary, 2020)

can be and how these consumers can be reached to make them aware of their position and contribution to textile waste and sustainable textile consumption.

### 2.5.1 Textile collection in the Netherlands

The Centraal plan Bureau (CPB) has presented a report from 2019 which presents information on the textile recycling in the Netherlands and the barriers that the textile collection and recycling faces. The report aims to *“show improvement for the textile collection policies in the municipalities and the rules regarding the export of textile waste that is no longer wearable”* (van der Wal & Verrips, 2019). According to this report only 40% of the textile waste from households in the Netherlands is separated, the remainder ends up with the residual waste. Pollution from textile waste has increased from 8% in 2014 to 13% in 2018. Partially because households lack the information, they need to use the most efficient collection method and lack the stimulation turn in their textiles separately. It is unclear what happens to the textile which is transported to other countries and the damage that is created from the waste there. 70% the textile in the Netherlands is produced abroad and around half of the income from textiles is allocated to the multinational companies such as H&M group and Inditex (CBS Statline, 2019). Municipalities are responsible for collecting waste and often do this through textile bags and textile containers. There are around 10 textile collection organisations in the Netherlands that collect, sort and resell or reuse the textiles. The total collection of textiles in the Netherlands from households per year is around 75000 tons, 160000 tons of textile end up with the residual waste (van der Wal & Verrips, 2019). The demand for recycled textile as replacement for primary materials is limited and textile is mostly recycled through downcycling, using old textiles for isolation or the automobile industry.

### 2.5.2 Textile collection through the provinces

The three provinces that will be focussed on in this research are Groningen, Drenthe and Friesland. these provinces are often categorised as the north of the country. Each province has multiple municipalities and different ways of collecting textile. The large municipalities and organisations for collecting textile are mentioned in this section.

Groningen and the surrounding municipalities of Haren and Ten Boer are working as one for collecting textile. The inhabitants of the province have the opportunity to collect their textile in multiple ways:

1. Put it in a textile bag by the road on specifically selected days.
2. Put it in the containers assigned for textiles.
3. Bring it to a collecting station.
4. Bring it to thrift stores.
5. Recycle/reuse as an individual.

There are restrictions for the textile bags, for example textiles can be torn but it has to be clean. Inhabitants can find the rules on the textile bags on the municipal website (Gemeente Groningen, 2020). When people have too much textiles or cannot wait for the collection days, they have the possibility to turn in their textiles in the containers, at the collecting stations or thrift stores. The collected textiles arrive at *Goudgoed* (thrift store), where it is sorted and afterwards priced and placed in the *Goudgoed* stores to be resold. Products that cannot be sold are disposed of or recycled. The profit the organisation collects goes to charities that care for people and planet. *“90% of the collected goods are recycled”* (GoudGoed, 2020).

In the province of Friesland, *Omrin* is the biggest organisation for collecting waste, including textile. They collect waste for Friesland and even some areas in Drenthe (Omrin, 2020). The collecting

methods are similar to those of Groningen. The additional option they offer is something called the *milieustraat* where all types of products can be handed in for recycling purposes. What *Omrin* separates the textiles after collection. What can be resold goes to thrift stores and what cannot be worn again is fiberized<sup>6</sup>, used for the production of new textiles or downcycling.

The province of Drenthe collects with the same methods as the provinces of Groningen and Friesland. The collection through textile containers is done by *Sympany*, which also collects textiles in other parts of the Netherlands. The wearable collected clothes are sold to international partners in developing countries and the profit is used as investment towards a circular textile economy (Sympany, 2020). Non wearable textiles are fiberized and recycled for other products.

To conclude this chapter there are several statements that can be made. The textile and fashion industry is one of the most polluting industries because of the large amounts of water, raw materials and chemicals they use and because the current business model does not use the post-consumer textile waste. The circular textile economy is a development in the EU and in the Netherlands that are supporting several ways of recycling textiles and promoting initiatives that decrease the textile waste and the amounts of pollution created with textiles. There are national and local initiatives and policies created to reach these circular textile goals, however it requires cooperation and communication with the consumers. To visualise and reduce this gap, this research was developed. To determine how the consumers can be reached the literature review on sustainable consumption and consumer behaviour was done, which concluded that the level of consumer awareness and perceived value play an important role. The awareness is based on knowledge and the perceived value is based on the 5 pillars shown in part 2.4. The different initiatives are also researched to see their potential and influence on the consumer as well as the current situation of textile recycling in the northern part of the Netherlands. Overall, the municipal websites are clear on how inhabitants can collect their textiles and what happens to the textiles after they have been collected. The amount of advertisement on the collection and recycling of textiles, the level of awareness and knowledge of individuals on the possibilities for handing in and recycling textiles and what impact this has on the environment still has to be determined through field research in the form of surveys and interviews.

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<sup>6</sup> Fiberize: *to break or crack into fibres* (Dictionary, 2020)

### 3. Research methodology

This chapter presents the aim of this research, the data collection, data analysis and research methods. “Designing a research project” of Verschuren P. and Doordewaard H. (2010) provides a practical way of structuring the research methodology. The reliability and validity of the research is also described, as well as the boundaries and limitations of the research. The research methods used are; a literature review, surveys, semi-structured interviews and desk research.

#### 3.1 Conceptual framework

The conceptual framework provides an overall picture of the research project. This is an important step when formulating the research questions who are based on the research objective. Verschuren and Doordewaard (2010) have developed a step-by-step approach that has been followed to develop this research framework. The steps are explained below.

##### **Step 1: Characterizing the objective of the research project.**

The objective of this research is to analyse the circular economy trends within the textile industry of the Netherlands. The focus of this is on consumer behaviour, their perception, values and motivation to influence the transition from linear to circular economy. This research aims to find and analyse the relations between the post-consumer waste in the textile industry and consumer behaviour. The trends in consumer behaviour in relation to the awareness on textile waste is researched. Additionally, the trends in circular economy that have a positive effect on consumer behaviour and textile waste are further discussed.

##### **Step 2: Determining the object of the research project and which part of reality you are going to study.**

According to Verschuren and Doordewaard (2010), the research objects are the “*Phenomenon under study*”. In this research the research objects are the Dutch consumers of the textile industry, the suppliers of clothing and textile, and the (innovative) projects and companies for the recycling of textiles.

##### **Step 3: Establishing the nature of the research perspective.**

The research perspective is essentially the focus that the research will have. Verschuren and Doorewaard mention in their book on designing a research method that there are several types of research perspectives. This research uses a problem analysis perspective. It analyses the current situation regarding circular management in the textile industry and how consumer (behaviour) can influence in this concept.

##### **Step 4: Determining the source of the research perspective.**

This research uses scientific literature to define the key concept needed for answering the main research question. Based on these theoretical models were used to strengthen the perspective. The models that were used are shown in the theoretical framework chapter. The key concepts that were determined for this report are as followed:

- a) Circular economy
- b) (Dutch) Textile industry
- c) Sustainable consumption
- d) Consumer behaviour

### Step 5: Making a schematic presentation of the conceptual framework.

The conceptual framework is shown in the figure 4, this is a schematic overview of the research objective. On the left side the key concepts of the research are described. This is followed by assessment criteria; in which way these key concepts have been researched and defined. What follows is the analysis of the results and from the findings in the results section the conclusions and recommendations are formed.

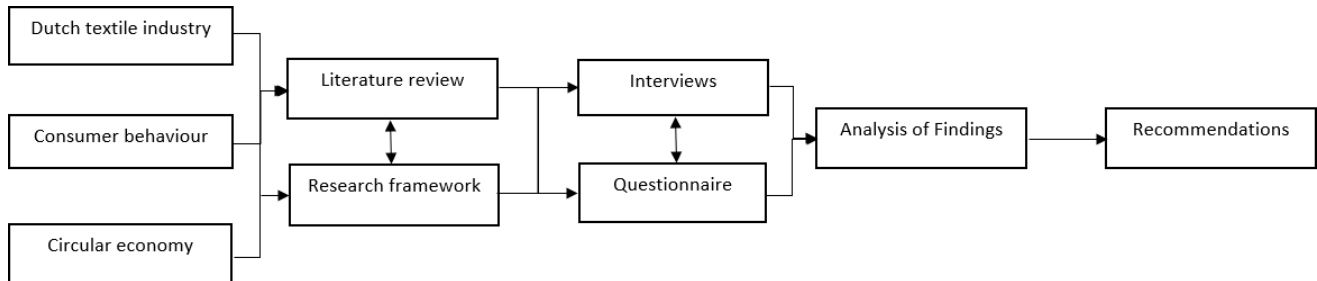


FIGURE 4: CONCEPTUAL FRAMEWORK

### Step 6: Formulating the conceptual framework in the form of an elaborate argument.

As mentioned before the key concepts are included in the conceptual model which will come mainly from literature review. The concepts were chosen based on general knowledge from the researcher and the topics mentioned in scientific articles. A literature review, as preliminary research and the theoretical frameworks used were determined. To collect additional information surveys were held and interviews with experts in the field were performed. The collected data was analysed and converted into conclusions and recommendations.

### Step 7: Check whether the model developed requires any changes to the research objective.

Looking at the current state of the research proposal the model developed does not require any changes to the research objective. Halfway through the research the additional AIDA model was added to the model.

## 3.2 Research questions

Together with the main question: *“What are the levels of consumer awareness and perception and their likeliness to take action towards CE initiatives, and how can this be influenced?”*. Several sub questions were formulated to structure the research towards a conclusion that answers the main question. The sub questions are stated below:

- a) *How can circular textile industry be defined?*
- b) *What type(s) of recycling processes/initiatives are there, and how are they currently reaching the customers?*
- c) *What is the level of awareness from consumers on the effects (social, economic, environmental) of the textile industry?*
- d) *What is the current perception of the consumers regarding clothing recycling?*
- e) *How can the consumer help realise the circular textile industry goals?*

## 3.3 Defining concept

As mentioned in the conceptual framework, four main concepts were defined for this research. The definitions of each concept will be provided in this sub-section.

- a) **Circular economy:** This concept can best be defined by the definition provided by Ellen McArthur and her foundation. She describes circular economy as: *“Looking beyond the current take-make-waste extractive industrial model, a circular economy aims to redefine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources and designing waste out of the system. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural, and social capital. It is based on three principles: Design out waste and pollution, Keep products and materials in use and Regenerate natural systems.”* (Ellen MacArthur Foundation, SD)
- b) **Textile industry:** A definition of the textile industry can be provided into two parts. The first part is what is to be considered textiles. Secondly, we have to determine what the textile industry means in the Netherlands. According to the Cambridge English dictionary, textile can be defined as *“a cloth made by hand or machine”* (Cambridge dictionary, SD). The sole definition of textile is not enough to describe the textile industry. The textile industry (in the Netherlands) can be defined as the conversion of fibre into yarn and yarn into fabric (Sayed, 2015). The textile industry is one of the mayor industries worldwide and is mostly known for the production of fabric used and sold as clothing material. For this research the focus will also be on the clothing industry.
- c) **Sustainable consumption:** The Oslo symposium in 1994 defined sustainable consumption and production (SCP) as: *“the use of services and related products, which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of further generations”* (United nations, 2020).
- d) **Consumer behaviour:** *“Consumer behaviour is the study of how individual customers, groups or organizations select, buy, use, and dispose ideas, goods, and services to satisfy their needs and wants. It refers to the actions of the consumers in the marketplace and the underlying motives for those actions”* (Smriti, SD). Consumer behaviour is influence by many visible and non-visible aspects that can either be in the surroundings of the individual or group or their personality traits or experiences. Many theories and researches have been performed to understand and influence consumer behaviour.

### 3.4 Research strategy

This section aims to provide information through a selection of research methods and different sources of information. A combination of qualitative and quantitative sources and research methods increases the validity and reliability of the research and provides a broad overview of the key concepts and more in-depth information on the objective. The research methods chosen were:

1. **Desk research/literature review:** Desk research is a quantitative research method that provides the researcher with up to date knowledge on the subjects and helps to understand the basic concepts mentioned in the literature review and other sources of information. A systematic literature review provides more in-depth information on the key concepts and the studies that have already been performed on these subjects. The literature review was performed on the concepts mentioned in section 3.3. The search engines the researcher used are; ResearchGate, Google Scholar, Scopus, the governmental websites of the Netherlands and European policy documents.
2. **Surveys:** For the aim of researching consumer behaviour the quantitative research method of a survey was used. The surveys are able to reach an extensive number of individuals and

provides the researcher with information on the general perception, motivation and behaviour of the consumers.

3. **Interviews:** More knowledge on the industry and the perception and information from the operational side will be provided by performing interviews with experts in the fields. These interviews will be semi-structured to allow the researches to ask follow-up questions for more in depth information.

### 3.4.1 Research units

The research units in this report are the Dutch consumers of the textile industry, because the consumer behaviour based on awareness and perceived value is researched. subjects related to the research units are the Dutch government sectors related to the circular textile goals and policies, and the organisations that are working on the textile recycling initiatives.

### 3.4.2 Selection of research units

The interviewees were chosen based on their knowledge in the field and their relation to the textile industry and recycling possibilities related to CE. Because a high response rate increases reliability in a survey there was, little to no selection made for participants. The criteria for the survey was that participants had a minimum age of 18, lived in one of the Northern provinces for at least six months, and purchased any form of clothing from a store in the Netherlands in the past six months.

### 3.4.3 Research boundaries

The research boundaries can be defined as the restrictions set in order to achieve a certain research goal in a given timeframe. Due to time constraints, the residence of the researcher, and the COVID-19 measures, the Netherlands was chosen as geographical location for this research, with a focus on the Northern provinces, which are Groningen, Friesland and Drenthe.

Another boundary for this research is to limit the textile industry to the production and supply of clothing that fits with the fast fashion description. The bigger fashion brands that produce large amounts of clothing at low cost and for the biggest consumer groups are the focus in this report.

The last boundary in this research is in the part of the process the research has focussed on. This report will specify the consumer side of the supply chain and how this side can contribute to a more circular process. The assumption is made that there is more current knowledge and more innovations and initiatives on the production side concerning recycling possibilities but there is less knowledge on how the worn clothing can be brought back into the supply chain. Additionally, only 8.88% of all recycled textiles in the fashion industry comes from post-consumer waste (Textile exchange & corporate citizenship, 2020).

## 3.5 Research material and accessing methods

Research materials are characterized as "the *means of defining and operationalizing the key concepts of the research objective along with the research questions*" (Verschuren & Doordewaard, 2010). Data and information required to answer the research questions were collected via desk research, surveys and semi-structured interviews. Document analysis was conducted through reviewing the existing literature about circular economy, consumer behaviour and the textile and fashion industry. The surveys were conducted online, and the participants were reached through the personal network of the researcher, social media platforms and the network of the University of



Twente. The experts for the semi-structured interview were contacted through the personal network of the researcher, the network of the supervisor Laura Franco Garcia and through request made online. The list of the interviewees, their function and their relevance to the research is mentioned in appendix C.

The data and information required and the relating accessing methods in this research were identified through a set of sub-questions, each sub-question and its information and methods are shown in Table 1.

**TABLE 1: INFORMATION REQUIRED AND ACCESSING METHODS**

Research sub-question	Information required	Sources of data	Accessing data
How can circular textile industry be defined?	Definition of circular economy, the textile industry and the circularity aspect of textile industry.	Documents and grey literature.	Content analysis
What type(s) of recycling processes/initiatives are there, and how are they currently reaching the customers?	Indication of current initiatives on recycling textile.	Literature review, desk research and interviews.	Content analysis and interview information.
What is the level of awareness from consumers on the effects (social, economic, environmental) of the textile industry?	Definition of consumer awareness and indication of the level of awareness related to recycling in the textile industry.	Desk research, grey literature and surveys.	Content analysis and survey.
What is the current perception of the consumers regarding clothing recycling?	Definition of consumer perception and indication of the different types of perspectives of the consumers.	Desk research, grey literature and survey.	Content analysis and survey.
How can the consumer help realise the circular textile industry goals?	Description of the different possibilities and indication of the best option based on the consumer information.	Grey literature, survey and interviews.	Content analysis, survey and interviews.

The surveys were conducted online. The sample size determines the reliability of the survey as well as the return rate. The data was collected through the automatic program of the online survey method (Qualtrics) and was analysed using Excel. Qualtrics is a supported method by the university of Twente. After collecting the answers of all the participants, the program (Excel) allows the researcher to analyse the findings through pie or bar charts to determine the percentage of participants that have given a specific answer. Because the population of the Netherlands is too large to take a survey from, a sample size is used. The sample size is determined using Solvin's formula.

The formula is stated as followed:  $n = N \div (1 + Ne^2)$ .  $n$  is the number of samples,  $N$  is the total population and  $e$  is the error tolerance (Stephanie, 2018). If a 95% success rate is requested the error rate should be 0,05. The total population of the Netherlands is around 17 million people. Because of the limitation in time and geographical location of the student the focus of this research is on the



north of the Netherlands the total population of the three northern provinces (Groningen, Friesland & Drenthe) combined is: 1.729.662 (SSN, 2020), this was be used as total population. With a confidence level of 95% a sample size of 385 is needed. To increase the response rate the researcher sent out the survey to multiple online platforms and sent reminders to those who have not responded after two weeks.

## 3.6 Data analysis

As described in the sections above the data was collected through literature review with additional desk research, surveys and interviews with experts. The methods for data collection are mentioned below.

### 3.6.1 Methods of data analysis

The methods of data collection have been defined in the in table 2 which is shown below. A selection is made between qualitative and quantitative methods of data collection.

**TABLE 2: REQUIRED INFORMATION AND ANALYSING METHOD**

Required information to address the question	Method of analysis
Definition of circular economy, the textile industry and the circularity aspect of textile industry.	Qualitative: Analysed circular economy and the circular aspects of the textile industry.
Indication of current initiatives on recycling textile.	Qualitative: Analysed the textile industry and the current recycling possibilities on the consumer side.
Definition of consumer awareness and indication of the level of awareness related to recycling in the textile industry.	Quantitative: analysed the awareness level of the consumers of the textile industry.
Definition of consumer perception and indication of the different types of perspectives of the consumers.	Quantitative: analysed the perception of consumers of the textile industry.
Description of the different possibilities and indication of the best option based on the consumer information.	Qualitative & quantitative: analysed the possibilities in relation to the consumer information and analysis of key concepts and industry.

As shown in table 2 above, a qualitative content analysis was adopted with the aim to “*capture the meanings, emphasis, and the themes of messages and understand the organization and process of how they are presented*” (Altheide & Schneider, 2013). To be more specific, the research questions were used to guide the approach to the data. The main goal is to present the “overall picture” of the topic and provide recommendations on the issues for this, a summary of the findings was selected.

### 3.6.2 Validation

The most efficient way to determine if a research is considered valid is to determine if the research report with the research methods and information gathered, answer the main research question and can provide recommendations. A triangulation method where more research methods were used to collect data on one topic increases the validity of the research. Desk research a literature review, surveys and interviews were used to gather information on the same topic. the information presented is not only cross-validated, but also multi-dimensional, thus addressing different dimensions of the same phenomenon. Having multiple sources stating the same does not necessarily mean that there answer can be stated as a fact or that this will be 100% valid or reliable. The gap here lies in the fact that in interviews and surveys, individuals can state certain that they do certain actions and provide their opinion, however it could be that they are only stating this because they believe this is the

preferred answer rather than their actual beliefs or behaviour. The only way to research this is to research facts and figure on past behaviour and perform observations.

### 3.6.3 Reliability

The reliability of this research was ensured by cross checking the results of the research and the data and information collected. The literature included multiple articles on the same key topics (consumer behaviour, textile industry, circular economy and textile recycling), to determine if the information found in these articles showed similarities or differences in the results. Searching the data bases used was done by precise research terms to ensure reliability. The articles selected in the literature review were also selected on their publication data where recent publications were preferred. The research questions mentioned in the research framework were used as a guideline to analyse the scientific articles. To ensure the reliability in the surveys the questions were mostly closed and remained the same for each recipient of the survey. In the interviews a draft of the questions was sent to the interviewee beforehand and the notes made during the interview were checked by the interviewer and the interviewee afterwards (for wrong interpretations, or personal bias). The Sub-questions were used as a guideline for the interview to provide structure and increase reliability.

### 3.6.4 Ethical aspects

In each research report ethics play an important role. Ethical issues arise in each method of data collection. The literature review and desk research are sourced in the references of this report. This means that the author, data and publisher of articles or scientific papers are mentioned to avoid plagiarism. This not only increases the reliability of the report but also ensures that the information provided is used in a respectful manner. The participants of the survey hand in their responses anonymously. The information used in the report but will not be shared with other parties. Before starting the survey, the participant agrees with an actual or virtual signature or acceptance that their information is used in the research. The information and for the survey participants are mentioned in appendix B. When it comes the interviews, the interviewees will sign a consent form before the start of the interview. The consent form can be found in appendix A. The interviewees have the possibility to look at the transcript set up by the researcher before the information is used in the report. To further ensure the integrity of the interviewees and the participants of the survey, the report will not be shared with additional parties and only with those involved in the process.

### 3.6.5 Limitations

Every researcher comes across limitations in when creating a research report. There were several limitations in this report as well. The most prominent ones are mentioned here:

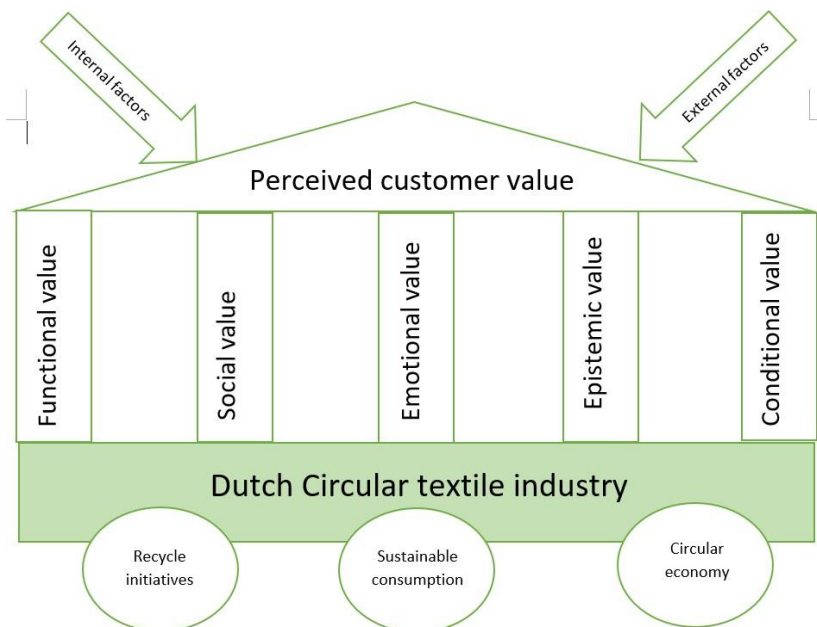
- I. The first limitation is time, the research report includes a deadline for the researcher to complete, in order to graduate. Because of this restriction some of the data could not be gathered and the research had to be specified to a certain topic and geographical location. Studying the complete textile industry would not have been possible with this time restraint.
- II. Secondly, location is also a limitation. In this extraordinary situation of a global pandemic, people are advised to remain indoors as much as possible and avoid gathering with groups or meeting other people. Because of this situation it was harder to connect with the interviewees because the contact had to be formed online. Next to this the aspect of personal interaction was missing from the interviews and the connection could sometimes create communication issues during the interviews. For the survey it was harder to reach participant because the only method of communication remained digital.
- III. The reliability of the research is also a limitation. If the findings are too generalizable and do not give a specific answer to a question or unclarity the information becomes less usable and reliable. Flaws in a research are the result of human error and a critical reflection is needed to

ensure that the information remains reliable. Next to this, the reliability is also questioned in the survey and interviews because people choosing a certain answer in the survey might be chosen because they believe this is the desired answer or because people believe they will act like this while the reality can differ from the results of the survey.

- IV. Another limitation is the access to information. Certain reports have limited access and the interviewees or participants of the survey might have been unwilling to cooperate or provide the information needed.
- V. Lastly the University of Twente also forms a limitation based on the requirements they have set for this report. Examples of this are the time frame, the wordcount, the structure and the acceptance of sources as valid for the research.

### 3.7 Analytical framework

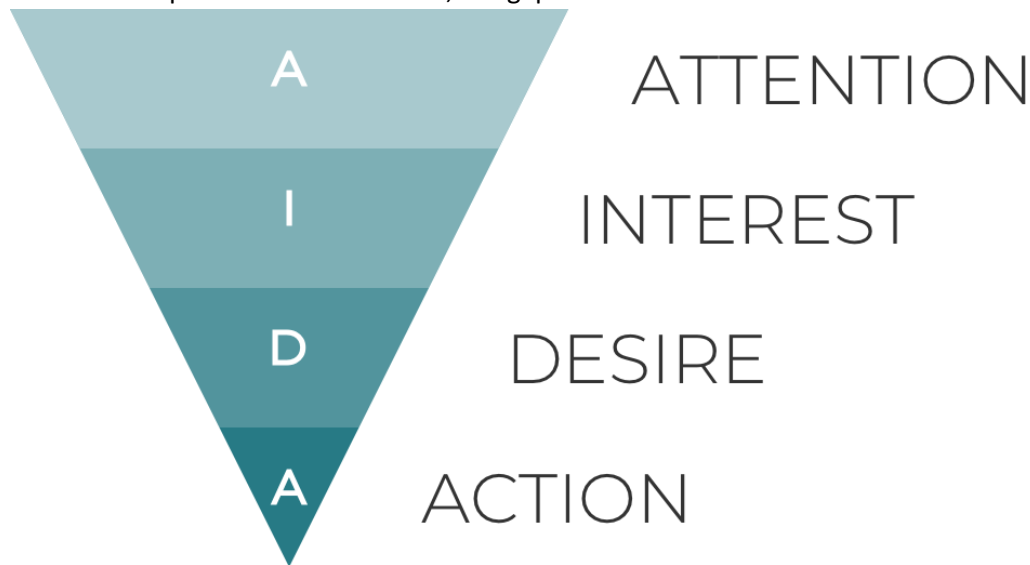
This sub-section explains the analytical framework developed for this research. The framework is shown in figure 5. The green section in the middle is the focus of this research which is circular textile industry in the Netherlands. Because this research focusses on the consumer perception and influence of the consumer, the overarching aspect in the analytical framework will be the perceived customer value. As described in the literature review, customer value can be divided into 5 pillars which are shown in the framework. The customer value and perception are also influenced by both external and internal factors the consumer has to deal with. For this reason, the internal and external factors are shown in the figure with arrows. Lastly, the three aspects besides consumer value and consumer behaviour that influence the Dutch circular textile industry are recycling initiatives, sustainable consumption and the circular economy as a general concept. These will all be researched before a conclusion can be reached.



**FIGURE 5: ANALYTICAL FRAMEWORK**

The second model that will be used to understand the consumer behaviour is the AIDA model. This model is shown in figure 6 and is *“an advertising effect model that identifies the stages that an individual goes through during the process of purchasing a product or service”* (Corporate finance institute, 2020). This figure is related to figure 5 because it shows the perceived value level of the consumer and figure 6 shows the awareness level of the consumer. Both are related to how the recycling initiatives will reach the consumers. The model shows that with higher awareness the gap

towards action becomes smaller, the same accounts for value. When sustainable clothing plays on the values important for a consumer, the gap towards action decreases.



**FIGURE 6: AIDA MODEL (CORPORATE FINANCE INSTITUTE, 2020)**

The first step is to consider how to attract the attention of consumers. The second step is increasing the interest level of potential consumers now that they are aware of the product or service. Thirdly the goal is to make consumers go from liking the product or service to wanting it, increasing the desire. The last and ultimate goal of the marketing campaign is to make the consumer purchase the product or service, meaning they perform an action (Corporate finance institute, 2020). The first level of attention is recognised by consumers stating that they are aware of the negative impact of the textile industry and the positive impact of sustainable textiles and textile recycling. The second level of interest becomes visible when consumers explain that the sustainable textiles and textile initiatives are something they are interested in and willing to cooperate with or take part in when it is presented to them. The level of desire goes one step further. In this step the consumer states that they want the product and are willing to pay more or put more effort in purchasing the product or service. This is also clearly visible in the perceived value of the consumer when the products and services are more related to the values of the consumer the product or service becomes more desirable. Lastly, the action is represented in numbers. When the purchasing of sustainable clothing goes up, when more kilograms of clothing are collected and sorted, and when thrift stores and other second-hand clothing platform include more money traffic, and sales are increasing, the level of action has been reached.

The aim of this research is to determine on which level most Dutch consumer are regarding the purchase of sustainable fashion and the use of the circular fashion initiatives or services. The goal of the research is to determine which sustainable recycling initiative has the most potential to move the consumer lower down the AIDA model (towards the action phase). This model will be relevant for the research because it gives a visual representation of where the consumers are in their purchasing behaviour and where they need to be guided to. Knowing in which stage of the model the consumers are in allows companies, institutions, governments and other stakeholder to determine what action to take to get them to the next stage.

## 4. Findings

This chapter analyses the data gathered by the researcher. The data is translated into information and provides an overview of the findings from the interviews, surveys and other sources. The information is presented per research sub-question. There were six interviews conducted, five of the interviews were conducted online and one in person<sup>7</sup>. This interview was with Luuk Duursma and the interview included a tour through the textile sorting factory of Sympany. The complete list of the interviewees, their position and their relevance to the research subject are mentioned in appendix C. Additionally, a survey was distributed. To receive a 95% success rate, the survey had to be filled in by at least 385 people in the provinces of Groningen, Friesland or Drenthe. The survey was filled in by a total of 390. This means that the success rate and reliability of this survey is 95%, however the results show only what consumers claim to know or how they reported to behave, their actual behaviour and beliefs could be different to what they reported. The calculations for the survey are shown in appendix G.

### 4.1 Circular textile industry in the Netherlands

This section will answer the question *“how can circular textile industry in the Netherlands be defined?”*. The definition will be based on the Dutch CPB report and other research that defines the current amount of textile waste in the Netherlands, the processes for textile collection and the ‘fast fashion’ barriers. The textile industry is also defined by interviews conducted by the researcher and a survey distributed amongst consumers. This survey will visualize the consumers reported behaviour regarding purchasing clothes and disposing of textile.

Based on the information gathered in the literature review, it has become clear that the circular textile industry is a developing economy in the Netherlands. On a global scale, the textile industry is the second biggest polluting industry and the production and consumption of textiles accounts for large amounts of water, chemicals and energy (Global fashion agenda, 2020; Koszewska, 2018; Ellen MacArthur foundation, 2017). *“Less than one percent of the materials that are used to produce clothing are recycled into new clothes and 73% of textile waste is still incinerated or transported to landfills”* (EllenMacArthur foundation, 2017). Although many companies are working with sustainable initiatives and materials, there are still brands that make use of sustainable branding without actually recycling their materials and reducing their impact on the environment. Of all textile waste, 73% of pre-consumer waste is transferred to landfills or incinerated, in relation to 48% of the post-consumer waste (EllenMacArthur foundation, 2017).

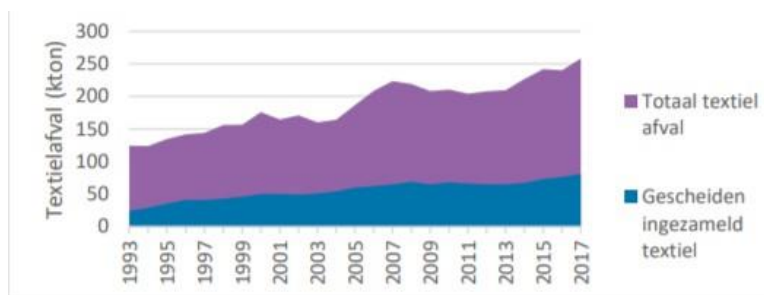
Circular economy strives to go from a ‘take-make-waste’ process to a circular one and reuse, reduce and recycle the materials. Recycling textiles has economic, social and environmental benefits to the world and the Netherlands. CE in relation to textiles made a big step towards improvement when the circular economy package was adopted by the European Union in 2015. The goal of CE in the textile industry is to limit the amount of waste that end up on landfills. To reach this goal several guides and policies have been developed such as the 2016 Dutch textile covenant. Circular textile industry in the Netherlands can be defined by the guidelines and policies developed.

Secondly, circular textile in the Netherlands can be defined by the processes that take place after textile is discarded. In the Netherlands, municipalities are responsible for collecting textile. Most textile in the Netherlands is collected through textile containers, either above or underground (van der Wal & Verrips, 2019). Sympany is one of the companies that places the textile containers in several municipalities and collects and sorts them.

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<sup>7</sup> Due to the COVID19 situation many countries in the world were in lockdown in 2020. The Netherlands had chosen for an intelligent lockdown where citizens would only travel and meet in person if necessary, for this reason many interviews were taken online. The interview that was held in person met the Dutch and Utwente safety requirements.

Sympany collects around 25 million kilos of textile each year from almost 2000 containers across the country (Reedijk, 2020). According to the CPB, the total amount of textile collected is 75000 tons and the amount of textile waste not collected is 106000 tons each year. Only 40% of the textile waste of Dutch households are handed in separately, the remainder is handed in with the residual waste (van der Wal & Verrips, 2019). The Dutch government together with the CPB also concluded that the amount of post-consumer textile waste has grown from 125000 tons in 1993 to 260000 tons in 2017, this is approximately 15kg per consumer and can be seen in figure 7. In this figure the vertical axe explains the kilotons of textile waste and the horizontal axe shows the years from 1993 to 2017. The blue line is the amount of textile handed in separately and the purple line shows the total amount of collected textile waste.



**FIGURE 7: TEXTILE WASTE IN THE NETHERLANDS (CPB 2020)**

The fast fashion research from the Dutch government selected the four main drivers that keep fast fashion intact. These are:

- **Competitive market:** To compete with each other fashion organisations constantly try to find ways to lower costs, such as low quality and cheap materials.
- **Long chains:** There are many parties in the production and distribution chain that makes it hard to keep control over the production and differentiate 'good from bad'.
- **Chains intertwined:** The production chains for conventional clothes is difficult to differentiate from the fast fashion production chains because these are mostly the same. This means that both the fast fashion production as well as the conventional clothes use the same methods and resources for production, transportation and supplying their clothes.
- **Consumerism:** Consumers have more income to spare on products such as fashion which means people buy more and there is a reduced lead time of products.

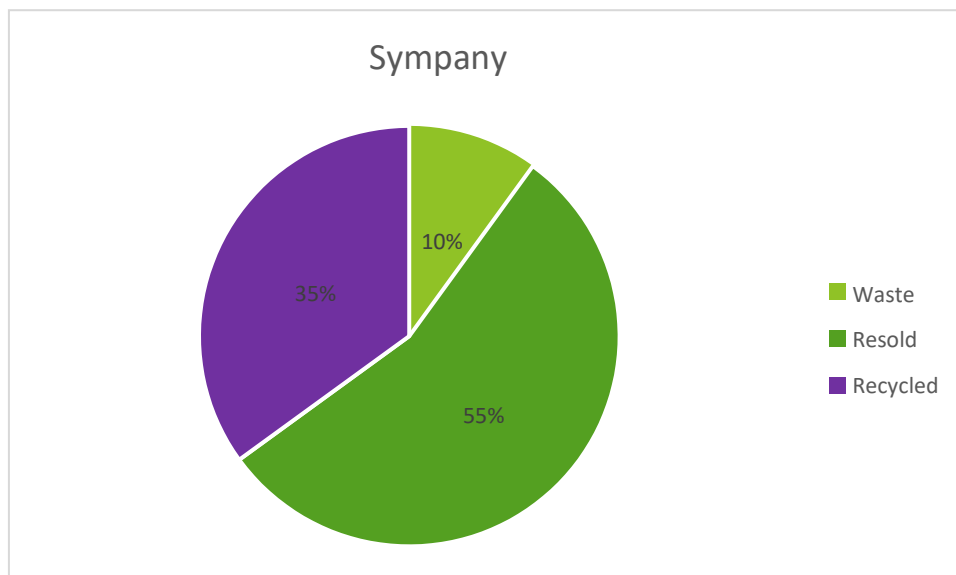
The main conclusion from this report suggested that fast fashion cannot be categorized as either only good or only bad and there are many factors that influence this business model other than the competition and capitalistic society we live in. Additionally, monitoring and researching to uniformly draw one conclusion on 'fast fashion' is required. Companies experience pressure from public opinion because consumers are becoming more sustainable in their purchasing. This creates businesses stuck between competition and sustainability (Janssen, van der Vaart, Bos, & Bakker, 2020).

Most collected textile is sold to other countries and what cannot be sold is either discarded or recycled. According to the CPB, the most common recycling method is downcycling. Figure 8 shows the percentage of textiles from Sympany that are resold, recycled and disposed of. This also confirms that around half of the textile collected in the Netherlands is resold to other countries.

What can be concluded from this is that the Netherlands is trying to introduce methods for textile collection to make the process more circular and that they have identified the drivers that keep fast fashion intact to tackle the problems and increase textile collection and recycling. The following section will review the results provided by the consumer survey regarding textile collection and consumer behaviour. In this survey

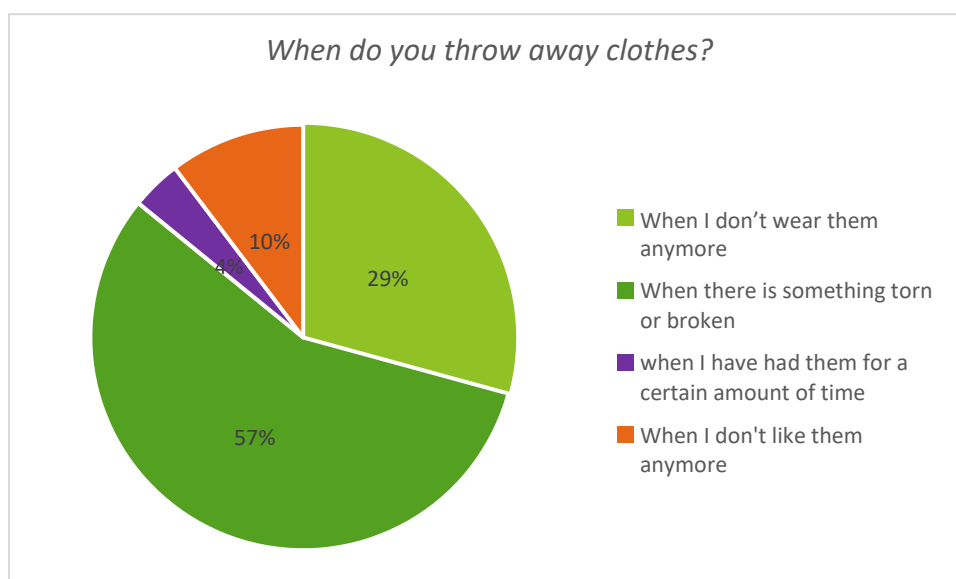


it is important to note that not all results presented in this survey reflects the actual consumer population in the Netherlands. The people filling in the survey might have a bias towards sustainability because of their relation to the researcher or because people taking the survey would only take the time for this if they already have some interest in sustainability and reducing textile waste. This could lead to results that show consumers are perceived to be more concerned with sustainability issues.



**FIGURE 8: CLOTHING COLLECTION SYMPANY IN THE NETHERLANDS (Luuk Duursma, 2020)**

Large amounts of textile is wasted every year. The post-consumer waste has been growing in the last decade, as can be seen in figure 7. The reasons for this are partially due to the growing concept of 'fast fashion', lower production cost, competition and higher incomes are what keeps this fast fashion business model in place (Janssen, van der Vaart, Bos, & Bakker, 2020). People do not only throw their clothes away when they are worn out but for several other reasons. Figure 9 shows the reasons why people dispose of their clothes.



**FIGURE 9: SURVEY RESULTS: CONSUMER BEHAVIOUR REGARDING TEXTILE WASTE**

The results in figure 9 are drawn from the survey that the researcher conducted amongst consumers. The goal of the survey is to visualize consumer behaviour, knowledge and their motivation to make use of textile recycling initiatives. The majority of the participants stated that they throw away clothes when there is something torn or broken. Clothes that are no longer wearable for these reasons are not

considered a direct result of ‘fast fashion’. Indirectly, fast fashion is kept in place by offering new clothing at a fast pace but simultaneously producing poor quality clothes to reduce the life expectancy of the clothing (Janssen, van der Vaart, Bos, & Bakker, 2020). Other options are more directly related to fast fashion. From all participants in the survey 39% stated that they throw away their clothes when they don’t wear them anymore. This also includes the 10% that stated that they throw away clothes when people don’t like their clothes anymore. The reasons for throwing clothes away when they are torn or broken is the only reason that is related to the functional aspect of clothing. The other reasons are related to other motivations from consumers such as the social or emotional value consumers have in relation to their clothes. The results show that the majority still stated that they dispose of clothes because they have lost their function of providing comfort or warmth. The remaining 43% of consumers that chooses to discard clothes for other reasons shows that there is a large amount of clothes being discarded before they reach the end of their lifespan, which results in this large amount of textile waste presented in figure 7.

Each individual has a certain storing capacity for their clothes. When this capacity is exceeded people often decide to discard of a selection of their clothes. The amount of clothes thrown away could be related to the frequency in which people purchase new clothes. The direct relation between the reasons for discarding clothes and the frequency of buying new clothes is not visible in this survey and requires further research. How frequently people purchase new clothes is shown in figure 10.



**FIGURE 10: SURVEY RESULTS: CONSUMER BEHAVIOUR REGARDING PURCHASING FREQUENCY**

From figure 10, it can be concluded that more than 75% of the people stated that they purchase clothes<sup>8</sup> at least every 3 months. More than 10% buys clothes once a week or more often, and 29% reports buying clothes every month. This could be linked to fast fashion because “*fast fashion chains offer new clothes every six weeks or less instead of every season, which used to be the norm*” (Interview with P Bos of Frankenbos, 2020). The average life expectancy of a piece of clothing is 3 years (Happinez, 2020). Assuming that not all items require replacement at the same time. The people that buy new clothes every week will have at least 52 new items each year. Taking the average of 173 items of clothing per person, of which 50 items are hardly used (WWF, 2019). These people will have replaced almost all their clothes within two years. Meaning that not all their clothes have reached the end of their lifespan when they are replaced. The same goes for the people that buy new clothes every month. They will have replaced most of their clothing within 3 years (if they buy one item per month),

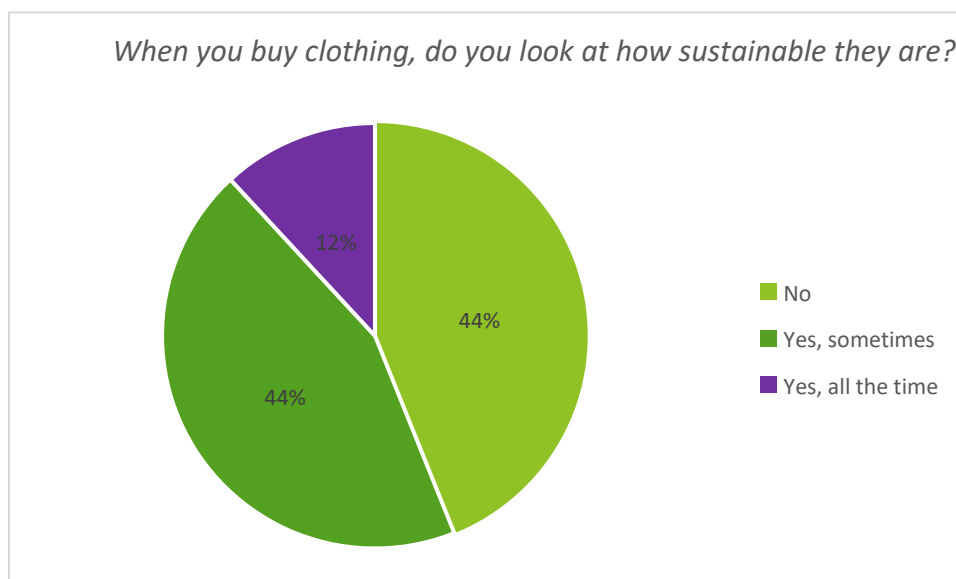
<sup>8</sup> ‘Clothes’ in this survey is specified as outerwear including; jackets, jeans, tops, and shoes and excluding accessories, undergarments, sportswear and other textiles such as sheets and towels.



but since some clothes have a longer life expectancy it is not likely that all clothes that have been replaced, needed replacing. The advertisements and stimulation of buying behaviour supports this system. This was confirmed by NOS (Dutch national broadcaster) who indicated the following: *“You will keep the desire of something new and you are continuously influenced online and on the streets. The fashion industries are playing on our primal instincts. If we think we need something new we will be likely to go for an impulse purchase”* (Staarman, 2020).

The report from the CPB together with the circular economy package from the EU being adopted and the ‘make fashion circular cooperative’ shows that the textile industry in the Netherlands is not circular yet. There are regulations improving the current situation. Such as the textile collection organisations that have the ability to request compensation from the municipalities when the textiles collected in the containers is compromised, due to other waste (such as food) placed in the containers. This was stated by Luuk Duursma in an interview. This regulation motivates municipalities to ensure that their citizens only dispose textiles in the containers. Around half of the collected textiles is resold and (from Sympany) 35% is recycled. The CPB’s ‘textile as secondary resource’ report has already suggested improvements for municipalities to overcome the barriers of textile waste. Their first suggestion is to develop an extended producer responsibility system where those who bring the textiles to the market are responsible for disposing of the product and paying a contribution for this. This is currently done for other materials in the Netherlands such as electronics, batteries and car tires (Rijksoverheid, 2020). This suggestion was also made by Luuk Duursma (Sympany) and Peter Bos (Frankenbos) in the interviews. Another suggestion is based on the producer responsibility and will differentiate the cost of the contribution on the type of material used. Synthetic materials will cost more which will stimulate the use of natural and less harming materials. Additionally, recycled materials costs less than primary materials which will also stimulate the recycling of textiles. Lastly, additional measures should be taken by the government to increase the collection methods and the information provided to consumers (van der Wal & Verrips, 2019). The purchasing of sustainable clothes can also contribute to a more circular textile industry. For that reason, knowing if consumers are able to recognise sustainable clothing and take the effort and time to research this, can provide insights in their behaviour and motivation.

Survey question 7 asks participants if they check how sustainable their clothing is. The results of this are shown in figure 11. This figure shows that 56% of participants reported to check the sustainability of their clothing. Of this 56% only 12% looks at the sustainability every time they buy new clothing. The remaining 44% does not look at the sustainability of the clothing. Having a little more than half of the consumers look at sustainability is not likely to motivate fashion organisations to produce more sustainable clothing. The reasons why the participants will not look at the sustainability level is dependent on several factors and values consumers are influenced by. The values are based on the 5 values determined by Colgate and Smith (2007) and are mentioned in chapter 2. This is further discussed on chapter 4.3.



**FIGURE 11: SURVEY RESULTS: SUSTAINABLE FASHION PURCHASING**

One aspect that defines circularity is the number of recycled items. In the Netherlands, around 75000 tons from the 260000 tons of post-consumer textile waste is collected. Sympany stated that they recycle around 30% of the collected textile which translates to around 225000 tons of textile being recycled in the Netherlands each year. This number is an estimate based on prior research and information gathered. There is no exact number provided by the textile collection organisations or the Dutch government. Globally, 73% of all textiles are incinerated or transferred to landfills and in the Netherlands, only 40% of textile waste is collected. Of this 40% only 30 to 35% is actually recycled (Sympany, 2020). The goal of CE in the textile industry is to increase the amount of textile being recycled. According to Peter Bos (interviewee) this can only be done with the right systems in place and the correct legal and organisational structure to support this. Wouter Reedijk (interviewee from Sympany) supports this statement, by saying that the best way to create a more circular system, communication is needed between all parties involved in the textile process. The collection and recycling of textiles needs to be a more controlled and organised system which is profitable and convenient for consumers and suppliers. Some of the initiatives that are stimulating this are mentioned in section 4.2.

What has become clear so far is that there is an increase in textile consumption in the Netherlands and that only 40% of this textile is collected separately. Not all textile collected is recycled but a part is also resold or disposed of. The textile production process should go from a linear to a circular one and with governmental regulation and initiatives from consumers and organisations the percentage of textile collected and recycled has the opportunity to increase. Circular textile industry in the Netherlands can be described as a cooperation between government, organisations and consumers that are all willing to make changes towards less textile waste and more textile collection and recycling.

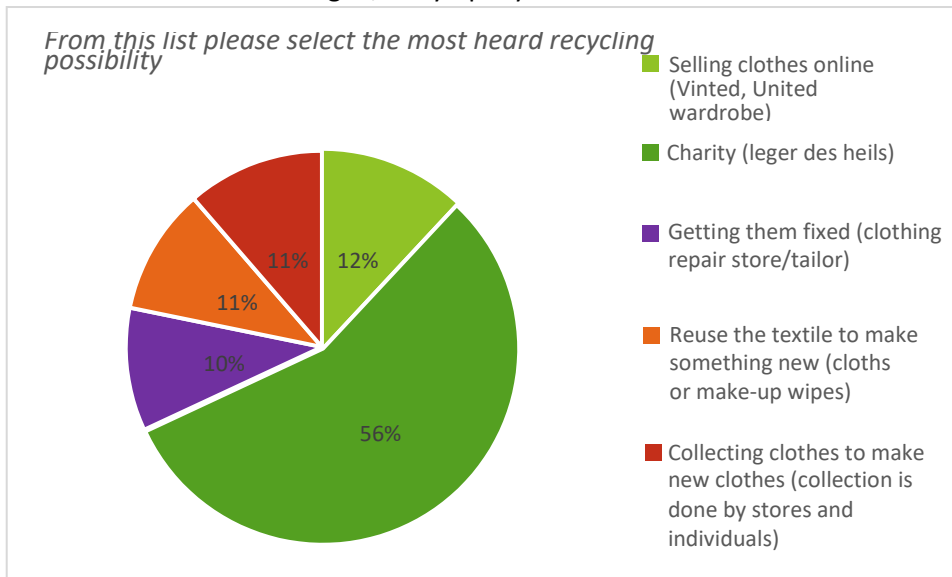
## 4.2 Recycling initiatives and how they reach consumers

There are several recycling initiatives in the Netherlands. The most common one is the textile containers, which is a textile collection and recycling method. Organisations that provide textile collecting and sorting work together with municipalities and collect 40% of the textile waste in the Netherlands (van der Wal & Verrips, 2019). Because there are a lot of textile initiatives in the Netherlands and this research has a time limit, only the most prominent recycling/collecting methods are selected in this research. The initiatives presented in this report are:

1. Collection and (partially) recycling through textiles bags and textile containers.

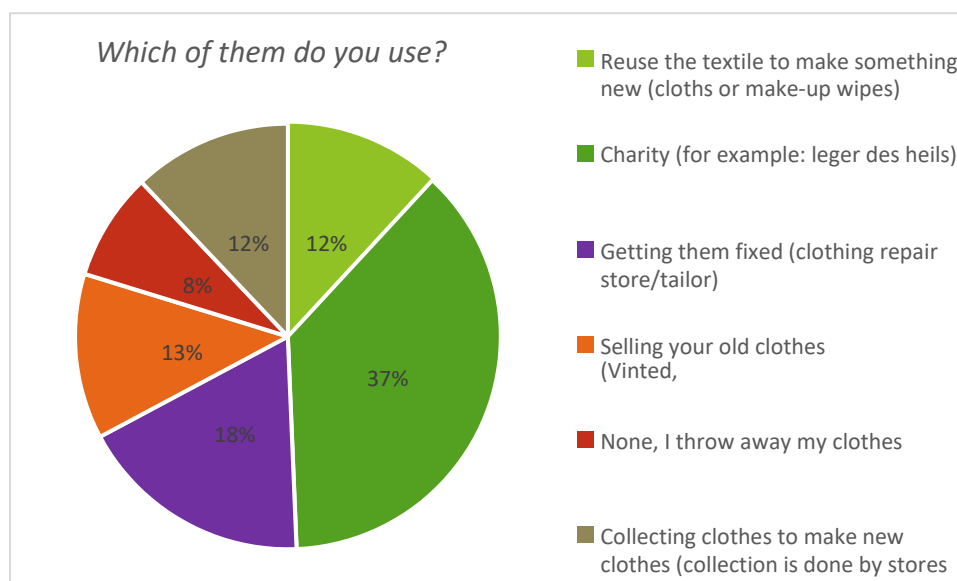
2. Reselling clothes online (such as *Vinted* and *United wardrobe*)
3. Collecting clothes through stores (Bringing them back to the clothing stores).
4. Repairing clothes (by the consumer or by a tailor).
5. Handing in clothes to thrift, second-hand and vintage stores.
6. Using the waste materials for downcycling (such as the automobile industry).

Figure 12 represents the options for recycling that consumers are most familiar with. The recycling initiatives above are represented in this question. Donating to charities like Leger des Heils is the textile collection method in Groningen, as Sympany is in Drenthe.



**FIGURE 12: SURVEY RESULTS: MOST COMMON RECYCLING METHOD**

Question 11 shows that more than half of the consumers are most familiar with the option to donate their clothes to charity. Leger des Heils is a Dutch thrift store company that collects clothes in the province of Groningen (just like Sympany). For this reason, it can also be stated that this 56% is most familiar with clothing collecting through textile containers. The most heard of method is not necessarily the only method people use. Because consumers often use more methods the survey also allowed them to select each method they used. The results are presented in figure 13.

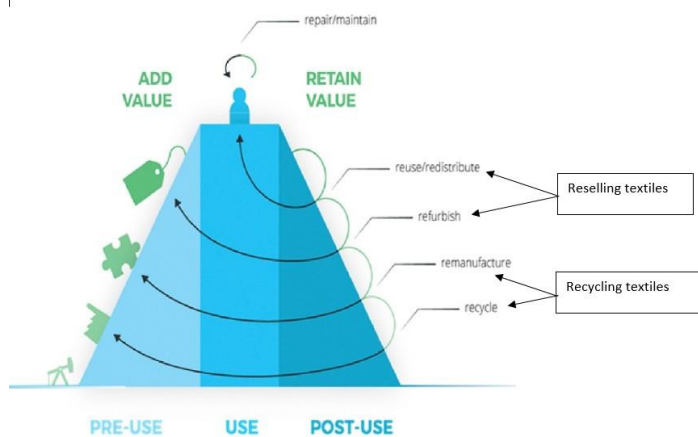


**FIGURE 13: SURVEY RESULTS: USE OF RECYCLING METHODS**

From this figure it becomes clear that Charity or the textile containers are not only the most heard of option but also the most used one as 37% selected this option. The other options are all used in under 20%. With 3 options being used for 12 of 13% of the time. The participants had the possibility to select more than one answer to this survey question. For example using the option of charity for clothes not torn or broken but using a tailor for clothes that are torn but can be fixed easily and throwing away their clothes when the clothes are in the last stage of use and are completely worn out. This could explain why each method is used by 12% or more and why the percentage of people throwing away their clothes is so low. Repairing clothes is the second most used option. Only 8% of the participants does not use any of the recycling possibility and discards their textiles with the residual waste. Important to consider with this question is why is this 8% is not recycling their clothes and how can they be motivated to use the textile recycling initiatives. This is discussed in more detail in the following chapters.

### 4.2.1 Textile containers

As mentioned in paragraph 4.1, textile collection through containers is one of the most common methods in the Netherlands. There are over 10 companies that collect through this method. It becomes clear from figure 8 that after the collection of textiles, 10% of the textiles is waste, 35% can be recycled and the remainder is resold (Duursma, 2020). As Luuk Duursma explained, part of the textiles they resell is 'high quality'<sup>8</sup> and some is lower quality (interview with Luuk Duursma of company Sympany). On the sorting location they divide the textiles into 13 different categories. Some of the resold textiles can be sold as they are, others need refurbishing. From the recycled percentage, a selection is mechanically or chemically fiberized and used to remanufacture clothes again (interview with Luuk Duursma of Sympany). The remainder is used in insulation, cars or other industries. This means that in relation to the circular material flow from figure 2, the textile that is collected in the containers falls in all four categories. This is visualized in figure 14 below.



**FIGURE 14: CIRCULAR MATERIAL FLOW TEXTILE CONTAINER** (adapted from linear vs circular material flow by Fischer & Pascucci, 2019)

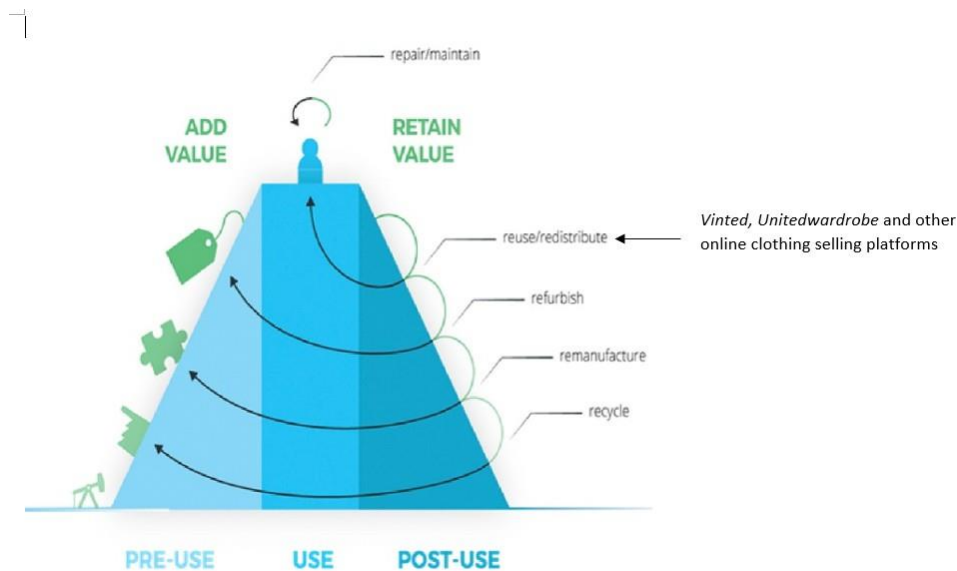
<sup>8</sup> High quality clothing in Sympany is determined as clothing with little to no visible wearing effects, and where no alteration needs to be made to wear the clothes or, as more expensive clothes where little alterations need to be made (Duursma, 2020).

The following section will visualize the perspective of the municipalities and the actions they are taking towards textile waste reduction and textile recycling. This also includes some perspective on the governmental aspect of textile recycling. The interview was conducted with two employees from the municipality of Oostellingswerf in Friesland. The interview with the municipality of Oostellingswerf made clear that municipalities are working together with organisations to collect textile in the containers. Sympany has also explained that each municipality has their own rules and policies in terms of textile collection. Fimke Hijlkema (Interviewee and councillor at the municipality of Oostellingswerf) stated that *“awareness of people is an important subject”* to which Mayte Leinenga (interviewee and junior advisor of sustainability at the municipality of Oostellingswerf) added that municipalities reach consumers by providing information on textile collection on the website. Additionally, they stimulate citizen participation and sometimes work on projects related to circularity or circular fashion (Leinenga & Hijlkema, Municipality Oostellingswerf, 2020).

The organisations that provide the textile containers and are responsible for collection also have ways of reaching consumers. For instance, Sympany provides information on their website. On the website citizens can determine where the containers are located, what can be collected and what happens after collection. Lastly, Sympany tries to promote the recycling of textiles through international projects. Citizens have the opportunity to donate or start their own project together with Sympany (Sympany, 2020). Based on the results of question 11, it can be concluded that this method of reaching customers is quite effective because from all the recycling initiatives this is the method people who filled in the survey are most familiar with. This, however, does not mean that people are aware of what happens with their clothes after it has been collected in the textile containers.

#### 4.2.2 Reselling clothes online

The clothing sites that are currently increasing their popularity in the Netherlands are *United wardrobe* and *Vinted*. The simplified process of *Vinted* is as followed: as a buyer people can download the app, take pictures of their clothes, when the article is sold, they send it, and after it has been accepted by the buyer people receive their money. For the buyer the steps are to download the app, search and select the clothes they like and after payment people receive the purchased item (Vinted, 2020). Both companies use common platforms to reach customers such as advertisements on social media, billboards and television. On their website and through the advertisements they explain the benefits of this service. The economic benefits of making money from old clothes or buying clothes for less than the original price is most prominent. The environmental benefits of increasing the lifespan of clothes are not mentioned so clearly on the website or through other advertisements. There are also negative effects of using a service like this because the selling of clothes all over the country requires deliveries and returns which include transportation costs. Additionally, the profit that can be made from selling clothes can also be used for the purchasing of new clothes, keeping the fast fashion business model intact. Figure 15 below shows that reselling clothes fits in the first section of retaining value from the circular material flow.



**FIGURE 15: CIRCULAR MATERIAL FLOW RESELLING CLOTHES** (adapted from linear vs circular material flow by Fischer & Pascucci, 2019)

From question 11 in figure 12 of the report it becomes clear that reselling clothing through these types of online platforms is the most common method for 12% of the consumers. Question 12 in figure 13 shows that 13% of the participants actually use this method for recycling their clothes or extending the lifespan of their clothes whilst simultaneously making some profit from it.

### 4.2.3 Store collection

According to the report of the CPB *“half of the income from the fashion industry in the Netherlands is allocated to multinational organisations such as H&M, Zara and C&A”* (van der Wal & Verrips, 2019). In the literature review is already explained that several of these companies operating in the Netherlands, are collecting used clothes in their stores. Weekday, a fashion retail chain, provides the opportunity to collect and reuse your clothes for a 10% discount (Weekday, 2020) and H&M offers the same service for a 15% discount (H&M, 2020). The H&M website provides information on what is collected and what happens to the clothes after collection. According to the website: *“Clothing that can be worn again is marketed worldwide as second-hand goods. Clothing that is no longer wearable is converted into new products, such as remake collections or cleaning cloths. Clothing that can’t be reused is recycled into textile fibres and used to make new materials and products, such as insulation for cars”* (H&M, 2020). This would suggest that similar to the collection of clothes through the textile containers, this system recycles clothes in each stage of the circular material flow. This is shown in figure 14, reselling and recycling textiles.

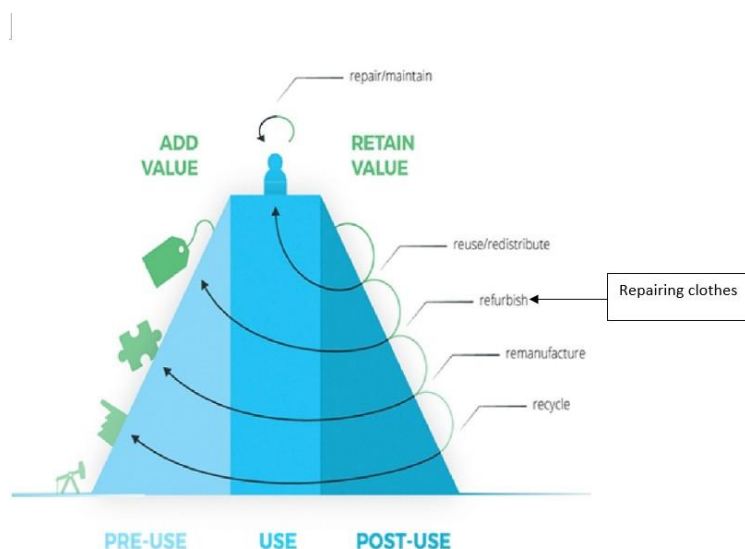
The way that this service or recycling option is reaching consumers is mostly through information on the website and in the stores. The main focus of these organisation is on gaining profit from selling as much clothing as possible for the lowest price available. The more clothes they sell the more income they receive. This ‘fast fashion’ business model is still the most common for fashion stores, *“they present the consumer with new clothes every six weeks”* (Bos P., 2020). Peter Bos (interviewee) is an expert in the textile sector with more than 20 years of experience and he also explained that *“when consumers are not asking for more sustainability, the producers will continue to choose the process with the least resistance”*. Meaning the most simple and cheap way to produce clothes. Survey questions 11 and 12 show that 11% of participants find clothing collection and recycling by companies the most common method and 12% actually stated using this service.

### 4.2.4 Repairing clothes

Repairing clothes is done in several ways. Some people are skilled or creative enough to repair

their own clothes, others send their clothes to a repair shop or tailor. Repair stores are common in most cities and villages in the Netherlands and people make use of them not only to repair clothes but also shoes, furniture, electronic devices and other products they use regularly. Items that are sent to a repair store are often items that are more expensive to replace than to repair.

One of the most popular advertisement campaigns in the Netherlands regarding repair stores is the campaign 'waardeer het, repareer het' from SIRE (SIRE, 2019). This was already mentioned by Mayte Leinenga in the interview and this translates to value it, repair it. SIRE is the independent idealist commercial Association. With campaigns they try to gain attention for important societal issues. The campaign 'waardeer het, repareer het' comes with an application, advertisement on social media, billboards and television, and information on their website. The reparation of clothes is in the second stage of the of the circular material flow model, the refurbish stage. This is represented in figure 16.



**FIGURE 16: CIRCULAR MATERIAL FLOW REPAIRING CLOTHES** (adapted from linear vs circular material flow by Fischer & Pascucci, 2019)

The survey results explain that repairing clothes is the second most heard of option for and is actually used by 18% of the participants. The reason people use this method could be related to the emotional and functional value of the product for the consumer. The influences and the values related to the decision are discussed in chapter 4.4.

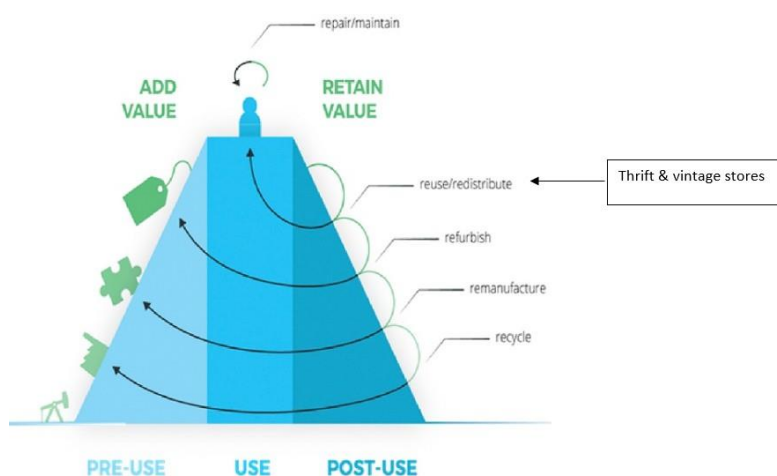
#### 4.2.5 Thrift and vintage stores

Thrift, second-hand and vintage stores are a common sight in the Netherlands. Vintage stores are gaining more popularity and second-hand stores are also increasing their range online. Part of the collected textile handed in through containers is resold in the second hand and thrift stores in the area. Additionally, the citizens have the opportunity to bring their textile to the thrift and second-hand stores in person. This information is provided on the municipal websites and the websites of the thrift and second-hand stores<sup>9</sup>. The research also included an interview with the founders of the Facebook group 'Groningen draagt duurzaam', which was introduced to create a community where people in the province of Groningen are able to share their tips and ask questions regarding sustainable textile consumption. In the interview with two creators of 'Groningen draagt duurzaam' (Bos & Mulder, 2020) was stated that second hand and thrift stores are reaching less customers for several reasons. The first reason is that people are not likely to change their

<sup>9</sup> (Gemeente Groningen, 2020) (Sympany, 2020) (Omrin, 2020)



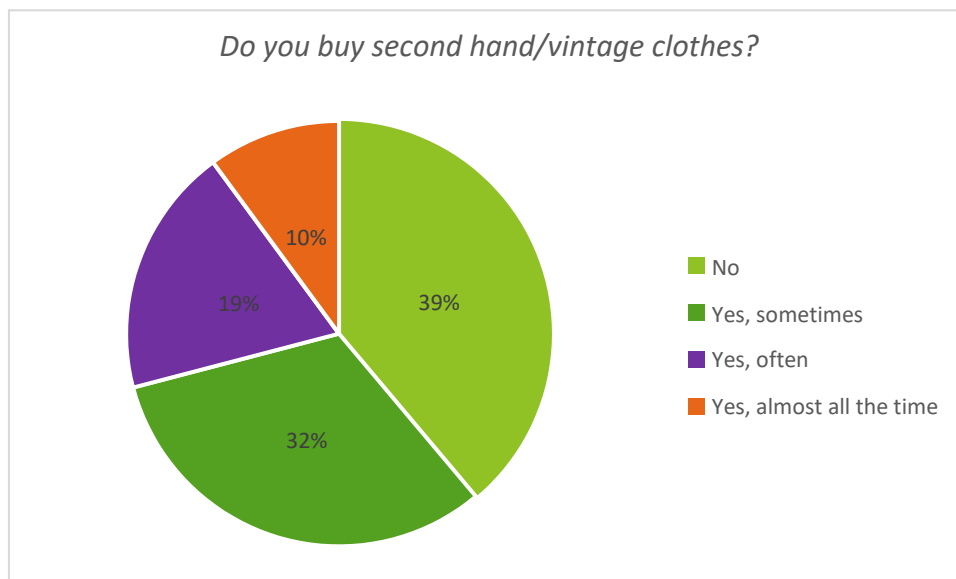
behaviour, which means they will keep purchasing the way they are used to. The second reason is that people believe that the clothes in second-hand stores do not fit their style. And lastly the appeal of second-hand stores also depends on the look and feel of the physical stores. They often look a little old and dusty because there is not someone with a fashion related study or experience that tries to arrange the store in such a way that it looks appealing for consumers. This is something that fast fashion stores do have. Both interviewees believe that the reason these stores do not look as appealing as regular stores is because they do not have the time, capacity and expertise to rearrange their store (Interview with Bos & Mulder, 2020). Thrift, vintage and other second-hand stores are on the first stage of the circular material flow model, the reuse/redistribute phase. This is shown in figure 17.



**FIGURE 17: CIRCULAR MATERIAL FLOW THRIFT & VINTAGE STORES** (adapted from linear vs circular material flow by Fischer & Pascucci, 2019)

From the survey results collected, an estimate can be made on how many consumers buy second hand or vintage clothing. In figure 18 it can be seen that 39% of the participants do not buy any second hand or vintage clothing. This means there is still room to grow and research should be done on why they only buy new clothes. Why people choose for second-hand clothing can be for various reasons related to the motives and values people have that relate to their purchasing behaviour. People that look at how sustainable their clothes are and are focussed on sustainable purchasing might choose for second-hand clothing because it extends the lifespan of clothing and reduces the amount of waste. Other reasons for purchasing second-hand clothing could be due to conditional values. Second-hand clothing is often cheaper, and consumers with less money to spend on clothes could choose second hand clothing for this reason. Another reason for choosing second hand or vintage clothing could be for social reasons. If vintage clothing is in style, people are more likely to purchase it. This means that people that purchase second hand or vintage clothing are not automatically considered as sustainable consumers with a regard for the environment. This is further discussed in section 4.4 on the internal and external factors that influence buyers and their perceived values.

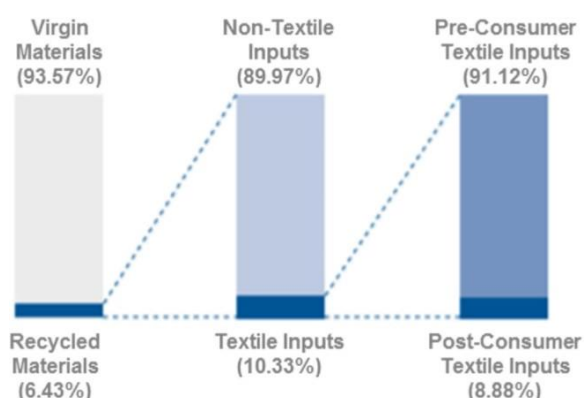




**FIGURE 18: SURVEY RESULTS: PURCHASING SECOND-HAND CLOTHING**

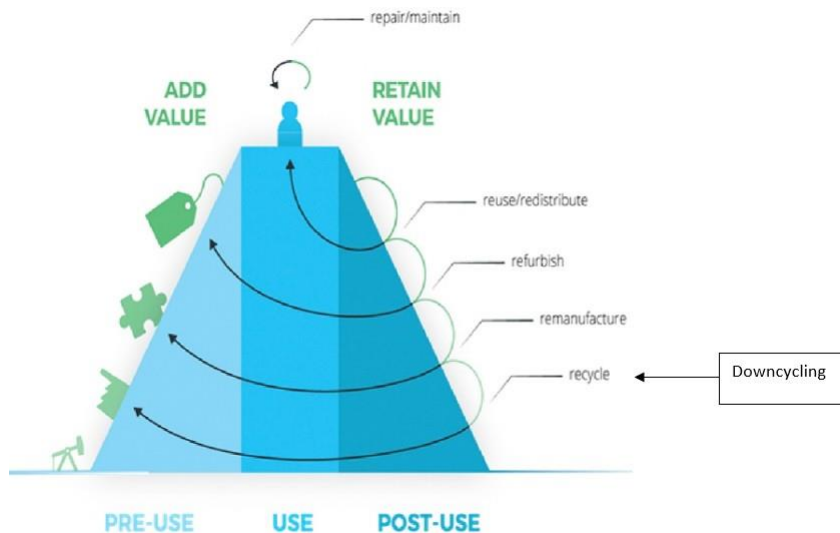
#### 4.2.6 Downcycling

According to Ecofox “downcycling<sup>10</sup> is the most common form of recycling” (Ecofox, 2019). Peter Bos stated that there are “between 30 to 50 kilos of old jeans in cars. There is also a lot of old textile to be found in the furniture and mattress industry. There is a lot material reused but not much has a high value second life” (interview with P. Bos of Frankenbos, 2020). Downcycling can be down with both pre-consumer and post-consumer waste. Almost 90% of the recycled materials in the textile industry comes from non-textile inputs (Textile exchange & corporate citizenship, 2020). This can be seen in figure 19.



**FIGURE 19: BREAKDOWN OF RECYCLED MATERIALS (TEXTILE EXCHANGE & CORPORATE CITIZENSHIP 2020)**

This figure shows that of all the textile produced, only 6,43% is produced with recycled materials and of this 6,43% only 10,33% comes from the textile industry, the remainder comes from other industries. Lastly the figure shows that of the textile input of the recycled textiles, only 8,88% comes from post-consumer textiles. This means that there is only a fraction of the textile that is discarded by consumers returned into the textile production process. Downcycling is not actively reaching consumers. What can also be seen in figure 19 is that less than 10% of the recycle materials comes from post-consumer textile inputs. Downcycling is the lowest form of recycling and is for that on the last stage of the circular material flow. This is visible in figure 20.



**FIGURE 20: CIRCULAR MATERIAL FLOW DOWNCYCLING** (adapted from linear vs circular material flow by Fischer & Pascucci, 2019)

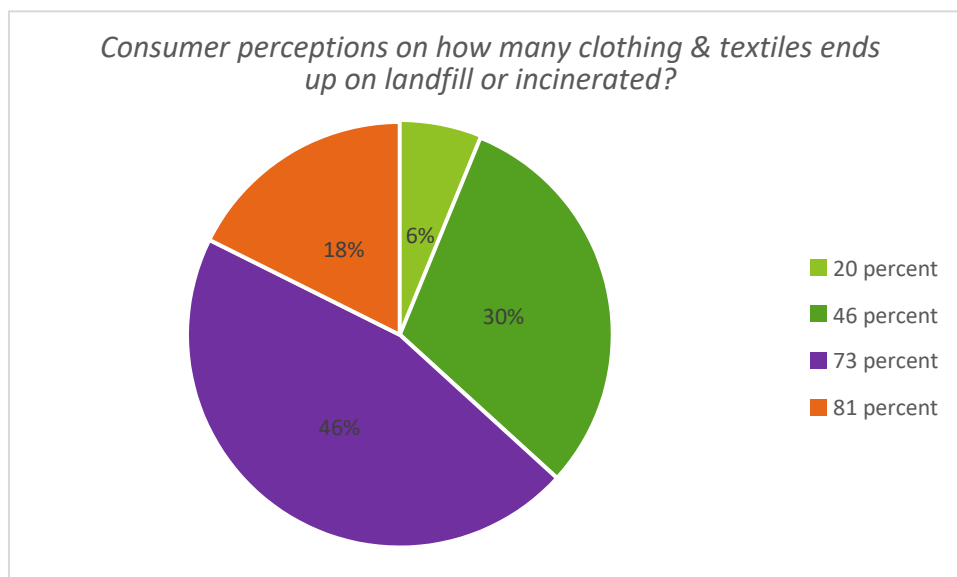
<sup>10</sup> “Downcycling refers to recycling a material into a lower value product. Examples include recycling used garments into non-woven textiles, building insulation, rags, or carpet underlay” (Think lifecycle, 2020).

In order to have an insight in the consumers perspective of this recycling method, the survey included questions about the different recycling methods and which one’s consumers use. This is represented in figure 12 and 13. One of the recycling options to choose from is making something new from old textiles. This is the consumer possibility to downcycle on a small scale. Twelve percent of the survey participants stated that they use this method of downcycling and for 11% of the participants it is the most heard of recycling method.

What can be taken from this chapter is that there are many options to recycle and collect post-consumer textile waste. From the survey and interviews it became clear that the most heard of and most used method in the Netherlands is the textile containers. Consumers hand in their clothes in the containers and companies like Sympany and charities such as Leger des Heils which collect, sort, redistribute or recycle the clothing. What can also be concluded is that apart from the downcycling option, which is the most common but also the lowest form of recycling, many recycling options only prolong the lifespan of the materials by reusing or refurbishing. This option is obviously better than placing textile waste on landfills or incinerating it, but this is not yet creating a completely circular industry. This can also be seen in figure 19 where it is stated that only 6,43% of all materials are recycled and of this only 10,33% is recycled from the textile industry. An important factor to determine the potential of the recycling initiatives and the way they can influence consumers to create a more circular textile industry is the level of awareness of consumers. For that reason, the following section represents the awareness level of consumers.

### 4.3 Awareness level of consumers

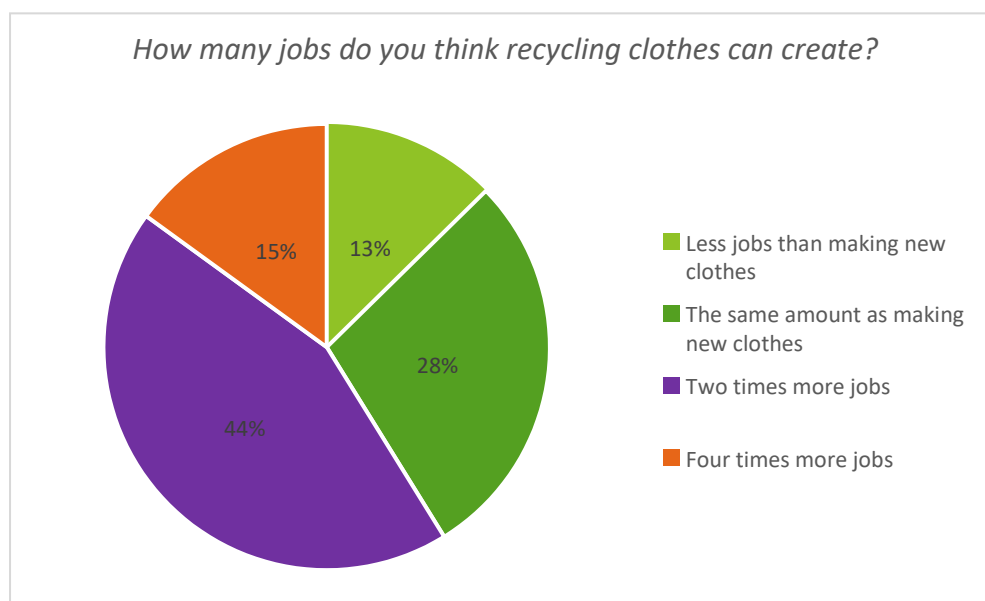
Awareness is part of the first and second step of the AIDA model mentioned in the analytical framework (see figure 6). It determines if the attention of the consumers and their interest in the topic is present. The awareness level of consumers was tested through the several questions present in the survey. The first three questions of the survey tested the participants level of knowledge on the economic, social and environmental impact of the textile industry. The results of question 1 are shown in figure 21.



**FIGURE 21: SURVEY RESULTS: ENVIRONMENTAL IMPACT**

According to figure 1 in the literature review, from the MacArthur foundation, 73% of clothing and textiles end up on landfills or is incinerated. Figure 21 suggests that 1/3 of the participants guessed or knew this. The results show that the majority of the population believes that more than half of the textiles and clothing produced is wasted. Question 1 provides an answer to the awareness level of consumers regarding the environmental impact of the clothing industry.

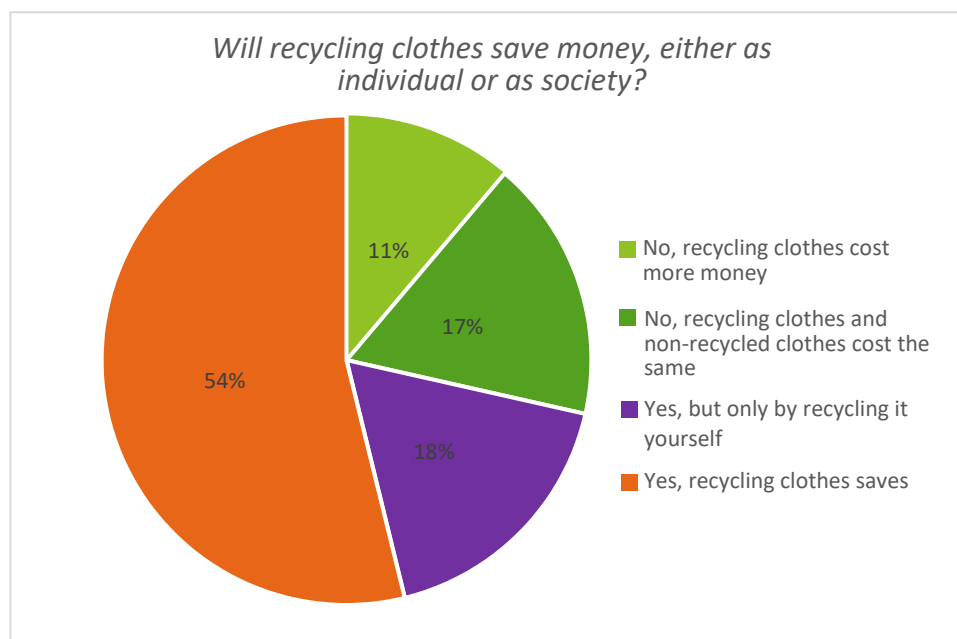
Question 2 looks at the social impact of recycling clothes. The results of question 2 are shown in figure 22 below.



**FIGURE 22: SURVEY RESULTS: SOCIAL IMPACT**

Almost half of the participants believe that recycling clothes can create 2 times more jobs. According to Shore (1995) “recycling centres create four jobs for every one job in the waste disposal industry”. Only 15% of the people believed that recycling clothes could create four times more jobs, however only 13% believed that recycling clothes would create fewer jobs. This question reviews the awareness level of consumers on the economic impact of recycling clothes and circular fashion. It shows that the majority of people believes that recycling clothes can create more jobs and therefore include some social benefits for consumers and businesses as well. The recycling of clothes creates around 17000 jobs in America alone (Leblanc, 2019). Together with the environmental and social benefits there are

also economic benefits related to textile recycling. The results on the survey question related to this are represented in figure 23.

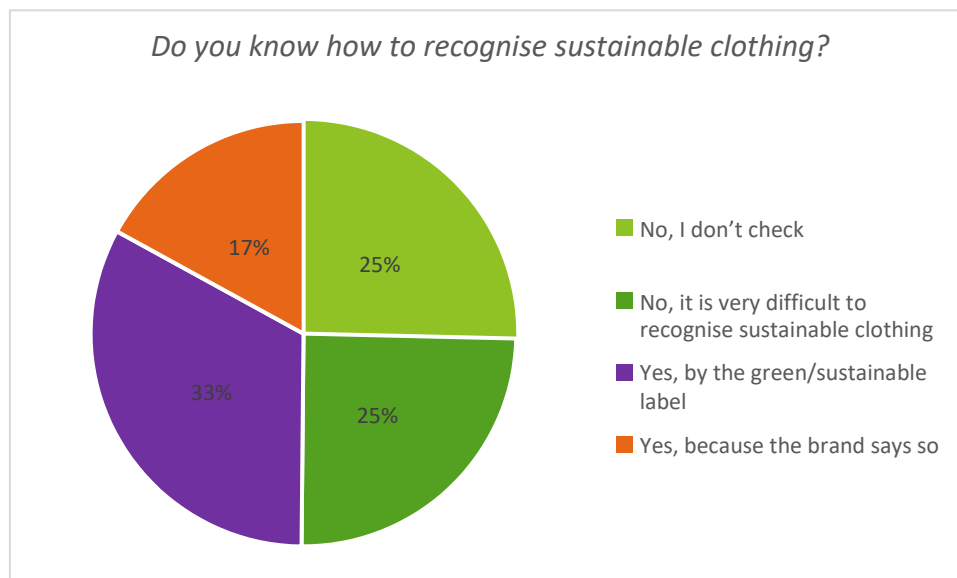


**FIGURE 23: SURVEY RESULTS: ECONOMIC IMPACT**

More than half of the consumers believe that recycling clothes saves money either for them as individual or for society in general (meaning both the purchase and the production of recycled clothes). An additional 18% believes that it only saves money if you recycle clothes yourself, meaning they recycle their own clothes or extend the lifespan or purchase recycled clothes. Finally, this means that 28% of the participants believe that recycling clothes is not financially beneficial for themselves or their environment. Shore (1995) states that recycling clothes saves money and an additional income can be made from recycled textiles. As an individual recycling clothes or extending the lifespan can be beneficial for multiple reasons. Firstly, purchasing at second hand or thrift stores often cost less than buying at a store with regular clothes. Secondly extending the lifespan of clothes by having them repaired by a tailor or repair store, or making a new product from the old clothes, will reduce the need for new clothes and purchasing less clothes will save money. Contradictory to this, the purchase of clothes from recycled materials is not necessarily less expensive. Taking the company of 'loop a life' as an example: this company produces and sells sustainable clothes. However, the clothes they make are in a higher price range than the average everyday clothing. In a webinar, Ellen Mensink (founder of loop a life) explained that *"the reason why their clothing is still more expensive is because they can only collect and produce the clothing on a small scale"* (Mensink, 2020). Other clothing from recycled materials could face the same difficulties. This statement was supported by Peter Bos, who explained in an interview with the researcher, that the only way recycled clothes can become cheaper, is when they are produced on a large scale. This contradicts the statement of Shore, however the statement cannot be totally discarded because the use of raw materials still makes the production of regular clothing more expansive than that of recycled clothing (Rogers, 2019). Recycling clothes creates more jobs than regular clothes, which means it is also more labor intensive. There is no clear answer to the economic benefits of recycling clothes for the individual and the world, however what can be suggested is that the use of recycled materials in clothes will save money in the production process and eventually in the purchasing aspect, when the use of recycled materials for clothing can be upscaled.

For these three questions the awareness level of the consumer was determined on the social, economic and environmental aspect of recycling textiles. Question 8 from the survey shows the

awareness level of consumers when it comes to purchasing sustainable textiles. The results are shown in figure 24.



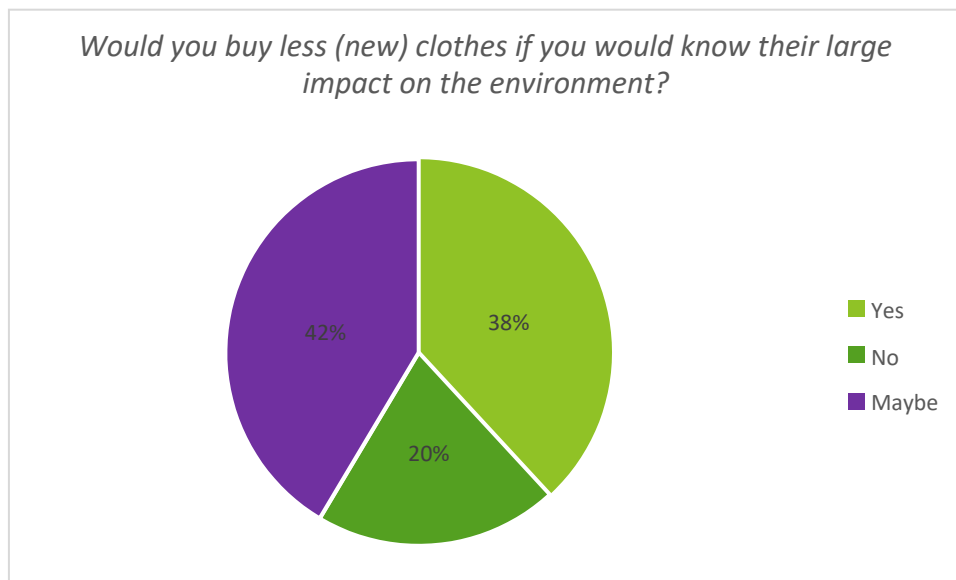
**FIGURE 24: SURVEY RESULTS: RECOGNISING SUSTAINABLE CLOTHING**

One quarter of consumers explain that when they buy clothes, they do not check on the sustainability of their clothing. One third believes it is difficult to recognise sustainable clothing and the remaining half believes that sustainable clothing can be recognised either by a green sustainability label or because the brand has labelled the clothing as sustainable. From the literature review (Chen & Bruns, 2006), it can be concluded that many labels on clothing are used to promote products that are supposed to have a minimal impact on the environment, however these terms are loosely described and the actual impact on the environment remains questionable. Opposed to the green energy labels on electric appliances and the biological labels on food, there is no universal or European green label for textiles. There is a Dutch label for all product environmentally friendly (including textiles). This is the EKO label, all products with this label are produced according to the European rules for ecological agriculture (EKO keurmerk, 2020). This means that 33% of the consumers believe that they can recognise sustainable clothing by a label that does not exist or is not clear enough in what accounts for a green label. There are however plans to create such a label stated in the Dutch policy program for circular textile. The other 17% recognises sustainability by the label that has been put on by the brand which, according to Corcione & Adryan (2020) remains questionable.

The interview with Bos and Mulder made clear that there are people willing to invest in sustainable clothing but that they should be made aware of the effects of fast fashion and the textile industry before they change their behaviour accordingly. According to Tsjora Bos, *“People close themselves and do not want to think about the consequences of their purchase, when you buy clothes you do not directly see where it comes from and what process it has to go too to get there, and with the purchase you do not notice that you sustain these negative effects”* (interview with T. Bos & M. Mulder from Groningen draagt duurzaam, 2020). Mulder and Bos have done field research and gathered from conversations with people on the street that once you inform people on the effects of the fashion industry, they are eager to change their behaviour and interested in the options you have to offer (Interview with T. Bos & M. Mulder from Groningen draagt duurzaam).

*“When people are aware of the impact of their buying behaviour and feel like they have to and can make a difference, it will most likely increase sustainable purchasing”* (Interview with T. Bos & M. Mulder from Groningen draagt duurzaam). The survey also researched the knowledge and awareness of consumers by asking if they would change their purchasing behaviour if they were aware of the

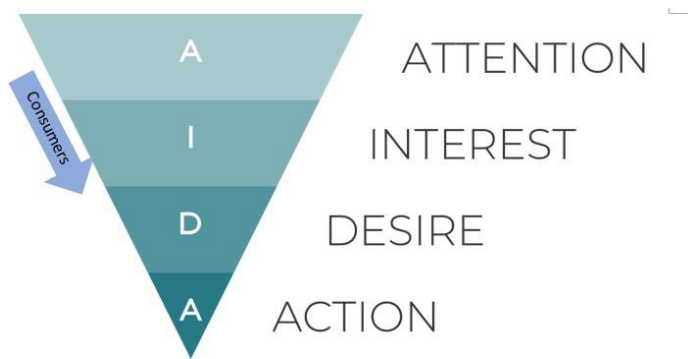
complete impact on the environment. The results are shown in figure 25.



**FIGURE 25: SURVEY RESULTS: AWARENESS LEVEL OF CONSUMERS**

The number of participants that stated that they are not sure whether their buying behaviour would change if they were aware of the environmental impact is 42%. From the remaining 58% only 20% stated that they would not change their buying behaviour if they were aware of the impacts. This means that 38% or more would likely change their behaviour if the impacts on the environment were communicated more to consumers to make them more aware of the impact. This stresses the importance of knowledge. The reason for purchasing sustainable clothes could also be unrelated to the environmental impact and might be because the individual values the economic or social impact of recycling clothes.

Awareness level of consumers is important to determine because it explains which actions need to be taken by organisations, governments and initiatives to move consumers from attention to action on the AIDA scale. The existing initiatives show that the consumers are gaining awareness on the benefits of recycling and the impact on the environment and social and economic benefits. Figures 21 till 24 show that there is some knowledge and awareness on the impact of the clothing industry and fast fashion however, the concept of greenwashing also shows the knowledge of consumers is not always complete. Some consumers are already past the attention point; however, some have no knowledge or awareness on the impact of their purchasing behaviour. There are already rules and regulations set up by the national and local governments to decrease the textile waste (such as the placement of textile containers in most municipalities), together with the recycling initiatives, it suggests a growing interest in reducing textile waste. What is needed now is to create a desire for more sustainable textiles and less textile waste. This will ultimately lead to actions from companies and consumers to change their purchasing behaviour to a more circular one. The steps consumers have taken, and the steps consumers need to take are visualized in figure 26, with an arrow. How a desire can be created and how interest can grow in depended on internal and external factors that determine if consumers will purchase sustainable. This is further discussed in chapter 4.4.



**FIGURE 26: CONSUMERS ON THE AIDA SCALE** (adapted from corporate finance institute, 2020)

## 4.4 Perception level of consumers

The perception level of the consumers is influenced by internal and external factors (Goossens, 2019). The internal factors that were analysed are; personal preference, brand loyalty, knowledge, feeling of obligation, and feeling of individual power. The external factors are Price, institutional factors, and social environment. These factors were analysed by means of interviews and surveys to define the opinions from the experts as well as the actual factors customers have stated to be important. Additionally, the perception of consumers is determined by the 5 perceived customer value pillars (shown in figure 5).

### 4.4.1 Perceived consumer values

The perceived consumer values were based on the 5 pillars mentioned in figure 5 which are here enlisted to facilitate the reading. These five pillars were taken from the framework designed by Colgate & Smith, 2007.

- a) Functional value → usefulness of the product.
- b) Social value → advantages of a product in terms of image and correlation to a socio-cultural group.
- c) Emotional value → satisfy the feelings or affective states of a consumer.
- d) Epistemic value → provide novelty or satisfy the need of knowledge of the customer.
- e) Conditional value → value depending on the specific (social/physical) conditions of the customer.

As presented in section 2, conditional value is closely related to the external factors of a consumer that can play a role and are for that reason not included in this section of the findings. Because there is no knowledge gain of a consumer with the purchase of textile, this is also excluded from this section. The knowledge of consumers is covered in the awareness level in section 4.3 and therefore not included as epistemic value. Question 4 of the survey covers four reasons why consumers would purchase new clothes, these are related to functional value, social value, emotional value and conditional value (Colgate & Smith, 2007). The results are provided in figure 27.

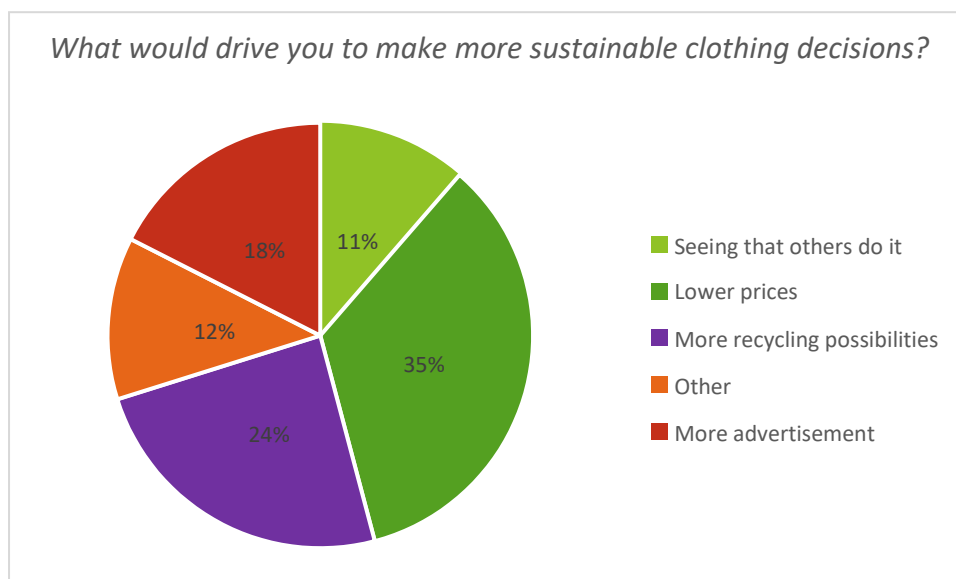




**FIGURE 27: SURVEY RESULTS: PURCHASING DECISIONS**

The results of question 4 show that almost half of the consumer makes the action to purchasing new clothes for the reason that they need new clothes. This means that they have a specific item of clothing that they need for an occasion or because they have a specific item that is worn out and needs to be replaced. The need for new clothing (to replace old or outgrown clothes) is related to the functional value, which means functional value is seen as most important in the purchase of clothing. The second most prominent values when purchasing clothes are emotional and epistemic value. 23% of consumer purchase new clothes because they are bored of what they have currently, this means they buy clothes for novelty or to satisfy the needs of the consumer. This is also supported by the fact that 14% of the consumers purchases clothes because buying new clothes gives them a good feeling, which is also related to the emotional value. The social value plays some role in the purchasing decision of consumer but not significantly. Only 16% of consumers purchase clothing because they want to wear the latest trends.

The experts interviewed also provided their opinion on what they expected to be the most important value when purchasing clothes. Mayte Leinenga stated that emotional and functional value would be most important because people buy clothes because they need them for comfort and warmth but it might also be the case that people are reluctant to throw away clothes, even if they don't wear them anymore, because there are memories connected to the clothes. Fimke Hijlkema stated that, in her opinion, emotional and environmental value would be most important. For both Mulder and Bos, the emotional value and the environmental aspect were important. They had the need to become more environmentally friendly in their clothing choices, which is also related to the epistemic value. Additionally, they mentioned that they get a good feeling from buying clothes second hand because it is more unique and will fit their unique style. Peter Bos explained that *"people buy their clothes on impulse, on emotion and because it makes them happy. There is a need for more clothes which is stimulated by peer pressure to wear the latest trends"* (interview with P. Bos, 2020). The reason why people buy new clothes is related to their values, these values can also influence the consumer to actually buy sustainable clothing. Going from the intention to the action of recycling and buying more sustainable or moving down on the AIDA scale can be influenced by many factors. Some of these factors are mentioned in figure 28.



**FIGURE 28: SURVEY RESULTS: DRIVERS FOR SUSTAINABLE CLOTHING**

Question 13 in figure 28 provides an overview of which values are most important for consumers when making more sustainable fashion choices. The most selected choice in figure 28 is lower prices. This is one of the most prominent external factors, which will be handled in section 4.4.3, however this is also related to conditional values since the amount of money people spend on clothing is depended on their income and other outside influences which are specific social values that differ per individual. Other reasons for buying more sustainable clothing is more options. More options would mean other opportunities to purchase recycled clothing, this could be a recycled line at the regular clothing store, different price ranges, different designs of clothing (such as t-shirts and jeans), or this could be a new brand/store that sells only recycled clothes. The availability of the options and the awareness of the consumers on these options is discussed in chapter 4.2 and stated by Bos and Mulder. the recycling options are only used when consumers do not have to change their rituals and do not have to put in extra effort to recycle their clothes. More advertisement and seeing other people do it, which takes up 29%, is related to the social values.

#### 4.4.2 Internal factors

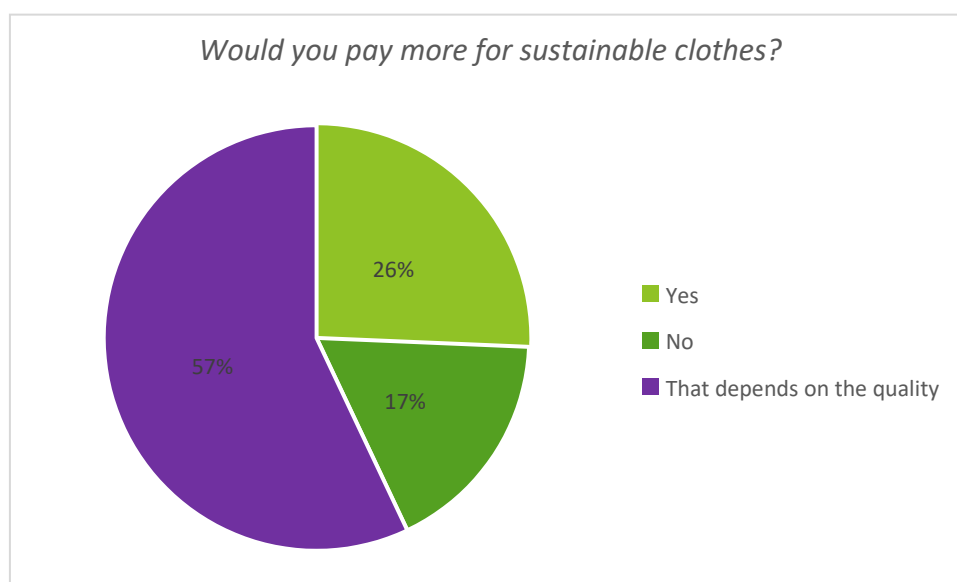
There are many internal factors that influence the consumers decision, however this research will mainly focus on the factors determined in the literature review. These internal factors are; personal preference, brand loyalty, knowledge, feeling of obligation, feeling of individual power. One of the internal factors that was mentioned often in the interviews was knowledge. Several interviewees stressed the important of knowledge of consumers as well as the awareness of consumers which relates to knowledge and the feeling of obligation and individual power. Knowledge can be compared to the awareness level of the consumers which is discussed in chapter 4.3. Knowledge as internal factor was also mentioned by several interviewees. Tjsora Bos and Marije Mulder mentioned that when they were interviewing people for their research, they noticed that once they started to explain the impact of the 'fast fashion' system, people immediately reacted that knowing this would change their future buying behaviour. Carol Mungo explained that knowledge is important in such a way that information should be provided by the companies and that they should inform them and support the transition towards sustainable fashion without shaming those who are not buying sustainable yet.

Mayte Leinenga stated that there are a lot of factors that influence the consumer behaviour: *"I think it has a lot to do with rituals and habits, I do not think it is a very rational action to shop. It depends on their upbringing, economic status, social position, fashion clothing involvement and also human-nature relation"* (Leinenga & Hijlkema, Municipality Oostellingswerf, 2020). The interview with Tsjora

Bos and Marije Mulder also noted that especially young people have a certain style that comes with certain brands which influences their buying behaviour. They believe that second hand or sustainable clothing does not fit with their style. This is related to the internal factors of personal preference and brand loyalty.

#### 4.4.3 External factors

The external factors that have been determined in the literature review are; price, institutional factors and the social environment. There are more external factors that influence the consumer decision, however for this research the factors were limited to the three factors mentioned above. The institutional factors refer to the availability and means of the consumers and the social environment is related to the influence of others in the direct environment of the consumers, this can also relate to the geographical location of the consumer. To determine if price is an important factor, one of the survey questions asked consumers if they would pay more for sustainable clothing. The results can be seen in figure 29.



**FIGURE 29: SURVEY RESULTS: PURCHASING PRICE**

More than half of the consumers answered that they would pay more, depending on the quality of the product. It can be assumed that they are willing to pay more for sustainable clothing if the quality is equal to or better than textiles made from virgin material. Of all participants 17% stated that they are not willing to pay more for sustainable clothing, even if the quality is similar. The remaining 26% stated that they would pay more for sustainable clothing and does not concern themselves about the quality much. Figure 23 already shows that the majority of the consumers believes that recycling clothes saves money. With this knowledge and the willingness to pay more for sustainable clothing, there should be an increase in recycling clothing and purchase of sustainable clothing and textiles.

In addition to the survey results, several interviewees also explained what they believe to be the most influential external factor when purchasing sustainable clothing. In the interview with the municipality of Oostellingswerf, Fimke Hijlkema stated that income is an important external factor for consumers, which can be linked to the price of a product and the institutional factors (the availability and means of the consumers and the social environment and their geographical location). Marije Mulder and Tsjora Bos also mentioned in their interview that they believe price is an important factor, especially for people with lower income. Next to that they also stated that to increase the purchase of sustainable or second-hand clothing, it has to look attractive. *"Just like regular clothing it should be on trend, affordable, available in familiar stores and it should be advertised by people with great influence"* (Bos

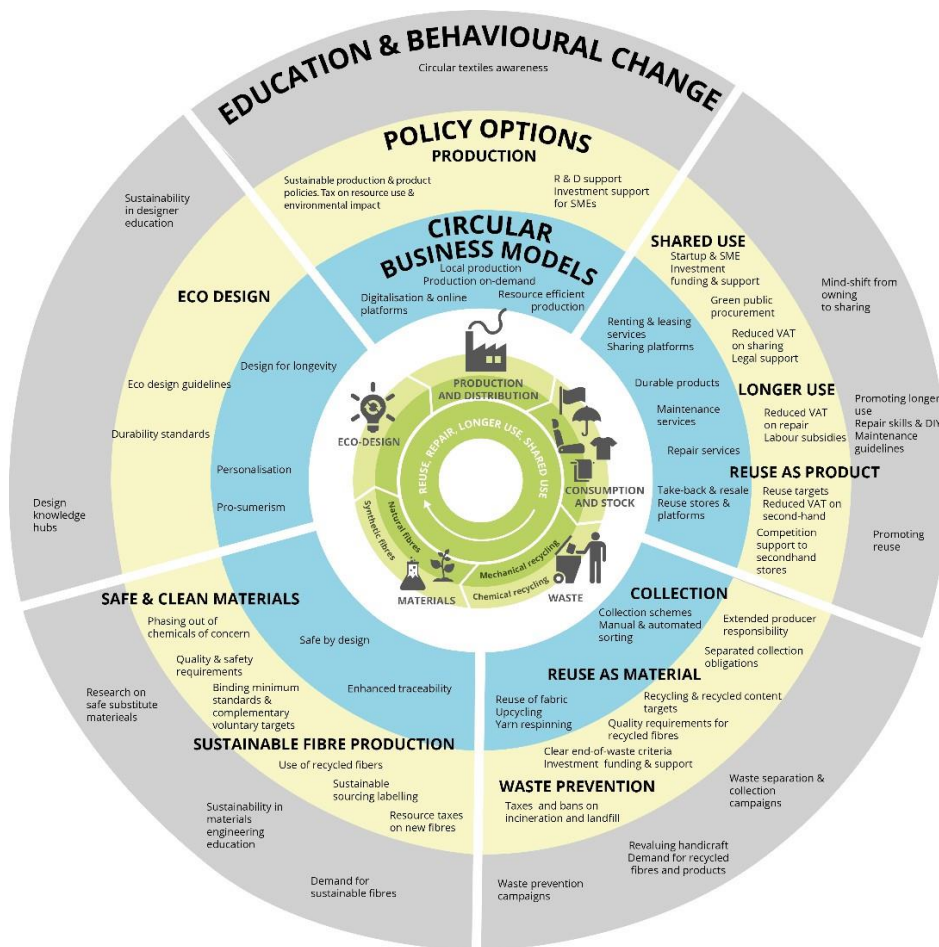
& Mulder, 2020). Making clothing more attractive relates to the institutional factors of people because it should be easier to purchase, and it is related to the social environment factor because clothing would be more attractive if people with a great network and influence advertise the clothing. Peter Bos also stated the importance of social environment because he mentioned that advertisement plays an important role with sustainable clothing. *“As long as there is no demand from consumers, there will be little to no supply from producers”* (Bos P., 2020). Interviewees Wouter Reedijk from Sympany and Carol Mungo, who has done her thesis research on a similar topic, also stated the importance of price. Mungo stated that when it comes to external factors the principle of the intention gap should be included. *“the intention gap is in this case, a group of people that want to change to sustainable clothes and want to adapt to help the climate, but it is very difficult fill the intention gap because of so many factors including availability”*. One way to increase the purchase and sustainable use of clothes is to fill this intention gap by creating more availability for people to purchase sustainable clothes.

## 4.5 Reaching circular textile goals through consumers

This section will explain the way the textile initiatives selected will influence the circular textile economy and what the influence of consumers is on supporting and expanding these initiatives. This chapter relates to the research sub-question *“How can consumers help realise the circular textile goals?”*. To answer this question, the textile goals of the Netherlands and the European union must be defined. Secondly the way these textile initiatives can be used to reach consumers and how they will contribute to the goals through these methods is determined.

### 4.5.1 Circular textile goals

As mentioned in the literature review, the European union has set up the circular economy package in 2015 which includes a section on circular economy in the textile industry. The main goal in this program is *“Reducing the environmental and climate pressures and impacts from textiles production and consumption, while maintaining economic and social benefits”* (European union, 2019). The goals of the program are divided into educational and behaviour change, policy option and circular business models. These goals and action the European union wants to take are represented in figure 30. Another important incentive set by the European commission is that the incineration of unsold sustainable material will be prohibited.



**FIGURE 30: CIRCULAR TEXTILE GOALS (EUROPEAN UNION, 2020)**

In addition to the European goals there has been a circular textile policy program set up by the Dutch government in 2020. The goal is to reduce the environmental footprint by 50%. The Dutch government wants to achieve this in the production, purchase, usage and disposal phase. For the purpose of this research the purchase and disposal phase are most important because the consumer behaviour is more related to the purchase and disposal phase than the production phase and the usage phase has been left out of this research because of the time limit of this report. Regarding the fast fashion and the awareness of consumers the Dutch government will invest in consumer aimed communication campaigns and the possibilities for behaviour interventions will be researched.

In the disposal phase the goals are based on that of the European Union which is that by 2025 30% of the total materials and products that are on the Dutch market will be recycled for new textile materials, only when reuse of the materials is no longer possible. In 2030 the goal will be increased to 50% (Rijksoverheid, 2020). The system of collection through textile containers is the most elaborated system set up in the Netherlands, but it can still be improved. The Dutch government wants to introduce the extended producer responsibility system to ensure that returned items are well taken care of. The producer responsibility has already been mentioned by the CPB as one of the possible solutions to reduce the negative effect of the fashion industry. Another option from the CPB is to differentiate in costs per material where synthetic materials will be more expensive than natural, less harming or recycled materials. The last suggestion from the CPB was for the government to increase collection methods which has been mentioned in the circular textile policy program as well.

#### 4.5.2 Reaching consumers

The different recycling initiatives are mentioned in chapter 4.2. The textile container system has

been mentioned by the CPB and the Dutch government policy program as a system that should have more support and can be structured in a larger and better way. The interviewees such as Wouter Reedijk, Luuk Duursma, Peter Bos and Fimke Hijlkema have stated that they believe from governmental and organisational perspective, this system could lead to more collection and recycling when there is more communication between stakeholders and clear rules and regulations from local and national government. This system can contribute to the circular goals is to create more communication and control on the system and inform consumers on the benefits of handing in their textiles in the containers. Another way to contribute to the circular goals is to increase the amount of collected clothes that is recycled. However, since this requires a more profitable recycling system and it is not influenced directly by consumers, it is not discussed in this research. Regarding other initiatives there is less influence from the government and organisations, but it more depended on the action of consumers and clothing businesses.

Simply put, the consumers can reach the textile goals determined in chapter 4.5.1 by using the textile initiatives mentioned in chapter 4.2. There are some negative consequences to using the textile recycling initiatives such as the additional cost of transfer and labour in producing recycled clothing, the additional cost of transfer at the 'Vinted' services, and the process of collecting and sorting textiles. The positive effects do outweigh the negative consequences and each of the initiatives contributes to the circular textile goals. The only recycling initiatives that has the potential to keep the fast fashion model in place are services like Vinted and the collection trough fashion stores. Vinted and United wardrobe reward the consumer with money for selling their clothes. With this the temptation to buy new (virgin) clothing with the money made from selling old clothing is increased. If consumers use this money for that specific purpose depends on their motivation to sell their clothes and the values that determines when and why they buy new clothing. This can be seen in chapter 4.4. Nevertheless, this method does reduce the amount of textile waste that ends up with the residual waste because the textiles are resold. The way in which collection through stores is not contributing to circular textile goals is that handing clothing in at the counter of a clothing store increase the temptation to look around and purchase new (virgin) clothing. The discount the consumer receives also promote purchasing at these stores. This cannot be avoided since fashion stores are depended on profits and purchases to survive. This method would be a better contribution to circular textile goals if consumer would purchase sustainable clothing with their discount or the money, they received from selling their clothes.

Repairing clothes is for the most part dependent on the consumer rather than clothing companies or government involvement. There was some involved in the form of the 'waardeer het, repareer het' campaigns, but other than that it is depended on the consumers and their willingness to repair clothing rather than purchasing new clothing. Consumers contribute to the textile goals by extending the lifespan of their clothing. Whether or not they are willing to do that also depends on external and internal factors mentioned in chapter 4.4. the government and businesses can increase the use of tailors and repair stores by making the purchase of new clothes less attractive than repairing. Since price plays an important role for a large amount of the consumers, reducing the repairing costs and increasing the costs of new clothing has the possibility to create this effect.

The consumer can contribute to the CE goals by handing in their textiles and shopping at thrift and second-hand stores. To increase the popularity of thrift and second hand stores the image of these stores needs to change. In the interview Bos and Mulder stated that they believe the reason why thrift and vintage stores are not more popular is because of the appearance of the stores. Tsjora Bos stated that *"the stores look outdated and a bit dusty, because the stores do not look like the standard fashion store and because it takes effort to find something a consumer would like and is in their size, they are less likely to look for clothing there"*. The reason why the stores are having less appeal than regular fashion stores is according to Bos and Mulder because they do not have the time and capacity to make the clothes and the store look more attractive. The growing popularity of vintage clothing and the

growing awareness of the negative impacts of the fashion industry does support the purchase of second-hand clothing. Consumers can be influenced with buying more second-hand clothing when the right information is provided to them on the effects of the fast fashion business model. They can influence the purchase of second-hand clothes by buying more second-hand clothes and allowing the thrift stores to have more capacity and money to make the stores look more attractive for a larger public.

Downcycling can be done by consumers but only on a small scale. Consumers could downcycle by making other products from their old textiles such as wash clothes. The campaign 'waardeer het, repareer het' does promote these types of downcycling by consumers. The method in which consumers can influence downcycling inside and outside of the textile industry on a larger scale is by placing their textile waste in the textile containers. With more textiles handed in there is a larger market for downcycling. Secondly, they could influence downcycling by purchasing textiles that are from natural and mostly the same materials. Textiles with natural materials are easier to fiberize and recycle.



## 5 Conclusion

This chapter will highlight the most important findings in this research and will also provide an answer to the main question given in this research: *How can the consumer contribute to circular textile industry and which initiatives and projects reach the customer the best?* To explain this, the circular textile industry and the different initiatives were defined and described, and the perception and awareness level of consumers was measured to determine how willing consumers are to make use of the different initiatives.

Circular textile industry is determined by the EU definition as going from a ‘take-make-waste’ process to a circular one and reuse, reduce and recycle the materials used in the process. The goal of the circular textile industry according to the Ellen McArthur foundation is to reduce the amount of textile waste that ends up on landfills or is incinerated.

In addition to this, the circular textile industry can be defined by the processes and policies that are in place in the Netherlands. There is no Dutch environmental label that defines sustainable textiles but there is a system in place that is used to reduce the amount of textile waste. Around 10 organisations for textile collection work together with municipalities to place textile containers throughout the country and collect and sort these textiles to resell, recycle or dispose of. The most common method of recycling in the Netherlands is downcycling. Only 40% of all textiles waste is handed in through textile containers (van der Wal & Verrips, 2019). The CPB has set up a report with recommendation for municipalities to reduce textile waste and recycle which is based on the circular economy package from the European union. Additionally, the Dutch government set up a policy program to change the ‘fast fashion’ business model. This model creates low production and purchasing costs with low quality and lower life expectancy. The advertisement of new clothes and competition between fashion brands contributes to the increasing percentage of people that throw away their clothes for reasons other than functionality. The most prominent suggestion for the government is to create and extended producer responsibility. This was mentioned by the CPB, the policy program and by interviewees Luuk Duursma and Wouter Reedijk. Several interviewees, such as Peter Bos and Fimke Hijlkema have suggested that communication is key to creating a production process that decreases the number of stakeholders. A more connected and controllable process, can reduce costs and make sustainable clothing and recycling simpler.

The different textile initiatives are mentioned in section 4.2 and are visualized below with the most important findings from each initiative:

1. Collection and recycling through textile containers:  
This is the most common method of textile collection and recycling in the Netherlands. The government is trying to promote this and work with municipalities to increase the use of this service. This method uses more steps on the circular flow such as redistributing and recycling. Of all participants 37% reported using this service for their textile waste.
2. Reselling clothes online:  
This method is increasing in popularity especially amongst younger people. It allows users to redistribute their clothes to others and make some profit from it. The downside of this method is that clothing is only resold and profit made allows people to buy new clothes and keep the ‘fast fashion’ business model running. Around 13 percent of the survey participants reported using this method.

3. Collecting clothes through stores:

With collection through stores the clothes are redistributed, remanufactured and recycled. The downside of this process is that there is no control on the process after collection. Only 12 percent reported using this method and the most likely reason for this is because it requires effort from the consumer. Peter Bos has mentioned in the interview that the only way a recycling method will work is when there is little effort required from the consumer.

4. Repairing clothes:

Repairing clothes is a more traditional method and allows the user to extend the lifespan of their clothing. This is one of the lower methods on the circular flow model with only refurbishing the clothing. Because 57% of the consumers stated that they throw away their clothes when there is something torn or broken, repairing clothes will presumably decrease the textile waste and the fast and frequent purchasing of new clothes. With 18% this method is reported to be the second most popular method of textile recycling.

5. Handing in clothes to thrift, second-hand and vintage stores:

Shopping at second hand and thrift stores as well as handing in clothes there extends the lifespan of clothing and is on the first section of the circular flow model, as redistribution. Vintage clothing is becoming more popular and 61% of the survey participants reported that they buy second-hand clothing. Of this 61 percent, 10 percent stated that they buy the majority of their clothing second-hand.

6. Using the waste materials for downcycling:

Downcycling is done through the other initiatives such as textile containers and handing in clothes in stores, as well as on consumer level. This method is reported to be used by 12 percent of consumers and is high on the circular flow model. According to the CPB downcycling is the most common method of recycling for textiles in the Netherlands (van der Wal & Verrips, 2019).

The awareness level of consumers is determined by their knowledge on the impact of textile waste. From the results presented in chapter 4.3 can be concluded that consumers have reported to be aware of the positive effect on environment, economic and social aspects of sustainable textile behaviour. Only 25% stated they do not check on sustainability and another 25% states that it is difficult to recognise sustainable clothing. This explains that even though they are aware, it does not necessarily affect their behaviour. According to research there are many businesses that perceive to be sustainable with certain labels, but their actual sustainability level remains questionable (Corcione & Adryan, 2020). There is a suggestion in the Dutch policy program to create a sustainability label to make consumers more aware. Interviewees Bos and Mulder have stated that people are already more willing to buy sustainable if they are aware of the impact and the survey concluded that only 20% stated that they will not change their purchasing behaviour when they are aware of the negative impacts.

The contradicting aspect in the survey results is that most participants mentioned they would change their behaviour if they have more knowledge and awareness, yet from the other questions it became clear that consumers already have this knowledge or have gained this knowledge during the process of taking the survey. The knowledge they have gained would only be related to the environmental, social and economic impact of recycling clothes and not detailed knowledge on brands, chains or specific products. This could be related to the ADIA model which suggests that there are still the steps to go through before a person takes action. The most likely reason why the results of the survey are contradicting is that other research has determined that actual value differs from perceived value and people have the intention to buy more sustainable, but during the moment of purchase are more inclined to go towards price and products that meet their immediate needs (Mungo, Sichiweza, Kariuki, & Zhang, 2017).

In addition to the awareness level of consumers, the perceived consumer value plays a role in consumer behaviour. The perceived value is dependent on internal and external factors and can be divided into function, social, emotional, epistemic and conditional value.

From the interviews and the survey, can be concluded that price is the most important external factor, this is also a conditional value because it relates to how much a consumer has to spend. One of the most important internal values is knowledge which related back to the awareness level of consumers. The most important value stated by consumers was functional value. Other important factors were emotional and epistemic value because consumers also stated they buy new clothes when they are bored with what they have or because purchasing new clothing gives a good feeling. Each value plays a role in the purchasing decision and which value plays the most important role differs per individual.

To answer the main question of this report. The conclusion is that reaching a circular textile industry comes from different aspects in the production, use and disposal phase and is dependent on the recycling of pre- and post-consumer textile waste. The consumer can contribute to the circular textile industry by collecting their textile to be recycled or resold and thinking about sustainable purchases and extending the lifespan of clothing. The rules and regulations set up by national and local governments make it easier for the consumers to contribute. What can be seen in chapter 4 is that the policies and regulations mostly apply for businesses selling and producing clothing rather than obligations for consumers. Regarding the consumer the main point is to inform and communicate the goals of the Dutch government to them, increasing the awareness and knowledge.

Consumers can use recycling and collection initiatives to contribute to circular textile goals. The survey and the report from the CPB conclude that the textile containers are the most common method of textile collection in the Netherlands. This method allows the extension of the lifespan and recycling. It also includes other textile initiatives mentioned because most clothing resold goes to thrift or second hand-stores and recycled textiles are often downcycled. The textile containers are easy to use and available to anyone. Another positive aspect of the textile containers is that there are more policies and regulation in place or created to make the collection of textiles easier (this can be seen in the Dutch policy program for textile collection). It takes little effort and no costs for the consumer. The way this method can help increase their collection and reduce waste is partially done through these new policies and regulations and partially through more communication and information sharing. The survey results show that people are more likely to change their behaviour if they are aware of the consequences of textile waste, however awareness alone will not spark behavioural change in all consumers.

The other textile initiative mentioned also contribute to less textile waste which means that even if they are not the most promising solution, they should still be supported. Collection clothes through stores or selling clothes online both requires more effort from the consumer but also offers a reward for their efforts in the form of a discount for the stores or payment from selling their clothes. Whether people are willing to take the effort and how much they value the reward is depended on their individual preferences and their values. These methods could reach consumers in a more active way through advertisement or different types of rewards since the survey results stated that more advertisement and seeing others recycle would drive around 1/3 of the consumers to make more sustainable clothing decisions. Repairing clothes offers an extended lifespan and is reported to be the second most used method. Functional value turns out to be the most influential value based on the results of the survey and prior research. The Dutch government and other organisations have been promoting repairing clothes by campaigns such as 'waardeer het, repareer het'. There is enough information available on municipal websites and websites of the textile collection organisations on the possibilities for repairing clothes.

## 6 Recommendations

The most realisable possibilities will be presented here. Secondly, possibilities for future research will be discussed. Recycling initiatives that reach the consumer best and how each initiative contributes to the circular textile goals in circular economy is already explained in chapter 4.5 and chapter 5. Other possibilities for recycling textile waste outside of the initiatives and other research possibilities to research the possibilities for a more circular textile industry in the Netherlands are presented here.

### 6.1 Recommendations for practitioners

The best option for textile recycling is to upscale and structure the processes already available. According to Luuk Duursma, the larger the scale of the process, the cheaper it is to produce. The best available option in the Netherlands is the textile container because it is stated to be used most by consumers and has support of and communication with national and local governments.

Recommendations for making more use of this method are based on the information found in the literature review, the interviews and the survey results. Introducing extended producer responsibility can be implemented and enforced by the government but will influence the post-consumer waste because it will force businesses to promote the recycling of their textiles, offering more possibilities for consumers. In the survey, participants answered what their biggest drivers would be to make more sustainable textile decisions. This is represented in figure 28. The results of this figure show that price, advertisement, more options and seeing others do it will increase their motivation. Figure 29 in the report shows that 17% of the participants will not pay more for sustainable clothing and that from the remainder, 57% stated that it is depended on the quality. This supports the statement that price is one of the most important factors. More information provided to the consumers on the effects of textile waste would most likely increase the textile collection. This can be done with campaigns such as the one from SIRE but also municipal projects focussing on textile recycling should increase the knowledge and awareness of consumers.

### 6.2 Recommendations for future research

This research has focussed mostly on the consumer influence on the circular textile industry and naturally, the post-consumer aspect of the process. Other research options could include pre-consumer waste. Pre-consumer waste would be targeted by government and directed towards the production aspect of the textile process. Another future research option would be to target the consumers in the usage period of clothing and provide them with information on the amount of resources and materials they use and how the lifespan of clothes can be extended.

More elaborate research can be done on all the factors influencing consumer behaviour. The factors of consumer behaviour are more elaborate than the 5 values and factors mentioned in this report. This was stated by Mayte Leinenga (in the interview). Analysing each aspect that influences consumer behaviour would allow research to determine more accurately what factors are most important and what can be influenced to aspire change in consumer behaviour. Another way to research consumer behaviour is to tackle the contradicting aspects in this research. The research shows that consumers lack awareness in the impact that 'fast fashion' has on the environment and other social and economic aspects, however the results of the survey shows that consumer have a certain amount of knowledge on the impact of their purchasing behaviour. The difference between consumers with the intent to buy more sustainable and those that actually buy sustainable, could be research through experiments and surveys. This would provide a better overview on the percentage of the consumer claim to make sustainable choices but are actually more influenced by other factors.

Another future research possibility would be to research the effect of promotion. The intent and actual purchasing behaviour before and after promotion could be researched. This would determine

if promotion will increase the willingness of consumer to buy more sustainable.

### 6.3 Personal elaborate research

Due to the limitations of the research, such as the COVID19 situation and the time limit, there were some possibilities to elaborate the research that the researcher could not execute. In this section the possibilities considered by the researcher are mentioned.

Firstly the research would be more elaborate if interviews were held with people from different sectors. What would have been a good elaboration on the research is to interview people involved in initiatives apart from the textile containers, such as an employee from *Vinted* or a person working at a second-hand or thrift store. One of the reasons why this was not executed was to time restrictions. Another reason is that the researcher had no connections to these individuals and reaching out online did not reach any response.

Another elaboration on the research is performing observations. Observations could be done by including the individuals, such as handing out promotion material on the effects of 'fast fashion' and determine how many people throw away their clothes. Another observations could have been by talking to people on the street and informing them on textile recycling and afterwards checking if the purchase in second-hand stores has remained the same or gone up. This would have increased the reliability of the survey. The main reason why observations were not done is because of the COVID19 situation, most of the stores were temporarily closed and there were less people outside. Another reason for not performing observations was time limit.

Lastly an elaboration on the survey could have created a better overview of the current situation and actual consumer behaviour. Asking more questions on how people handle their clothes, what drives them to make other decisions and sketching situations for the participants to test how they would react. The main reason why this was not done is because a lengthy survey is less likely to be completely finished by participants, which would have created a lower response rate. Next to this more answers would have also create more data to translate and due to time limits the researcher was restricted to a limited number of questions.

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# Appendices

## Appendix A: Consent form interviews

### Master thesis circular textile industry (Luna Weewer)

#### Consent to take part in research study interview

- I, ....., voluntarily agree to participate in this research study interview.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I can withdraw permission to use data from my interview after it, in which case the material will be deleted.
- I have had the purpose and nature of the study explained to me and I have had the opportunity to ask questions about the study.
- I agree to my interview being audio-recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that in any report on the results of this research my identity will remain anonymous if preferred to be so. This will be done by not explicitly mentioning my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.
- I understand that I am entitled to access the information I have provided after the interview.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information. Here as follow the names of the people involved in this research who guarantee the agreed use of this consent and the answers provided during the interview.

**Researchers: Luna Weewer**

**Project Supervisor: Laura Franco Garcia, Victoria Daskalova**

**Participant:**

**Signature of participant: .....**

**Date:**

## Appendix B: Opening statement online survey

This is a survey for a thesis to the master environmental and energy management at the university of Twente. You can only participate if you are over 16, live or have lived (minimum 6 months) in the Netherlands and you have bought or recycled clothes in the last 6 months. The aim of this research is to gain insight in consumer knowledge, perception, perceived value and behaviour of consumers in the textile and clothing industry in the northern part of the Netherlands. The survey will take a maximum of 5 minutes and will ask questions regarding sustainable fashion, circular textile industry and consumer behaviour.

As participant you are requested to answer honestly, and your answers will be handled anonymously. Participation in this survey will help gain more insight in how the consumer side of the textile industry can improve to become more circular and possibly reduce textile waste.

There is always the possibility to stop this survey and by emailing me you have the possibility to withdraw the information you have provided for this research. The results of the research can be requested by email; however, the results are anonymous to avoid sharing personal information of other participants and organisations taking part in this research.

To continue with this survey questions, please click on the button below. **Note that, by clicking on this button, you are considered to provide the research with your informed consent.** If you have any questions, please contact me via email: l.weewer@student.utwente.nl. Thank you in advance!

## Appendix C: Interviewees

Interviewee	Position/Company	Relevance for the research
Tsjora Bos & Marije Mulder	Groningen Draagt duurzaam	This Facebook group is from and for people in the province of Groningen who are aiming to become more sustainable in their clothing behaviour. This is a good way of viewing the consumer side of sustainable fashion.
Carol Mungo	M-eem Alumni/Hans Seidel foundation	She has done here thesis and case study on sustainable fashion and can provide some insights on the struggles she experienced at that point and how the field is looking now.
Peter Bos	Expert in the field of recycling clothes on business and technical level	His views on the current system and his experience with building up a sustainable brand and sustainable initiatives can provide insight in the barriers our society faces regarding sustainable fashion.
Wouter Reedijk	Sympany	This company recycles the clothing of multiple provinces in the Netherlands. This company can provide insight in how much is recycled by consumer, how it is recycled, what drives people to recycle and what can be improved in the current process.
Luuk Duursma	Sympany	Because he was one of the founders of the company and still has a lot of knowledge on the business, he can explain how this company works and what is needed for the company to continue working and upscale. Also, he can give a tour through one of the clothing sorting facilities.
Mayte Leinenga/Fimke Hijlkema	Municipality of Oostellingswerf	The municipality has a sustainability department which can provide some information on the governmental influence of recycling clothes.



## Appendix D: Interview transcripts

### D.1 Transcript Interview municipality of Ooststellingwerf

*Councillor Fimke Hijlkema (FH) and junior sustainability advisor Mayte Leinenga (ML).*

**Can you tell me a bit about your position and how this is related to circular management and the sustainable textile industry?**

FH: Our municipality (Ooststellingwerf) has pronounced the ambition to be energy neutral and CO2 neutral by 2030. Because of that, we are in favour of sustainable use of materials (reuse), we are aiming to use waste as a valuable resource. Unfortunately we have not yet set in a course towards sustainable textile industry. In the past we organised a fashion show in collaboration with the local second-hand store, using second-hand clothing.

ML: I am a junior sustainability advisor for the municipality of Ooststellingwerf, a municipality consisting of villages, the aim is to be a green municipality with citizens and companies that are focussed on sustainability and circular economy. The aim is to be climate neutral in 2030, as councillor Fimke mentioned. We have different knowledge hubs, for example one on soil. Our Biosintrum is an example of a sustainable building, it gives space to sustainable research and entrepreneurs. My role is to focus on initiatives and policy related to sustainability, including sustainable education, biodiversity and bio-based economy. As councillor Fimke mentioned, we do not yet have policy on sustainable fashion, but it could be interesting to include sustainability in fashion initiatives in the future.

**In your opinion, what internal factors influence the purchasing decision of a consumer the most? (brand loyalty, knowledge, feeling of obligation)**

FH: Many people have little money to spend and for this reason choose to buy second-hand clothes. In addition to that, there are of course people that wish to live as sustainable as possible and for this reason buy second-hand clothes, participate in clothing swaps or purchase underwear made of bamboo (instead of made of regular cotton). Idealism in people is an important factor to choose to buy sustainably.

ML: I think it has a lot to do with rituals and habits, I do not think it is a very rational action to shop. It depends on their upbringing, economic status, social position, fashion clothing involvement and also human-nature relation.

**What external factors influence the purchasing decision of a consumer the most? (price, ability, social environment)**

FH: People realise the scarcity of resources, which can spark idealism. As mentioned in the answer to the previous question, income too influences the purchasing behaviour of people.

ML: I am not sure, I know from my research that there are very many factors influencing the behaviour, I do not think one or the other is the main influencer of purchasing behaviour.

**When looking at circular and sustainable fashion do you think the consumer has a large impact on this?**

FH: The consumer plays a very important role in this.

ML: Yes, two third of the impact of fashion clothes are in the consumers' grasp, as they purchase, use and discard clothes. They do not produce, but by wearing (or not wearing) their clothes they already have a large impact on the environmental impact. If consumers support sustainable and circular brands, or simply consume less clothes, this is a signal to the big brand players in the fast fashion market. It will be interesting to see this effect after this corona crisis, as I believe consumers have consumed far less goods in general.

**For companies or governmental organisations, what is the best way to reach the consumer and make them part of the circular fashion chain? (advertising, prices, knowledge etc.)**

FH: For municipalities it applies that awareness of people is an important subject. To make people aware about the fact that we should act sustainably in regard to resources and environment.

ML: Good question, and one that I would like to know the answer to as well. I think it is important that citizens are included in sustainable policy and projects, as they come up with very nice ideas. There are some nice campaigns like Fashion Revolution. I think consumers need to be helped, to be clear what are sustainable clothes, to make them available and visible. Project Cece does a nice job to bring together many sustainable clothing brands.

**In the circular management, how can the consumer play a role? Is this only in sustainable purchasing or also more on post consumption side?**

FH: After use of clothing, the consumer also plays a role; if something does not fit anymore, it is possible to donate it to second-hand clothing stores or to swap it with friends or family. Of course, it is also important to separate used textiles properly, so that donated textiles can be reused to make something else from it again.

ML: Both, they purchase and use clothes, for the environmental impact it is very important that clothes are used effectively, so to purchase clothes that will be worn a lot and are not very trend-based, but rather classic. It is important to be sustainable in the washing and drying of clothes as well, so perhaps lower degrees of washing, line-drying instead of tumble-drying, and to recycle effectively, to try to mend broken clothes, or to recycle them yourself into another useful product. Or swap it with friends and family. Try to extend the product life.

**There are already a lot of recycling initiatives, which one do you think is most promising (for reaching the consumer) and why?**

FH: Perhaps Mayte has some ideas on this, I am thinking about recycling of clothing.

ML: Hmm, I think current documentaries on Dutch television and online campaigns are reaching a lot of consumers. Myself, I like the Dutch campaign by Sire, called waardeer het, repareer het (treasure it, repair it).

I can see the popularity of second hand apps, like United Wardrobe and Vinted, I think they are effective in recycling, I am also a bit worried however that consumers will discard cheap fast fashion clothes even faster because of the easiness of these apps to get rid of these cheap clothes and to buy even more cheap fast fashion clothes with the money earned. It is also interesting to look to new initiatives such as fashion lending libraries, where you can lease clothes.

**As a governmental institution, how are you working with consumers and other companies for the recycling and collecting of textiles?**

FH: Via the recycling points for textiles and the recycling options of the local second-hand stores, (which are run by Omrin, the Friesian waste processing company).

**Value plays an important role for the purchasing decision of a consumer, which value do you believe is the most important? (functional, emotional, social etc)**

FH: I believe emotional and environmental value are very important in this.

ML: For me, I like functional and emotional, clothes have a clear function to clothe you and keep you warm, they need to fit well. Emotional is very strong too I think, I imagine many female consumers keep clothes that do not fit, but they dream that it might fit later. Or you cannot get rid of some clothes, because of the memories you attach to them. Social is very important as well, you dress differently for different occasions, like work, school, going out etc.

## D.2 Transcript Interview Carol Mungo

**Can you tell me a bit about the research you have done related to customer behaviour, circular management or sustainable fashion?**

**Luna:** I just saw your reaction to my questions but I have not checked it out yet so I think we will elaborate on them as we follow the questions of the interview. Can you tell me a bit about what you are doing, what you have done, and why it is related to my topic of research?

**Carol:** Where I currently work in Kenya is with an NGO, I work with the German political foundation that focusses on a lot of different areas, such as government, rule of law, climate change, sustainable energy and environmental sustainability. The topic closest to your subject that I have worked with is the topic I worked with during my master thesis as well. I was doing my masters course and we had the group/work related assignment. We worked with MUD-jeans for 8 weeks. We tried to more deeply understand the concept of sustainable fashion and what MUD-jeans was trying to promote. And for my master thesis I used the principle of circular economy to see how cities are in transition towards becoming more circular cities.

**Luna:** Did you keep in contact with mud-jeans after the project to see how everything worked out or not?

**Carol:** No, we had a presentation. We had to present to the class, but the director of MUD-jeans was also present. It was very captive in term of the findings and what came out of our findings, particularly what came out of our findings, the similarities of what we found and what they found in terms of customer relations with their products. It was something they constantly found. The whole idea of selling the experience to the customer was something they try and do with their products, so they were happy that it kept coming up. It was just some elements of the product, like the design that were specified in regard to what the company can do now to move forward. One of the things they found about design is that many people will not rent a jean because it was constantly the same design and the same look. With more changes and other trends people are more interested in renting it.

**What internal and external factors influence the purchasing decision of a consumer the most? (brand loyalty, knowledge, feeling of obligation, price, ability, social environment)**

**Luna:** I saw indeed on mud-jeans and jeans2jeans that they have a large number of jeans to rent but that they all look kind off similar. I saw you told me something about the internal and external factors of the purchasing decision. Trend is one of the issues you mentioned, this would be a social factor. And in your answer, you mentioned price as an external factor is there anything else that might be relevant?

**Carol:** Externally price would influence one or two things. But internally I feel that with the research that we did and what we found that the knowledge of the product is important, and it comes in very handy to have the knowledge. Not many people know how much water it takes to produce one pair of jeans or one t-shirt. I believe that the more these companies try and inform them the more the customers become aware of the problem. But one important thing to consider is that you should not shame them. Those you do not want to transition should not be shamed for it. You should not say H&M for example is bad and do not buy from their anymore, but you should tell people they can still buy there but they have to be aware of the consequences. They are now at a particular stage that when you are ready you can make that transition. The transition towards becoming ready is the knowledge. Brad knowledge can also be handy because if you know the brand more you know what they do or don't do for the environment. Ability is also important because a good product will last you longer that for example something from H&M. for the buyer it would make more sense to buy the product that lasts longer. Also, the look of the product

matter, which is again a social aspect. It should not only be something you can wear but in terms of looks also something you want to wear.

**When looking at circular and sustainable fashion do you think the consumer has a large impact on this?**

**Luna:** You said there is a lot of knowledge that needs to be translated to the consumers, how much of an impact do they have on the production and consumption of sustainable fashion? Do you have any idea?

**Carol:** For my consumers are at the centre of all this. The producer produces the clothes that they do because there are people who need these clothes. There are people who will continue wearing fast fashion clothes as long as there is no other alternative. If you don't show me what plan B is I will continue to go for plan A. putting consumers at the centre of this, you turn the conversation around of how do please that consumer in my production and how do I make them constantly want to go to a product which is sustainable and a more durable product which is an alternative, maybe not for something people do right now but for consumers in the near future. The more this conversation are coming up about if I ever want to get something better and it is not from this industry which is textile intense you should have the alternatives at the top of your head. The production has a large influence on the consumption. And the consumption eventually leads back to the production. The more there is produced the more there is consumed and the more there is consumed the more there is produced. Producing in masses is also cheaper. So, the more you produce the cheaper the production costs are. The whole process has the consumer at the centre. The market is all about how I play around with the consumers mind.

**Luna:** I gathered from other information that most of the textiles that are recycled now, even though it is not much go to the industrial sector like mattresses and cars and it is not so much recycled within the textile industry. Do you think that would be a problem for making more fashion from raw materials? That if they were to get more supply from old materials they will recycle, or would that only happen if they are forced to recycle?

**Carol:** I think with regards to material there is a lot of knowledge on how to get the material and to be able to produce as much as you can. The problem is once it's on the shelves and it's not going it's not even going to push people to find creates ways of getting materials from products for people to wear. I believe there is a lot of need to change attitude and perspective of people into actually wearing and consuming recyclable clothes. People are now worrying about it is clean enough, do I look okay, has it been disinfected so much that it is healthy. I feel I would not be worried about where the material would come from but actually where the products would go once, they are here.

**What is, in your opinion, the best way to reach the consumer and make them part of the circular fashion chain? (advertising, prices, knowledge etc.)**

**Luna:** Do you think that it would matter for the consumers, when they buy sustainable clothing, do you think they care about helping the environment or are they more resistant in buying recycled clothes because it has been used or worn somewhere else? Would the availability or the attitude of people matter more in this situation?

**Carol:** I think because, for me I want to image that the early adopters would buy recycled clothes because they are sustainable thinking. Sustainability would be their first introductory point to this. They are changing. There is something called the internal gap. In this case it is a group of people that want to change to sustainable clothes and want to adapt to help the climate, but it is very difficult fill the intention gap because of so many factors including availability. Price can always be a factor. I want to live in a neighbourhood where someone has tools but doesn't use, they and asks

if someone else can use them, this goes a bit towards the circular cities model. I want to know that this is possible. The best way to do this is to fill the intention gap. The fact that something comes from a car would not be their concern but more the availability. The early adopters are the ones that will push the sustainable fashion industry. The group of people with the intention is growing and is much higher compared to a few years before. If this conversation would be going on a few years ago the issue of the fast fashion would be mostly on child labor issues, but it is now moving also to environmental issues. The textile industry is the second biggest consumer and the impact is just too large. Beyond the issues that the fast fashion is known for there is a big sustainability issue which is growing right now. The only problem right now is there is a price factor. The sustainable products right now are very expensive. The reason for this is that they are not sold in masses. Getting the resources is not easy, marketing is not easy.

**Luna:** So, you think that the knowledge and awareness amongst consumers will also help scale up the production of sustainable fashion?

**Carol:** Absolutely because you share your experience. In a social group or in the conversation of climate conservation. The more consumers who are aware, the more we can trigger sustainable fashion production.

**In the circular management, how can the customer play a role? Is this only in sustainable purchasing or also more on post consumption side?**

**Luna:** Could sustainable consumption/production happen with control over the chain if there is no force from the consumer?

**Carol:** I believe this is something that can be executed from government level. Either regional or local. To put this infrastructure in place they can do it the same as they put in roads or railways. Once you put it in place it gives businesses a lot of motivation to pick up the idea because there are a lot of initiatives to recycle but once the infrastructure is there it levels the playing field. When the playing field is not levelled it is just the business who has the most muscle and influence that decides how production is done and what is done after consumption. If there is someone that oversees the collection and there is a collection point that the initiatives can use this to make their clothes. Because there are now only a few options they remain very expensive.

**There are already a lot of recycling initiatives, which one do you think is most promising (for reaching the consumer) and why?**

**Luna:** You mentioned there is not one most prominent option and it is determined on the scalability and experience. On a large scale would a textile container be a good alternative or maybe another alternative like collecting clothes through stores, what would be something a national government could do?

**Carol:** I feel like with the recycle initiatives there needs to be infrastructure for it to pick up and to find an effective model it has to come from an existing infrastructure. The problem now is that there needs to be a large scale, so there needs to be a collection point where a lot of things can be collected to make a difference. When the infrastructure is there it would be good for you to know what happens and what the chain of production and recycling is. That story is important for recycling options to grow. You need someone to control the chain because that can help them grow. For example, if you have someone coordinating the chain you can see that the fabrics and colours don't get mixed unnecessarily and that the end product is something the consumer can make sense of.

**Value plays an important role for the purchasing decision of a consumer, which value do you believe is the most important? (functional, emotional, social etc)**

**Luna:** You mentioned that on values for the customer you would believe functional value is the more important one, why do you think that is?

**Carol:** There is always a section about sustainable fashion that it goes beyond what you would regularly expect from a product, such as clothing. It is like a transition; you don't buy it for the beauty you buy it because you want to help contain the environment. I have an example with solar panels. There were a lot of options but if it didn't work you would put it aside. The most important thing is that it functions without you having to go out of your way to make it function. It would have to be something of my day to day live. It should not be something that needs a lot of instruction or a lot of care.

**Luna:** So just as an assumption, what you are saying is that we need to introduce these initiatives to people without them having to change anything in their daily routine.

**Carol:** Exactly, it should just compliment the unsustainable products that you have. It should be something almost exactly the same in use as the product we are used to just more sustainable. Once you meet this transition consumers would make these changes without having the feeling that they make these changes. One more example is the electric car. A big part of the problem was the changing station. This is a good example of lack of infrastructure. When you want to drive an electric car, you have to think and calculate where you can charge your car and this effort can be seen as a barrier towards this transition from diesel to electric.

**Luna:** How is the transition towards sustainability and circularity in your country?

**Carol:** In Kenya there is a transition towards more circularity. But in Kenya the focus is mostly on waste and on plastic waste. They are not really focussing on going circular but only on the waste.

### D.3 Transcript Interview Peter Bos

**Zou u kunnen omschrijven wat, naar uw idee, de definitie van circulaire/duurzame textiel is, en waarom het belangrijk is?**

Waarom circulaire en duurzame textiel belangrijk is, is vanwege de grote hoeveelheid grondstoffen en energie het nodig heeft. Met het maken van 1 kilo katoen wordt 7 tot 8000 liter water gebruikt. Naast water wordt textiel ook geproduceerd met een grote hoeveelheid aan energie, chemicaliën en zelfs landbouwgrond. De landbouwgrond is bijvoorbeeld het houden van schapen die wol leveren of het produceren van de katoen zelf. Als laatste is het ook belangrijk om duurzamer te zijn met onze textiel met betrekking tot het Gezondheidsaspect. Katoen gebruikt veel water, kijk maar naar het voorbeeld van het Aral meer in Rusland. Dit is gebruikt voor het produceren van textiel en is nu helemaal opgedroogd, de droogte in dit gebied zorgt nu voor huid en longziekte bij de bevolking. Dit is 1 voorbeeld maar een soortgelijke situatie heeft zich ook voorgedaan in Twente, wat in Nederland en Europa als hoofdstad van de textiel productie werd gezien. Nu zijn er bijna geen plekken in Nederland meer waar zelf materiaal wordt geproduceerd.

**U heeft me over de telefoon al wat kunnen vertellen over de bedrijven u voor en mee hebt gewerkt, zou u nog iets uit kunnen breiden hierover en wat de doelen van deze organisaties zijn?**

Wat wij proberen te creëren is een hoogwaardig product dat weer gebruikt kan worden in de textiel industrie.

**Hoe zou u bedrijven adviseren om duurzamer en meer circulair te werken en ook hun klanten te bereiken?**

Ten eerste hebben we de textiel containers, maar nog geen kwart wordt ingezameld. De kleding die wordt ingezameld wordt uitgezocht. Van de uitgezochte kleding gaat ook nog maar 10% naar arme/derde wereld landen. Wat helpt om consumenten te bereiken is een stuk voorlichting. Het gaat bij het inzamelen niet alleen om kleding maar ook gordijnen, lakens etc. Dus het is niet alleen voor de individu maar ook voor bedrijven zoals hotels is het ook belangrijk dat ze er meer mee doen. We hebben de illusie in Nederland dat we zelf iets nieuws op gang kunnen brengen maar



Daarvoor moeten we grensoverschrijdend gaan samenwerken. Als het in Nederland niet gemaakt kan worden moeten we met andere mensen/landen samenwerken. Oud Kamerlid Jacqueline kramer gaf aan dat om in de keten aanpassingen te doen, samenwerken essentieel is. Alleen op die manier krijgen we een keten en product waar iedereen sociaal en financieel voordeel uit. Veel mensen willen het wiel uitvinden en het voor zichzelf houden. De hele keten kan niet bestuurd worden door één partij dus “als je niet kan delen kan je ook niet vermenigvuldigen”. Het is wel mogelijk voor grote bedrijven om het controleerbaarder te krijgen, mits ze dat willen. De belangen van de grote bedrijven moeten anders worden (van fast-fashion naar circulair). Het verdienmodel moet anders worden, economisch duurzaam. Textiel heeft een multiplier, meer geld per stap die erin zit. Een Zeemanbroek is in essentie net zo duur om te maken als een G-Star broek. Dit zou ook maatschappelijker verantwoord voor de lageloonlanden. Het wordt een samenwerking op lange termijn met voordelen in iedere stap van de keten.

**Werkt u al met hernieuwbare bronnen? Op welke manier?**

30% van energiebehoefte was die ons bedrijf gebruikte kwam van zonne-energie, ook gebruikte wij al hernieuwbare grondstoffen als hennep en vlas

**Focussen jullie al op het verminderen van (niet hernieuwbare) bronnen en materialen? Op wat voor manier?**

De hernieuwbare grondstoffen als hennep en vlas gebruiken wij. Maar wat het spijtige is, is dat er in de textiel wordt veel PET gebuikt. Er zijn zelfs fabrieken die plastic flessen maken en die gaan direct de recycling in voor PET gebruik om de producten duurzamer te laten lijken en dus voor een hogere prijs op de markt te gebruiken. Daarom worden in sommige projecten PET ook uitgesloten als optie voor duurzame bron.

**Op welke manier maken jullie gebruik van gerecyclede materialen/bronnen?**

Wij maken onze producten van gerecycled materiaal, dus oude kleding of textiel. Wat ook gedaan wordt is het sorteren van het materiaal, zodat het bewerken van de stoffen die binnenkomen zo minimaal mogelijk is. We maken niet een witte handdoek van een oude spijkerbroek maar wel een nieuwe spijkerbroek van de oude. Wat dan van belang is, is dat er aan de voorkant goed gesorteerd wordt, maar dit kost wel tijd en geld.

**Op welke manier draagt de organisatie(s) bij aan duurzame textiel?**

Door het gebruik van mijn grondstoffen en meer gerecyclede materialen en het gebruik van bijvoorbeeld zonne-energie, zoals hiervoor al benoemd. De vezels van de stof (bijvoorbeeld broek) zijn niet versleten als we de broeken niet meer dragen. Wat de textielindustrie zo vervuilend maakt is dat we tegenwoordig veel meer mode hebben. Er ligt iedere 6 weken nieuwe kleding in de winkels i.p.v. 2 of 4 keer per jaar. Heel veel wordt al gerecycled en gaat laagwaardig terug, bijvoorbeeld in de automobielsector. Er zit 30 tot 50 kilo oude spijkerbroeken in auto's. Ook in de meubel en de matras industrie zit veel oude textiel. Er wordt al hergebruikt maar niet veel van de gebruikte stoffen hergebruikt worden met een hoogwaardig tweede leven. Dit ligt niet alleen aan het feit dat de techniek er niet is maar ook vooral omdat het gewoon niet gedaan wordt. Als men kleding koopt wil men gewoon een goed stuk kleding hebben. Omdat het gerecycled is twijfelen sommige mensen aan de kwaliteit en zouden het om deze reden niet willen hebben.

**Is het proces/product gefocust op de duurzame productie of op de consument kant, of beide? (op welke manier?)**

Als de consument niet vraagt naar verduurzaming gaat de producent voor het proces met de minste weerstand. Harrie van Bommel heeft een onderzoek gedaan naar consumentengedrag. Hoeveel meer willen mensen betalen voor een duurzamer product. Het eerste onderzoek toonde aan dat 5% van de bevolking wil meer betalen, maar dan wel maar 3% meer. In het tweede onderzoek was dat percentage omgegaan naar 15% van de bevolking maar wel nog steeds maar die 3% meer betalen.

De techniek en marketing van kleding maakt de duur. Pas op het moment dat het op grotere schaal geproduceerd kan worden, wordt het goedkoper. Het is heel lastig om het in de markt te brengen. Het zien van een stof en daar een product mee maken is veel simpeler dan bedenken hoe



Er van een reststof een product gemaakt kan worden. “Textiel is een vlak landschap maar er zit een kloof in zo groot als de grand Canyon. Aan de ene kant de keten de vraag van de consument, aan de andere kant de producent van de stoffen”. Ze kunnen met samenwerken de kloof overbruggen. Hoe het opgelost kan worden is dat de consument duurzamer gaat kopen maar dat zien de ketens niet. Iedereen wil het wel maar ze hebben geen idee hoe. Als de vraag van de consument komt dan pas kan het aanbod komen.

Zorg dat de producenten gedwongen worden om dit te doen anders doen ze dit niet. Er zijn al bedrijven die reclame voor maken voor duurzame kleding (Patagonië). De kleding moet eerst hoogstaand en populair zijn voordat het verkocht kan worden, dit is dus weer een deel marketing. Het is ook belangrijk dat dit soort initiatieven geen eendagsvliegers zijn. Campagne is ook belangrijk, een systeem voor neerzetten wat op de lange termijn blijft. Om zo iets van de grond te krijgen heb je believers nodig.

De oplossing is in dit geval niet structurele subsidies voor duurzame textiel. Voor de aanvraag van deze subsidies zijn er namelijk veel projecten die een nieuwe naam krijgen en opnieuw aangevraagd worden. Wanneer de subsidie eindigt stopt men ook met produceren.

Wat in mijn mening een oplossing zou kunnen zijn is het sluiten van de grenzen in Europa, wat betreft de producten die binnenkomen en gemaakt worden. We moeten weten wat er binnenkomt en hoe het gemaakt wordt voordat we het hier aanbieden. Alles wat binnenkomt moet op die manier aan de productienormen van Europa voldoen. Anders krijg je een boete en mag je niet verkopen in Europa. I.p.v. subsidies aan onze bedrijven, moeten we voor iedereen die hier verkoopt ook eisen opstellen waaraan voldaan moet worden anders volgt er een boete of importheffing. Dan wordt het product dat nu goedkoop is duurder.

Als het gaat om veranderingen met betrekking tot dit idee zit er nog nauwelijks beweging in. Er zijn veel meer mensen die voor subsidie kiezen.

**U vertelde aan de telefoon dat het hebben van een markt voor je producten erg belangrijk is voor de slaagkans van een product/service, kan u hier meer over vertellen? Wat is de invloed Van de consument in dit verhaal?**

Zoals eerder benoemd kan het proces van productie alleen aangepast worden als de consument gaat vragen naar duurzame producten. Als de vraag er niet is kiest de producent voor de makkelijkste weg. Daarnaast vergt het een deel kennis van de consument en bedrijven voor bewust inleveren van textiel

**Wat zijn uw ideeën als het draait om het bereiken van de consument, hoe zijn ze te beïnvloeden Om duurzame keuzes te maken en verantwoord om te gaan met hun textiel en overgebleven kleding? (prijs, kennis, reclame etc.)**

Zoals al eerder besproken speelt de reclame van een merk een grote rol in het bereiken van de klant. Als ze zich er niet van bewust zijn gaan ze ook niet vragen en als er geen vraag is zal er ook geen aanbod komen. Daarnaast is ook de prijs belangrijk, zoals gezien kan worden in het Onderzoek van Harrie van Bommel.

**De waarde van de consument voor een product speelt een belangrijke rol in de aankoop beslissing, welke waarde denkt u dat de grootste invloed heeft? (emotionele, functionele, sociale)**

Mensen kopen hun kleding in een impuls, voor emotie, omdat het ze blij maakt. Daarna wordt de kleding even gedragen en dan weggegooid. Mijn gevoel is dat de consument heeft dat het meer Impuls wordt, het nu willen hebben van de kleding en de groepsdruk van iedereen die het draagt.

**Er bestaan al verschillende initiatieven voor het recyclen van kleding, wel is volgens u het meest belangrijke en het meest succesvolle (ook in het bereiken van de consument) en waarom?**

De consument is lui. Over het algemeen is marketing de belangrijkste factor. Als consument lever ik mijn spullen niet in als ik moeite moet doen. Daarnaast is het inleveren in winkels ook niet de beste manier omdat de winkel heeft ook kosten aan het verwerken van oude kleding.

Rolcontainers moeten vervoerd worden, kleding wordt bewaard op de werkvloer. Transport naar de sorteerlocatie kost geld.

Straatcontainers zijn de meest makkelijke manier. Hergebruik in de oorspronkelijke vorm het meest wenselijk. Ook vind ik dat er meer productie van textiel moet zijn in ons land maar ook in ontwikkelingslanden. De textiel is de een van de eerste ontwikkeling van een land. Als het niet ontwikkeld in zo'n land dan kan het land ook niet groeien qua industrie en economie. Veel landen willen zelfs onze oude kleding nu niet meer. De Kringloop in Nederland is nu voornamelijk voor vintage. De textielindustrie en het maken van duurzame textiel valt en staat met samenwerking. Vooral niet bang zijn dat de ander er ook wat aan verdient. In Duitsland en België is samenwerking makkelijker dan in Nederland omdat we in Nederland geen productie hebben.

Nederland zou ook kunnen profiteren als we minder gaan handelen en meer industrie creëren. Mensen die lager opgeleid zijn hebben in Nederland meer moeite voor een baan. Als we meer Industrie creëren hebben we ook meer arbeidsparticipatie, innovatie en ontwikkeling. Je schept geld i.p.v. rondpompomen zoals met services en handelen waar Nederland om bekend staat.

## D.4 Transcript interview Wouter Reedijk

**Kunt u me wat over het bedrijf vertellen, waar jullie zitten, hoe het textiel verzameld en verwerkt wordt en wat het doel van het bedrijf is? (hoeveel word er gerecycled?)**

**Luna:** Zou u mij misschien wat kunnen vertellen over het bedrijf zelf? Er wordt textiel ingezameld, bijvoorbeeld in de provincie Drenthe maar hoe doen jullie dit wat doen jullie er nog meer mee?

**Wouter:** Sympany zamelt voornamelijk in bij gemeentes op dit moment in 92 gemeentes in Nederland. Vorig jaar is dat ongeveer 25 miljoen kilo geweest. En in deze gemeentes moet je je voorstellen dat we bijna 2000 containers hebben, afhankelijk van hoeveel inwoners een gemeente heeft. Het is verspreid over heel Nederland je ziet wel dat er rondom de randstad wel meer is dan in Zeeland maar in principe gewoon heel Nederland.

**Luna:** En met wat voor doel is zo'n bedrijf dan opgezet, is dit vanuit de overheid of zit er meer achter?

**Wouter:** Je moet je voorstellen dat de gemeentes ook steeds meer willen recyclen, dat is ook vanuit de overheid dat ook steeds meer gestimuleerd wordt en dat is voor het milieu natuurlijk ook beter. Er zijn in Nederland een aantal grote bedrijven die inzamelen en dat gaat op aanbesteding bij gemeentes. Zij zeggen bij ons kun je textiel inzamelen en bedrijven zoals een Sympany of een curitas of leger des heils kunnen zich daarvoor inschrijven om tegen bepaalde voorwaarden daar textiel in te zamelen. En wat je ziet is dat kleding in Nederland wat wordt ingezameld is nog wel goed en daar is een goede markt voor geweest en nog steeds is om dat weer te verkopen. Dus er wordt nog verdient aan goede kleding in Nederland in enkele landen in oost Europa, Afrika. Sympany doet dat ook. De textiel wordt ingezameld, gaat naar een sorteer centrum, daar wordt het afval eruit gehaald, daar wordt het gescheiden op recycle kwaliteit of herdraagbare kwaliteit en dan gaat het gelijk richting de verkoop partner. Dat is hoe het is geweest en ook nog is maar wat je nu ziet is dat kleding slechtere kwaliteit wordt en minder waard wordt. Dus er wordt minder verdient aan minder goede kleding. En dat brengt de markt in gevaar omdat dan de kleding niet meer genoeg verdient.

**Sympany maakt deel uit van de circulaire textiel keten, hoe zit dit eruit in Nederland en wie zijn de belangrijkste groepen in dit proces?**

**Luna:** Wie maken daar deel van uit, gemeentes en bedrijven maar zijn er nog andere groepen die een belangrijke rol spelen?

**Wouter:** Kleding gaat vaak van de consument in de container. In elke gemeente zijn er ook weer andere reglementen qua containers dus je hebt sommige die ondergronds zijn en sommige zijn bovengronds. Dan komt het bij de inzamelende partij terecht en de partners die erna komen kan

Ook heel erg wisselen op basis van wat voor type kleding het is. Als je bijvoorbeeld kijkt naar las het herdraagbaar is hebben wij een aantal vaste partners die het inkopen en in tweedehands winkels weer verkopen. Voor recycling kunnen het misschien wel 100 verschillende afnemers zijn omdat recycling heel erg met het type materiaal te maken heeft. Je kunt je voorstellen dat kleding vaak bestaat uit verschillende materialen, en recycling is vaak alleen mogelijk als je maar 1 type materiaal hebt. Daarom is sortering een belangrijk deel van het recyclen omdat je dan bepaalde kleding die binnenkomt kan scheiden op materiaal en vanuit daar vindt het zijn weg naar een partner die daar een bepaalde recycling techniek op toepast. Dat kan chemisch zijn maar ook mechanisch, daar zijn al veel technieken voor. Vanuit daar probeer je erna weer een product van te maken; nieuw garen voor kleding of isolatiemateriaal dat kan alle kanten op. Wat je in de toekomst wil is dat het circulair wordt. Kleding wordt ingezameld, gesorteerd het wordt bewerkt zodat je nieuw garen hebt en dat dan weer gebruikt kan worden voor nieuwe kleding. Waardoor je niet nieuwe grondstoffen hoeft te gebruiken omdat dat allemaal milieuvoordelen heeft. Op dit moment wordt van alle nieuwe kleding nog maar minder dan 1 procent gerecycled garen gebruikt. Er wordt in Nederland alleen al jaarlijks 250 miljoen kilo kleding weggedaan en in potentie zou dat natuurlijk allemaal mogelijk garen voor nieuwe kleding kunnen zijn alleen dat gebeurt nu nog niet.

**Luna:** En wat is de grootste reden dat dat nu nog niet gebeurt?

**Wouter:** Dat heeft ook een beetje met jou vraag te maken wie zit er allemaal in die keten, die keten is vrij lang er complex. Je hebt consumenten, producten, inzamelaars, verwerkers. Als een iemand in de keten zegt dat ze circulair vinden maar andere partijen in de keten vinden het nog te duur, wie gaat dit dan veranderen. Het is echt een keten probleem, er is niet 1 iemand verantwoordelijk voor maar je zou wel kunnen zeggen dat de overheid dit moet gaan stimuleren en met partijen voor een oplossing moet gaan zorgen.

**Als we kijken naar circulaire en duurzame textiel, speelt de consument hier dan een grote rol in?**

**Luna:** En dat is dan vanuit de business side, en vanuit de consument kant is er vanuit de overheid of vanuit jullie als bedrijf nog meer invloed uit te oefenen op de consument zodat ze ook meer bewust worden?

**Wouter:** Als je het puur op recycling hebt, er wordt al heel veel ingezameld dus het aantal kilo's textiel is het probleem niet maar er is ruim 135 miljoen kilo dat nu nog bij het huishoudafval verdwijnt. Dat is iets wat je van consumenten wil stimuleren dat ze het in textiel containers gooien zodat het een duurzamere weg vindt. En de tweede stap is dat je de consumenten wilt stimuleren om bewust na te gaan denken om kleding te kopen met gerecycled garen want dan kunnen we ze ook stimuleren om dat proces te creëren en daar ook meer afzet voor te genereren in de toekomst. Het zijn voor de consument 2 dingen, het scheiden van je afval (daar is nog een grote uitdaging) en dan het gerecyclede garen en kleding met gerecyclede materialen kopen maar dat is nu duurder dan kleding van nieuwe materialen.

**Luna:** En is dit nodig dat het duurder is of kan het ook goedkoper?

**Wouter:** Dat ligt ook aan de producten, producenten kiezen voor nieuwe materialen omdat het goedkoper is en consumenten willen alleen maar goedkopere kleding. Het is een beetje kip ei wie gaat de eerste stap nemen. Als consumenten meer gaan vragen en kopen dan gaan produceren het ook meer produceren maar je kan niet alleen de verantwoordelijkheid alleen bij consumenten neerleggen en daarom is het probleem ook zo complex.

**Wat is naar uw mening de beste manier om de consument te bereiken en hem deel te laten Maken van de circulaire textiel keten? (kennis, reclame, prijs etc)**

**Luna:** U zei al dat prijs daarin meespeelt, zou ook marketing ook mee kunnen spelen of meer kennis of informatie vanuit de overheid. Wat zou het verschil kunnen maken?

**Wouter:** Prijs is natuurlijk een ding maar ook bewustzijn mensen kopen principieel dingen en consumenten moeten veel meer gestimuleerd en geïnformeerd worden over waarom ze gerecycled garen zouden moeten kopen en wat het oplevert en wat kan het voor het milieu doen. Dat moet dan ook weer meegenomen worden in de marketing en hoe dat dan gedaan wordt kan natuurlijk op verschillende manier.

**Speelt de consument een rol in de aankoop kant van de kledingindustrie (als het gaat om Duurzame kleding) of aan de kant na gebruik van textiel, of beide?**

**Luna:** En speelt de consument dan een grotere rol bij de aankoop van de kleding of de rest en de verwerking van de kleding?

**Wouter:** Het begint bij de aankoop, de eerste stap kan al zijn heb ik kleding nodig. Wil ik 5 shirts in plaats van 1. Als je kijkt naar de duurzaamheid ladder is natuurlijk consuminderen bovenaan en dat zou de makkelijkste en meest duurzame oplossing zijn. Daarna is het verlengen van een kledingstuk duurzaam en dan pas wil je na gaan denken over het hergebruik en het recyclen van de kleding omdat daar ook weer energie en grondstoffen bij komen kijken. Dat zijn oplossingen waarvoor je al andere dingen kan verzinnen. Alleen kan je het ook niet alleen op consumenten afschrijven. Het zal ook niet verdwijnen dat mensen kleding nodig hebben.

**Luna:** Doen jullie in het bedrijf zelf ook al iets met reduce, reuse en recycle dat jullie qua energie al meer op zonne-energie gefocusseerd zijn zodat het bedrijf al minder belastend is voor de natuur?

**Wouter:** Je probeert je routes zo optimaal mogelijk te maken, daar ligt ook de meeste winst. Verder zijn we ook aan het kijken naar duurzame oplossingen met kunnen processen makkelijker. En qua zonne-energie hebben we daar nog geen concrete plannen voor.

**Er zijn meerdere recycle mogelijkheden en technieken voor textiel, welke is naar uw mening het meest veelbelovend?**

**Luna:** Jullie zamelen natuurlijk in via de textiel containers maar zijn er nog andere manieren waarom je zegt dat het veelbelovend kan zijn zoals het inzamelen via winkelketens die het opnieuw gaan fabriceren of zit daar geen markt in?

**Wouter:** Ik zie zeker wel dat dat in de toekomst wel anders kan zijn omdat dat het bewustzijn van consumenten ook groter maakt als er in een winkel een textielbak staat die aangeeft dat je daar je oude kleding in kan doen. Dat maakt ze al bewuster dan bijvoorbeeld de container. Ik zie wel potentie in andere inzamel technieken. H&M doet het al maar die weten ook nog niet wat ze met de kleding gaan doen. Ze hebben nu al wel chemische oplossing in Zweden waardoor ze nieuwe vezels kunnen maken maar dan praat je op minder dan 1% van de hele collectie. In potentie kan het, het moet op schaalbaar zijn dan ga je naar meer duurzaamheid toe en meer circulariteit, de intentie erachter is goed.

**Luna:** Dus als het groter zou worden en in Bulk gedaan kon worden dan kan het ook goedkoper?

**Wouter:** Ja dan kan je ook in goedkopere manieren en kleding gaan denken.

**Luna:** Dus het blijft lastig om te bepalen waar het vandaag moet komen de consument en vraagkant of de productnet en aanbod kant.

**Wouter:** Ja klopt en wat wij dan ook wel vaak zien is dat partijen met een goede oplossing komen voor recycling maar dat zijn oplossingen waarmee je met 20 duizend kilo of minder kan verwerken alleen dat is bij ons een druppel op de gloeiende plaat omdat er bij ons miljoenen kilo's binnenkomen. Dus wij zoeken echt naar opschaalbare initiatieven omdat het over meer dan 245

Miljoen kilo textiel gaat dat weggaat. Je kan natuurlijk ook de consument vertellen ga zuiniger met je textiel om denk aan wat je koopt. Alle kleine beetje helpen maar het blijft lastig.

**Waarde speelt een belangrijke rol voor consumenten wanneer ze een aankoop doen, wat voor soort waarde heeft de meeste invloed? Emotioneel, functioneel, sociaal etc)**

**Wouter:** Prijs is belangrijk, principieel, meer kennis, meer marketing

**Wouter:** De keten in zijn totaal moeten gaan kijken naar samenwerkingen dan ga je maar elkaar kijken en dan gebeurt er niets.

**Luna:** En als je vanaf de EU gaat kijken naar sancties bijvoorbeeld dat alles binnen Europa een bepaalde standaard moet hebben, zit daar nog mogelijkheid in?

**Wouter:** Onze intentie qua recycling is natuurlijk om alles zo dicht mogelijk bij huis te houden, binnen Nederland is te klein dus dan zou het binnen Europa zijn. Qua oplossingen zou je ook kunnen kijken naar statiegeld bijvoorbeeld voor kleding. Dan moet je naar producentverantwoordelijkheid gaan zoeken. Die hebben statiegeld op kleding en dat geld wordt dan geïnvesteerd in oplossingen om circulaire te gaan stimuleren en die mogelijkheden en gesprekken lopen nu ook al bij het ministerie.

## D.5 Transcript Luuk Duursma

Because there was a tour through the company it was impossible for the interviewer to record or transcribe the interview. Below are the main points taken from the meeting with Luuk Duursma.

**Sympany:** Sympany is a collection and sorting company in the Netherlands. They collect over 24 million kilos of clothing per year. Sympany is contracted by a municipality to collect the textiles in that province or city. This is done through above or underground textile containers. When the containers are full the clothing is collected and transported in trucks to the sorting centre. The sorting centre is located in Assen and this is where the tour took place. Next to the collection and sorting of clothes they sell, recycled or dispose of the items. Sympany also hosts crowdfunding projects to increase the collection of clothes and reduce the amount of clothing wasted. They provide the clothing they collect to different international partners to resell the clothes or use the fabric to create new clothing or downcycle to other materials. The goal of Sympany is to reduce the textile waste and create a more sustainable economy.

**The sorting process:** The sorting process in Assen follows several steps when the textile has arrived at the location. The first step is to unpack the clothing from the packaging where people deliver the clothes in and put the clothes onto containers. These containers are emptied on a sorting band where 4 employees per station work on sorting the clothes on season, fabric and quality. Sympany has 3 main quality categories (A, B, C) and underneath these categories are a total of 13 categories. Some examples are Leather, Jeans and Wool. After the clothing is sorted in the correct categories the clothing is packed tightly and pressured to fit the packaging that it will be shipped in. The clothing can end up on the landfill or incinerator when the quality is too poor. The clothing can be shipped to their international partners where it is sold again, or it can end up in Dutch second hand or vintage clothing stores if the quality is well enough. From all the clothing collected, 10 to 15% is waste, around 35% is recycled and the remaining 50 to 55% is resold to (international) partners. The pressuring process is visualized in the figure below.





**FIGURE 31: CLOTHING PRESSURE MACHINE SYMPANY**

**Luuk Duursma:** Luuk Duursma believes that one of the best options for creating a more sustainable textile economy is to include a removal fee. This is already in place for other materials in the Netherlands such as kitchen appliances and other small light and electronic devices. The producers pay a recycling contribution with which they will take care of the recycling of the old appliances when a new device is bought. This was set up to reduce the negative impact on the environment and to increase recycling. Luuk Duursma believes that introducing this for textiles will also reduce the impact of the textile industries on the environment. Additionally, he believes that the system of clothing collection, sorting and recycling of clothing can best be done when there are more rules and regulation from the government and the European union. In the old situation Sympany had to pay a contribution to place the textile containers, these containers were often not used for textiles but for residual waste which made the textiles in the container useless for future options. Currently the textile containers are placed for free and when the textile in the containers can no longer be used due to residual waste being placed in the textile containers, the municipality pays a fee to

compensate Sympany. These types of rules need to be in place, and they need to be enforced to allow more clothing recycling and a longer lifespan of clothing.

## D.6 Transcript Tsjora Bos & Marije Mulder

**Hoe zijn jullie op het idee gekomen om dit op te zetten en wat was het doel van deze facebook pagina?**

**Tsjora:** Vanuit de les creatief denken met een methode gedrag en als onderwerp duurzame kleding. We zijn eerst in gesprek gaan met mensen op straat om te kijken of we hun gedrag en houding konden veranderen en daaruit kwam dat we mensen wat mee willen geven, een flyer is niet helemaal duurzaam dus toen kwamen we op de facebook pagina. We zijn dus ook met mensen in gesprek gegaan op straat maar om mensen te werven voor de facebook groep.

**Marije:** Op straat of In het forum met mensen praten met onze doelgroep wat ook studenten was.

**Luna:** En hoe ging dat?

**Tsjora:** Gesprekken met Kennissen of vrienden was dat en onze doelgroep was mensen die nog geen duurzame kleding hebben om te kijken of we hun van mening kunnen laten veranderen. We merken dat omdat we het er over hadden mensen al direct inzagen dat hun gedrag op dat gebied al beter kon. Zodra mensen dingen leren zijn ze direct geïnteresseerd en willen dan wel veranderingen maken zoals niet meer naar de primark gaan. Ik vond het wel heel positief.

**Marije:** Je merkt dan ook echt wel dat mensen het wel willen en dat ze vinden dat het belangrijk is maar je ziet dat het probleem best ver van hun vandaan staat zoals in het buitenland dus dat dat de reden is dat ze niet de noodzaak inzien. Ze willen wel maar ze weten niet wat de alternatieven zijn die zijn in hun ogen niet leuk of niet haalbaar of niet makkelijk. Ze zitten nog in de materialistische samenleving.

**Tsjora:** Het is stoffig en niet leuk en dan kan je alleen tweedehands kopen waar niets bij zit.

**Luna:** Wat was het doel van de groep? Wil je hier verder nog iets mee doen, blijf je actief of niet?

**Tsjora:** Momenteel laag pitje maar als er leuke dingen zijn wordt het wel toegevoegd en dat gaat om bewustzijn van alternatieve te promoten en de noodzaak duidelijk naar voren te brengen. Waarom is het een probleem en wat is jouw rol erbij en dan alternatieven aanbieden zodat het ook weer haalbaar wordt.

**Marije:** Het idee is dat het een community wordt en dat anderen ook dingen aandragen. Dat je weet dat er andere zijn en van elkaar motivatie krijgt en een deel sociale druk.

**Tsjora:** De theorie die erachter zit is de theorie van gepland gedrag. Het gaat over houding sociale norm en waargenomen gedragscontrole. Dit zijn de factoren die inspelen op iemands gedragsintentie, of mensen het gedrag willen uitvoeren. Mensen sluiten zich er heel erg voor af en willen niet nadenken over de impact van hun aankoop. Als je aan het shoppen bent is het ook niet duidelijk waar het vandaan komt en wat je koopt maar het is niet duidelijk dat je dan ook de gevolgen ervan in stand houdt.

**Wat vinden jullie van circulaire textiel en hoe het bereikt kan worden?**

**Luna:** Als je textiel wat meer circulair zou willen maken, denk je dat dan bereikt kan worden?

**Tsjora:** Ik denk het wel alleen dan moet het op een manier worden gedaan dat het gegarandeerd schoon is. Dat mensen het aantrekkelijk vinden. Als je mensen aansprak kennen ze bijvoorbeeld de



stardust wel maar er is niet heel veel aandacht voor tweedehands and circulair. Dat is lastig te realiseren.

**Marije:** Dat is net als dat herbruikbare en composteerbare plastic daar zitten ook veel haken en ogen aan en ik denk dat hier ook zo is, dat het idee leuk is maar de uitvoering lastiger.

**Tsjora:** Als grote ketens verandering maken dan zou het anders overkomen op mensen. Bijvoorbeeld als H&M een rek met duurzame en betaalbare kleding zou presenteren. Omdat je toch wel die winkel in loopt.

**Marije:** De meerwaarde van als die grotere ketens het doen is dat mensen niet van verandering houden dus als ze bij dezelfde winkels kunnen blijven winkelen is dat makkelijker. Dat heeft dan meer effect, dan zie je de betere en slechtere optie naast elkaar. Wat mij eerst ook tegenhield is dat je niet weet waar ik het moet doen.

**Luna:** Wat is zag is dat het van 2 kanten komt, de consument moet vragen en de product moet aanbieden.

**Tsjora:** Ik denk dat het in dit geval nu heel keuze en dat het ook gaat om het aanbieden. En ik denk dat als je duurzame kleding maakt dat dat wel mensen het gaan kopen als ze het willen. Het aanbod moet er zijn en door hun strot gedrukt worden. Het moet hip worden, een merk wat betaalbaar is en duurzaam. Het is makkelijker om het aantrekkelijk te maken dan wanneer mensen het zouden willen omdat ze dan problemen in de kledingindustrie voorkomen. Dan moet je namelijk een bepaald level van bewustzijn hebben en dat is moeilijker te verkrijgen.

**Marije:** Ik denk dat het moeilijkste is om mensen op de plaatsen waar duurzame kleding te koop is te krijgen. Als ze er zijn is het wel goed maar het trekken van mensen is het moeilijkst. En ze moeten echt een voorbeeld in hun omgeving hebben.

#### **Welke rol denken jullie dat de consument kan spelen in textiel recycling?**

**Marije:** Wat het moeilijkste is, is om de mensen er te krijgen vooral als mensen in hun omgeving het meekrijgen. Het is voor mensen heel makkelijker om het in te leveren en ze kopen het dan ook makkelijker. Hebberig duurzamer leven gaat in stapjes je moet niet in 1 keer alles willen veranderen. Een groot deel van het probleem is dat je makkelijk zo veel kleding kan kopen. Fast fashion is een klein onderdeel van het probleem dat mensen hebberig en materialistisch zijn en ik denk dat je dan juist moet focussen op het grote probleem. Ik denk dat duurzamer leven in stapjes gaat en ik denk dat je niet mensen moet dwingen om in 1 keer veel grote veranderingen te maken maar dat je het ze in stapjes moet laten doen. Ook omdat het mogelijk is om zo veel kleding te kopen omdat het zo goedkoop wordt er zoveel kleding gekocht.

#### **Van de verschillende textiel recycling initiatieven denken jullie dat het beste is om de consument te bereiken?**

**Luna:** Je hebt natuurlijk veel initiatieven voor tweedehands kleding, welke heeft volgens jullie de meeste kans om de consument te bereiken?

Ik denk dat het alles is en dat het belangrijk is om veel verschillende mogelijkheden aan te bieden en omdat mensen op verschillende manier met de rest van hun kleding om willen gaan. het wegdoen van kleding geeft mensen een goed gevoel waardoor ze weer nieuwe kleding gaan kopen. Het is ook goed om een bedrijf te hebben dat je de garantie hebt dat het niet op de vuilnisbelt hebt. Inzicht is ook al belangrijk dat je precies weet wat er mee gebeurt.

#### **Van de verschillende waardes waarom consumenten kiezen voor het kopen van (duurzame) kleding, welke heeft de meeste invloed? Emotie, functie, milieu etc.**

**Luna:** Wat ik met mijn enquête probeer uit te vinden is vanuit welke reden mensen kleding kopen, misschien kunnen jullie met je onderzoek of eigen ervaring ook wel wat over kwijt. Doe je dat uit emotionele waarde, of meer functioneel, of andere redenen?

**Marije:** Voor mij was het duurzaamheid de motivatie maar toen ik ermee begon was het ook het emotie gedeelte en de andere dingen die er bij kwamen, dat je ook heel blij kan worden van het kopen van duurzame kleding. Voor mij is het ook wel maten, je kijkt niet naar maten en hebt niet de druk dat je per se een bepaalde maat moet hebben. Dat is voor meiden die daar gevoelig voor zijn denk ik ook wel een groot voordeel. Ik ben trotser op een kledingstuk dat ik tweedehands heb gekocht.

**Tsjora:** Bij mij is het ook dat het beter bij me past en ik vind ook geen leuke kleding bij die grote zaken, ik ben niet zoals anderen. Vaak is het wel zo dat mensen geen kleding nodig hebben en dat is eigenlijk waar het probleem begint.

**Welke interne en externe factoren spelen de grootste rol in het bereiken van mensen? Kennis, prijs, reclame, sociale omgeving, mogelijkheid.**

**Luna:** Jullie zeiden al dat als je er over gaat praten dat mensen er anders over gaan denken, wat zijn, volgens jullie de grootste factoren voor het bereiken van mensen?

**Tsjora:** Ik heb een meisje en een jongen geïnterviewd en het meisje ging het vooral om het geld. Zij had niet zo veel geld en gaat voor haar kleding vooral naar de primark maar wist niet dat het fast fashion was en slecht voor het milieu. Toen ik het er met haar over had was het ook de eerste keer dat ze dat vernam en was ze ook direct geneigd er wat aan te gaan doen. En de jongen was vooral gericht op merkkleding en vond het belangrijk wat voor merk zijn maten kopen en dat tweedehands ook te oudbolig voor hem was. Hij heeft niet het idee dat hij in een tweedehands winkel kleding vind die bij hem past.

**Marije:** Sommige mensen hebben wel echt een specifieke stijl. Veel mensen en vooral jongens hebben een bepaalde stijl en die is natuurlijk makkelijker om niet duurzaam te kopen. Ik denk dat ze met tweedehands denken dat het te simpel en te saai is.

**Tsjora:** Het is ook vooral de manier waarop het aangeboden wordt wat belangrijk is. Een tweedehands kleding is gewoon een beetje stoffig en ziet er niet hip uit en dat moet je leren waarderen. Je stapt er niet zomaar binnen en dan moet je echt al met iemand meegaan en iets heel leuks vinden om overtuigd te worden. Ik denk dat het op een wat meer bekende manier wordt aangeboden zoals bij h&m en Zara waar alles open en licht is. Als je er meer aandacht aan besteed aan hoe het wordt aangeboden denk ik dat dat al heel erg zou helpen. Mensen gaan ook naar winkels die er aantrekkelijk uitzien. Het is ook belangrijk dat de kleding schoon is, dat het lekker ruikt dan maak je het toegankelijker. Dat je er pas later achter komt dat het tweedehands is. De psychologie toepassen die ze in een winkel gebruiken.

**Luna:** Wat zou de reden zijn dat ze dat nu in tweedehands winkels niet doen?

**Tsjora:** Ze hebben er de motivatie en de capaciteit is er niet voor om tweedehands kleding aan te passen. Ze werken voornamelijk met vrijwilligers, de winkels zitten op achteraf locaties en het is vaak niet alleen kleding maar ook heel veel andere dingen. Het is heel anders. Ze hebben ook niet een manager erachter die kijkt hoe het gehangen moet worden om het beter te verkopen, niet iemand die fashion gestudeerd heeft die er mee bezig is. Maar ik denk wel dat die mensen het heel erg zouden kunnen verbeteren.

## Appendix E: Consent forms

### E.1 Consent form Mayte Leinenga

#### Master thesis circular textile industry (Luna Weewer)

##### Consent to take part in research study interview

- I, Mayte Leinenga, voluntarily agree to participate in this research study interview.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I can withdraw permission to use data from my interview after it, in which case the material will be deleted.
- I have had the purpose and nature of the study explained to me and I have had the opportunity to ask questions about the study.
- I agree to my interview being audio-recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that in any report on the results of this research my identity will remain anonymous if preferred to be so. This will be done by not explicitly mentioning my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.
- I understand that I am entitled to access the information I have provided after the interview.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information. Here as follow the names of the people involved in this research who guarantee the agreed use of this consent and the answers provided during the interview.

Researchers: Luna Weewer

Project Supervisor: Laura Franco Garcia, Victoria Daskalova

Participant:

Signature of participant: ML

Date: 27-05-2020

### E.2 Consent form Carol Mungo

## Master thesis circular textile industry (Luna Weewer)

### Consent to take part in research study interview

- I, **Carol Mungo** , voluntarily agree to participate in this research study interview.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I can withdraw permission to use data from my interview after it, in which case the material will be deleted.
- I have had the purpose and nature of the study explained to me and I have had the opportunity to ask questions about the study.
- I agree to my interview being audio-recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that in any report on the results of this research my identity will remain anonymous if preferred to be so. This will be done by not explicitly mentioning my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.
- I understand that I am entitled to access the information I have provided after the interview.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information. Here as follow the names of the people involved in this research who guarantee the agreed use of this consent and the answers provided during the interview.

Researchers: Luna Weewer

Project Supervisor: Laura Franco Garcia, Victoria Daskalova

Participant:

**C.M**

Signature of participant: .....

Date:

## E.3 Consent form Peter Bos

Because Peter Bos was absent, He could not send his consent form. Through an email he has confirmed that he agrees with the transcript and all that was written in the report. He will sign and sent the consent form when he returns.

Beste Luna,

Bedankt voor je mail bericht.

Omdat ik nu met vakantie ben kan ik dit formulier niet invullen en ondertekenen.

Maar zo ver ik alles heb gelezen ben ik akkoord.

Met vriendelijke groeten Peter Bos

## E.4 Consent form Wouter Reedijk

### Master thesis circular textile industry (Luna Weewer)

#### Consent to take part in research study interview

- I, Wouter Reedijk, voluntarily agree to participate in this research study interview.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I can withdraw permission to use data from my interview after it, in which case the material will be deleted.
- I have had the purpose and nature of the study explained to me and I have had the opportunity to ask questions about the study.
- I agree to my interview being audio-recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that in any report on the results of this research my identity will remain anonymous if preferred to be so. This will be done by not explicitly mentioning my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.
- I understand that I am entitled to access the information I have provided after the interview.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information. Here as follow the names of the people involved in this research who guarantee the agreed use of this consent and the answers provided during the interview.

Researchers: Luna Weewer

Project Supervisor: Laura Franco Garcia, Victoria Daskalova

Participant: Wouter Reedijk

Signature of participant: [Signature]

Date: 28-5-2020

## E.5 Consent form Luuk Duursma

### Master thesis circular textile industry (Luna Weewer)

#### Consent to take part in research study interview

- I, Luuk Duursma, voluntarily agree to participate in this research study interview.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I can withdraw permission to use data from my interview after it, in which case the material will be deleted.
- I have had the purpose and nature of the study explained to me and I have had the opportunity to ask questions about the study.
- I agree to my interview being audio-recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that in any report on the results of this research my identity will remain anonymous if preferred to be so. This will be done by not explicitly mentioning my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.
- I understand that I am entitled to access the information I have provided after the interview.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information. Here as follow the names of the people involved in this research who guarantee the agreed use of this consent and the answers provided during the interview.

Researchers: Luna Weewer

Project Supervisor: Laura Franco Garcia, Victoria Daskalova

Participant: Luuk Duursma

Signature of participant: [Signature]

Date: 13-7-2020

## E.6 Consent form Tsjora Bos

## Appendices

### Appendix 1: consent form interviews

#### Master thesis circular textile industry (Luna Weewer)

##### Consent to take part in research study interview

- I, Tsjóna Bas, voluntarily agree to participate in this research study interview.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I can withdraw permission to use data from my interview after it, in which case the material will be deleted.
- I have had the purpose and nature of the study explained to me and I have had the opportunity to ask questions about the study.
- I agree to my interview being audio-recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that in any report on the results of this research my identity will remain anonymous if preferred to be so. This will be done by not explicitly mentioning my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.
- I understand that I am entitled to access the information I have provided after the interview.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information. Here as follow the names of the people involved in this research who guarantee the agreed use of this consent and the answers provided during the interview.

Researchers: Luna Weewer

Project Supervisor: Laura Franco Garcia, Victoria Daskalova

Participant: Tsjóna Bas

Signature of participant: Tsjóna Bas

Date: 9 June 2020



## Appendix F: Survey questions

**How much clothing & textile ends up on landfills or is incinerated?**

- ☐ 20%
- ☐ 46%
- ☐ 73%
- ☐ 81%

**How many jobs do you think recycling clothes can create?**

- ☐ Less jobs than making new clothes
- ☐ The same amount as making new clothes
- ☐ Two times more jobs
- ☐ Four times more jobs

**Can you save money with recycling clothes?**

- ☐ No recycled clothes are more expensive
- ☐ No recycled clothes and new clothes cost the same
- ☐ Yes, but only by recycling it yourself
- ☐ Yes, recycling clothes saves money

**Why do you buy new clothes: (more answers possible)?**

- ☐ Because I need new clothes
- ☐ Because I want to wear the latest trends
- ☐ Because I am bored of what I have now
- ☐ Because it makes me happy to buy new clothes

**How often do you buy new clothes?**

- ☐ Once a week (or more)
- ☐ Once a month
- ☐ Once every 3 months
- ☐ Once every half year (or less)

**Do you buy second hand/vintage clothes? If so, how often?**

- ☐ No
- ☐ Yes, sometimes
- ☐ Yes, often
- ☐ Yes, almost all the time

**When you buy clothing do you look at how sustainable they are?**

- ☐ No
- ☐ Yes, sometimes
- ☐ Yes, all the time

**Do you know how to recognise sustainable clothing?**

- ☐ No, I don't check
- ☐ No, it is very difficult to recognise sustainable clothing



- ☐ Yes, by the green/sustainable label
- ☐ Yes, because the brand says so

**Would you pay more for sustainable clothes?**

- ☐ No
- ☐ Yes
- ☐ That depends on the quality

**When do you throw away your clothes?** (more answers possible)

- ☐ When I don't like them anymore
- ☐ When there is something torn or broken
- ☐ When I don't wear them anymore
- ☐ When I have worn them for a certain amount of time

**From this list please select the most heard recycling possibility.**

- ☐ Selling your old clothes (Vinted, united wardrobe)
- ☐ Charity (leger des heils and other thrift stores)
- ☐ Getting them fixed (clothing repair store/tailor)
- ☐ Reuse the textile to make something new (cloths or make-up wipes)
- ☐ Collecting clothes to make new clothes (collection is done by stores and organisations)

**Which of them do you use?** (more answers possible)

- ☐ None, I throw my clothes away
- ☐ Selling your old clothes (Vinted, united wardrobe)
- ☐ Charity (leger des heils)
- ☐ Getting them fixed (clothing repair store/tailor)
- ☐ Reuse the textile to make something new (cloths or make-up wipes)
- ☐ Collecting clothes to make new clothes (collection is done by stores and organisations)

**What would drive you to make more sustainable choices regarding clothing?** (more answers possible)

- ☐ Lower prices
- ☐ More advertisement
- ☐ More recycling possibilities
- ☐ Seeing that others do it
- ☐ Other.....

**Would you buy less (new) clothes if you would know their large impact on the environment?**

- ☐ Yes
- ☐ No
- ☐ Maybe

## Appendix G: Survey calculations

**Calculation success rate:**  $n = N \div (1 + Ne^2)$

**Total surveys filled in:** 439

**Total surveys left blanc:** 50

**Total surveys filled in completely:** 389

**Calculation complete surveys filled in:** =SOM (total-empty cells)

**Calculation surveys left blanc:**=AMOUNT.EMPTY. CELS (A2:A440)

**Calculation complete:** =AMOUNTIF (A2:A440)

**Calculation percentage of answers per question:**

Answer 1	=AANTAL.ALS (A2:A440; answer 1)	Amount answer 1/total (in percentages)
Answer 2	=AANTAL.ALS (A2:A440; answer 2)	Amount answer 2/total (in percentages)
Answer 3	=AANTAL.ALS (A2:A440; answer 3)	Amount answer 3/total (in percentages)
Answer 4	=AANTAL.ALS (A2:A440; answer 4)	Amount answer 4/total (in percentages)
Total	=Total	=Total in percentages