Expectations of the Circular Economy in the Fashion Industry

Thesis Msc. Innovation Sciences

Supervisor: dr. Julian Kirchherr

Second reader: prof. dr. Marko Hekkert

Jelle van Brink
Student number: 3879100
J.vanbrink@students.uu.nl

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Universiteit Utrecht

Contents

Summary

The fashion industry is a pre-eminent example in the linear economy that shows the environmental pressure caused by high consumption. Large amounts of waste, use of chemicals, water, energy and resources typify this sector, which is has doubled in size the last 15 years. The recently upcoming approach of circular economy (CE) might provide an opportunity to address the causes of these environmental pressures, by transitioning to a new economic system where business models apply reducing, reusing, recycling and recovering materials to accomplish sustainable development. Technological, market related, regulatory and cultural aspects can influence the movement towards a CE. As such, CE can be seen as a systemic innovation. While it is impossible to predict how the circular fashion industry might actually develop in the future, the function of future expectations has been recognized as having a performative function. Through the coordination of activities, creation of legitimacy, mobilization of resources and reduction of perceived uncertainty expectations may 'guide' innovation in a certain direction. This function is stronger when expectations are widely shared within a field. To gain insight in how CE is developing, this thesis answers the question: *How do expectations of actor groups regarding approaches to create a CE, differ in the fashion industry in the European Union?* In this research expressed expectations on CE by industry associations, non-profit organisations, the fifty largest fashion companies, and the EU are studied. Data in press releases from January 2012 to May 2018 was collected and five interviews were done among stakeholders. The contents were analysed on expectations on circular strategies, barriers and drivers, and levels and terms of the expectations. The main findings are that, even though companies are reducing their impact for a longer period of time, the concept of CE has only begun to establish in the industry since 2015. At this point, the EU and industry associations do not have a major role in creating expectations. Companies envision reducing their impact by optimizing their production process and recycling while keeping production at a high level, though development of scalable recycling technology is still in an early phase. Non-profit organisation do recognize the need to reduce impact and recycle, though they envision a circular fashion industry where alternative business models, based on services, have a larger role, in order to decrease production levels.

1. Introduction

The current linear economy is characterized by a high demand for resources and producing a large amount of waste, which are often linked to pressures on the natural environment (Bocken, de Pauw, Bakker, & van der Grinten, 2016; Ellen MacArthur Foundation, 2013). The fashion industry is an example of an industry that puts such large pressures on the environment (Ellen MacArthur Foundation, 2017; The Global Fashion Agenda & Boston Consultancy Group, 2017). Currently the industry is driven by a high consumption of goods and produces large volumes of waste during clothing production and during and after the use phase (Ellen MacArthur Foundation, 2017). Fashion consumption is estimated to have consumed 79-93 million cubic meters of water in 2015, causing further pressure on water supply where scarcity is an issue, such as in China and India (Ellen MacArthur Foundation, 2017; GFA & BCG, 2017). Also in 2015 energy emissions for the sector equalled 1.2-1.7 billion tonnes CO_2 and 92 million tonnes of waste was created (Ellen MacArthur Foundation, 2017; GFA & BCG, 2017). Another pressure put on the environment by the industry is chemical pollution. Cotton production requires large amounts of fertilizer, insecticides and herbicides, which partly ends up in waterways (GFA & BCG, 2017). Furthermore, dying and treatment of textiles is estimated to cause around 20% of industrial water pollution globally (Ellen MacArthur Foundation, 2017).

One approach to address these issues which succeeded in attracting attention in business, governance and science is that of the circular economy (CE), which is aimed at reducing waste and use of resources (Bocken et al., 2016; Ellen MacArthur Foundation, 2013; Kirchherr, Reike, & Hekkert, 2017). Despite the attention on CE of different fields, it was recently noted that little agreement exists over the definition of the concept (Kirchherr, Reike, et al., 2017). In a study conducted by Kirchherr, Reike & Hekkert (2017) 114 definitions were analysed, on which the following definition, used in this research, is based:

"A circular economy describes an economic system that is based on business models which replace the 'end-of-life' concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes, thus operating at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), with the aim to accomplish sustainable development, which implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations" (Kircherr, Reike & Hekkert, 2017, p. 224-225).

While different business models to narrow, slow and close resource flows are the core of a CE, this often requires innovation in multiple areas and on different levels (Kirchherr, Bour, et al., 2017; Kirchherr, Reike, et al., 2017). Cultural, policy, market and technological aspects can be drivers or barriers that influence if the adoption of more sustainable business models is successful (de Jesus & Mendonça, 2018). As such, moving towards CE can be typified as an systemic innovation (Kirchherr, Bour, et al., 2017; Kirchherr, Reike, et al., 2017).

The role of expectations is an important factor in the early development of innovation, and thus CE (Borup, Brown, Konrad, & Van Lente, 2006; Konrad, 2006; Ruef & Markard, 2010; Van Lente, Spitters, & Peine, 2013). Social science studies have shown that expectations are performative; they influence the course of development of an innovation through the coordination of activities, creation of legitimacy, mobilization of resources and reduction of perceived uncertainty (Alkemade & Suurs, 2012; Van Lente et al., 2013). When the expectations on an innovation are aligned among actors over time and in content, these mechanisms perform stronger which could potentially help move towards a CE (van Lente & Bakker, 2010).

According to research on expectations on CE in the European Union (EU) from 2014-2015, a similar image of what CE entails exists among incumbents, NGO's (non-governmental organisations) and intermediaries, and governmental affiliates, however the manner in which to move towards CE is contested (Lazarevic & Valve, 2017). While NGO's stress that there is a need for radical change to address production and consumption, it is speculated that incumbents adhere to change within current institutions where business effort will create the transition to a CE (Lazarevic & Valve, 2017). At this time governmental affiliates were mostly involved in expressing the need for collaborative effort (Lazarevic & Valve, 2017). As this research was not sector specific and was limited as it accounted for expectations of actors involved in influencing European policy, more research is needed for insight in the transition to CE in the fashion industry.

To gain this insight in how adoption of strategies towards CE will develop in the fashion industry, this explorative research will focus on the expectations regarding CE of several actor groups, namely incumbent, industry associations, the European government, and NGO's focussed on sustainable fashion. The aim is to find to what degree the expectations of actor groups differ, by looking at content and longitudinal patterns of expectations. The research question that will be answered is:

How do expectations of actor groups regarding approaches to create a CE, differ in the fashion industry in the European Union?

Regarding incumbent companies specifically, this research looked at the expectations of the largest fashion brands operating in the EU. A large part of the value-chain related to production and manufacturing fashion, takes place in low-cost countries with more lenient environmental regulation (de Brito, Carbone, & Blanquart, 2008). From a supply-chain management perspective, fashion brands ideally control the different tiers in production to bring their product to the market, and thus have relative power over the supply-chain (Brun & Castelli, 2008). By studying the expectations of strategies towards CE by brands, the factor with presumably the largest impact on the industry is the focus of this research. Furthermore, expectations of the European government, NGO's focussing on sustainable fashion and industry associations will be studied.

By analysing both the content and frequency of the expectations in press releases and supplementing these with stakeholder interviews, a thorough narrative on the visions of CE in the fashion industry is provided. The factors where different visions deviate and inhibit advancement towards CE, can be addressed by business, government and research for an informed discussion to align expectations. This could aid more sustainable practice in the fashion industry to be introduced faster. Furthermore this is, to the authors knowledge, the first study that explores the role of differing expectations in relation to a system innovation. This study shows that not only the actual barriers and drivers for circular strategies determine how and if CE is implemented, but that also the perception and the subsequent expression of shared expectations towards the circular strategies are performative for future developments.

2. Theoretical background

In this theory section different conceptualizations which were needed to answer the research question are explained. In section 2.1 the concepts related to CE are discussed, followed in section 2.2 by an overview of the sociology of expectations.

2.1 Circular Economy

The concept of CE has come into being as opposition to linear economy, which is typified as a system that consumes natural resources with little regard for the remains of the products created from these resources (Murray, Skene, & Haynes, 2017). CE has been described as an umbrella concept covering a multitude of strategies to attend the comparative disregard to resource consumption and waste production in linear economy, which needs further interpretation to be operationalised (Blomsma & Brennan, 2017). The shift from linear economy to CE is helped by drivers and hindered by barriers (de Jesus & Mendonça, 2018; Kirchherr, Bour, et al., 2017; Ritzén & Sandström, 2017). Analysing which strategies, barriers and drivers linked to CE are commonly mentioned in the fashion industry, provides insight in the content of industry expectations.

2.1.1 Strategies for CE

As stated in the used definition of CE, it is based on business models that reduce, reuse, recycle and recover materials (Kirchherr, Reike, et al., 2017). Bocken et al. (2016) describe the first three approaches as narrowing, slowing and closing resource flows. The narrowing resource flows approach entails less resources being used per product, so that resource demand goes down, and is already being integrated in linear economy (Bocken et al., 2016). However, as noted this approach on its own does not necessarily lead to a more sustainable economy, as it might still be accompanied by increased production and consumption of goods, while they are being produced more efficiently (Bocken et al., 2016). Therefore Bocken et al. (2016) stress that the time dimension is taken in regard as well in narrowing resource flows, which is an important notion in the fashion industry. This is because the growth of the apparel sector and lesser utilization of clothes have been described in relation to fast fashion business models (DiVito & Bohnsack, 2017; Fletcher, 2010; Todeschini, Cortimiglia, Callegaro-de-Menezes, & Ghezzi, 2017; Turker & Altuntas, 2014). Fast fashion is part of a business model wherein the latest trends on the catwalk, reach the consumer fast and in large volumes (Fletcher, 2010; Todeschini et al., 2017). Often lesser quality materials are used, so that shorter product life drives consumption further (Fletcher, 2010; Todeschini et al., 2017). Thus, only reducing the materials per product is not sufficient to move towards CE.

In slowing resource flows the time dimension is already addressed. Slowing resource flows means that products are used longer, which can be achieved by altering product-design or by bringing into life services that can prolong the products useable period, for example by repairing or refurbishing products (Bocken et al., 2016; Potting, Hekkert, Worrell, & Hanemaaijer, 2017). Closing resource loops refers to recycling materials at the end-of-life stage of products (Bocken et al., 2016). Important in strategies aimed at recycling materials is that ideally the grade of quality of the recycled materials does not deteriorate in the process (Bocken et al., 2016).

The last approach mentioned the adopted definition is recovering from resources, which is aimed at recovering energy from incineration (Kirchherr, Reike, et al., 2017; Potting et al., 2017). According to Bocken et al. (2016) recovery is not part of CE but rather a practice fitting linear economy, as only part of the resources is used in this process. While this is a compelling argument for a perfect CE, this might currently not be achievable. A popular way to address this concern is by organising the approaches in a

hierarchy that ranks different strategies according to their impact on the shift towards CE, ranking from reducing to recovering (Kirchherr, Reike, et al., 2017; Potting et al., 2017). In figure 1 different strategies related to the approaches are depicted in the 9R framework by Potting et al. (2017).

Regarding the results, it is expected that incumbent fashion brands and industry associations will favour approaches that enable companies to be more sustainable, but at the same time not have an effect on the number of sales of products. Recycling and producing products

Circular economy	Strategies		
Smarter product use and manu-facture	R0 Refuse	Make product redundant by abandoning its function or by offering the same function with a radically different product
	R1 Rethink	Make product use more intensive (e.g. by sharing product)
	R2 Reduce	Increase efficiency in product manufacture or use by consuming fewer natural resources and materials
Extend lifespan of product and its parts	R3 Reuse	Reuse by another consumer of discarded product which is still in good condition and fulfils its original function
	R4 Repair	Repair and maintenance of defective product so it can be used with its original function
	R5 Refurbish	Restore an old product and bring it up to date
	R6 Remanufacture	Use parts of discarded product in a new product with the same function
	R7 Repurpose	Use discarded product or its parts in a new product with a different function
Useful application of mate-rials	R8 Recycle	Process materials to obtain the same (high grade) or lower (low grade) quality
	R9 Recover	Incineration of material with energy recovery

Increasing circularity

Linear economy

Figure 1: The 9R framework consisting of hierarchical strategies for a Circular Economy (Potting et al., 2017)

more efficiently by reducing materials are examples of these strategies. NGO's on the other hand are expected to stress that strategies towards CE higher in the hierarchy need to be adopted, such as reducing number of sales and repairing and refurbishing products. The EU government is expected to not have a strong focus on which strategies will be part of a circular fashion industry, but rather accept all progress made.
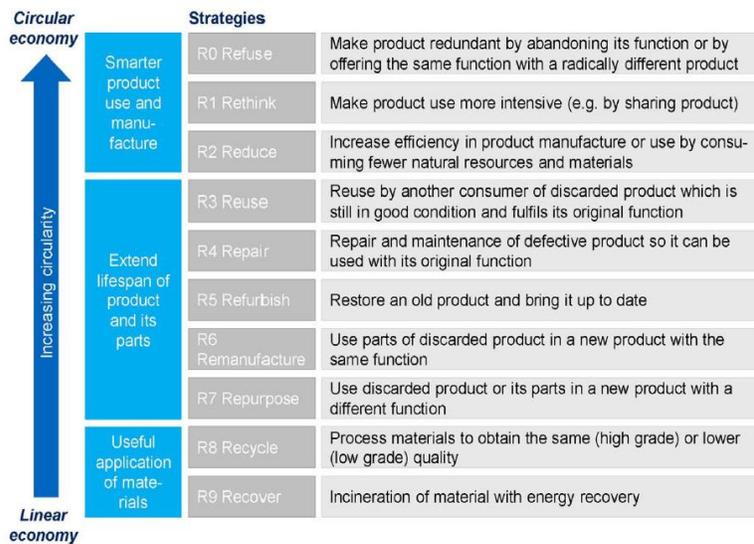
2.1.2 Barriers and Drivers to CE

Even with strategies of increasing circularity in mind, reaching a CE requires understanding of the drivers of and barriers to the systemic shift (de Jesus & Mendonça, 2018; Kirchherr, Bour, et al., 2017). de Jesus & Mendonça (2018) identified four broad factors that can stimulate and impede the shift to CE, namely market, technological, cultural and regulatory factors. In table 1 an explanation of what the factors include according de Jesus & Mendonça (2018) is given. Within these four factors a distinction is made between harder market and technological factors, and softer cultural and regulatory factors (de Jesus & Mendonça, 2018). However, as Kirchherr et al. (2017) note, in sociological science regulatory factors are perceived as harder factors. As a sociological framework is applied in this study, this separation between hard and soft factors is not made.

Table 1: Typology and definition of driver of, and barriers to CE, adopted from de Jesus & Mendonça (2018).

	Drivers	Barriers
Technical	Availability of technologies that facilitate resource optimisation, re-manufacturing and re-generation of by-products as input to other processes, development of sharing solutions with superior consumer experience and convenience	Inappropriate technology, lag between design and diffusion, lack of technical support and training
Economic/Financial/ Market	Related to demand-side trends (rising resource demand and consequent pressures resource depletion) and supply-side trends (resource cost increases and volatility, leading to incentives towards solutions for cost reduction and stability)	Large capital requirements, significant transaction costs, high initial costs, asymmetric information, uncertain return and profit
Institutional/ Regulatory	Associated with increasing environmental legislation, environmental standards and waste management directives	Misaligned incentives, lacking of a conducive legal system, deficient institutional framework
Social/Cultural	Connected to social awareness, environmental literacy and shifting consumer preferences (e.g. from ownership of assets to services models)	Rigidity of consumer behaviour and businesses routines

Kirchherr et al. (2017) note that the categories of barriers are not self-contained, but rather are nested. According to the authors, it can be argued that cultural barriers can determine regulatory barriers, which in turn can create market barriers through regulation (Kirchherr, Bour, et al., 2017). As the market is often a decisive factor for technologies to be developed, market barriers can create technical barriers as well (Kirchherr, Bour, et al., 2017). Within the categories of barriers, different sub barriers can also be interrelated and cause a chain reaction, for instance when a lacking consumer awareness and interest cause a hesitant company culture (Kirchherr, Bour, et al., 2017).

Actors that prefer a certain approach towards CE, are expected to emphasize the drivers for this approach, while being more likely to express barriers for non-preferred approaches. By doing so, actors can try to influence the common vision of the direction of CE.

2.2 Sociology of Expectations

Expectations in STI are commonly defined as *"real-time representations of future technological situations and capabilities"* (Borup et al., 2006, p.286). As the researched innovation in this study, namely CE, is not only consist technological, but also of market, regulatory and cultural factors, a broader definition will be applied. Following Budde, Alkemade & Weber (2012), explanations will be described as 'real time representations of future situations'.

2.2.1 Expectations in Innovation Systems

As mentioned before, expectations are performative (Borup et al., 2006; Konrad, 2006; Ruef & Markard, 2010; Van Lente et al., 2013). A more commonly known illustration of the performative mechanism behind expectations, is that of the self-fulfilling prophecy (van Lente, 2012). When a perception of the future is collectively shared, it can be acted on as if true or serve as a goal for actions, even when it is not yet a reality outside of that perception (Van Lente, 2012). In this manner, expectations can serve as coordination for actions, act as a legitimisation and mobilize resources to be invested towards the expected future while also reducing the uncertainty of actions (Alkemade & Suurs, 2012; van Lente, 2012; Van Lente et al., 2013).

As expectations are performative, they offer strategic value for stakeholders in an innovation process (Alkemade & Suurs, 2012; Berkhout, 2006). Actors may try to influence the reputation of an innovation either pro-actively or reactively by expressing their perceived or preferred future situations (Alkemade & Suurs, 2012; Berkhout, 2006; van Lente, 2012). In this case, the content of expectations becomes more important. In the case of the fashion industry, this might mean that barriers for preferred circular strategies are downplayed or expressed as an opportunity and the barriers for disfavoured strategies are amplified, while the opposite can happen for the drivers.

2.2.2 Characteristics of Expectations

The content of expectations can vary widely. In the sociology of expectations, often a distinction is made in three levels on which the expectations can take place (Alkemade & Suurs, 2012; Borup et al., 2006; Budde et al., 2012). These are, according to the terminology of Borup et al. (2006), the micro-, meso- and macro-level. The micro-level refers to expectations that are specific, as they result from development of projects and in firms (Borup et al., 2006; Van Lente et al., 2013). Expectations on meso-level are often more general as they contain visions on industry developments (Borup et al., 2006; Van Lente et al., 2013). Lastly, expectations on societal level, which often envelop large trends and ethical debates, are in the macro-level (Borup et al., 2006; Van Lente et al., 2013). Konrad (2006) notes that expectations of various levels can also influence each other as they develop. One example is when the results of a company project

are positive, this can influence the expectations on the industry development. Another example is when visions for a more sustainable industry or society, influences expectations on the future sustainability of the firm.

Other than taking place on different levels, the content of expectations can also be focussed on short or long term developments (Alkemade & Suurs, 2012). Negative short term expectations might be countered by positive long term expectations, or vice versa, to shift the general perception of an innovation. Al stakeholders are anticipated to express expectations on different levels and terms. Fashion companies are somewhat more likely to express short term expectations on firm level in relation to their own business practices. NGO's and the EU are more likely to present a vision of the future on a societal or industry level, to influence the general direction of the debate.

2.2.3 Hype Cycle

A model that uses the analysis of collectively shared expectations is the hype-cycle, used in business to determine the stage of the technological field (Van Lente et al., 2013). The Gartner hype-cycle, depicted in figure 2, is a well-known example for this (Van Lente et al., 2013). As this model is used to measure the diffusion of technology, it is not necessarily suitable for studying the development of expectations in practice, however it does show the basic dynamics of a hype (Bakker & Budde, 2012; Van Lente et al., 2013).
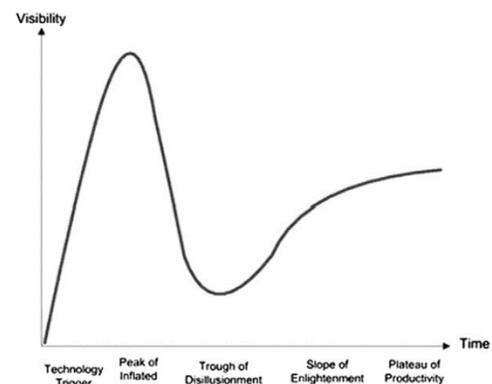

Following Van Lente, Spitters & Peine (2013), the most important notions of the hype-cycle are the peak expectations and the trough of disappointment. Towards the peak, positive

Figure 2: The Gartner Hype Cycle (Van Lente et al., 2013)

expectations often grow in number as actors are joining the collective with interest for the innovation (Bakker & Budde, 2012). This can culminate in a peak of expectations if expectations are overstated (Bakker & Budde, 2012; Van Lente et al., 2013). What follows is the trough of disappointment, where the enthusiasm for the innovation drops, when the inflated expectations are not met (Bakker & Budde, 2012; Van Lente et al., 2013). If a peak and through have occurred, can naturally only be determined in hindsight (Bakker & Budde, 2012). After the trough of disappointment, a slow recovery of expectations can take place as innovations gradually develop (Van Lente et al., 2013). It is noted that not all innovations recover, but some either die out or only aspects of the innovation will be incorporated in other developments (Kirkels, 2016). Different characteristics of expectations have been related to the degree of occurrence of hype-dynamics (Kirkels, 2016; Van Lente et al., 2013). When these characteristics of expectations align neatly, it is more likely that disappointment occurs, where if there is some misalignment between expectations, a reconfiguration of the innovation and recovery of expectations is more easily achieved (Alkemade & Suurs, 2012; van Lente, 2012; Van Lente et al., 2013).

As CE is a rather broad concept and with both drivers and barriers present, misalignment of expectations is likely to occur in the results. Possible peaks in the expectations are likely caused by important events, such as certain regulation being debated, reports being published or events being held. Deep troughs in positive expectations are unlikely as there are multiple approaches towards CE which are reoccurring in the societal debate.

9

3. Methods

3.1 Research Design

The research question is answered with a longitudinal study on expressed expectation regarding CE approaches by different stakeholders. The data that was collected and analysed are press releases from January 2012 to May 2018. The reason 2012 was chosen as a starting point, is that the report of The Ellen MacArthur Foundation published in the beginning of that year can be viewed as the start of the CE concept getting traction in society, for example indicated by the increasing use of Circular Economy as search term since then (Bocken et al., 2016; Google, 2018). In addition to press releases, further secondary data was collected and semi-structured interviews were held to triangulate the data. This way, a more complete overview of visions regarding CE in the fashion industry can be created.

3.2 Sampling Method

For this research, a purposive sampling method was applied, where the focus is on the EU and the most relevant organisations are selected. The European government, as the regulator of the European single market, is the first stakeholder from which expectations were collected. EU members are obligated to follow EU regulation on sustainability and as such the EU is a relevant level of studying expectations.

Fashion companies were regarded as the second stakeholder group in this study. According to the European Apparel and Textile Confederation (EURATEX), over 120.000 clothing companies were active in the EU in 2016 (Euratex, 2017). In this study, the choice is made to look at expectations of the fifty incumbent companies, covering 212 subsidiary brands, with the highest market capitalization according to Fashion United, that operate in the European market (Fashion United, 2018). The rationale is that the relative largest part of the fashion industry of the EU can be covered with this method.

Thirdly, European industry associations are part of the sample, as these parties may influence European regulation on behalf of the clothing and textile industry. This includes organisations representing large parts of the industry and also coalitions formed by industry players on the subject of sustainability. Six relevant industry associations were identified as can be seen in appendix A.

The last actor group is that of the NGO's and non-profit organisations. This group consist of several different organisations, like Greenpeace, striving for a more sustainable world in general, to the C&A foundation, focussed on improving sustainability for the C&A brand and the fashion industry. Initially, the Global Fashion Agenda was included in this group. However, their press releases were not dated and did not suit this study, so it was decided that they were omitted. A total of eleven relevant non-profit organisations were included. A list of all organisations can be found in appendix A.

The interview respondents were selected by convenience sampling (Budde, Alkemade, & Hekkert, 2015; Budde et al., 2012). A total of five interviews were held, which were divided over stakeholders from different actor groups to ensure diverse perspectives on the subject will be found (Budde et al., 2015; Eisenhardt & Graebner, 2007). Three of the interviews were done telephonically, one of these supplemented with e-mail correspondence, and two were done face-to-face. The interview lasted between 30 and 77 minutes. None of the respondents requested to be included anonymously in this study, their names and function can be found in table 1.

Table 2: List of interview respondents

Name	Function
Douwe Jan Joustra	Head Circular Transformation, C&A Foundation
Emilija Bertasiute	Change Agent, Youth Fashion Summit; Sustainability Advisor, Fashion For Good
Emile Bruls	Advisor Circular Textile, Rijkswaterstaat (Part of the European Clothing Action Plan)
Mariëlla Noto	Interim Manager CSR & Sustainability, Asics EMEA;
	Training Development Consultant, ZDHC
Tamara Zwart	Director Textile/Apparel & Stakeholder Engagement, Fashion Positive

3.3 Data collection

To understand to what degree expectations regarding CE differ for the fashion industry, three types of data were collected. The main source of data are the press releases and public documents published by the different stakeholders. Data was gathered through stakeholder websites, by searching in press releases related to environmental sustainability or with the search-terms in in figure 2. In some cases press releases were omitted, as they only contained information on awards or recognition of sustainability efforts and did not contain relevant information. The search terms are identified by Bocken, Ritala & Huotari (2017) as the most used by business in relation to circular economy, added upon by the author. The data found was downloaded directly, or copied of a webpage and stored in a text file for coding. Other secondary sources have been used in order to gain a better understanding of the context of CE in the fashion industry. These were grey literature, webpages or other press releases not released by stakeholders within the sample.

Table 3: Search terms for desktop research, partly adopted from Bocken et al. (2017)

Search terms Circular Economy			
Maintenance	Zero waste	Industrial ecology	Slow fashion
Recycle	Remanufacture	Minimize waste	Green label
Refurbish	Closed Loop	Close the loop	Fair
Waste Management	Less Waste	Nature-inspired	Footprint
Compost	Resource efficiency	Reuse waste	CSR
Reduce Waste	Cradle to cradle	Cradle-to-cradle	Environment
Closed-loop	Zero-waste	No waste	Sustainable

The interviews were held following a semi-structured set-up. The interview started with an inquiry on topic of past expectations on CE and how expectations have changed regarding the fashion industry. In the interviews the timeline composed from the desk-top research was used by the interviewer to be able to inquire into specific events. It was noted that there is the danger that respondents might unknowingly use retro-active sense making to explain the relation between past and current time. This means that certain factors that played a role in further development of innovation or expectations might be given either a bigger or smaller role in explanation. Despite this risk of bias, interviews are still seen as a good source for data (Budde et al., 2015; Eisenhardt & Graebner, 2007). The interview guide that was used can be found

in appendix B. Interviews were recorded, with permission of the respondent, and transcribed so that they could be coded.

3.4 Operationalization and Data analysis

To analyse what the expectations on CE in the fashion industry contain, it is operationalised by using the strategies of Potting et al. (2017) discussed in the theory section. The indicators are explanations of the strategy or particular business models fitting the strategies. These business models are identified from the report from the EMF (2017) and linked to the respective circular strategies the used framework, as seen in table 4. The levels of expectation were coded on the firm, industry or societal level and the terms of the expectations on short term, less than 5 years, long term, longer than five years, or as undetermined, when the expectation contains a general vision on CE. Regarding the expressed drivers and barriers, the indicators were adapted from the study of Kirchherr et al. (2017). As actors can express a current barrier as being a future driver, the decision was made to only include the topics of the barriers and indicate whether it was expressed as a driver or barrier by actors. This way, it was possible to compare expressions per concept well. Furthermore, some indicators have been adapted to encompass circular strategies in a broader sense. For example the market barrier 'low prices of virgin material' is changed to 'economic viability of circular alternatives' as this encompasses not a possible barrier to recycling, but also to other alternative business models.

The qualitative data was analysed using NVivo 11. As indicators for the concepts of CE, levels and term of expectations can be coded according to the indicators, a priori coding was applied for these categories. Coding for expressed barriers and indicators was done through open coding followed by axial coding per indicator, as to preserve the qualitative content of the data.

The counts of the number of expectations on circular strategies showed if hype patterns exist. The content in other categories provided insights on how expectations between actor groups differ. Both the content of expectations and the quantitative patterns were triangulated with the other secondary data and the interview results in order to explain differences in expectations between actor-groups.

3.5 Research quality

The internal validity of the research is fostered in several ways. First interviewees were guaranteed anonymity in the publication of this research if requested, so that sensitive information cannot be traced to them. This way information gained in the process is more trustworthy. Furthermore, because data-triangulation was applied as described before, the results are more likely to be an accurate representation.

In this studie, external validity is a harder measure to ensure. As purposive sampling was applied and specific cases were selected, results are not automatically applicable to the whole industry. In a recent publication it was suggested that commitment to sustainability by fashion brands is related to company size, as most smaller brands, except those in the sustainability niche, do not possess the knowledge and resources to operate more sustainable (GFA & BCG, 2017). As such this sample is not representative for the fashion industry as a whole per se. In this research this was sensitized through the use of additional secondary data.

The reliability was ensured by applying a structured documentation and analysis of the data, so results can be traced back to certain findings. Replicability of the study is hard to ensure for interviews, as social settings and practice change constantly. Therefore, it is impossible for interviews to return the same results.

Table 4: Operationalisation table of content of expressed expectations

Concept	Sub-concept	Indicator	Data
Circular Economy	*Refuse*	Refusing sales of clothing	Press releases and Interviews
	Rethink	Making product use more intensive through clothing libraries, service models or design for durability	Press releases and Interviews
	Reduce	Reduce environmental impact by optimizing materials and production processes	Press releases and Interviews
	Reuse	Stimulate reuse of clothing, for instance through reselling second hand clothing	Press releases and Interviews
	Repair	Prolong product use through offering repair services	Press releases and Interviews
	Refurbish	Redesign old clothing or clothing collections	Press releases and Interviews
	Remanufacture	Use parts of old clothing to produce new garments	Press releases and Interviews
	Repurpose	Use parts of garment to create new products	Press releases and Interviews
	Recycle	Process textile to create material input for clothing production (high grade) or for products that require lower quality material input (low grade)	Press releases and Interviews
	Recover	Incineration of textile for energy recovery	Press releases and Interviews
Level of expectation	*Firm*	Expressed expectation applies to firm or operations in the firms value chain	Press releases
	Industry	Expressed expectation apply to fashion industry	Press releases
	Societal	Expressed expectation applies to general society	Press releases
Term of expectation	*Short term*	Expectations on short term, less than 5 years	Press releases
	Long Term	Expectations on long term, more than 5 years	Press releases
	Undetermined	General forward looking statements with no indication of time-scale	Press releases
Perceived Drivers (positive statements) and Barriers (negative statements)	*Technical*	Presence of technology circular material and process	Press releases and Interviews
		Degree of circular design	Press releases and Interviews
		Large-scale demonstration projects	Press releases and Interviews
		Availability of data	Press releases and Interviews
	Market	Economic viability of circular alternatives	Press releases and Interviews
		Degree of standardization	Press releases and Interviews
		Investment costs	Press releases and Interviews
		Funding for circular business models	Press releases and Interviews
	Regulatory	Degree of circular procurement	Press releases and Interviews
		Presence of obstructing laws and regulation	Press releases and Interviews
		Degree of global consensus	Press releases and Interviews
	Cultural	Company culture regarding CE	Press releases and Interviews
		Collaboration in value chain	Press releases and Interviews
		Consumer awareness and interest	Press releases and Interviews
		Influence of operating in a linear system	Press releases and Interviews

4. Results

4.1 Press releases

A total of 536 press releases were collected and coded. When the press releases on sustainability collected are displayed over time with a trend line, as seen in figure 3, no obvious pattern of a hype cycle can be

seen. There is a slight increase in publications from 2015 onwards, however no peak can be determined. Another notion is that the number of press releases differ greatly between studied cases. The number of press releases per organisation differed greatly, 22 organisation released no news items on sustainable practices, 32 released one to fifteen and 13 organisations released between 15 and 63. A full overview of number of press releases per organisation can be found in appendix A. Regarding the terms for which expectations are expressed, no major

Figure 3: Press release per month from January 2012 to May 2018

differences between actor groups were found in the results. Of the expectations, 31% was on short term, 30% on long term an 39% was undetermined. The levels on which expectations were made differed more between groups, where companies expressed 80% of their expectations on firm level, other organisation expressed 82% on industry level.
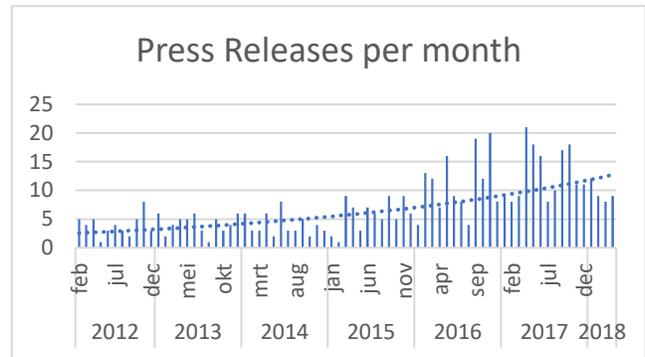
4.2 Circular strategies

In the collected press releases, 457 references were found that could be accounted to a specific circular strategy. Of these references, 337 were found to be forward looking statements and thus be counted as expectations. The majority of expectations regarding circular strategies are referring reduction of the use of resources in product manufacturing, while the second largest group of expectations is referring to the recycling of textile. The other strategies together only account for 13% of all expectations on circular strategies. In figure 4 the amount of expectations regarding reducing, recycling and the total of other strategies over time are visualized. What is noticeable is that before 2016 almost no expectations on
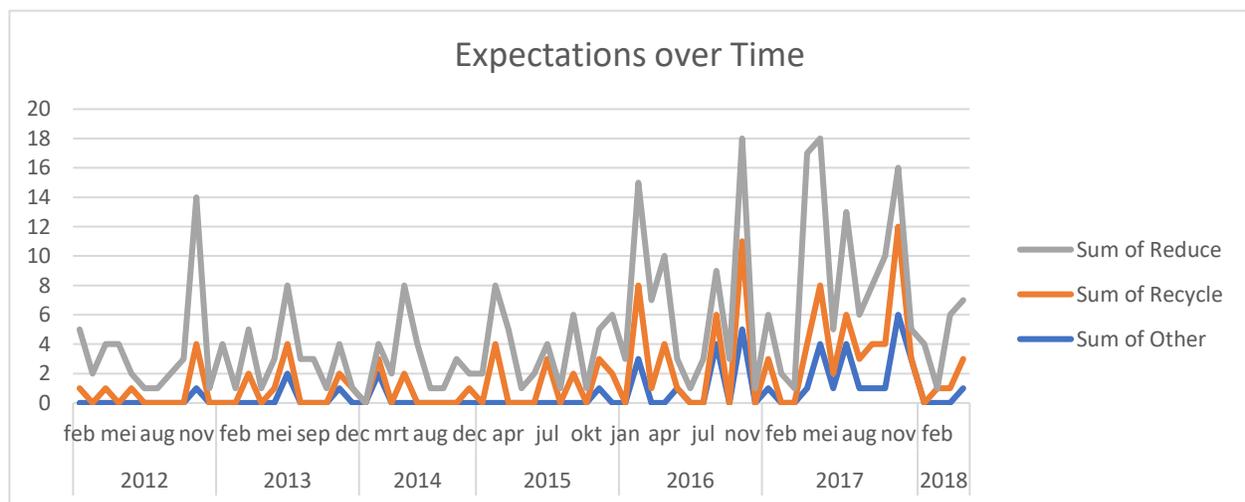

Figure 4. Expectations regarding Reducing, Recycling and Other strategies over time

14

strategies other than reducing resources and recycling were expressed, and this has increased since then. Interesting to note from the beginning, that in the press releases gathered from the EU, only two mentions were found for recycling specific to textile and the industry associations had fifteen references in total, thirteen to reducing strategies, and one to recycling and reusing each. This indicates that these actor groups are not yet majorly involved in the formation of circular practices. The rest of the mentions to circular strategies were made by non-profit organisations and companies, for which the following paragraphs will discuss the findings.

4.2.1 Reducing

In 2011, nine brands founded the Zero Discharge of Dangerous Chemicals (ZDHC) foundation, with the aim to phase out nine chemicals that are harmful to health by 2020 (Zero Discharge of Hazardous Chemicals Programme, 2013). In November 2012, Greenpeace launched their Toxic Threads report, targeting 20 international brands (Greenpeace International, 2012a). In their investigation, Greenpeace found that around two thirds of 141 pieces of garments tested were produced in factories that release chemicals that are hazardous to health (Greenpeace International, 2012b). In figure 4 it can be noted that in this month a peak of expressed expectations occurred, caused by companies reacting to allegations made by Greenpeace. These events are noted to have been important in forming awareness concerning sustainability by various interviewees and non-profits and companies recognize the need to reduce chemical use. Over time, these companies have expressed the expectations to have no discharge of hazardous chemicals in their supply chain in 2020, which is reducing the environmental impact of their product.

Another impact that the fashion industry addresses with the strategy of reducing, is the high environmental impact of cotton. While it appears from the press releases that companies like C&A and H&M are frontrunners in implementing the use of sustainable cotton in their products, several other companies studied also have expressed specific expectations on the short and long term related to their increase of use of sustainable cotton which is supported by NGO's. The Better Cotton Initiative (BCI) is one of the certifications for more sustainable cotton. It currently accounts for 14% of the cotton produced worldwide, with the expectation to increase the percentage to 30% by 2020 (Better Cotton Initiative, 2016). By implementing more sustainable cotton, such as BCI, companies in the fashion industry reduce the use of pesticides and herbicides, water use, use of fertilizer and land degradation as well as improving the life of cotton farmers. These views on the benefits of using more sustainable cotton is furthermore backed up by the resolution of the European parliament adopted in April 2017 (European Parliament, 2017).

Expectations on further reducing the use of energy and increasing the use of renewable energy are another common theme in the expectation expressed by companies and NGO's. However, it is not always clear from the expectations if this reduction on energy use is for company operations, such as stores and warehouses, or throughout the supply chain.

4.2.2 Recycling

The strategy supporting a CE that is mentioned the second most in expectations, is recycling. Both companies and other organisations believe that closing the loop through recycling is crucial in order to create a CE, as this is the way to reduce the need for virgin materials. Companies have expressed both general and specific expectations on their future use of recycled materials. H&M for instance, has stated their products will only contain recycled material from 2030 onward. These expectations go alongside a

multitude of projects worldwide to develop techniques supporting recycling, such as the Fibresort, a technique to sort garments on their fibre composition, and Re:Mix, a project aimed at creating a marketable technique to separate and recycle textile of mixed material compositions (Circle Economy, 2016; Mistra Future Fashion, 2017). This vision on the importance of recycling is furthermore shared by the European government. In April 2017 the European Parliament adopted a resolution calling on the EU and its members to support recycling through legislature and through funding for research and development to promote recycling practices (European Parliament, 2017).

There is however some criticism on the focus on recycling as the main solution to move towards a circular economy, which was made specific by Greenpeace. According to Greenpeace recycling should not be the only main focus, as they do not believe complete recyclability to become a reality and recycling does not necessarily address the material intensive customs on which the fashion industry is build (Greenpeace International, 2017). As such, Greenpeace believes the industry should focus on other circular strategies as well.

4.2.3 Other circular strategies

For the remainder categories of strategies that fall into the CE, far less expectations were expressed, as can be seen in figure 5. When looking at all statements made which can be attributed to certain strategies fitting CE, as seen in figure 5, organisations in the other category mentioned circular strategies twice as often as companies do.
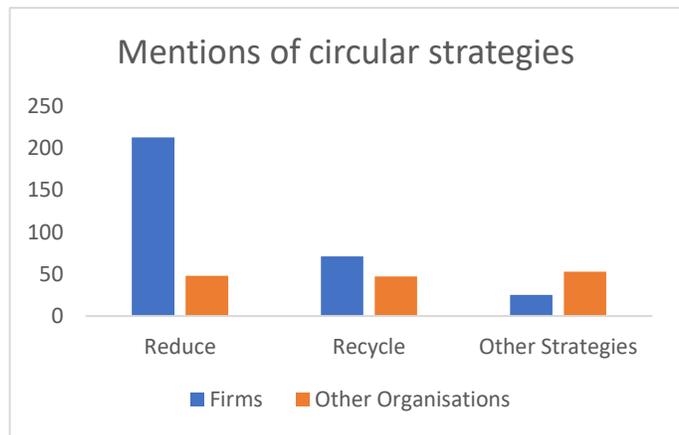
One of the strategies is mentioned is the reuse of clothing. Companies such as H&M, C&A, Adidas and several others work with I:CO, an international company that collects clothing for reuse and recycling by offering consumers

Figure 5. Total mentions of circular strategies for Reducing, Recycling and other

an incentive to hand in used clothes (C&A Foundation, 2016). Also, the Danish brand Bestseller recently expressed to offer used garments on the market and some smaller companies like Patagonia, though not studied in this research, have a marketplace to sell and buy their brands' second hand clothing (Bestseller, 2017; Patagonia, n.d.). Barring these examples of reuse in the fashion industry, companies themselves have not shown much interest to develop their business models to actively promote reuse of their own clothing, while most NGO's consider reuse to be an important step towards a CE as found in the data.

Rethinking the way clothing is brought to consumers, is another option to increase the utilization of garments. Business models based on this strategy are clothing lease and rental, subscription models, and clothing libraries (Nielsen & Gwozdz, 2018). When the importance of the strategy rethinking is mentioned in expressed expectations, the statements were general and on industry level and made by NGO's. The interviews respondents were, to different degrees, positive on the development of the leasing and rental business models. Leasing and renting clothing, which are similar but deliver clothing for respectively longer or shorter periods of time, have the advantage that clothing is worn more often and gives companies the incentive to design products with regard to the whole life cycle, according to Douwe Jan Joustra. He notes

that by binding customers and being able to track the service provided, companies gain more insight that can be used to better predict their future production as well.

Another way of rethinking clothing, is designing garments for a longer life-time by increasing the quality. While some firms, like Kering and H&M, have expressed this need, it is mostly NGO's who focus on this point (H&M Group, 2016; Stella McCartney, 2017). The same goes for repairing garments, as few companies express the need for this. Refurbishing clothing, which means in the context of the fashion industry to use old garments and adjusting these to make the clothing fashionable once more, is also mentioned only in a general sense. While it is current practice, recovering energy or repurposing clothing as for example isolation, has not been an expected to be part of CE in the fashion industry, and the same goes for remanufacturing. Regarding the strategy refusing, only Greenpeace has stated that less clothing should be bought in press releases, however this is aimed at consumers more than companies.

4.3 Barriers and Drivers

In the press releases, there were 236 mentions of drivers to a circular economy and 112 mentions of barriers. During analysis it is noted these barriers and drivers were often expressed not as forward looking statements, but in present tense, even though they are used as explanation for why certain expectations are held. In the cases where barriers and drivers are prospectively, it will be made specific in this chapter. Furthermore, while some drivers and barriers are mentioned for defined circular strategies, others are more commonly applicable to CE. No large differences were noted between actor groups regarding the type and content of barriers and drivers mentioned, the full table of drivers and barriers per indicator and per actor group can be found in appendix C. In figure 6 the number of barriers and drivers per category are displayed.
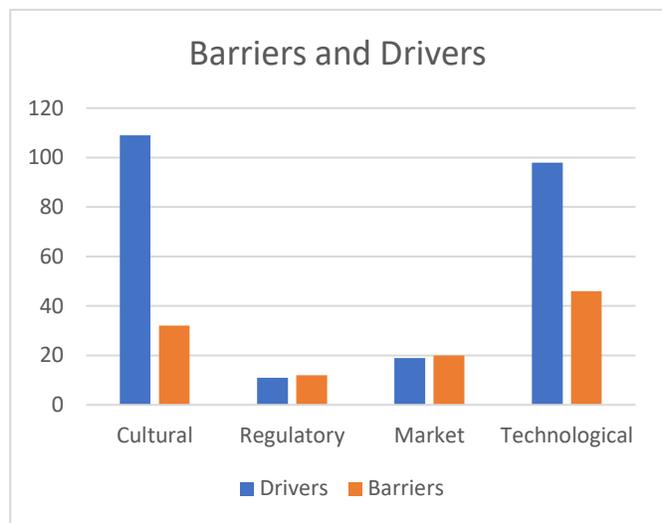

Figure 6: Number of barriers and drivers for cultural, regulatory, market and technological factors

4.3.1 Drivers

4.3.1.1 Technical drivers

The availability of new technology is mentioned in 24% of all drivers. Especially, the role of recycling in is highly anticipated. This is related to the expectation that recycling technologies will be an important driver for this development. Fabrics are often made from a blend of materials to increase durability, for instance a mix of cotton and polyester. These fabrics cannot be recycled mechanically, which is done by grinding up textile and use the fibres to make new fabric, as the materials need to be separated (Elander & Ljungkvist, 2016). Chemical recycling techniques are expected to provide a solution for this issue. Other anticipated technological drivers focus on improving the production processes. Companies as DyeCoo, which developed the first waterless dying technology, and Jeanologia, which made the production process of denim more sustainable, are some of the producers of technology that are collaborating with major fashion companies and drive sustainability (Munuera, 2017; Nike Inc., 2012).

17

Another technological driver is the development of knowledge of materials used in the industry and the tools that are provided to use this knowledge, mentioned in 14% of the drivers. One of the most used set of tools in the industry is the Higg Index, used by more than 10,000 manufacturers worldwide and representing around a third of the industry (GFA & BCG, 2017; Sustainable Apparel Coalition, n.d.). The Higg Index contains an array of tools which inform on material impact and helps designers make low-impact choices in their process, provide a life-cycle assessment for products, evaluate supplier facilities and evaluate a brands social and environmental sustainability. With the knowledge in these tools, companies are able to design more sustainable clothing.

4.3.1.2 Market drivers

The market drivers found are related to the economic viability of more sustainable fashion. The increasing volatility of raw materials availability, which may drive future demand for recycled materials, is one reason for this. By relying on recycled materials, companies have an increased control over resource flows and are less dependent on the external environment. One event, that according to one of the interviewees might have made fashion companies aware of their dependability on external resources, was the increased cotton prices due to a bad harvest in 2011. Cotton prices rose to the yearly average of 155,7 U.S. cents per pound, which is almost double of the yearly average between 2012 and 2017 (Statista, 2018). Furthermore, for instance according to Circle Economy, the increase in demand for recycled material, can in the future increase availability and affordability of said materials, which in turn can act as a driver for more brands to switch to recycled materials (Circle Economy, 2017). The Pulse of the Industry report predicts that yearly €160 billion can be saved by implementing environmental and social sustainable practices are implemented throughout the value chain (GFA & BCG, 2017). In this scenario, only the waste reduction in a linear production are incorporated, while cost savings due to recycling are not.

4.3.1.3 Regulatory drivers

At this moment, few to none regulatory drivers specific for the textile industry exist. In February 2018 it was decided that member states of the EU are required to have organized a separate collection of textile waste and recycling practice in place by 2025 (Gyekye, 2018). However, no targets have been set on the amount of textile to be collected or recycled.

4.3.1.4 Cultural drivers

In 18% of the drivers found, company culture is mentioned. While statements like these should be viewed critically, some merit can be given to these organisations. One of the developments is the increased transparency in the industry, by releasing supplier data publicly. One company that recognizes the need for transparency, is H&M: *"The more informed customers become the more pressure they will put on companies to act sustainably"* (H&M Group, 2017)*.

Another driver is the increased awareness and societal pressure which has caused companies to revaluate their practices along the supply chain. One of the events that affected this awareness was the collapse of the Rana Plaza factory in April 2013 according to interviewees. In the first place this put pressure on the industry to address worker conditions in clothing producing countries, but according to the interviewees this indirectly also affected the focus on environmental sustainability. Another event mentioned, and on six instances referred to by companies, is the formation of the United Nations Sustainable Development Goals. While some consumers are already more critical in their purchases, thus putting pressure on companies to improve their sustainability, it is expected that pressure from consumers will play a larger

role in the future. This is on the condition that companies keep providing more transparency in their operations.

4.3.2 Barriers

4.3.2.1 Technical Barriers

While the expectations for the future role of recycling technology are high, it is acknowledged that there is currently still a need for further development. As put by the organisation behind the research program Mistra Future Fashion: *"However, developing a recycling technology is challenged by separation of blends, additives to clothes, restoring quality, lack of knowledge of material and chemicals in garments"* (Mistra Future Fashion, 2018). Chemical recycling is still in early development and is not yet scaled to industry level, while, as said, mechanical recycling is not useable for many fabrics. Also, organic fibres deteriorate over time which impacts the quality negatively and are not recyclable indefinitely. These issues need to be solved in order for recycling to be widely implemented. Apart from recycling technology, further development of more sustainable fabrics is also addressed as a barrier to reducing the environmental impact.

Another barrier is the fact that the fashion industry at the moment is limited in its circular design. While initiatives as Fashion Positive certify materials that fit in a circular economy, the need for design to be more sustainable is present. Another barrier in circular design is the need for circular infrastructure. Mariëlla Noto notes that supply chains in the fashion industry tend to be complex and with recycling this complexity will increase further.

The last barrier, accounting for 10% of the barriers in the press releases, is the limited available knowledge on material impact and their alternatives. While knowledge availability is being propagated as an important driver, it needs to be taken into account that the creation of insight in the supply chain is still in a developing phase.

4.3.2.2 Market barriers

While not directly mentioned in press releases, the first market barrier is the low price of virgin material compared to recycled material. This can be derived from the concerns of limited scalability and quality of the existing recycling technology. The low prices for virgin material makes the alternative less attractive for fashion companies. For the circular strategies mentioned under the other categories in chapter 4.2, uncertainty about the economic viability in comparison to current business models is a barrier. As fashion companies depend on selling large amounts of clothing, companies are afraid that these profits will not be maintained. This concern is shared by all interviewees. While they see an increasing interest in alternative business models in the industry, they do not expect that incumbents will adopt these.

4.3.2.3 Regulatory barriers

At this moment little regulation in support of circular procurement in fashion. Though the European parliament recently outed their expressed their support for reusing and recycling textile, no legislation is in place to actively support this.

According to Tamara Zwart, there are also instances of obstructing laws and regulations. As an example regulation on textile waste being treated as waste instead of resource in the EU is mentioned. This affects the movement of waste between countries and limits the infrastructure for recycling.

4.3.2.4 Cultural barriers

According to two of the interviewees, company culture can inhibit the transition to more sustainable practices. Even though almost all companies claim to work on becoming more sustainable, this does not always reflect action. Douwe Jan Joustra described this as 'the difference between talking and walking'.

While collaboration in industry initiatives is plentiful in the industry, during interviews it is mentioned that collaboration with suppliers in developing countries can be difficult, both due to brands and suppliers. Brands aim at low cost production and suppliers tend to take as many orders at possible, outsourcing these to other producers if necessary. Even though the contracted suppliers or inspected factories are up to sustainability standards, the fashion brands oversight of the supply chain remains questionable. It is suggested by a Douwe Jan Joustra, that durable relations with suppliers might solve sustainability issues, but brand willingness to engage in these relations is limited.

A last cultural barrier is the limited consumer interest in alternative business models. For example, during a large N survey across four countries, only around 20% of respondents answered they could imagine using fashion libraries or leasing (Elander, Watson, & Gylling, 2017). Two interviewees described the barriers for consumers as clothing being personal and part of a person's identity, which might cause reluctance to not actually own clothing. The economic uncertainty is caused in part by this limited consumer interest, which is a barrier for companies to invest in alternative business models. That way limited consumer interest might also affect company culture.

5. Conclusion and Discussion

From the results it has become clear that closing and narrowing the loop are expected by all actor groups to become an essential part of the CE in the fashion industry. Reducing the environmental impact by lessening the use of chemicals, energy and water and reducing waste by recycling are commonly and positively addressed is press releases, even though barriers exist to the implementation to these strategies. What does become clear is that within the companies studied there is a large difference between the degree to which sustainability is addressed in press releases, if at all.

Regarding the strategy of slowing the loop, more disagreement among actor groups was found. While most non-profits included alternative business models or general expressions on how to increase clothing utilization in their expressed visions on CE, this was rarely the case for companies. This might be caused by the perceived lack of economic viability and uncertainty due to the existing barriers to these business models. It is important to take into account that the full perspective of circular strategies that include alternative business models became more common at the end of 2015, visions on these practices are still being developed. When taking into account the hierarchy of circular strategies and the fact that fashion consumption is foreseen to increase in the years to come, only reducing material use and recycling textile might not sufficiently decrease the environmental pressure of the fashion industry. From the perspective of a CE, support for alternative business models can address consumerism in fast fashion. However, it must be acknowledged that several barriers might prevent large scale economic viability in the foreseeable future.

5.1 Practical Implications

While expectations on recycling and reducing are generally positive, it is noted that not every company is committed to reducing environmental impact in the same degree. When taking into regard that SME's generally have more difficulty in improving their sustainability than the large multinationals studied in this research, it is essential that barriers are addressed to make sustainable practices of reducing and recycling a more attainable and common vision in the industry. The supporting of research projects and addressing the lack of supporting regulation are actions that can be taken.

Addressing the lack of expectations on alternative business models in the industry is larger challenge, as the perceived barriers are considerable. These interrelated barriers add up to a perception of uncertainty of sufficient financial trade-off between current and alternative business models. Policy interventions might incentivize a transition to strategies that address greater utilization of clothing, but addressing the cultural barrier of consumer interest is a challenge which need a long term vision on institutional change.

5.2 Theoretical Implications

While previous studies have focussed on the sociology of expectations in relation to technical innovations, this is, to the authors knowledge, the first study to explicitly link it to CE as a system innovation. While the CE theoretically has a hierarchy that dictates how environmental impact can best be addressed, the visions of different actor groups in society do not necessarily follow these lines. By studying the expectations towards CE in different industries, focus areas for future research can be determined related to the positive and negative visions on certain circular strategies to help steer expectations.

Furthermore, this research has shown that barriers to a CE are not always perceived as such. For example, while technical barriers towards recycling in the fashion industry exist, recycling is mostly perceived as a driving opportunity for the industry. On the other hand, perceived barriers can also be propagated to seem

unsurmountable in order to steer future efforts in a desirable direction. Including these findings on expectations might help to make nuance future studies regarding CE.

5.3 Shortcomings

Although it is believed that the findings in this study are representative to the expectations in the fashion industry, there are some shortcomings. First, because of the sheer magnitude of the fashion industry and the absence of database with organisations in this industry, sampling is applied purposively. It is noted that the sample taken is not representative for the total industry. However, as it is not measured how circular strategies are implemented but rather which circular strategies are expected to become an important part of the circular fashion industry as a whole, the results of this study is believed to accurately describe the prevailing expectations.

Another finding is that even though the data collected is from 2012 to April 2018, expectations beyond reducing and recycling strategies were not yet prevalent before the end of 2015. This shows that the concept of CE has only recently succeeded in getting traction in this industry, and expectations on before 2016 were not yet necessarily seen in the framework of CE. This early stage makes it impossible to measure hype cycles of expectations, thus making this part of the sociology of expectations not well applicable to the studied case.

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Appendix A- Sample of Organisations

Nr.	Name	Organisation Type	Nr. of press releases
1	Inditex	company	13
2	Nike	company	36
3	LVMH	company	4
4	Hennes & Mauritz	company	63
5	adidas	company	23
6	Chanel	company	0
7	Christian Dior	company	0
8	Compagnie Financière Richemont	company	0
9	VF	company	22
10	Kering	company	20
11	Primark	company	10
12	L Brands	company	0
13	Under Armour	company	0
14	Armani	company	1
15	C&A	company	21
16	Next PLC	company	0
17	Hanesbrands Inc.	company	11
18	GAP	company	4
19	Bestseller	company	17
20	PVH	company	4
21	Michael Kors	company	0
22	Prada	company	1
23	Arcadia Group	company	0
24	PUIG	company	0
25	Levi & Strauss & Co.	company	15
26	New Balance	company	0
27	Max Mara	company	1
28	Burberry Group	company	6
29	Marks & Spencer Group	company	14
30	Zegna	company	0
31	Mango MNG Holding	company	4
32	Gildan Activewear	company	6
33	Pentland Brands Plc.	company	3
34	Ralph Lauren	company	0
35	Dolce & Gabbana	company	0
36	Lacoste	company	0
37	New Look	company	0
38	ASOS	company	1
39	Valentino	company	1
40	OTB Group	company	0

41	Triumph International	company	0
42	Moncler SpA	company	1
43	NewYorker	company	0
44	Asics	company	7
45	Hugo Boss	company	3
46	PUMA	company	0
47	Columbia Sportswear	company	2
48	Versace	company	0
49	Takko Fashion	company	0
50	Russel Athletic	company	0
51	European Commission	Governmental	12
52	The Sustainable Apparel Coalition	Industry Association	18
53	European Outdoor Group (EOG)	Industry Association	6
54	European Textile and Apparel Confederation (EURATEX)	Industry Association	1
55	Federation of European Sporting Goods Industry (FESI)	Industry Association	9
56	Leather Working Group	Industry Association	1
57	Zero Discharge if Hazardous Chemicals	Industry Association	18
58	The Better Cotton Initiative	Non-profit organisation	29
59	C&A Foundation	Non-profit organisation	12
60	Greenpeace	Non-profit organisation	13
61	The Ellen Macarthur Foundation	Non-profit organisation	37
62	The H&M Foundation	Non-profit organisation	5
63	WWF	Non-profit organisation	7
64	Mistra Future Fashion	Non-profit organisation	3
65	European Clothing Action Plan	Non-profit organisation	23
66	WRAP	Non-profit organisation	20
67	Made-By	Non-profit organisation	5
68	Circle Economy	Non-profit organisation	3
69	Fashion Positive	Non-profit organisation	0

Appendix B- Interview Guide

The subject of my research are the expectations on approaches towards Circular Economy in the fashion industry. The reasoning behind studying expectations is that the provide a guiding factor and thus provide some insight in the development of CE in the fashion industry. Firstly, is it alright if this interview will be recorded? All results can be processed anonymous if you would like.

1. What is your role related to the fashion industry?
2. What is Circular Economy in your view?
3. When did you first have to deal with CE regarding the fashion industry?
4. What were the visions on CE for the fashion industry at that time?
   a. Which impacts were deemed most urgent to address at that time?
      i. Which environmental/ economic/ social impacts?
      ii. Why were these impacts important?
   b. Which sort of approaches were preferred by different actor groups?
      i. Why?
      ii. What are the most important differences between actor-groups?
5. How did the visions on CE change? (Possibly mention event from timeline)
   a. *Repeat sub-questions 4.*
6. Which impacts are deemed most urgent currently?
7. What approaches towards CE are at this time preferred ?
   a. How do they differ from past visions on CE practices?
   b. What are
8. How is the industry most probably going to develop regarding CE?
9. What barriers need to be addressed to be able to move towards a CE?

Appendix C- Barriers and Drivers

	Cultural		Regulatory		Market		Technological	
	Drivers	Barriers	Drivers	Barriers	Drivers	Barriers	Drivers	Barriers
	Company Culture		Circular procurement		Economic viability		Presence of technology	
Company	27	2	0	0	3	3	29	11
Governmental	0	0	8	4	1	0	1	0
Industry Association	1	0	1	0	1	1	1	0
Non-profit organization	15	6	2	3	7	9	25	16
	Collaboration		Presence of obstructing laws		Degree of standardization		Degree of circular design	
Company	11	1	0	0	0	0	3	1
Governmental	0	0	0	1	0	0	0	0
Industry Association	8	0	0	0	0	4	1	1
Non-profit organization	10	3	0	0	0	0	1	5
	Consumer interest		Degree of Consensus		Investment Costs		Demonstration projects	
Company	10	3	0	0	0	0	1	0
Governmental	0	0	0	0	0	0	0	0
Industry Association	3	1	0	0	0	0	0	0
Non-profit organization	24	19	0	0	0	1	1	0
	Operating in Linear system				Funding for circular business models		Availability of data	
Company	0	0			0	0	12	2
Governmental	0	1			1	0	0	0
Industry Association	0	0			2	0	16	0
Non-profit organization	0	2			4	2	6	10