

Fashionably circular

A mapping of circular strategies in the Danish fashion industry

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Abstract

This thesis investigates how companies in the Danish fashion industry works strategically with implementing circular economy and sustainability to a higher degree. The fashion industry is among the most resource- and energy-intensive sectors in the world and many resources are lost due to low usage and recycling rate of the finished garments. The Danish industry has in recent years created strategies and ambitions towards becoming global leaders on sustainable fashion, but the actual results have yet to manifest themselves.

The thesis applies a conceptual framework of circular economy and business models to the textile-related case, in order to understand how and why companies might be motivated to implement the circular economy. The sources of empirical data are the interviews with three Danish fashion companies: Wood Wood, By Malene Birger and Better World Fashion. Other sources include the companies' available material on their sustainability strategies, expert interviews and the available body of literature on the subject.

The different initiatives were tabulated according to five circular economy strategies (Slow, Narrow, Close, Regenerate and Inform) and three business areas (Materials, Product chain and Business models). This analysis indicated that the companies mainly emphasize adherence to ecolabels and certifications on social issues and harmful substances. Following that is the use of recycled and recyclable fabrics in their collections, though there are differences between the shares of recycled content from 15% to 98%. The most applied circular business models are Products as a Service and takeback schemes. It is also clear the newer companies are being created with circularity and sustainable values in mind, and they are generally doing better in these regards. The more consolidated companies are currently trying out circular approaches but are still at the early stages.

The Danish fashion industry would benefit social, environmental and financial sustainability if they were to implement the circular economy into their business models. Barriers for doing so are lack of management buy-in and financial prioritizing, absence of a regulatory framework that promotes circular decision making and a systemic lock-in towards a linear and fast fashion business model.

Sustainability has been a widely discussed topic in the Danish fashion industry in recent years. The outbreak of COVID-19 and the subsequent financial crisis might pose a window of opportunity for companies to invest in disruptive innovation and start reshaping the way they currently conduct their business. Being more aligned with the values of sustainability and circularity is thought to improve the customer perception of a company and can become a crucial part of securing the company's survival in a future market which is still unknown.

Resumé

Dette speciale undersøger hvordan virksomheder i den danske modebranche arbejder strategisk med at i højere grad implementere cirkulær økonomi og bæredygtighed. Modeindustrien er blandt de mest ressource- og energikrævende brancher i verden, og mange ressourcer går tabt grundet en lav udnyttelses- og genbrugsprocent på det færdige tøj. Branchen i Danmark har de seneste år lavet strategier og formuleret ambitioner om at blive verdens førende indenfor bæredygtig mode, men de konkrete resultater har endnu ikke indfundet sig i stor skala.

Specialet har benyttet en konceptuel ramme i form af cirkulær økonomi og forretningsmodeller på den tekstil-relaterede case til at forstå, hvordan og hvorfor virksomheder kan motiveres til at implementere cirkulær økonomi. De empiriske datakilder har været interviews med tre danske modehuse: Wood Wood, By Malene Birger og Better World Fashion. Øvrige datakilder inkluderer firmaernes tilgængelige publikationer om deres bæredygtighedsstrategier, ekspert-interviews og den tilgængelige litteratur om emnet.

De forskellige tiltag blev tabuleret i henhold til fem cirkulære økonomi-strategier (Slow, Narrow, Close, Regenerate and Inform) og tre forskellige forretningsområder (Materials, Product chain and Business models). Analysen indikerede at virksomhederne primært vægter at følge miljømærkninger og certificeringer omkring sociale forhold og skadelige substanser. Dernæst kommer brugen af genbrugte og genbrugelige materialer i kollektionerne, om end der er forskel på andelen af genbrugt stof – mellem 15% og 98%. De mest anvendte cirkulære forretningsmodeller er PaaS og indsamlingsordninger. Det fremgår også at nyere virksomheder i højere grad bliver funderet på cirkulære og bæredygtige værdier, og generelt klarer sig bedre på disse områder. De mere konsoliderede firmaer tester i øjeblikket nye cirkulære tilgange, men er stadig på de tidlige stadier.

Den danske modebranche ville opnå fordele indenfor social, miljømæssig og finansiell bæredygtighed hvis de implementerede cirkulær økonomi i deres forretningsmodeller. Barriererne for at gøre det er mangel på engagement på ledelses-niveau og finansiell prioritering, fravær af en regulering der tilgodeser cirkulære beslutninger og en systemisk fastlåsenhed i en lineær og fast fashion forretningsmodel.

Bæredygtighed har været et meget omdiskuteret emne i den danske modebranche i de senere år. Nu kan det nylig udbrud af COVID-19 og den efterfølgende finansielle krise potentielt udgøre en mulighed for virksomheder til at investere i disruptiv innovation og til at genopfinde måden de driver forretning på. At være associeret med bæredygtige værdier tænkes at forbedre forbrugernes opfattelse af en virksomhed, og kan blive en afgørende del af overlevelsen på et fremtidigt marked der stadig er ukendt.

Abbreviations

AI = Artificial Intelligence

BMB = By Malene Birger

BWF = Better World Fashion

BSCI = Business Social Compliance Initiative

CE = Circular Economy

CSR = Corporate Social Responsibility

EMF = Ellen MacArthur Foundation

EPR = Extended Producer Responsibility

FSC = Forest Stewardship Council

GHG = Greenhouse Gases

GOTS = Global Organic Textile Standard

NGO = Non-governmental organization

PaaS = Product as a Service

REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals

RFID = Radio Frequency Identification

RSL = Restricted Substances List

RTL = Rent The Look

SDG = The UN Sustainable Development Goals

SMETA = Sedex Member Ethical Trade Audit

UNGP = United Nations Guiding Principles on Business and Human Rights

VAT = Value-Added Tax

WW = Wood Wood

Reading guide

This thesis is structured around answering the main research question and the sub-questions. The following is meant to provide an overview of which topics will be investigated in the different chapters.

Chapter 1 introduces the fashion industry and its historical context, the way it operates and why the current practices are considered unsustainable. Tendencies like fast fashion and highly complex product chains are highlighted as part of the problem, in tandem with consumers in the developed world who have gotten accustomed to cheap and disposable clothes. The research questions are raised, and the scoping and delimitations of the thesis are specified in chapter 1.3.

Chapter 2 contains the conceptual framework for the research, resting on two main concepts. One is the Circular Economy which seeks to provide an alternative to the dominating linear way of doing business today. The origin and definition of the concept is explained and put into context with the fashion industry. The other concept is business models which provides an explanatory frame for the way a for-profit company prioritizes, and which essential parameters are needed to operate a healthy business. After explaining the concept, it is also contextualized around the research questions of the thesis.

Chapter 3 lays out the methodology behind the research. To answer the research questions a combination of interviews and literature studies provided the necessary data for the analysis.

Chapter 4 contains the analysis and seeks to answer the first sub-question of how and why the Danish fashion industry works with circularity and sustainability. The empirical data is tabularized according to the conceptual framework to map how the different companies' initiatives can be characterized. The arguments behind the initiatives are found in the interviews. Each of the three respondent companies are analyzed this way, and a joint comparison between their strategies provides an answer to the sub-question.

Chapter 5 is the discussion of the analysis results. It seeks to answer the second sub-question of what constitutes the barriers and opportunities for further implementation of circular economy in the Danish fashion industry. This chapter is meant to provide a more nuanced and reflective view on the future of Danish apparel.

Chapter 6 concludes on the findings in previous chapters and provides a collective answer to the general research question of how the Danish fashion industry works towards sustainability and circularity, and how their efforts might be characterized.

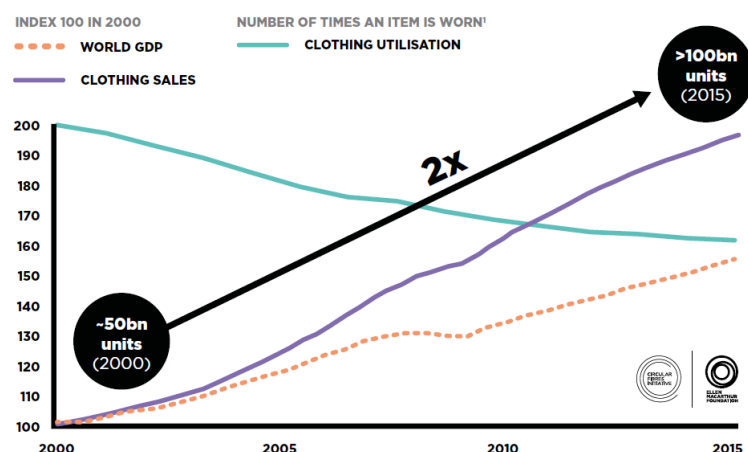
Chapter 7 reflects on potential areas of interest for further research on the topic of the thesis. The chapter also contains my critical reflections on the limitations of the research and what might have been improved under different circumstances.

Chapter 8 contains the full list of sources for the thesis.

1. Introduction

Clothes are an essential part of everyday life. They provide warmth and protection and help us express our group affiliations and individual style. This universal need for clothing helps explain why the fashion industry is among the most lucrative sectors worldwide, with an estimated global revenue of \$1,7 trillion in 2017 and a projected annual growth of 2% towards 2030 (Euromonitor, 2018). Fashion has a massive footprint on the planet; in terms of total carbon emissions, the apparel industry is second only to the fossil fuels industry (Conca, 2015). While all industries of a significant size can be expected to impact the biosphere, the fashion industry is straining the planet in four areas in particular: water consumption, energy emissions, chemical usage and waste creation (Eder-Hansen, et al., 2017). While all these impacts are sizable, three out of the four have projected growth rates towards 2030 of approximately 50-60% (Ibid.).

The apparel industry employs upwards of 300 million people all over the world, many of which are in developing countries (Ellen MacArthur Foundation, 2017). As the global middle class has grown over the last decades, so has global consumption. In 2015 the average EU citizen bought over 12 kilos of new clothing annually (Šajin, 2019). Between 1996 and 2012 the amount of clothes bought per person in the EU increased by 40% - while relative prices for apparel in the same period decreased by 36% (Ibid.). As the average consumers wardrobe grew fuller, so did the rate of which clothes were discarded and substituted for new pieces. An European study showed that the average life-time for clothing in 2019 was around 4,3 years, with Danes keeping their clothes the longest at 5,2 years – in all countries there has been a decline compared to decades ago (WRAP, 2019). The Ellen MacArthur Foundation has made the figure below illustrating the correspondence between the amount of clothes being sold, and the number of times they are worn over the last two decades.



1 Average number of times a garment is worn before it ceases to be used

Figure 1.1: Growth of clothing sales and decline in clothing utilization since 2000 (Ellen MacArthur Foundation, 2017).

Different terms are used to describe the textile products we wear, like clothes, garments, fashion or apparel. In this thesis the focus is on fashion, as in textiles that are made for wearing, in contrast to textiles like carpets, bedding or other products – these are not included in the scope of the research. The terms garments, clothes and apparel are used interchangeably when referring to pieces of wearable textile; the term textiles is used primarily to refer to the clothes as a waste material. The following section will investigate the historical development of the industry and some of the current practices.

1.1 The development of the fashion industry

With the need for clothes being essential for everyone, the clothing manufacturing industry is as old as human civilization. It did not change notably until the industrial revolution brought along means of mass production and allowed for a massive change of scale. Still, most people either made their own clothes or went to a tailor to acquire a select few items, which were customized for the individual buyer (Goldsworthy, et al., 2019). Clothes were generally made to last for a long time and was continuously repaired and passed on, since new clothes were expensive. The fashion industry started to change dramatically in the second half of the 20th century, especially in the 1960's and forward. A new youth culture had emerged and were demanding clothes made specifically for their generation (Ewing, 2014). Clothes started in the following decades to go from bespoke and tailor-made to ready-to-wear – with haute couture as the exception. In 1974 the World Trade Organization issued an Multi Fiber Agreement (MFA) that issued import quotas on textiles from certain (developing) countries into markets in Western Europe, USA and Canada. This was meant to help preserve the domestic textile production as it was threatened by the competition of cheaper production in developing countries (WTO, 2020). From 1995 the MFA was phased out, allowing for an increasing globalization of the fashion product chain. The import of textiles from countries like Turkey and China to the West dramatically went up. The share of imports in European clothing consumption increased from 33 % in 2004 to 87 % in 2012 (Šajin, 2019) and the value of imported apparel in the USA went from \$10 billion in 1982 to \$96 billion in 2006 (Kant Hvass, 2016).

A fashion concept that have been influential on this development is fast fashion. Emerging in the 2000's, fast fashion has since become the most influential business model in the fashion industry with major industry players like Zara and H&M as prime examples. The concept relies on a faster production cycle where influential trends quickly are turned into new collections, allowing for high-end styles at affordable prices (Edology, 2020). Consumers benefit from a large variety of styles that are frequently updated, and non-exclusive prices. Where fashion brands twenty years ago might have released one or two collections annually, that number has quintupled on average – with Zara making as many as 24 collections per year and new items weekly (Šajin, 2019) (Kant Hvass,

2016). An illustrative example of the product chain and lifecycle for a standard cotton t-shirt might look like what is seen in figure 1.2.

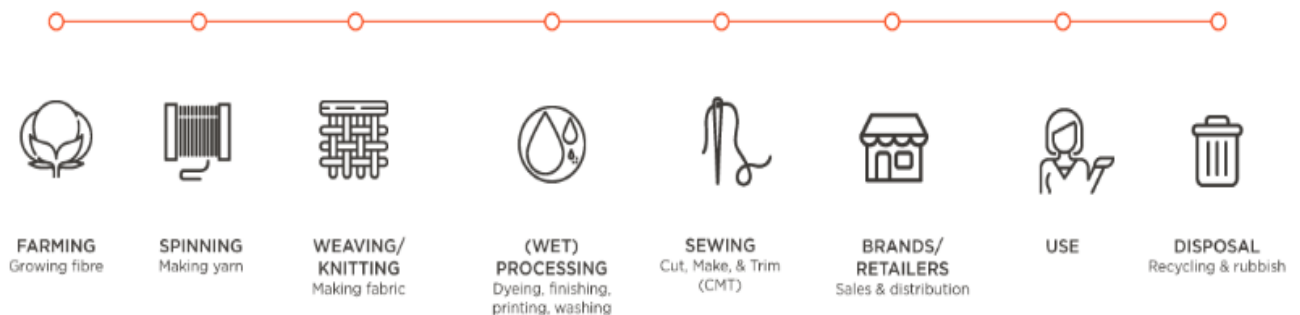


Figure 1.2: Exemplification of a standard lifecycle for clothes (Common Objective, 2019).

To illustrate the logistics and impacts of this lifecycle, an illustrative example is provided. The first step is growing the raw material, cotton. This is farmed in the USA in this example. After being harvested and baled the cotton is shipped to Turkey, a major fabric production hub. Here the cotton is spun into yarn and weaved into a usable fabric. The next step is dyeing the fabric to the desired colors using large amounts of water. This might be done in Turkey or South East Asia. The water may be reused or spilled into a nearby waterway, possibly still containing dye residues. If the fabric has not been shipped to countries like China, India or Bangladesh for the dyeing process, it is so for the sewing process. Here it is made into the finished product, in this case a t-shirt. Any extra treatment or finishes to the clothes are also done here. Once done, the clothes are shipped to Europe or the USA to be sold in retail. Once the consumer discards the clothes after use, it might either be land-filled or incinerated in the country it was discarded in or donated to charity. Some clothes are recycled, but in most places these only make up smaller parts (The Price of Fast Fashion, 2019) (Nørup, 2019) (Kant Hvass, 2016). In the EU an estimated 15-20% of discarded clothes are collected for re-use or recycling on average. The highest collection rates are found in Germany - 75% - with Denmark and the Netherlands following with 47% and 37% respectively (Šajin, 2019) (Ljungkvist, et al., 2018). For comparison, the rates in China and the USA are approximately 10% and 15% respectively (Kant Hvass, 2016). This example goes to show the complexity and highly global nature of the contemporary fashion industry.

Not only the way clothes are consumed are problematic, so are the materials they are made from. Almost all clothes made today, 97%, are produced from virgin resources. The most commonly used textiles are plastic-based, synthetic ones such as polyester, nylon or acrylic, making up 63% of clothes. The second-most popular fabric is cotton, accounting for 26%. All other types of materials make up 11% and include materials like wool, silk, leather, linen, lyocell etc. (Ellen MacArthur

Foundation, 2017). The remaining 3% comes from recycled materials. Materials like polyester and nylon are made from fossil oil of which the feedstock is finite. While biological materials like cotton or wool are regenerated, they rely on vast amounts of critical resources during production, such as land and water (Roos, et al., 2019). Cotton especially is a highly water-intensive crop which relies on irrigation; cotton farming alone represented 4% of the global freshwater withdrawal in 2014 (World Bank, et al., 2014). The material with the largest overall footprint is cow leather, but all the most commonly used fabrics impact the environment in some way or another. Figure 1.3 provides an overview of which materials is most impactful and how.

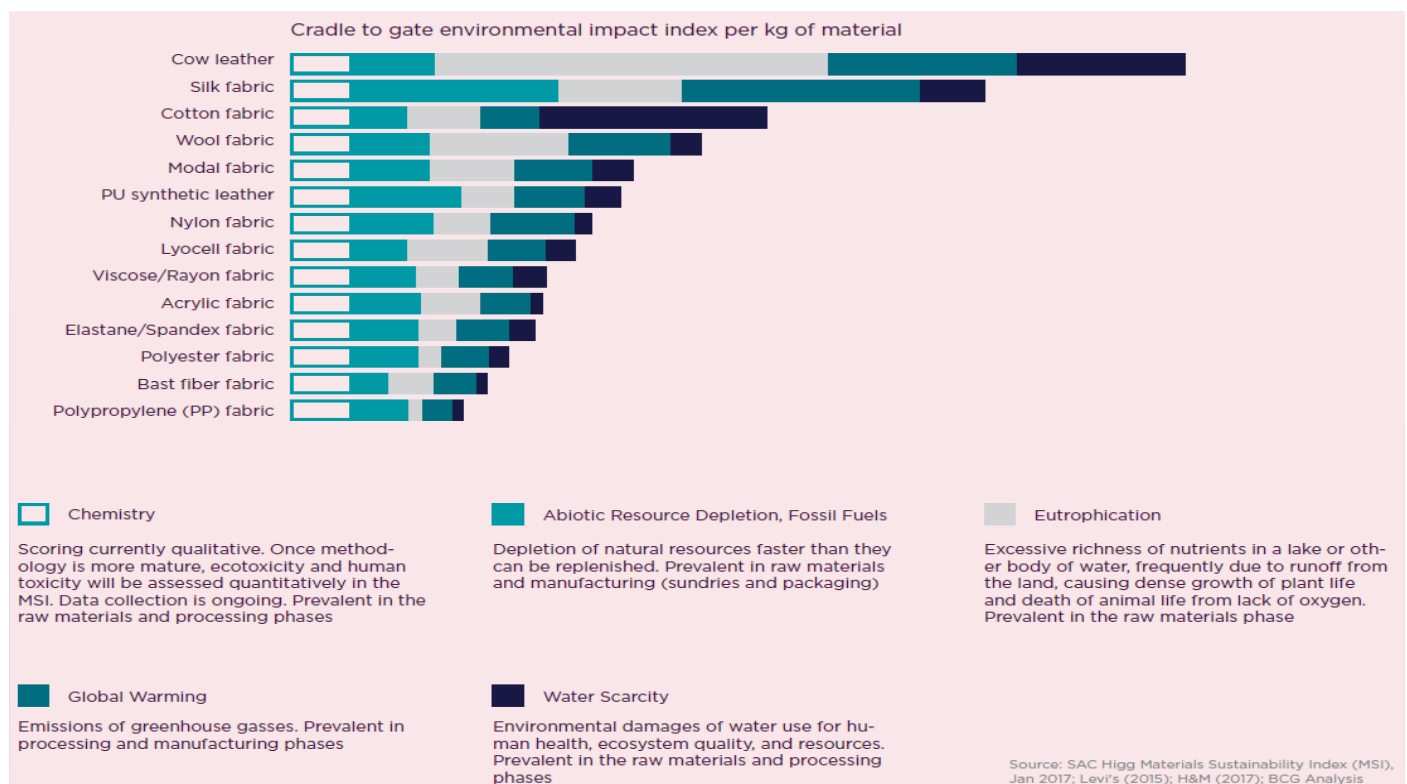


Figure 1.3: Categorized material impact per kg of commonly used fashion materials (Eder-Hansen, et al., 2017)

To maintain a fast production cycle and frequent customer traffic in stores, clothes are often made from lower-quality materials resulting in quicker disposal rates. Clothes are discarded after as little as seven or eight uses (Andersson, et al., 2018) (By Malene Birger, 2020a). The result of this “designed obsolescence” is increasing amounts of textile waste as a consequence of increased consumption – in Denmark alone one person might produce up to 14,8 kilos of textile waste per year (Nørup, 2019).

These numbers underline how the apparel industry operates in a highly linear sense; materials are extracted, clothes are produced and sold, and quickly disposed of by the consumer. This “take-

make-dispose” line of thought would work well if resources were unlimited; sadly, they are not. Post-consumer textile waste is abundant, and the amounts are growing (Kant Hvass, 2016).

In countries like Denmark without official collection of textile waste, a common way to dispose of used clothes is donating them to charity. Organizations like Red Cross then sort the garments and take out the clothes of best quality and condition for sale in Western European markets, the so-called “cream”, which make around 2% of what is donated (Danish Red Cross, 2020). Some of the remaining clothes are recycled, mostly by downcycling them to industrial cleaning wipes or similar. The rest is donated to countries in Eastern Europe, Africa or Asia (Ljungkvist, et al., 2018). However, these markets are less dependent on donated clothes than earlier and are becoming saturated. The clothes are in many cases piling up and are disposed of by landfilling or incineration despite still being usable (Kant Hvass, 2020).

This effectively means that many of the resources that are currently used for clothing production are lost. Resources are also wasted at large levels in the retail phase, with up to 30% of the produced clothes never getting sold and going directly to disposal (Sharecloth, 2018) (Eder-Hansen, et al., 2017). In the long term, it might challenge the safety of supply for the industry and make material prices more volatile as the feedstock grows scarcer. Additionally, the un-reclaimed materials represent a significant economic loss. All the materials that are lost throughout the product chain are estimated to represent a global value of \$100 billion annually (Ellen MacArthur Foundation, 2017). The above tendencies draw a picture of an essential, yet problematic industry. The main findings can be summarized as:

- Fashion is one of the most profitable, but also most environmentally impactful industries in the world. Over the last decades clothes have become cheaper and more abundant.
- The industry is wasteful; one third of clothes directly disposed and recycling rates around the globe are rarely higher than 50%.
- There are large problems with ever-increasing amounts of post-consumer textile waste. This waste represents a lost economic value as well as lost resources.

1.2 Fashion and sustainability

It is not only the inputs to the fashion industry that continues to be a concern, it is also the impacts of the industry across social and environmental factors. The (fast) fashion industry is challenged both in terms of the way customers are consuming and the way in which the garments are produced. People have grown accustomed to having large varieties of cheap clothes available, and new collections on almost a weekly basis. But large volumes of cheap and short-lived clothes cannot be considered sustainable for the future. One of the obstacles for changing production patterns is the lack of transparency along the product chain. To make garments matching the latest trends, fast

fashion brands rely on having their orders produced and shipped to retail fast. To keep up with the deadlines, many supplier factories rely on sub-suppliers and outsource tasks. This makes it exponentially harder for the brands to know the specific conditions under which their collections are produced and intrinsically harder to improve them (Hobbes, 2015). Aside from the environmental strains of making clothes, the apparel industry has for several years been under critique for unethical work practices. These include sweatshops, forced and child labor, unsafe or unhealthy work environments or low wages paid to workers with grueling work hours (Ibid.). Luckily, many brands are aware of the social issues and are taking measures to mitigate them (Danish Fashion and Textile, 2020).

With the world experiencing increasingly severe consequences from climate change, destruction of habitats and the exceeding of planetary boundaries (Rockström, et al., 2009) (Steffen, et al., 2015), urgent challenges are rising. Many of the current practices in not only the fashion industry but society at large have to become more sustainable if these challenges are to be mitigated.

In recent years sustainability and circularity have become major topics within the apparel industry (By Malene Birger, 2020a). In Scandinavia, producing green fashion is becoming a competitive parameter. The issue is also being picked up at the political level, with The Nordic Council of Ministers making a political declaration in 2015 to make the Nordic garment industry a sustainable role model for the rest of the world (Nordic Council of Ministers, 2015). Even though most of the manufacturing of clothes has moved out of the Nordic countries in the latest decades, fashion is still a significant export industry in Sweden and Denmark especially (Ibid.). Brands are increasingly seeking to implement ethical or sustainable measures (Danish Ethical Trading Initiative, 2019) (CSR.dk, 2020) (Wood Wood, 2020c), with initiatives like switching to organic cotton being among the most popular efforts (Better World Fashion, 2020a).

Other industry actors has joined this discourse, like Copenhagen Fashion Week, whom in 2018 declared that they will only allow brands that meet certain sustainability standards to exhibit their collections towards 2022 (Arici, et al., 2018). Another initiative is GCO, which is a cross-industry project to promote sustainable and circular business models in Danish companies (GCO, 2020a). Despite the increasing amount of communication and apparent consensus about the need for change, there has still not been observed radical changes (Lifestyle & Design Cluster, 2020) (Melchiorson, 2020). The largest Danish fashion companies like Bestseller and DK Company, owning almost 40 brands in total (Detailfolk.dk, 2018), are still part of the fast fashion patterns. With average profit levels around 10 times the production costs, fashion companies have extremely cost-effective value chains (Better World Fashion, 2020a). This raises the question if these low costs are due to un-priced externalities that are unsustainable in the long term. Some stakeholders are therefore pleading for a shift towards “slow fashion”, meaning lower volumes of clothes produced and

each garment being more durable and of higher quality (Danish Fashion and Textile, 2020). This challenges the status quo of “quantity over quality”. Private companies seek to maximize their profits and are always operating to promote financial sustainability. Switching to a slow fashion model will make it more costly for them to produce their goods and potentially lower their profits, which they are not likely to be interested in.

One solution might be to completely disrupt the current practices altogether and pursue a more circular and sustainable fashion economy. If business-as-usual prevails, not only the fashion industry but the planet might be heading towards an uncertain future. It is therefore necessary to understand which alternatives to the linear paradigm that exists in the fashion industry and how brands are seeking to adapt to a more sustainable future. While their ambitions of becoming green front-runners are admirable, it requires that the Scandinavian and Danish brands want to live up to them. The main findings of this chapter are:

- Both consumption and production patterns in fashion need to change to mitigate negative consequences.
- Sustainability is becoming a hot topic in Danish fashion, but the way brands are operating still needs to change dramatically to mitigate these negative consequences. Social sustainability has been prioritized for years, but environmental sustainability initiatives has not caught up yet.
- The high-volume system is profitable, and companies will lose profits if they slow down. Systemic innovation is needed to find both sustainable and profitable solutions for the future.

1.3 Research question

This thesis seeks to map sustainable and circular initiatives in the Danish fashion industry to provide a more comprehensive understanding of whether the sector is delivering on its promises. While many companies might engage in sustainability projects out of altruistic reasons, implementing large-scale changes will require financial viability as well. Circular economy offers the promise of delivering both financial and environmental value and poses an interesting alternative to the current situation. Companies are challenged by rising environmental concerns coming from a highly profitable business model. Alternatives with higher degrees of resource circulation and sustainable production are necessary and it is paramount that the first steps towards the desired future is taken soon, and the sooner the better. The initiatives and strategies with which Danish apparel companies are trying to leave the linear, unsustainable paradigm have not been researched extensively before. The research conducted in this thesis has been guided by the following research questions.

In which ways are the Danish fashion industry working towards increased sustainability and circularity, and what characterizes the efforts?

To structure the work with the overall research question, the following sub-questions have guided the research of this thesis:

1. *How and why are the Danish fashion industry working with circularity and sustainability?*
2. *What are the opportunities and barriers towards a further implementation of circular economy in the Danish fashion industry?*

1.4 Delimitations

When applying the above questions as a scope for the thesis it was also necessary to delimitate the research. This section contains clarifications on the focus of the thesis.

This thesis has been conducted with an emphasis on qualitative analyses. In-depth quantitative analyses of financial data or environmental impacts is considered beyond the scope of the research. As mapping initiatives and understanding their characteristics called for a different methodology, quantitative analyses were taken from the literature when necessary. As the available sources provided numerous statistical data, the need for conducting this type of research was not considered as urgent.

The thesis had a primarily Danish scope. Denmark has a tradition for producing high-quality designs, and fashion is an important export industry. Actors across the industry and at the political level had expressed ambitions to make Denmark a frontrunner of sustainable fashion, indicating a general interest in the topic throughout the sector. The easier availability of data and respondents in the Danish market made for the initial delimitation of the thesis. Preliminary research also revealed that a mapping of circular economy and sustainability initiatives across brands was an underexplored area, which supported the decision to explore the Danish fashion industry.

The mentioning of the concept “sustainability” throughout the thesis, does not only include environmental sustainability. While the most widely accepted definition of sustainability defines sustainable development as “*meeting the needs of the current generations without compromising the need for future generations to meet theirs*” (Brundtland, et al., 1987), many companies and other actors have also adapted the triple bottom line view on sustainability. Environmental, social and financial sustainability are to be considered equally important (Elkington, 1994) and have formed the basis of CSR for years. The definition of sustainability has become increasingly holistic with the introduction of the SDG’s. The importance of many factors across the natural, societal and economic sphere entails a more complex definition of sustainability. In the thesis sustainability is therefore referring to the broader definition including people, profit and planet.

2. Conceptual framework

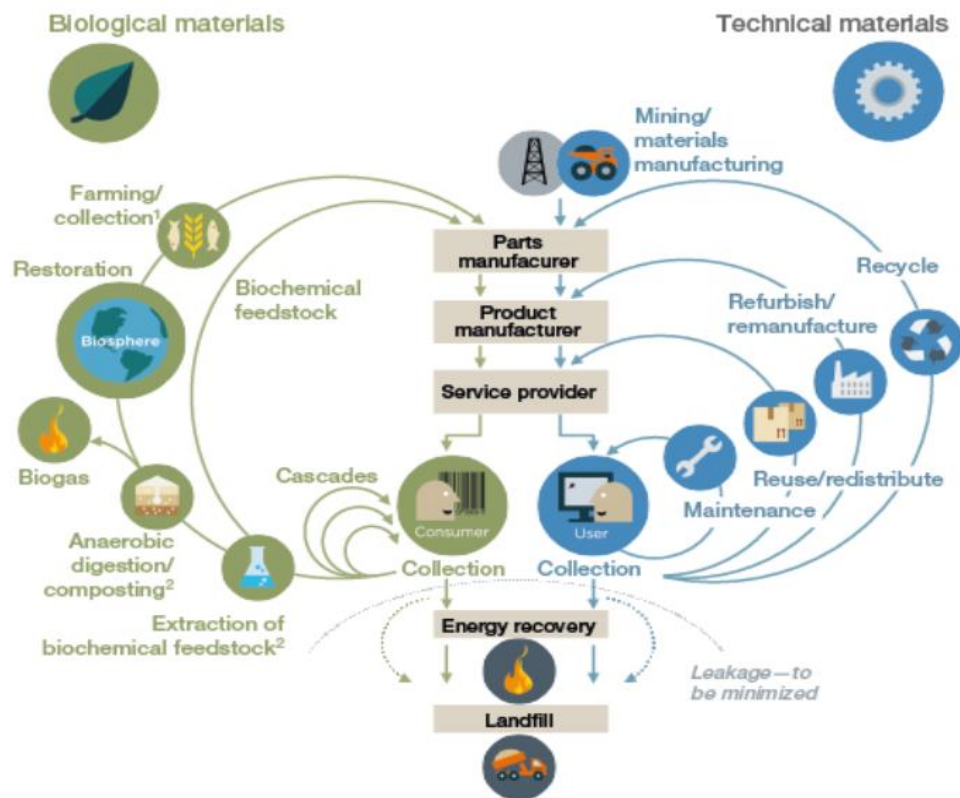
Two main concepts make up the frame around the research for the thesis. The first is circular economy (CE) and the second is business models. Each of these concepts have an extensive body of literature about them, so before specifying their applications for this thesis it is necessary to understand the underlying origins and definitions.

2.1 Circular Economy

CE is a concept opposing the linear economy, or the “take-make-use-dispose” way of thinking. The scope of global human activities is currently harmful to the resilience of natural ecosystems due to both waste creation and resource exploitation (Stahel, 2016). CE seeks to re-align economic activity with the planetary boundaries (Rockström, et al., 2009); allowing for a continuously thriving economy without exceeding the capacity of the biosphere (Borrello, et al., 2020). This is done by designing a waste-free economy forming a closed loop, where all materials are either continuously recirculated or returned to the biosphere. This effectively means that any given product and material will remain in use after its extraction or be allowed to re-enter natural degradation cycles, from which they can be regenerated (BSI, 2017). In this way pressure on the natural systems from resource extraction and waste creation will likely be reduced, while still satisfying human societies’ needs (Ellen MacArthur Foundation, 2012).

With its narrative of changing the current economic system CE encourages policy changes on the political and business level. As put by Borello et al (2020), “*CE is evoking a socio-technical transition into multiple regimes in which societal and material needs are fulfilled by innovative industrial systems.*”. It is thus not only meant as a managerial tool, but to inspire both top-down regulation changes and bottom-up initiatives from companies. In recent years CE has made its way into policy creation in China and the EU (European Commission, 2015).

The first publication by the Ellen MacArthur Foundation (EMF) marked a breakthrough for CE, and the organization has been one of the most prominent proponents of the CE agenda over the last decade. Their definition of the concept is the most commonly accepted one, saying “*The circular economy refers to an industrial economy that is restorative by intention; aims to rely on renewable energy; minimises, tracks, and eliminates the use of toxic chemicals; and eradicates waste through careful design.*” (Ellen MacArthur Foundation, 2012). A visual depiction of this definition – also referred to as a butterfly model – can be seen in figure 2.1.



¹ Hunting and fishing

² Can take both postharvest and postconsumer waste as an input

Figure 2.1: Illustration of the CE concept. The system forms a series of closed loops of materials and products (Ellen MacArthur Foundation, 2012).

While CE has gained increasing traction over the last few years the concept is not new per se. It draws inspiration from various ideas and schools of thought on resource efficiency and sustainable economic conduct (Kant Hvass, 2016) (Geissdoerfer, et al., 2016). Borello et al has created a timeline of the key influential schools of thought related to CE, and policies supporting actions towards circularity. Note the emergence of regulation and targets after the publication of the first EMF report.

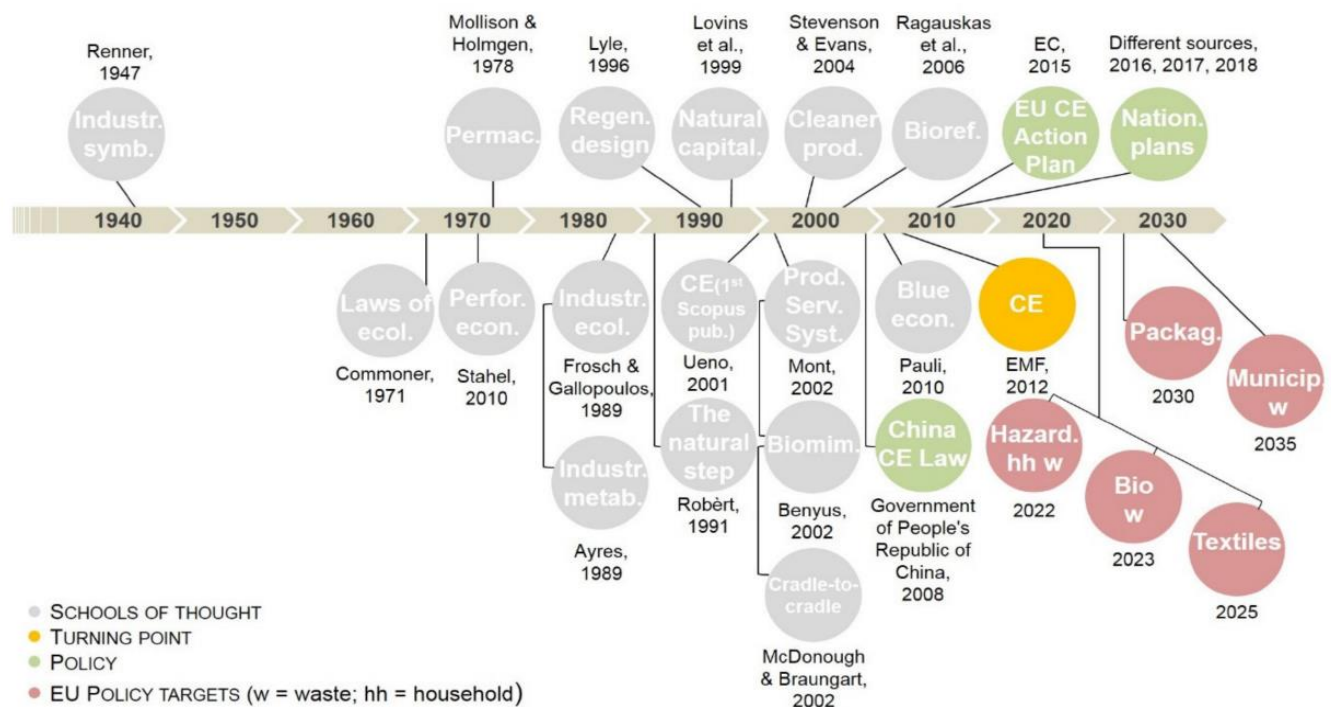


Figure 2.2: Timeline of influential schools of thought on CE, regulation and EU recycling targets (Borrello, et al., 2020).

CE is still an underly theorized subject of research, with many different definitions still existing across the literature (Kirchherr, et al., 2017) (Geissdoerfer, et al., 2016). Despite differing ideas within academia, standardized certifications are emerging (BSI, 2017) further indicating a broader acceptance and implementation of the concept into the mainstream.

The private sector has from the onset been one of the main recipients of circular economy. As such, a substantial amount of the conducted research has focused on market implementation and strategies for businesses to adapt (Bocken, et al., 2016). There is also an expanding body of literature on circular economy in the fashion industry. This research has been the point of departure for this thesis.

2.1.1 Circular economy and fashion

As an industry with a sizable footprint on the planet the fashion industry is an interesting case for CE. As clothes are manufactured in such massive scale and mostly landfilled or incinerated shortly afterwards, the sheer amount of resources in circulation and those being lost makes CE relevant to consider (Nørup, 2019) (Melchiorson, 2020). According to the EMF \$500 billion are lost yearly from lacking recycling and underutilization of clothes (Ellen MacArthur Foundation, 2017). The potential for improvement is undoubtedly there but the pathways towards a circular fashion industry are multiple.

One set of principles that showcase the multi-faceted nature of CE is presented by Konietzko et al (2020) and elaborates on those presented by Bocken et al (2016). These are called the five circular strategies and consists of narrowing, slowing, closing, regenerating and informing. A depiction can be found in figure 2.3.

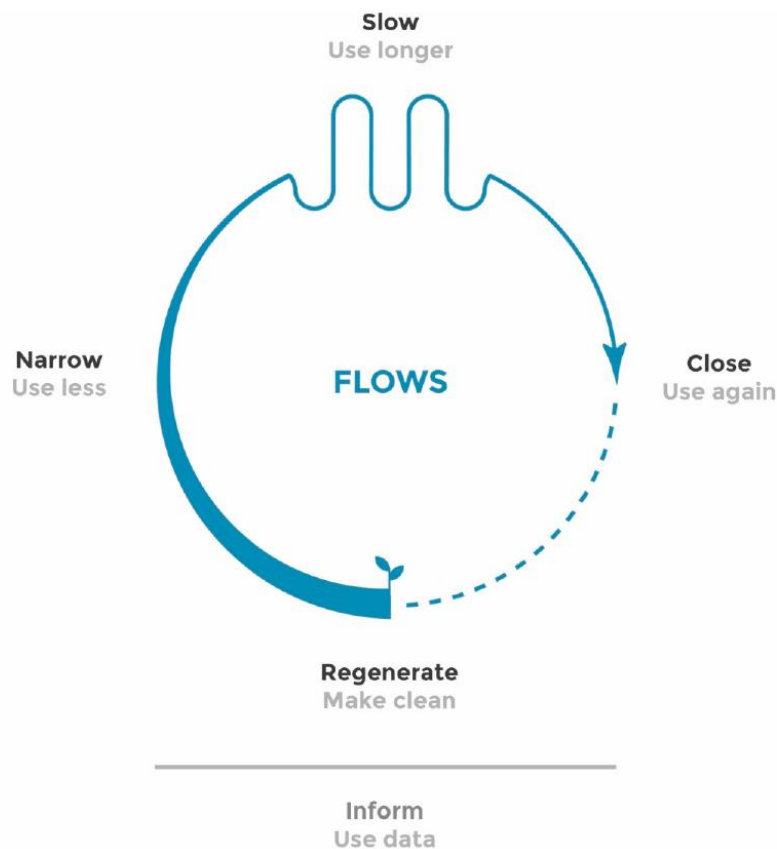


Figure 2.3: Circular strategies for energy and material flows (Konietzko, et al., 2020).

The strategies describe the ways in which a complete CE strategy should affect the flow of materials and energy in any given system. Targeted towards companies, they provide examples of how to strategize circularity regarding products, business models and the wider financial ecosystem. The following are non-exhaustive examples of how the five strategies apply to an apparel-related context.

Narrowing covers using less resources, like energy or materials or creating more efficient products. In this way the same value can be retained with less input – or the same amount of input can provide additional value. In fashion narrowing might apply to using more mono-fibers or making highly foldable clothes to make for more efficient shipping. Other measures include eliminating production waste or localizing the product chain to limit distance for transporting.

Slowing means using products for longer and thereby decreasing the need for new inputs over time. If a garment is designed to have emotional and physical durability, it can remain relevant and valuable for longer. If clothes are repaired when damaged instead of disposed, or shared among multiple owners, the resources used for each piece of clothing are used to their maximal potential.

Closing regards end-of-life resources and means to use them again, effectively rendering virgin input obsolete. The fashion angle is to recapture the materials in production and post-consumer waste and use them in new clothes through different recycling technologies. Designing clothes for easy disassembly at their end-of-life can boost recycling rates, as can take-back schemes in stores. If textiles are unfit for use in new clothes, other industries can use them for their products, like insulation or rags.

Regenerating means having clean production in the sense of non-toxic materials and using renewable energy to power the processes. Many companies already work with eliminating harmful chemicals in their clothes. Other initiatives could be to focus on new, innovative materials made from other industries' waste streams – some pilot projects include fabrics made from paper and agricultural waste (Goldsworthy, et al., 2019) (The Price of Fast Fashion, 2019).

Informing covers increased usage of data and information technology in the system. In the fashion industry this strategy might be divided into two: the original definition on applying innovative information technology, and documentation and communication through adhering to ecolabels and standards. The first path of informing might include things like applying AI to make recovery and recycling processes more efficient or using RFID to monitor the quality and whereabouts of clothes. Using online platforms for selling and sharing clothes are also within innovation-driven informing. The second category is focused more on due diligence. By communicating to consumers that a brand lives up to a certain set of objective standards, they show compliance to certain values e.g. using organic fabrics, ensuring proper conditions for workers or having less environmentally harmful products. These third-party ecolabels require companies to document their conduct quantitatively. Managing these data requires the acquisition of informing-related resources in the company. (Konietzko, et al., 2020).

These strategies should be regarded as archetypes for circular efforts and is meant to act as guiding principles. They are not mutually exclusive, as initiatives might touch upon more than one strategy at a time. These strategies are well suited for the fashion industry due to their relative simplicity and applicability to multiple levels of business. With a fashion industry so currently geared towards linear economy, the unexplored potential of CE makes an interesting approach to apply to this context and aligns with some of the measures existing in the industry already (Ivang & Rana, 2019) and those planned for the future (Nordic Council of Ministers, 2015).

In this thesis the notion of sustainability rests upon Elkington's definition of the triple bottom line; social, environmental and financial sustainability (Elkington, 1994). Borello et al describe the link between these and CE as: "*CE contributes to the environmental and economic dimensions of sustainability by means of an eco-effectiveness approach to industrial systems*" (Borrello, et al., 2020).

When a business or any other stakeholders sets out to implement CE there is a need to make the concept more tangible (Guldmann & Remmen, 2018). As the thesis is concerned with the conduct and rationales of private businesses, it is deemed relevant to introduce the concept of business models to investigate the financial aspects of sustainability.

2.2 Business models

The concept of business models is relatively new in academia. Though first being coined in 1957, it was not until the 1990's after the initial dot.com period that the term started to gain coverage in scientific papers (Osterwalder, et al., 2005). There are differing definitions of what entails the notion of business models. Some sources claim that a business model is an action-centered description of how a firm does business, while others refer to it as a value-centered conceptualization of how a company does business (Ibid.) (Kant Hvass, 2016). Despite contrasting claims in the literature there is a common understanding that business models refer to some level of the conceptualization and implementation of business strategy. It is also agreed that they form the foundation for implementing the needed business processes (Richardson, 2008).

Osterwalder et al (2005) have developed a framework for generating and analyzing business models, later labelled as the business model canvas (Osterwalder & Pigneur, 2010). It has since been widely accepted and used in generating and analyzing the generic business modelling process in companies. The canvas presents nine building blocks divided into four pillars, each of which concerns a key area for capturing and delivering value to a company's target customers, see figure 2.4.

Pillar	Business Model Building Block	Description
Product	Value Proposition	Gives an overall view of a company's bundle of products and services.
Customer Interface	Target Customer	Describes the segments of customers a company wants to offer value to.
	Distribution Channel	Describes the various means of the company to get in touch with its customers.
	Relationship	Explains the kind of links a company establishes between itself and its different customer segments.
Infrastructure Management	Value Configuration	Describes the arrangement of activities and resources.
	Core Competency	Outlines the competencies necessary to execute the company's business model.
	Partner Network	Portrays the network of cooperative agreements with other companies necessary to efficiently offer and commercialize value.
Financial Aspects	Cost Structure	Sums up the monetary consequences of the means employed in the business model.
	Revenue Model	Describes the way a company makes money through a variety of revenue flows.

Figure 2.4: The components of the business model framework by Osterwalder et al (2005).

However, the conventional business model canvas only encompasses the financial aspects of sustainability. Other researchers have presented elaborated versions of the canvas to capture environmental and social issues in the business model generation process as well. One such version is that of Bocken (2015) called the sustainable business model canvas which adds the categories of People and Planet, referring to positive effects for the common interest of society and the environment respectively. In this thesis the sustainable business model canvas will help make up the conceptual framework. See figure 2.5 for a visual representation.

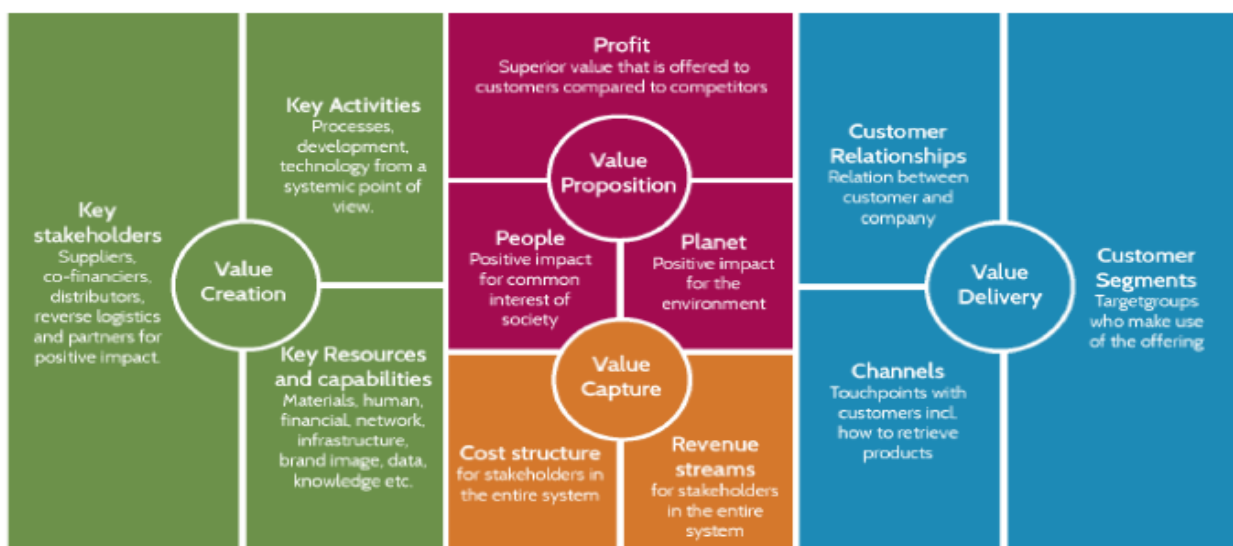


Figure 2.5: The sustainable business model canvas (Bocken, 2015).

The canvas is also applied in business model innovation. Being able to modify or innovate on their business models can provide companies with a competitive advantage (Kant Hvass, 2016).

This thesis focuses on the fashion industry where the dominant business model is causing substantial harm to people and planet; if brands are to move in a different and more circular direction, one might argue that changes to the status quo will be necessary. When exploring a new business model or changes to the current ones the sustainable business model canvas provides an easily comprehensible and holistic framework for understanding which processes, values and resources are essential in that process. For this reason, it forms part of the conceptual framework for the thesis.

2.2.1 Business models and fashion

To investigate how the Danish Fashion industry works with CE, the thesis seeks to understand how the concepts of CE and business models are combined. While it from a theoretical standpoint might make sense to move away from a linear business model towards more circular ones, the financial viability must still be in place. If it is not, it will appeal less to a for-profit organization as they will eventually suffer losses (Kant Hvass, 2016) (Guldmann, 2016).

Different sources present principles for circular business models and others provide examples (Lacy, et al., 2014) (Bocken, et al., 2016). One example might be to offer products as a service instead of one-time purchases. In a clothing context this might mean to offer pieces for leasing over a certain time period, after which they are to be returned to the company. This way each garment can have multiple owners and a longer service life before being discarded for recycling (Sweet & Wu, 2019). Figure 2.6 shows the examples of the circular business models found in Lacy et al (2014), and how they alter the linear lifecycle of a product.

There are five archetypes for circular business models; Circular Supplies, Resource Recovery, Product Lifetime Extension, Sharing Platforms and Products as a Service. Circular Supplies concerns the inputs to the product chain and like the close strategy of Konietzko et al (2020) focuses on using recycled and recyclable resources; biodegradable materials are also included in this description and draw parallels to the regenerate strategy. Recyclability should both include the technical and biological loops, as seen in figure 2.1. Resource Recovery covers recapturing resources in post-consumer products and production cut-offs, as well as waste streams from other industries to use in manufacturing new products. This aligns with the other part of the close strategy, that addresses the industrial symbiosis mentality of companies sharing byproducts for mutual benefit (Borrello, et al., 2020). Product Lifetime Extension is translatable to the slow strategy; by making products durable and repairing and upgrading them they are kept functional for longer. This yields more value for the same input.

Sharing Platforms is a part of the innovation-related inform strategy and is already something being

applied in fashion. Peer-to-peer platforms like Trendsales or Facebook Marketplace are examples of ways to use this business model. Lastly Products as a Service is a promising trend in fashion with companies like Rent the Runway offering their customers a varied and trendy wardrobe through leasing. This corresponds well with the slow strategy as the company retain ownership and will invest in keeping their products in use instead of discarding them.

Business Models

Circular Supplies: Provide renewable energy, bio based- or fully recyclable input material to replace single-lifecycle inputs

Resource Recovery: Recover useful resources/energy out of disposed products or by-products

Product Life Extension: Extend working lifecycle of products and components by repairing, upgrading and reselling

Sharing Platforms: Enable increased utilization rate of products by making possible shared use/access/ownership

Product as a Service*: Offer product access and retain ownership to internalise benefits of circular resource productivity

* Can be applied to product flows in any part of the value chain

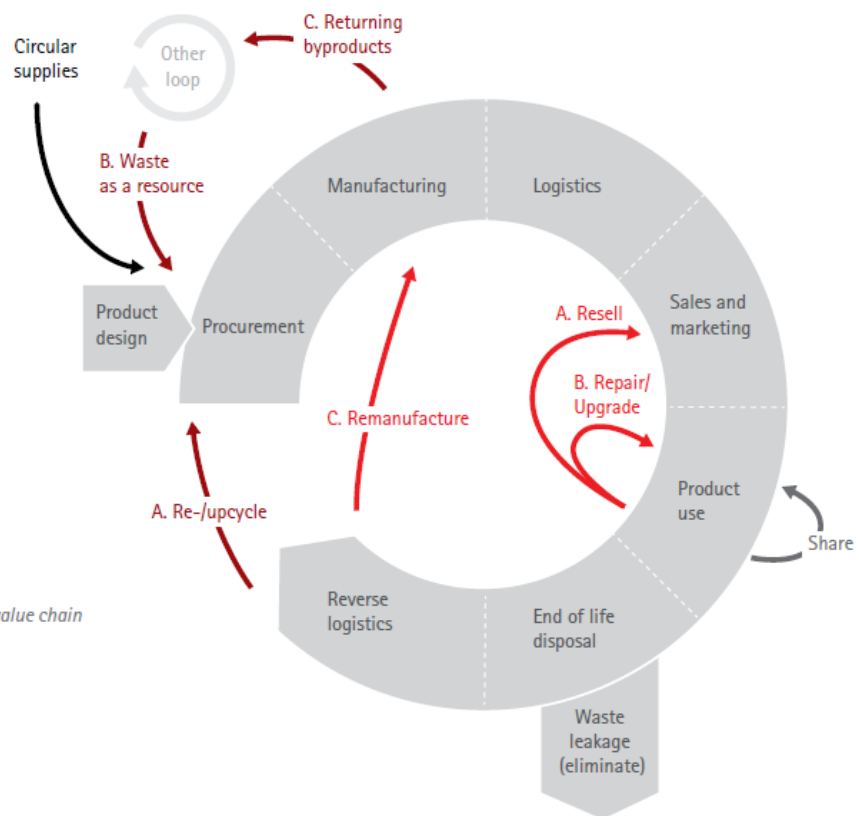


Figure 2.6: Five examples of circular business model and their impact on the product lifecycle (Lacy, et al., 2014).

All the above strategies and business models takes the perspective of a single company. To be fully successful CE must be applied to the entire fashion industry. To illustrate this scenario, Fontell and Heikkilä (2017) has created the model seen in figure 2.7.

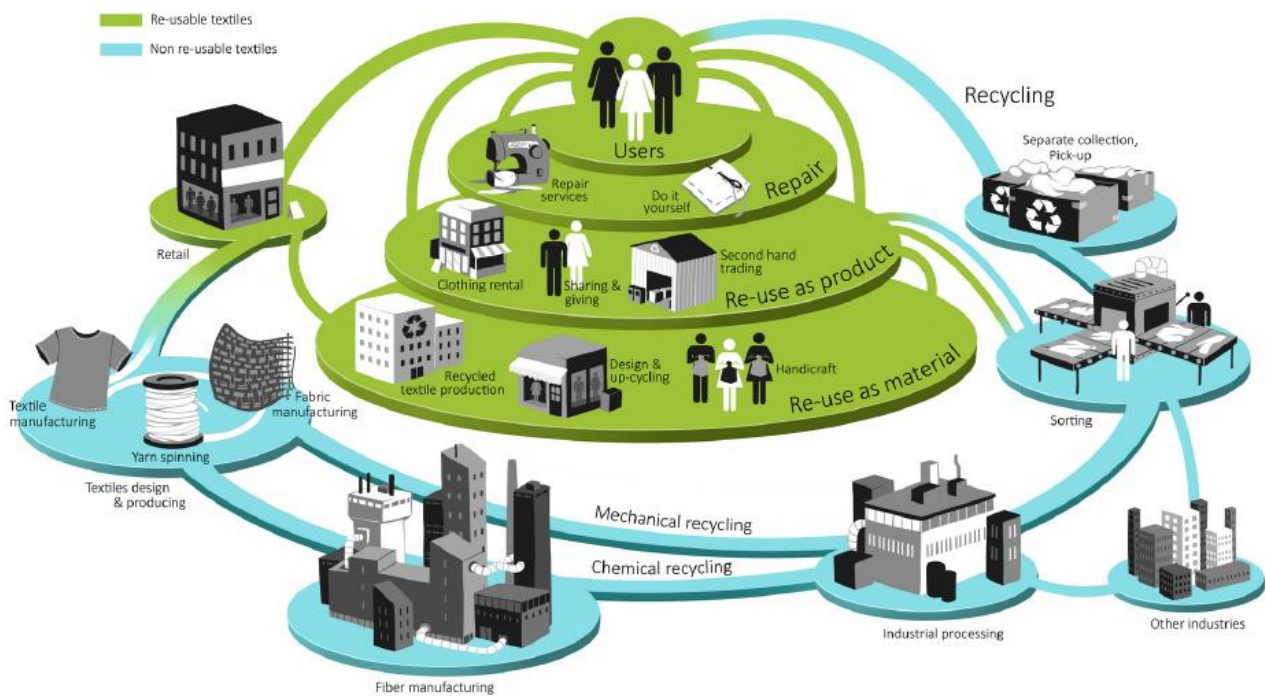


Figure 2.7: Model of a circular business ecosystem for textiles (Fontell & Heikkilä, 2017).

This simplified model shows four loops for textiles to cascade through; with the original user, re-use or sharing, recycling and material reclamation. The loops represent the intrinsic value of garments from highest to lowest, with the user loop being the most valuable. Clothes should only pass to the next loop when their quality have deteriorated to a stage where it is no longer possible to use it as e.g. a product. The green loops are those where the textiles are still reusable and hold more valuable, and the blue loops are non-reusable textiles that still might have other uses. These uses could either be as feedstock for other industries or the fashion industry after the materials have been recycled. For this system to work, an entire ecosystem of users, retailers, recycling facilities etc. must be in place.

When companies decide to move towards a higher degree of sustainability or circularity in their organizations and business models, it is most often a gradual process (Remmen & Münster, 2003). In the literature it is modeled as a series of steps or stages that a company move through in their efforts towards thorough implementation (Adams, et al., 2012) (Adams, et al., 2016) (Hauschild & Pedersen, 2016). This process, referred to by Adams et al (2016) as sustainability-oriented innovation might serve as a general model for companies seeking to implement CE as well, since there are several overlaps between sustainability and CE efforts (Ellen MacArthur Foundation, 2017) (Roos, et al., 2019). Each step might be pursued independently or simultaneously, but companies with sustainability embedded across the organization tend to have more sustainable products and production as well. In Konietzko et al each of the five circular strategies apply to three dimensions;

product, business model and ecosystem. Products are focused on the company's internal operations, business models are focusing on how to sell the clothes and operate the business, whereas ecosystems focus on the broader industrial and economic system.

These stages are in this thesis divided into materials, product chain and business models. The reason for altering the taxonomy is to put more emphasis on what the individual companies do and how they strategize, as CE in the Danish fashion industry is driven mostly by single company bottom-up initiatives as of today. As more companies start to implement more sophisticated CE business models there will be a greater need for alignment and cooperation. With the categories of product chain and business models some ecosystem elements are included, like partnerships and shared resource streams, but this thesis applies a more company-close research scope. The reason behind breaking down the initiatives into three business areas is to also match the structure of the data sources on the companies' websites which is more often than not divided into different focus areas, like materials, suppliers or environment (Wood Wood, 2019) (By Malene Birger, 2020b) (By Malene Birger, 2020e) (Better World Fashion, 2020b).

In this thesis the above concepts form the framework for the methods and analysis CE in the Danish fashion industry by being the reference to compare the data to. The following chapters will elaborate on the applied methodology and analysis approach.

3. Methodology

This thesis presents a qualitative cross-comparison of the sustainability efforts in the Danish fashion industry with special attention to those surrounding CE. The methodology applied to gather and analyze the data consists of literature studies, semi-structured interviews and a systematical categorizing of the sustainability strategies of three companies according to the conceptual framework principles. The following sub-sections elaborate on the relevance and argumentation for applying the individual methods.

3.1 Literature study

To adequately answer the research question, having an overview of the most relevant and recent literature was deemed essential. As I initially had limited knowledge of the fashion industry, it became paramount to understand the dynamics and the lines of thought in this sector prior to conducting the analysis.

Peer-reviewed scientific reports were prioritized as source material. European and national strategies and action plans were reviewed to understand the current state of sustainable textile policies. Publications from prominent NGO's on the topic, like the EMF, also provided expert knowledge and were in many cases suggestive of progressive solutions for the current problems in the industry. There also exists an increasing number of cross-disciplinary research projects and pilot projects like Mistra Future Fashion or ECAP, whom contribute with frequent and novel research publications. To get an extensive overview of initiatives and strategies in the examined companies their online communication proved to be relevant sources. Despite varying level of detail among company websites the published CSR strategies and reports provided empirical data to support the interviews. To unfold the conceptual frameworks and investigate the state-of-the-art in fashion it has been a priority to use both sources with conceptual analyses, e.g. Geissdoerfer et al (2016) or Osterwalder et al (2005), and those seeking to apply the concepts in a practical setting like e.g. Goldsworthy et al (2019) or Konietzko et al (2020). The interaction between theory and practice aided in selecting the analysis criteria and provided the necessary knowledge for conducting interviews with the industry respondents.

3.2 Interviews

As the main source of qualitative data, a series of semi-structured interviews were conducted and transcribed. In the initial stages of the research process the emphasis was on obtaining a broad understanding of the Danish fashion industry and through snowballing get in contact with other relevant respondents. As such, the first interviews were with industry associations and experts with extensive knowledge and networks within Danish fashion.

The next objective was then to get into contact with relevant companies. They were identified based on recommendations from the earlier interviews and own research. The purpose was to get detailed insights on the experiences and considerations behind the status quo of circular business models within the industry, and to understand how and why companies prioritize and implement them. The initial ambition was to include a broad selection of fashion companies in the thesis to allow for a generalized assessment based on the data. Table 3.1 shows the companies and other industry actors that were contacted throughout the thesis process and the result of the request. For the respondents who were willing to contribute to the thesis the character and date of the interaction is listed.

Agreed to participate	Type and date of interaction	No reply received	Declined to participate
H. Melchiorson, business consultant	Phone interview 14/02/2020	Kopenhagen Fur	Baum und Pferdgarten
G. Constantinou, Lifestyle & Design Cluster	Physical interview 19/02/2020	PlanMiljø	GANNI
M. Busk, Danish Fashion and Textile	Physical interview 19/02/2020	Danish Red Cross*	Samsøe & Samsøe
T. Donnerborg, Danish Red Cross	Phone interview 10/03/2020	KALO København	Organic Basics
A. Sarup, Wood Wood	E-mail correspondence from 11/3/2020 to 18/03/2020	Continued Fashion	Veras Vintage
A. Braunstein, DAKOFA	E-mail correspondence 11/03/2020	Masai	Won Hundred
R. Ivang, Better World Fashion	Skype interview 23/03/2020	Aiayu	NN07
L. Vind, By Malene Birger	Skype interview 01/04/2020		Bestseller
K. Kant Hvass, Ph.d.	Skype interview 30/4/2020		DK Company
*The participating respondent from these companies recommended to contact a colleague whom then failed to reply			

Table 3.1: All contacted actors in the thesis process chronologically divided by whether they wished to participate in the project (green columns) or not (red column). Actors who did not respond to the request is shown as well (yellow column).

The data collection process was characterized by two significant circumstances.

Firstly, the need to obtain an understanding of the workings of the Danish fashion industry due to limited prior experience with this sector. This motivated me to interview experts with a broad industry knowledge and a relevant network to recommend other respondents. Both H. Melchiorson and the respondents from Lifestyle & Design Cluster and Danish Fashion and Textile fitted this description and was contacted first. DAKOFA also contributed somewhat to the identification of relevant companies and organizations to reach out to. On the online corporate sustainability portal in Denmark, CSR.dk, an article mentioned that several Danish fashion companies were discussing sustainability in a new network. The companies in question were Samsøe & Samsøe, GANNI, Baum und Pferdgarten, By Malene Birger, Wood Wood and Won Hundred (CSR.dk, 2020). These companies were deemed as the most fitting to reach out to first.

The second influential factor on the ability to collect data was the outbreak of COVID-19. During the thesis period the Danish government issued restrictive measures which forced many companies to temporarily shut down. Adapting to these new and unforeseen circumstances put great strain on many of the contacted fashion companies, as they saw their revenue streams disappear overnight. For these reasons, several of the companies that was asked to contribute to the thesis had to decline as they had to prioritize their resources elsewhere. Though it remains unconfirmed, one might

assume that the lockdown influenced the number of companies that chose not to reply as they might have likely been under pressure as well.

As mentioned, I originally set out to include companies of various sizes, segments and degree of CE implementation. This was to get a nuanced picture of the sector. However, as many companies chose not to participate in the research, the thesis prioritized to obtain data from companies with some level of experience with CE initiatives, as to investigate how well-established these practices were in the industry.

Danish Red Cross was contacted as being representative of the NGO's that currently manage a large share of the recycling and sorting of donated textiles in Denmark (Danish Red Cross, 2020) (Nørup, 2019). The respondent with detailed knowledge of the sorting process did unfortunately not reply to the questions that were sent. In terms of for-profit companies it seemed relevant to contact both the largest corporations like Bestseller and DK Company (Detailfolk.dk, 2018) and those with a particularly outspoken circularity focus like Better World Fashion (AAU, 2019). Eventually I was able to conduct two in-depth interviews with Better World Fashion (BWF) and By Malene Birger (BMB). Even though BMB had initially declined to participate, it went through thanks to a personal recommendation from a colleague I was already acquainted with. The interview guide for both interviews was partly customized for each company and partly standardized. This was meant to ensure data on both the unique propositions in the respective organizations but still with the ability to compare their reflections on e.g. the greatest benefits and challenges with working with circular fashion.

Of the conducted interviews all but two were conducted either through written correspondences or telephone and VoIP (Voice over Internet Protocol) applications. Initially physical meetings were preferred over virtual ones, as actual interactions tends to build a higher level of rapport between respondent and researcher and ensure better data quality (Lo Iacono, et al., 2016). In some cases, a phone call was chosen due to the respondent being in another part of the country (Melchiorson, 2020). Later in the research process interviews had to be conducted digitally due to the pandemic lockdown. It did not affect the data collection negatively and allowed for interviews with distant respondents that would have been challenging to meet in person. The VoIP interactions provided better data than the written correspondences, as having an actual conversation allows for easier follow-up questions or elaboration on certain topics. While written responses tend to be more concise and deliberately formulated, they also lack the nuances of the more fluid conversation in a semi-structured interview. The gathered data from both methods did still prove valuable to the research.

3.3 Analysis framework

In order to investigate the nature of CE in Danish fashion the initiatives and business models in the different companies had to be compared. With fashion being both a fast-moving and quite diverse market the actors within it also have different characteristics. A categorization by Ross and Harradine (2010) of different segments of fashion brands divides them by price, design influence and production volume, see figure 3.1.

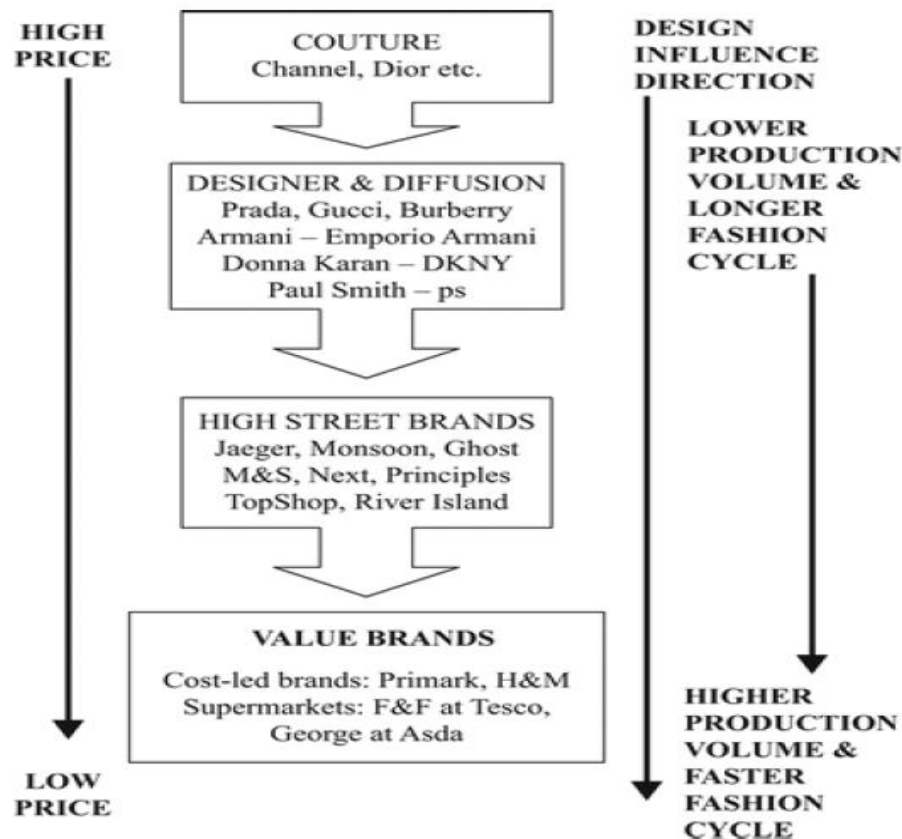


Figure 3.1: Different segments of fashion brands (Ross & Harradine, 2010).

The companies that have been analyzed in this thesis are Wood Wood (WW), By Malene Birger (BMB) and Better World Fashion (BWF). The respondent companies fall into the categories of high street (WW, BMB) and designer brands (BWF). Even though having respondents in all categories would have been better for diversification of data, the three companies in question is still thought to be representative for the Danish fashion industry in this regard. All three companies were found to have worked with circular business models to some degree, and all have formulated extensive sustainability strategies. While this improved the data quality, it should also be noted that they may not be representative for the Danish fashion market as a whole per se, as many other companies have less sophisticated strategies in place (Kant Hvass & Pedersen, 2019). Especially BWF can be

said to represent a niche in the market, as their entire business strategy revolves around circularity. WW and BMB are more representative of the market standard, as their main source of income is traditional linear fashion. Within the latest year they have started to explore circular options and are thus capable of providing data on their experiences. While the companies may not be representative of the general approach to sustainability in Danish fashion, they can be regarded as indicative cases of the companies that *do* work with CE in the industry today.

To ensure comparability the initiatives and policies for each company had to be analyzed using the same tool. In this thesis the analysis tool consists of two parts. Firstly, a matrix or table that tabulates the five circular strategies of Konietzko et al (2020) with the three business areas of materials, product chain and business model described in chapter 2.2.1. The second part of the analysis consisted of a comparison of the company initiatives and the interviews with a respondent from the company in question. The materials category in the table feeds into impacts from raw materials and design for recyclability and/or longevity. The product chain category focuses on how the garments are manufactured with the suppliers and include any guidelines or codes of conduct the companies have made for their business partners to follow. The final category of business models is where a company might seek to disrupt or diversify their business by seeking out new ways to provide value. This might be by going from retail to leasing or establishing reverse logistics to retrieve post-consumer garments for recycling. A company might explore more business areas simultaneously or focus on just one; there is no hierarchy between the business areas. Eventually, initiatives across all three areas will be necessary as sustainability or CE requires holistic strategies to become successfully implemented (Ellen MacArthur Foundation, 2012) (Wolde & Korneeva, 2019).

For this thesis the aim was to identify where the companies focused on enhancing circularity and sustainability across their businesses and if they were leaving other opportunities unseized. The blueprint for the tables is shown below.

	Materials	Product chain	Business Model
Slow			
Narrow			
Close			
Regenerate			
Inform			

Table 3.2: example of the analytical framework used in the thesis. The aim is to investigate which circularity pathways the companies are pursuing and in which areas of their business.

This division is made from my best knowledge but can still be argued to be somewhat arbitrary. This is due to the interconnectedness between the areas in the real world where one policy might

influence more or all categories at once. For the sake of the analysis, it was deemed necessary to categorize the different initiatives into only one of the business areas or circular strategies. Arguably, others might have categorized the same initiatives differently or applied a different taxonomy to the same data.

4. Analysis

This chapter investigates the question of how and why the Danish fashion industry are working with circular business models. The understanding of the concepts foundation in the industry is key to answering the main research question of the thesis. The following sections uncover for each brand its history and market segment, a description of their sustainability and circularity initiatives and an analysis on how it fits with the literature.

4.1 Wood Wood

WW was founded in 2002 in Copenhagen by Karl-Oskar Olsen and Brian SS Jensen. Today the company has stores in several Danish cities as well as Berlin and London and are expanding to overseas markets. Worldwide their collections are sold in close to 400 stores. In 2017 the company presented a record financial statement with a profit of 6,7 million DKK. (Jensen, 2018) (Wood Wood, 2020d).

Describing their own design as “*contemporary streetwear*”, WW has an unformal and sporty appeal, blending elements of high-end fashion with underground and urban aesthetics (Ibid.). They are categorized as a high street brand in accordance with Ross and Harradine (2010) as they are more expensive and produce fewer collections than the value or fast fashion brands, whilst having a more mainstream appeal than an haute couture brand.

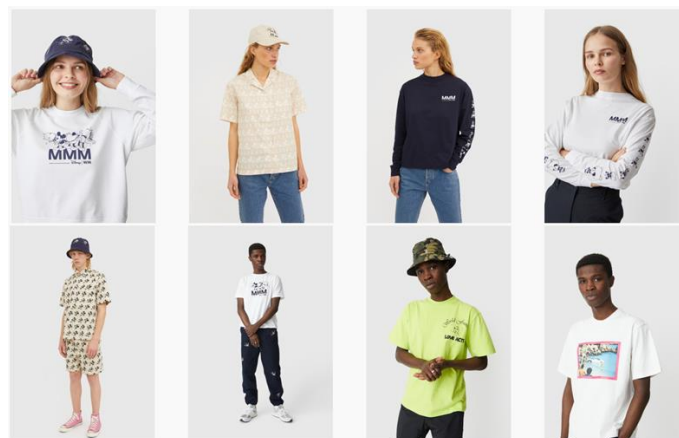


Figure 4.1: Examples of WW's collections (Wood Wood, 2020e) (Wood Wood, 2020f).

4.1.1 Wood Wood's sustainability strategy

In their sustainability report from 2019 WW have presented their initiatives towards becoming a more sustainable business (Wood Wood, 2019). These initiatives are aligned with five out of the 17 SDGs (UN General Assembly, 2015). The five goals are number 8 (Decent work and economic growth), number 12 (Responsible consumption and production), number 13 (Climate change), number 14 (Life below water) and number 15 (Life on land). The following list shows the initiatives and policies listed by each goal:

SDG 8: WW has a goal for 2020 about having 70% of their production sourced in Europe. This goal was exceeded in 2019 since 75% of the products were produced in Europe and the remainder in China. As another way to ensure better conditions for the workers throughout the product chain WW adheres to Amfori BSCI's country risk classification, to determine whether suppliers need to be certified by a third party. The risk level in the sourcing countries is determined by their performance across six World Governance Indicators (WGI) developed by the World Bank, which are: *Voice and Accountability, Political, Government Effectiveness, Regulatory Quality, Rule of Law and Control of Corruption* (Wood Wood, 2019).

When WW does business with a supplier in a risk-country, they visit the factories and require that they are inspected and certified by either Amfori BSCI or SMETA auditor (Ibid.). As of 2019, 55% of suppliers are in low-risk countries and 45% in one of four risk-countries: China, Turkey, Romania and North Macedonia. The 2020 goal for production in risk-countries is that at least 80% should be either SMETA or BSCI certified. This is currently the case for 76% of the production.

SDG 12: In 2019 WW joined the SDG Accelerator, a program funded by the Danish Industry Foundation to help companies make decisions that benefit the SDGs (The Danish Industry Foundation, 2020). In WW's case, the program focused on initiatives for SDG 12. The plans include providing all employees with a sustainability guide, rethinking the use of plastic bags in their stores and making the current CSR strategy for 2025 more ambitious. The most tangible outcome of the SDG Accelerator was the development of Artefact; a new circular business model, as well as seeking to raise awareness regarding responsible consumption within their customer base (Wood Wood, 2019). It consists of a take-back scheme for used WW garments where customers receive a 15% discount voucher upon returning their clothes (Wood Wood, 2020a). After the clothes have been cleaned and inspected for damage, they are resold in the so-called MUSEUM concept store in Copenhagen. This store already features deadstock clothes and pieces from previous collections and will in the future be one of two outlets for acquiring second-hand WW clothes. The other channel is planned to be an online sharing and buying platform, but it has not been launched at the time of writing (Wood Wood, 2020c). Artefact was announced and started up in March 2020.

SDG 13: To get a quantified overview of their greenhouse gas (GHG) emissions, WW had a third-party organization track their carbon footprint in 2019 through an LCA analysis. This provided details into the most problematic and polluting areas of the value chain (Wood Wood, 2019). The LCA pointed out that approximately 68% of the GHG emissions comes from the production of fabrics. In fabric production, around half (43%) of the carbon footprint stems from the extraction of raw materials, either from harvesting biological materials or refining oil into synthetic fabrics (Ibid.). It should be noted that the end-of-life phase is not included in the LCA, despite sources claiming that a substantial amount of GHG emission take place during this part of the lifecycle (Ellen MacArthur Foundation, 2017).

SDG 14: According to the sustainability report WW is working with their suppliers “*to ensure that they handle their water waste and reduce the amount of water used in production*” (Wood Wood, 2019). To lessen the water use in production, WW’s suppliers has started using ozone and laser technologies when making denim. These techniques help to lessen the chemical and water usage and further help secure a healthier working environment in the factories (Wood Wood, 2020b).

SDG 15: The strategy on this SDG is particularly focused on the materials used in production. The most used fiber in WW’s collections is cotton, amounting to 79%, where 43% is conventionally grown cotton and 36% organic cotton (Wood Wood, 2019). The brand has made several targets for 2020 on the percentages of sustainable materials in their collections, see table 4.1:

Material	Share in 2019	2020 target
Sustainable cotton	77%	50%
Sustainable wool	30%	30%
Recycled polyester	10%	30%
Recycled nylon	50%	40%
Tencel and other lyocell fibers	42%	50%
Recyclable fibers in collections	89%	70%

Table 4.1: 2020 targets on sustainable and recycled materials in WW garments (Wood Wood, 2019).

In May 2019 WW became GOTS-certified and focus on increasing the share of organic cotton in their products. Other initiatives include reducing the amount of plastic in packaging and substituting with cardboard. Plastic made up 20% of the packaging used in 2018 and cardboard made up 80%. The goal for 2020 is to use less plastic, especially single-use, and to optimize the way the clothes are packed in order to rely on less packaging materials. When clothes are shipped, the bags are made from recycled plastic and are reusable. Other initiatives include making hangtags from FSC-certified cardboard and having all trim on the clothes being OEKO-TEX-certified (Ibid.). To engage the consumers in caring for the clothes in the least impactful way, WW has made a care guide (Wood Wood, 2020c).

4.1.2 Analysis of Wood Wood's strategy

Based on the presented circularity and sustainability strategy the cross-comparison between the initiatives and the principles in the literature has been made. The result of the tabulation can be seen in table 4.2 below.

Wood Wood	Materials	Product chain	Business Model
Slow	Partly reusable plastic bags from shipping	Design for longevity	Artefact: second-hand
Narrow	Organic cotton Focus on less plastic	Less water usage in production Ozone technology in denim manufacturing	Clothing care guide for consumers
Close	Focus on recycled and recyclable materials in clothes Recycled plastic bags for shipping		MUSEUM and Artefact: selling pre-owned clothes; providing vouchers as incentive
Regenerate	Use of primarily organic fabrics	Laser technology reduce chemical usage	
Inform	FSC-certified hangtags GOTS-certification Standard 100 by OEKO-TEX-certified trimming	Mandatory BSCI or SMETA certification in risk-countries	Using LCA data for informed decision making Artefact: Planned introduction of second-hand platform

Table 4.2: Characteristics of WW's sustainability strategy compared to the conceptual framework of the thesis (Wood Wood, 2019) (Wood Wood 2020a-c).

The table shows that the announced initiatives fit into most of the categories. The subsequent analysis dissects each of the five circular strategies to provide a better understanding of how WW operate with CE and sustainability.

Slow: As mentioned in chapter 3, slowing refers to lifetime extension of products and materials. Or more simply put, using the same things for longer. In the case of WW's strategy, they present three different initiatives that arguably serve as means to that end. The first one relates to materials and is that their bags for shipping garments bought online comes with a reusable closure. The customer can reuse the bag to return clothes to WW, who can then reuse the bag. Currently it is only online orders being shipped this way, while clothes bought at a retail store is still carried home in regular plastic bags. WW has the elimination of single-use plastics as a future sustainability target, but since retail is still the main channel for revenue there continues to be an impact from packaging.

The second initiative is that WW "design for longevity". This fits rather well with the strategy of slowing, since material and emotional durability is key if products are to have longer user lives

(Bocken, et al., 2016). It is however not specified in the report how exactly the clothes are designed to be durable, leaving some room for interpretation. A garment might be made from durable materials, like linen, or it might have a timeless design so that it will stay in style for longer and not be discarded for being unfashionable. Both are designs for durability, so how WW has gone about it in their collections remains to be elaborated.

Lastly the Artefact project serves as a “slow” business model. By allowing the same piece of clothing to have multiple owners and user-phases throughout its lifetime, it provides more value to both consumer and company per garment. While the value proposition remains the same, offering nice and fashionable clothes, some of the surrounding business model elements are changed. The channel changes to the MUSEUM store and eventually the planned online platform, instead of all WW stores. In order to have a functioning take-back scheme the logistics around collection, cleaning and re-selling must be in place, meaning additional costs for the company. By selling the same garment multiple times the revenue gets multiplied as well. It should be noted that for each user-phase a garment goes through, its quality is likely decreased slightly due to wear and tear. As such, second-hand clothes cannot be expected to be sold at the same price as new ones (Wood Wood, 2020c). The clothes get cheaper and cheaper as they become more worn and are recycled once their resale value becomes lower than the cost of recapturing the materials; or the clothes can be refurbished in-between owners. The latter option is more labor-intensive but will help retain a higher resale price for longer – the challenge remains to balance the additional cost and revenue streams in order to create a profit.

Narrow: WW has several strategies that fall under the narrow category. The first efforts regarding materials is moving away from single-use plastics and prioritizing organic cotton as a raw material. The plastic bags handed out in stores are seldomly reused. By either making sure the bags are recycled and/or made from recyclable or biodegradable materials unnecessary plastic pollution might be avoided. A fee on plastic bags might be considered if more environmentally friendly packaging turns out to be costly to the company, or in order to incentivize shoppers to bring their own bags. H&M launched their “Pay it BAG” initiative in 2018 with a fee on plastic bags, serving as an example for other fashion brands to follow (WWF, 2018).

The goal about prioritizing organic cotton in collections is categorized as part of the narrow strategy due to the lower amount of resources needed to grow it. Especially water and chemical use is lessened which puts less strain on the local environment in cotton-producing countries. Organic cotton reduces the water consumption to a quarter of that of conventionally grown cotton but might produce up to 25% smaller yields. To compensate, farmers will need to plant more cotton

fields (Eder-Hansen, et al., 2017). Despite being an overall better alternative than conventional cotton, it is still a crop that requires a lot of arable land and water compared to others.

The narrow initiatives also impact the product chain category. As an effort to comply with SDG 14, WW works with their suppliers on how to reduce water consumption and waste across the value chain. The details on how they approach the task and data on progress are not mentioned nor are there any quantitative targets. Lowering the resource use in the production phase is undoubtedly necessary and important; but the current communication leaves room for improvement in terms of transparency. Another product chain initiative is the implementation of ozone water treatment. By using atmospheric oxygen, the technology creates ozone that acts as a disinfection agent in the water and oxidizes it in the process. The process water is cleaned without chemicals like chlorine, which can become a pollutant in local aquatic environments (Water Aps, 2020). According to their website, WW has been able to reduce the water use per manufactured item to 15-20 liters (Wood Wood, 2020b). It is not mentioned what the water use was before which makes it difficult to put the improvement into perspective. It is assumed that these 15-20 liters per item only refers to the manufacturing process, as a general estimate for the total water usage for a standard cotton t-shirt can be as high as 3.000 liters (Common Objective, 2020).

Besides raw materials extraction, the use-phase of clothes is the most resource intensive with an estimated 25% of the total environmental impact occurring here (Šajin, 2019) (WRAP, 2019). Despite not having any actual influence on what consumers do with the clothes they buy; some brands have created extended care guides which are placed in the business model category. This fits the narrow strategy by appealing to a less wasteful clothing care. While it does not constitute an independent business model, it is a type of customer interaction that extends beyond the point of sale. WW have created a set of recommendations for sustainable product care (Wood Wood, 2020c). These mainly concern washing at low temperatures and with less detergent, avoid tumble drying whenever possible, and guidelines for storing clothes to maintain their original feel and quality for longer (Wood Wood, 2020g). A Unilever study shows that a third of consumers actively buys from brands with better social and environmental impacts (Unilever, 2017). By including their customers in a sustainable narrative WW might increase the customer loyalty and positive association with the brand.

Close: The first initiative for this strategy is the use of recycled plastic for making bags for shipping online orders. As mentioned above the online shipping only makes up a smaller part of the business so a major reduction in environmental footprint will likely not come from this initiative alone. Still, plastic pollution is a major environmental issue that should be addressed at all levels (Ellen MacArthur Foundation, 2017).

The strategy of prioritizing recycled, and recyclable, materials is more fashion industry specific. When talking about recycled materials it refers to a garment containing some percentage of recycled fibers, either from production scraps or post-consumer waste. Clothes made from purely recycled fibers are still relatively uncommon, depending on the material (Roos, et al., 2019). WW has targets for the share of recycled nylon and polyester and for “sustainable” wool and cotton in addition to lyocell fibers (Wood Wood, 2019). It is not clarified what is meant by “sustainable”. As previously mentioned, WW is focusing on organic cotton and might also be labeling this as “sustainable cotton”. The same might be the case for wool, since WW’s collections in 2019 became GOTS-certified. To become certified, materials must be labelled as organic according to various standards (GOTS, 2020) and even though it is not specified it is assumed to be the argument behind the strategy of “sustainable” materials for WW.

Another claim is that their clothes are all “recyclable”. One of the main reasons is that 92,52% of the 2018 production came from mono-fibers, see figure 4.2:

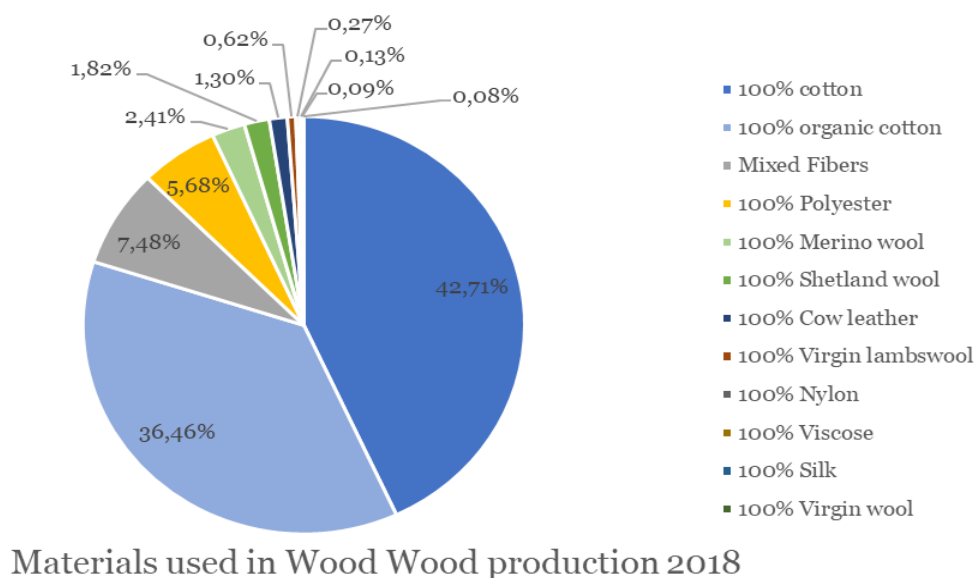


Figure 4.2: Material composition of WW's collections in 2018 – adapted from (Wood Wood, 2019).

Besides the fact that many post-consumer clothes today are of such a quality that there often remains little to no economic value in recapturing the resources, they are often made from a mix of different materials. This makes recycling challenging, as recycling technology across sectors relies on clean material streams (European Commission, 2020) (Roos, et al., 2019). By primarily using mono-fibers WW makes their clothes recyclable at higher rates with more economic and environmental benefits to be gained in the future. Currently, only a minority of the materials used by WW are recycled (Wood Wood, 2020c). For cotton, the base for over three quarters of WW's clothes, it is currently not possible to make garments from 100% recycled fibers – the industry standard is

~15-20% recycled fibers and the remainder being virgin cotton (Roos, et al., 2019). Companies mix recycled and virgin fibers to maintain certain properties like stretch or softness (Goldsworthy, et al., 2019). Synthetic fibers like nylon and polyester can already be recycled back to new quality and is easier to use in new textile products of higher quality (Ibid.).

In the business model category, WW aims at increasing the reuse rate of their clothes. Reuse is essential towards lowering the environmental impact from textiles (Šajin, 2019). The Artefact initiative will, if successful, keep more clothes circulating within the economic system and thereby reduce the necessity for extracting virgin resources. The take-back scheme relies on customer donations to function, and customers are therefore rewarded with a discount voucher whenever they hand in their old clothes. If vouchers are used for new clothes instead of second-hand ones, the retail and re-sale business models might become conflicting from an environmental standpoint (Corvellec & Stål, 2019). New clothes require new inputs, and the – at least partly – linear system is upheld. From a financial perspective it increases the flow of customers in both segments by having more clothes on the market. If the voucher were reserved for the MUSEUM store or for Artefact pieces, it could provide a boost to the circular business model. The prerequisite for this positive feedback loop would be that customers would be as interested in second-hand clothes as new ones (Sweet & Wu, 2019).

Regenerate: The way WW's strategies fit into regenerating is, in the materials category, by focusing on organic fabrics, especially cotton. Organic agriculture and husbandry imply no pesticides, herbicides and fungicides or use of synthetic fertilizers, all of which pose pollutants to the environment. For the product chain category, WW works with suppliers that use laser technology when producing denim. The laser replaces traditional washing methods like stone washing, bleaching or sandblasting to give the denim a distressed look that is sought after among consumers (Fibre2Fashion, 2014). In addition, using laser washing eliminates the need for using chemicals such as potassium permanganate sprays (Wood Wood, 2020b). This results in both the workers and the environment being exposed to fewer harmful substances.

Inform: As mentioned, the inform strategy can be perceived in two ways. The way WW uses this strategy is primarily adhering to compliance with third-party certifications of their collections. For materials, three standards are in play: GOTS, FSC and OEKO-TEX. GOTS ensures that the fabrics are organic, which in 2018 was the case for 44% of the total WW production (Wood Wood, 2019). When clothes are bought in a store, they come with hangtags displaying the price, model and size. These are in WW's case made from FSC-certified cardboard, ensuring that the forests providing the raw materials are sustainably managed. The last certification is Standard 100 by OEKO-TEX and

concerns the trim on the clothes, i.e. buttons, zippers, lacing etc. Standard 100 by OEKO-TEX ensures that the materials are tested free of substances that are harmful to human health.

In order to mitigate indecent and unhealthy working environments in their product chain WW primarily works with European suppliers, as workers' rights are better enforced here. The suppliers located in BSCI risk-countries are required to live up either the SMETA or BSCI standards. When this is the case, WW have objective proof that their clothes are made under ethical conditions. The innovation branch of the inform strategy is also applied by WW. The LCA analysis conducted of the 2018 collection provide a quantitative, data-driven baseline for further strategies. Data are still lacking in terms of the end-of-life phase as this was excluded from the assessment. This is problematic in terms of circularity. An obvious next step would then be to gather data from this part of the lifecycle to also enable informed decision-making regarding recapture of value and materials. The last initiative in the inform strategy regards the future expansion of the Artefact business model. According to WW (2020c), the plan is to create a digital platform on which the customers can trade their used garments and acquire new second-hand pieces. Expanding the sales channel from only a brick-and-mortar store to an online platform appeals to young consumers (ASOS, 2018) and sales would not be limited by opening hours or consumers' geographical proximity to the store. The most imperative challenge will be to spark customer interest in Artefact. The goal is to both attract existing WW customers and hopefully expand the customer base with segments that seek out second-hand shopping predominantly (Wood Wood, 2020c). The initiative was launched in March 2020 and there is still minimal experience to draw conclusions from. A clearer picture is thought to form in the coming months.

4.2 By Malene Birger

BMB was founded in Copenhagen in 2003 by Malene Birger. The brand first participated in the Copenhagen Fashion Week in 2004 and opened its first flagship store in 2006. Today their clothes are sold in over 1000 stores in 42 countries (By Malene Birger, 2018). The company makes women's wear exclusively with clothes that impose "*intelligent but joyful elegance*" (By Malene Birger, 2018). BMB would be categorized as a designer brand in the taxonomy of Ross and Harradine (2010) as they produce fewer, more design-driven collections (four per year) and are among the more expensive brands.



Figure 4.3: Examples of BMB collections (By Malene Birger, 2020g)

4.2.1 By Malene Birger's sustainability strategy

BMB has adapted a sustainability strategy that emphasizes social sustainability and avoiding harmful substances (By Malene Birger, 2020a). They divide their policies into Environment (By Malene Birger, 2020b), supplier Code of Conduct (By Malene Birger, 2020c), People (By Malene Birger, 2020d) and Animal welfare (By Malene Birger, 2020e). Each of these four topics contains policies that make up the CSR-strategy for BMB. They are explained below.

Environment: The first policy regarding environmental sustainability is using denim labeled with the Nordic Swan ecolabel. This requires certified fabric to live up to quality requirements on health and environmental impact. Another fabric-related initiative is that the collections contain organic cotton. While organic cotton provides numerous environmental benefits over conventional cotton (Eder-Hansen, et al., 2017), it is not stated how much of the cotton is organic. It also becomes challenging to assess the environmental impact. Likewise, with BMB's accessories which contain "recycled materials" it is not elaborated which materials are recycled or how large a percentage they make up.

When it comes to the special collection called "Made with Care", the degree of transparency regarding sustainable materials is higher. This collection consists of 10 pieces made from wool, cotton and leather. The wool is recycled from post-consumer garments and production scraps, and the leather is leftover material from glove production. The cotton is a mix of virgin and recycled fibers – the distribution is not disclosed – and is all organic. Denim products are labelled with the Nordic Swan and consist partly of recycled cotton (By Malene Birger, 2020h).

An interesting project in terms of circularity is Rent the Look (RTL). It is a project that used a circular textiles platform provided by Continued Fashion and presents a select set of item for rent instead of purchase (Sonne, 2019). The pieces – mainly occasional wear like party dresses – can be

leased for a short period of time and are then returned to the company to be cleaned and made ready for the next customer (By Malene Birger, 2020a). By definition, it falls under the category of Products as a Service (PaaS) (Guldmann, 2016) (Lacy, et al., 2014). Just as WW, BMB uses recyclable packaging for shipping orders. It is assumed to be some type of plastic and perhaps cardboard even though it is not specified, both of which can be source sorted at the customers household (Danish Government, 2015).

Harmful substances is an area of particular focus for BMB (By Malene Birger, 2020a), and for this reason they have their products tested by external experts according to the European REACH guidelines (By Malene Birger, 2020b). The brand has also developed their own RSL to eliminate harmful substances from their collections.

The last environmental policy regards unsold items. A problematic trend in fashion has been companies burning or destroying unsold items to maintain high prices and low supply thus ensuring exclusivity (Siegle, 2018). BMB has adapted a no-burn policy for their unsold items and has entered a partnership with the Swedish NGO Human Bridge to donate surplus garments to material relief around the world (By Malene Birger, 2020b).

Code of Conduct: To ensure that their suppliers demonstrate due diligence, BMB has issued a series of requirements on environmental, social and animal welfare issues for them to follow (By Malene Birger, 2020c). The Code of Conduct is built upon the principles of the UN Global Compact and the UN Guiding Principles on Business and Human Rights (the UNGPs). The document is divided into three segments covering process, sustainability and implementation and collaboration requirements respectively. It applies to BMB's first-tier suppliers whom are then required to make sure their own first-tier suppliers adhere to it as well. Implementing a Code of Conduct of this sort is an example of proactive environmental management and demonstrates a sense of responsibility for their products and suppliers (Adams, et al., 2016).

People: Here is listed anti-corruption policies for all employees associated with BMB as well as the social elements in the Code of Conduct. As Global Compact members, transparent and diligent business conduct is required, and corruption and human rights plays a considerable role in the principles. As another part of the strategy BMB aims to work with BSCI and SMETA-certified suppliers. In their latest collections 61% of the suppliers used were BSCI AND SMETA-certified and supplied 78% of the pieces in the collection (By Malene Birger, 2020d). The company also engages in several local and international partnerships regarding promoting social issues (Ibid.).

Animal welfare: As animal products like leather and down make up part of BMB's collections, the company has issued a set of policies on how to source these materials. As is required by international law, no endangered flora or fauna is used for their clothes, and for ethical reasons are no

animals skinned or plucked alive (By Malene Birger, 2020e). More interesting from a CE point of view is that all leather, skins or down/feathers are by-products of meat production; these materials have no value to that industry but can through open-loop recycling be used to replace virgin feed-stock in the fashion industry. This constitutes an eco-system perspective as mentioned by Konietzko et al (2020).

4.2.2 Analysis of By Malene Birger's strategy

Based on the overview of the presented CE and sustainability strategy, the cross-comparison between the initiatives and the principles in the literature has been made. The result of the tabulation can be seen in table 4.3 below.

By Malene Birger	Materials	Product chain	Business Model
Slow			Donating unsold items to charity RTL: PaaS – multiple lifecycles per garment
Narrow	Organic cotton	Code of Conduct: environmental requirements	
Close	Recyclable packaging Using meat by-products Recycled materials in accessories Made with care: recycled leather, wool and cotton		No-burn policy on unsold items
Regenerate		Own RSL External REACH auditing	
Inform	Nordic Swan-certification	BSCI and SMETA-certified suppliers preferred Anti-corruption policies Own Code of Conduct	UN Global Compact UNGP's

Table 4.3: Characteristics of BMB's sustainability strategy compared to the conceptual framework of the thesis (By Malene Birger 2020a-f) (By Malene Birger, 2020h).

The subsequent analysis dissects each of the five circular strategies to provide a better understanding of how BMB work with circularity and sustainability.

Slow: The BMB policies that best fit the slow strategy fall under the business model category. The first policy is the partnership with Human Bridge in which unsold pieces are donated to those in need around the world. By passing on the garments to others their lifecycle is extended, and their intrinsic value maintained. Yet, studies have shown that the market for donated second-hand textiles is becoming saturated (Kant Hvass, 2020) (Nørup, 2019), meaning that the clothes risk ending up as dead-stock in the recipient countries or even become landfilled or incinerated there.

Currently BMB has no way of utilizing the unsold pieces themselves leaving donation as the most environmentally sound decision. If or when the recycling infrastructure becomes ready at larger scale donating might become a less attractive option (Ellen MacArthur Foundation, 2017).

The second initiative is the RTL project. Started in 2019 as a collaboration between Continued Fashion and BMB, RTL serves as a pilot project for how a more circular approach might look in the context of the brand. As a PaaS initiative, the business model is built around BMB maintaining ownership of the clothes and offering customers to lease them for as long as they wish. The leasing price depends on the garments condition and history – the longer an item has been in circulation the cheaper it gets and vice versa. When the customer no longer wants to lease an item, it is shipped back for cleaning and quality assessment, after which it is available for lease again. Customers also have the option of buying any pieces they might become fond of. In that case they pay the remaining amount of the retail price and can then keep the clothes. (By Malene Birger, 2020i). This fits the slowing strategy by extending the lifetime of clothes as much as possible, and thereby slowing down the consumption cycle for new clothes.

Currently, RTL offers lease of party and occasional wear as well as exclusive vintage haute couture pieces, called “salon styles” which are normally used exclusively for fashion shows (By Malene Birger, 2020a). The reason for starting with occasional wear like party dresses was that this type of clothes was deemed highly appropriate for leasing over owning. Many people buy a more exclusive dress for a specific event, e.g. a wedding, after which they will rarely use it. By giving multiple customers the opportunity to use the same piece its value is utilized fully, and the replacement rate for virgin materials can be assumed to be higher than single use only (Roos, et al., 2019). However, this targets a relatively narrow customer group as most people only need occasional wear a few times a year or less. But while BMB has long-term ideas about expanding their circular business model with take-back schemes or everyday-wear for leasing, RTL is seen as a relatively risk-free way of getting experience with CE. The platform behind RTL is managed by Continued Fashion, meaning that they manage the logistics of distributing and cleaning clothes (By Malene Birger, 2020a) (Sonne, 2019). BMB provides the clothes to the platform and helps assess the quality and followingly the price of an item. Using a white-label platform has been deemed a better solution for BMB instead of investing in requiring the necessary infrastructure and skills in-house (Branchebladet TØJ, 2019). The scale and revenue from RTL are still “*at this point in time merely trifles*” compared to the conventional, retail side revenue stream (By Malene Birger, 2020a). This is due to the limited selection of clothes targeting a rather limited demand, the short run-time of the project so far and a limited interest from the consumers. While there are some attention and some flow in the business the number of new customers or interest is quite low, despite BMB claiming to

have communicated a lot about it. Another factor might be the lack of resources dedicated to sustainability in the company, which is allegedly equivalent to 1,5 full time positions (Ibid.).

Narrow: BMB uses the narrow strategy in the material category by sourcing organic cotton for their collections, especially denim. As previously described, organic cotton is less resource-intensive in many ways compared to conventional cotton. It lessens the strain on water and chemical usage in the growing process.

BMB's Code of Conduct for suppliers contains a chapter on environmental concerns. These policies affect the product chain category and requires first and second tier suppliers to live up to the principles of the Rio Declaration on Environment and Development (By Malene Birger, 2020c). These 27 principles cover, among other things, reporting on environmentally harmful practices and their elimination or minimization (UN General Assembly, 1992). Using less resources and working towards more ecoefficiency is in line with the strategy of narrowing and limits the pressure on virgin resources and ecosystems.

Close: The category in which most of BMB's policies fit the close strategy is materials. Recovered/recycled materials is used in the clothes, especially in the Made with care collection. Here all leather and wool are excess material from other production lines, e.g. glove production, that are gathered and sown into new textiles and handbags. Cotton garments are made with a mixture of recycled and virgin fibers (By Malene Birger, 2020h). With almost all existing cotton recycling technologies, there occurs a loss of fiber quality during the process (Roos, et al., 2019). Currently, no large-scale solutions can provide recycled cotton with virgin quality, since the fibers are shortened when they are recycled, resulting in lower qualities. The industry standard is around 15-20% recycled content (Ibid.), and BMB's clothes are assumed to have a similar mix. Even when they do not make up the entire material, recycled materials replace virgin ones. By not relying on new material inputs companies are not as susceptible to volatile material prices or shortness of supply. The environmental savings means that the most resource-intensive phase of clothing manufacturing, material extraction, can be eliminated or minimized. There will instead be emissions from the reverse logistics and recycling phase, but both these impacts are thought to be less severe (Wolde & Korneeva, 2019) (Ellen MacArthur Foundation, 2012). The same rationale is applicable to the policy about using recyclable plastic bags when packaging orders for shipping.

BMB uses recycled materials in their accessories (By Malene Birger, 2020b). It is not explained which materials and to which extent, which is relevant in order to determine the degree of circularity. BMB makes a variety of accessories; bags, sunglasses, shoes, handkerchiefs, wallets and covers for phones and laptops. With a broad selection of items comes a broad selection of materials with different carbon footprints. It would hence be relevant to know if the recycled materials were e.g.

wood, metal or leather as the effect of replacing virgin feedstock of some materials are more impactful than others (Eder-Hansen, et al., 2017).

The last material-focused close policy is that all materials of animal origin are sourced as by-products of meat production. Whenever BMB uses leather, skins, fur, down and feathers it has to come from animals who were not deliberately raised for skinning (By Malene Birger, 2020e). Besides the ethical aspects of animal welfare, this practice creates value for a material stream that in the meat industry is considered as waste. The saying of “one man’s trash is another man’s treasure” hold some truth in relation to CE; as one of its core ideas is that materials should circulate and cascade not just within one product chain or company but eventually between different industries as well (BSI, 2017) (Konietzko, et al., 2020). Acquiring materials from other industries’ waste products might also be cheaper. It also provides the producer of the “waste” with an additional revenue stream and makes their product more profitable. The fashion industry also provides other industries with raw materials through textile waste, as both rugs, cleaner wipes and cushioning for car seats are made from old clothes (Šajn, 2019) (Nørup, 2019).

When it comes to the business model category, BMB’s no-burn policy for unsold items relates to the close strategy as well. The destruction of valuable materials completely contradicts the idea of circularity. By ensuring that the clothes are repurposed in some way, BMB helps keeping the materials in circulation. The unsold items are currently donated to charity, but for a thorough implementation of the close doctrine the garments should eventually be recycled as materials for new clothes to be made. This is currently not possible at the required scale (Roos, et al., 2019) (Lifestyle & Design Cluster, 2020) (Danish Fashion and Textile, 2020).

Regenerate: Eliminating unnecessary and harmful substances from their collections have long been a priority to BMB (By Malene Birger, 2020a). To ensure this, the brand has developed their own RSL for suppliers to follow (By Malene Birger, 2020f). By having a clearly formulated list of restricted substances that the suppliers in the value chain should avoid, transparency is improved. This falls under the product chain category since any supplier that works with BMB must be able to document that these substances are not found in the produced clothes. It becomes easier to guarantee the absence of health-damaging chemicals when they are excluded from the manufacturing altogether.

In addition to having their own RSL, BMB has their collections examined in accordance to the EU REACH guidelines by external auditors (By Malene Birger, 2020b). When the clothes live up to these standards, they are certified to be free of forbidden substances that are harmful to both humans and the environment. Eliminating toxic waste and having clean products are core elements of the regenerate strategy and these policies help ensure that.

Inform: BMB's inform-related policies cover all three business areas. Nonetheless, they only cover one application of the inform strategy, the compliance application. The first policy, falling into the materials category is the certification of denim by the Nordic Swan label. This voluntary ecolabel guarantees strict requirements are met for both chemical content and environmental impact (Nordic Ecolabel, 2020). By living up to this standard BMB can communicate about the sustainability of their products with greater authority and documentation, fitting with the inform strategy.

In the product chain category BMB also conduct their business in accordance to several third-party standards. The company prefers to work with suppliers who are certified by BSCI and SMETA standards and capable of guaranteeing a proper working environment and social conditions (By Malene Birger, 2020d). This indicates a preference towards documentable and quantitative guidelines, which is also reflected in BMB's own Code of Conduct. In it, documentation and proper practices for environmental management are prioritized, as well as living up to both the Global Compact and Rio Declaration guidelines. Social issues like workers' rights and conditions and anti-corruption are clearly prioritized as well (By Malene Birger, 2020c).

In the business model category are BMB's adherence to two sets of principles: The UN Global Compact and UNGP's. When companies join charters like these, they are exerting corporate citizenship (Crane & Dirk, 2004) and engaging in sustainability beyond just their own organization, which according to Adam et al.'s taxonomy indicates a more holistic approach to sustainability (Adams, et al., 2016). Benchmarking and documentation align with the strategy of informing and are consequently categorized as such.

4.3 Better World Fashion

BWF was founded in Aalborg in 2015 by Reimer Ivang and Karsten Lund. It was created as a social enterprise with a mission of trying to solve the human-created problems in the fashion industry by offering a better alternative (Ivang & Rana, 2019). The founders believed that the responsibility for making the right choices should not rest with consumers, but with companies (Better World Fashion, 2020a). Consequently, they created a business model that from the onset was made with circularity in mind. Their concept revolves mainly around leather jackets made from recycled materials. A jacket can be either bought directly or leased for any length of time and then returned and swapped for another one. Customers can also send back their previously bought leather jackets at any time for a 50% discount voucher on a new BWF jacket through a lifetime product guarantee (AAU, 2019) (Better World Fashion, 2020c). Since 2015 the collections have grown to besides jackets include bags, computer covers, sunglasses, watches and oven mitts. The items are shipped globally, and BWF is being sold in over 60 countries (Ivang & Rana, 2019).

In comparison to the other companies included in the thesis and many brands in the Danish fashion industry, BWF has a rather different business model and structure, and can be considered a niche company. This can make directly comparing them to the other companies more challenging. Still, the category within the taxonomy of Ross and Harradine (2010) that best fit BWF would be a mix between a designer brand and couture; not because the garments are exclusive or expensive but because making the right product is prioritized over profits (Better World Fashion, 2020a). The price of a leather jacket is still not among the cheapest in the market with a price of 3.000 DKK per piece. As mentioned, it is difficult to capture these priorities in a taxonomy made for conventional fashion companies and definitions are hence more fluid.



Figure 4.4: The six different models of jackets offered by BWF. (Better World Fashion, 2020d) (Better World Fashion, 2020e).

4.3.1 Better World Fashion's sustainability strategy

BWF was created based on a manifest that seeks to change the way fashion is normally consumed: *"The world needs something new. Not new stuff. But new ideas. Better World Fashion is a new idea."* (Better World Fashion, 2020f). The principles of making "the right" garments have led to the company pursuing sustainable production and procurement methods. It starts with the materials. The main product is leather from donated post-consumer textiles sourced from NGO partners. Leather was initially chosen as the main product since it is both durable and heavily environmentally impactful, (see figure 1.3) killing two birds with one stone when it is reused. In some cases, customers also bring their own, old leather garments to have them remade into new ones. The lining in the jackets is made from recycled PET bottles, and zippers and buttons are made from recycled metal at YKK. The thread for sewing is the only non-recycled material (Better World Fashion, 2020a). These are the main material streams which are sent to the manufacturers in Poland who

then upcycle the materials into jackets, bags etc. BWF only works with this one supplier for the leather products and have verified that the workers have proper wages and conditions, and that no child labor is used (Ibid.). The manufacturing process itself consists of several steps, i.e. washing the leather in sawdust rather than water and chemicals (Ibid.) to ensure as little impact as possible. The finished products are either sold at the brick-and-mortar store in Aalborg or shipped directly to customers. BWF also sell non-leather products such as sunglasses or watches. These are also made from recycled materials, skateboard wheels and recycled wood respectively. There is no information available on the manufacturing process for the accessories, however.

BWF seeks to implement circularity with their own products by encouraging customers to send back jackets that are worn out, damaged or otherwise in need of replacement. By doing so, they are getting a material stream of recycled products which then can be remade into new ones. An illustration of the BWF business model can be seen in figure 5.5.

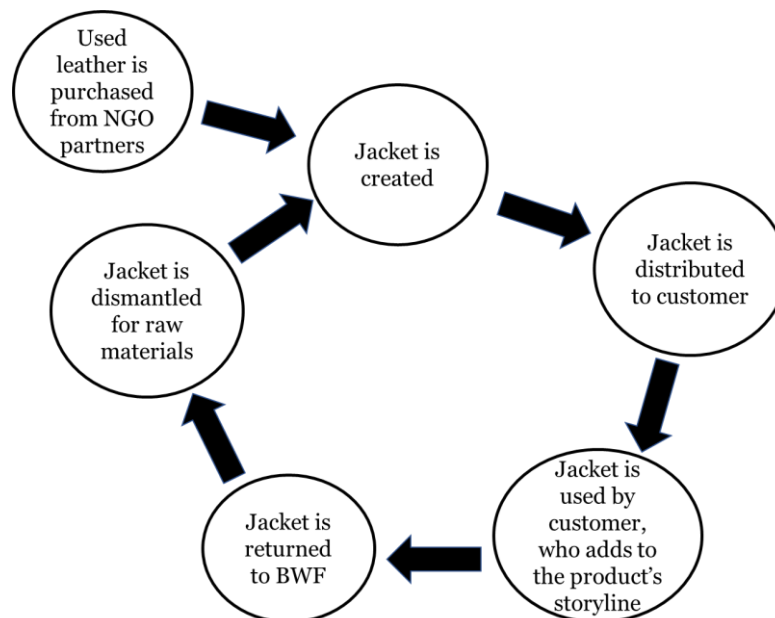


Figure 4.5: Illustration of BWF's business model. Adapted from Ivang and Rana (2019).

Despite still being a relatively small company, BWF has achieved international attention for their circular approach to fashion. In 2016 and 2017 BWF received endorsements of their concept by third-party organizations. First in 2016, Project Just awarded BWF with their Seal of Approval, which was given to just five out of 76 nominated companies that year. Project Just is an online platform that reviews fashion brands' ethical practices and seeks to promote sustainable fashion (Project Just, 2020). The following year BWF was certified to become a Certified B Corporation as the second Danish company to ever do so (Ivang & Rana, 2019). According to their website, "*Certified B Corporations are businesses that meet the highest standards of verified social and*

environmental performance, public transparency, and legal accountability to balance profit and purpose” (B Corporation, 2020).

Another part of BWF’s strategy is the BWF App. This application for mobile devices shows the “life story” of each individual jacket, as in how many previous owners it has had before and how many times it has been dismantled and repurposed. People are then encouraged to add their own personal stories to the jacket’s and essentially provide a storytelling component to the clothes (Ivang & Rana, 2019). This gives each garment a unique profile and strengthens customer loyalty by creating a stronger emotional bond to the clothes.

4.3.2 Analysis of Better World Fashion’s strategy

As with the previous companies analyzed in this thesis, a table has been created to compare BWF’s strategy to the conceptual framework, see table 4.4.

Better World Fashion	Materials	Product chain	Business Model
Slow		Refitting leather jackets to bags and accessories	PaaS, multiple lifecycles per garment Repairing garments
Narrow		Avoiding waste in production Manufacturer closer to Denmark	
Close	Using 98% recycled materials Materials continuously recaptured and upcycled		Buy-back guarantee/voucher
Regenerate		Less impactful washing (sawdust)	
Inform			BWF App Project Just Seal of Approval Certified B Corp

Table 4.4: Characteristics of BWF’s sustainability strategy compared to the conceptual framework of the thesis (Ivang & Rana, 2019) (Better World Fashion 2020a-c) (Better World Fashion, 2020f)

The subsequent analysis dissects each of the five circular strategies to provide a better understanding of how BWF works with CE and sustainability. It should be noted that since the notion of circularity and by extension sustainability has been engrained in BWF from the beginning, the different efforts are more intertwined.

Slow: The first initiative that is categorized under the slow strategy is refitting of leather jackets into other products like bags, computer sleeves or oven mitts (Better World Fashion, 2020c). It fits

the material category as it concerns the main material for the company, leather. The leather is re-used as many times as possible for jackets, but eventually wear and tear will degrade the quality enough to make it unfit for becoming a jacket again. In those cases, BWF uses it for other products, effectively extending the materials use phase.

In the business model category, the extended service and repair of jackets help prolong their lifecycle and are appropriate for the slow strategy. When minor damages are repaired a jacket may last several years longer than if it was discarded instead. Another way the business model of BWF fits the slow strategy is that they through leasing out the jackets provide a PaaS-model. As described with RTL, having clothes circulate between multiple owners require a capable infrastructure. When that is in place, the environmental savings from sharing goods among more users are significant (ThredUp, 2019). While the current clothes assorting is limited to leather jackets only, the company is open to eventually expanding their collections with e.g. cotton t-shirts or similar. The determining factor would still be whether these new garments could live up to the sustainable and ethical standards of the company (Better World Fashion, 2020a).

Narrow: The ways in which BWF has adapted their strategy to using less resources, or the narrow strategy, primarily concerns their product chain and their Polish supplier. In this factory the production is made with as little waste as possible, meaning that scraps of leather are collected and utilized in the production (Ibid.). By using what is already available means a more efficient production and less reliance on new inputs.

By choosing to localize their product chain, BWF has made the transport costs and the environmental impact lower. Compared to other companies in the fashion industry whom rely on overseas suppliers, having a more locally or regionally anchored product chain is more efficient (Kant Hvass, 2020) (Ivang & Rana, 2019). Compared to countries like China or Bangladesh, textile workers in the EU are better protected by legislation in terms of securing their rights, and their wages are higher. BWF are also able to have a closer relationship with their supplier if they can visit the factory more regularly, as ensured by a shorter distance.

Close: The circular strategy of closing, or reusing end-of-life materials, is probably the most fitting in terms of BWF. Especially in the materials category. With an overall share of recycled materials of 98%, the brand can be said to have embraced this strategy. Only the sewing threads and part of zippers are virgin materials, as a 100% share of recycled metal content would imply a loss of quality and/or durability (Ibid.).

As demonstrated in figure 4.5 the business model for BWF ensures two material streams; the purchased leather from NGO's and the recirculated jackets. The production acts as a semi-closed loop but even when "new" materials are taken in, it is still recycled material and not virgin. If BWF ever

sought to scale up their production to match the volume of larger companies, they would arguably need to find additional material sources as well. As a social enterprise the goal of economic growth over sustainability is not in the DNA of the business. Even though the people behind BWF wish to see the company grow, such growth should not be allowed to come at the cost of their founding principles. This sets them apart from most private companies whom are highly driven by financial gains. In the words of one of the founders:

“We have defined Better World Fashion as a solution. And if we at one point begin to change so much on the product that it is no longer a solution, then we stop.” (Better World Fashion, 2020a).

In their business model BWF offer an unlimited buy-back guarantee. This means that if a customer decides to buy a jacket and later wants another one, they can send it back and receive a discount voucher for a new jacket (Better World Fashion, 2020c). This is meant to encourage customers to buy more products but also to recapture the materials of the jackets back into the production. In this way the circular production of garments can continue if people deliver their old clothes back. In most cases there should be a tangible incentive in doing so (Sweet & Wu, 2019), in this case a discount.

Regenerate: One of the encountered initiatives from BWF fits the strategy of regenerating and does so in the product chain category. It is mentioned how the production are conducted in the least harmful and wasteful way, including cleaning the leather in sawdust instead of using chemicals. Though there are not any more details available about the specific practices and their benefits, limiting the use of chemicals in production is still regarded as positive. In order to analyze these efforts further in the future more information must be available.

Inform: The way the inform strategy align with BWF’s strategies reside within the business model category. Firstly, in terms of compliance. Having achieved the external endorsements from Project Just and the B Corporation legitimized their business. Especially being a certified B corporation is valuable in this regard, since the organization is well-known and have authority on corporate sustainability. It is not apparent from BWF’s external communication, as the certification is not visible on their website. While many companies would likely be more outspoken about having these certifications, it does not seem to be a part of BWF’s communication strategy.

Digitalization plays a more prominent part in the information strategy. The BWF app is as mentioned created for customers to see the previous history of the jackets they buy, and encourages them to add to it (Ivang & Rana, 2019). This makes each jacket unique and customized to whom-ever is the user of it at that point in time. For this reason, each jacket has an ID number, something also encouraged by Konietzko et al (2020) to help companies track their assets. The app also provides the opportunity for users to see the history of other jackets and the stories that other users

share about it. In this sense technology helps to create a sense of community among the customers based on their shared interest in BWF. Social media play an important role in the marketing strategy for the company, relying on satisfied customers to share their experiences and affiliation with the products and create attention. In this way a small company like BWF with a limited marketing budget can still create attention around their cause and their products (Better World Fashion, 2020a).

4.4 Comparison of fashion company strategies

The analysis sought to answer the question of how and why the Danish fashion industry works with circularity and sustainability. Before answering the “why” portion of the question it was necessary to uncover the “how”. The analysis of the circularity and sustainability strategies of the three respondent companies have led to the cross-comparison found in table 4.5. In the table, all the initiatives mentioned by the companies either in literature or in interviews are tabulated according to the conceptual framework of the thesis. Each company has been assigned with a different color; WW’s initiatives are marked with blue, BMB’s with red and BWF’s with green. The table sums up how the Danish Fashion industry – represented by these firms – work with circularity and sustainability. As previously mentioned, the cases represented by these companies are not indicative of all Danish fashion companies, but rather those on the forefront of sustainability and CE adaption. It should be noted that the categorizations are made based on the gathered data and my best abilities; as there are few similar studies conducted on this topic, there are no objective answers and other researchers might have arrived at different results.

The table is shown on the following page.

All companies	Materials	Product chain	Business Model
Slow	<ul style="list-style-type: none"> Partly reusable plastic bags from shipping 	<ul style="list-style-type: none"> Design for longevity Refitting leather jackets to bags and accessories 	<ul style="list-style-type: none"> Artefact: re-sale Donating unsold items to charity RTL: PaaS – multiple lifecycles per garment PaaS, multiple lifecycles per garment Repairing garments
Narrow	<ul style="list-style-type: none"> Organic cotton Focus on less plastic Organic cotton 	<ul style="list-style-type: none"> Less water usage in production Ozone technology in denim manufacturing Code of Conduct: environmental requirements Avoiding waste in production Manufacturer closer to Denmark 	<ul style="list-style-type: none"> Clothing care guide for consumers
Close	<ul style="list-style-type: none"> Focus on recycled and recyclable materials in clothes Recycled plastic bags for shipping Recyclable packaging Using meat by-products Recycled materials in accessories Made with care: recycled leather, wool and cotton Using 98% recycled materials Materials continuously recaptured and upcycled 		<ul style="list-style-type: none"> MUSEUM and Artefact: selling pre-owned clothes; providing vouchers as incentive No-burn policy on unsold items Buy-back guarantee/voucher
Regenerate	<ul style="list-style-type: none"> Use of primarily organic fabrics 	<ul style="list-style-type: none"> Laser technology reduce chemical usage Own RSL External REACH auditing Less impactful washing (sawdust) 	
Inform	<ul style="list-style-type: none"> FSC-certified hangtags GOTS-certification Standard 100 by OEKO-TEX-certified trimming Nordic Swan-certification 	<ul style="list-style-type: none"> Mandatory BSCI or SMETA certification in risk-countries BSCI and SMETA-certified suppliers preferred Anti-corruption policies Own Code of Conduct 	<ul style="list-style-type: none"> Using LCA data for informed decision making Artefact: Planned introduction of second-hand platform UN Global Compact UNGP's BWF App Project Just Seal of Approval Certified B Corp

Table 4.5: Cross-comparison of the circularity and sustainability initiatives in WW (blue), BMB (red) and BWF (green).

The materials and business model categories are the ones targeted by the most initiatives as shown in the table. It also shows that the circular strategies of close and inform contain the most policies, 11 and 15 respectively. Most of the inform initiatives concern ecolabeling, and thus the communication-interpretation of the strategy where the companies demonstrate their efforts go beyond just compliance. The common denominator for such certifications is that they are voluntary and conducted by independent third-party organizations. This underlines the authority of the labels and signals that companies that adhere to them have a proactive strategy to the impact of their products beyond what is required by law. It acts as a message to the consumers. The companies hope that their due diligence builds trust in the brand and eventually make people prefer their clothes.

Currently there are upwards of 100 ecolabels for textiles (Ecolabel Index, 2020) and many cover the same topics, such as organic materials. No average consumer can be expected to be familiar with all ecolabels and encountering an unfamiliar one might leave people more confused than educated. This underlines the need for transparent communication from fashion brands to customers on sustainability issues, because clear messaging can make the consumers more engaged and informed on these matters. The respondent from BMB also mentioned how companies have a responsibility in educating consumers:

"[...] We (companies red.) talk a lot about what we do and want to do [...] but I definitely think there is a responsibility on our side to get people educated on what matters" (By Malene Birger, 2020a).

Increasing consumers' awareness on sustainability in fashion is regarded an area for future strategies in the industry.

The close strategy contains the most initiatives in one category, materials. A total of eight initiatives across the three companies fit this description, making it an area receiving a lot of attention. Contrastingly there are no initiatives that fit the close/product chain category, leaving room for improvement in including suppliers in reusing materials. It should be noted that with their circular business model, BWF cooperates with their supplier to recycle and refurbish clothes and thus meeting these criteria. As no examples of concrete procedures were mentioned by BWF in this regard, they are not seen in the table. Another place where initiatives are absent is in the regenerate/business model category. Examples given in the literature fitting this description include transitioning towards renewable energy and help restore natural ecosystems. Such initiatives are not common in the fashion industry at this point but might become relevant in the future.

When making a table like the one above in 4.4, the degree of complexity in the data is reduced. This is a tradeoff to obtain an overview of the tendencies, but in the real world the different business areas and strategies are not as clear-cut as in the tables. For instance, working with a certain ecolabel would be categorized as being an inform initiative. The requirements might include reducing chemical use,

using organic fabric or guaranteeing transparency throughout the product chain; all these measures touch upon different categories and strategies. A company cannot ensure the use of i.e. recycled or organic materials if they do not work with the suppliers in the product chain etc. As such, I recognize the interdependencies and overlaps between the initiatives and the complexity of working with CE in practice.

The table contains an overview of all publicly available sustainability initiatives from the three companies. The categorization indicates where and how they impact the achievement of CE and a sustainable agenda, but it does not necessarily indicate which initiatives are the most impactful. It is not given that all efforts bring about the same effect and therefore some might be more relevant to implement before others. The analysis has both included rather specific policies like sustainable washing methods in production, and broader statements like working with designing for longevity. While no initiatives should be neglected, the taxonomies by Konietzko et al (2020) and Adams et al (2016) points to the broader and systemic initiatives as being more disruptive and impactful. Depending on the point of departure, initiatives that reduce negative impacts from production and improve ecoefficiency are to be considered as the first steps. When talking about a system change like that needed to implement CE, things like developing new business models or reverse logistics to recycle and reuse textiles are thought to be more effectful. Such strategies are however more advanced and require that the product and the value chains are sustainable enough to deliver the desired effects. The efforts in BMB and WW are characterized by seeking to make their existing activities cleaner and more sustainable. With things like using recycled plastic in packaging or having ecolabels for hangtags it seems like they are starting with the easy fixes – relatively small measures to improve their conduct. They do with their goals for recycled and organic content show more ambition, as with Artefact and RTL. Compared to BWF, they have not applied equally radical and systemic measures.

Another way to describe the differences between WW, BMB and BWF is their application of incremental versus disruptive innovation. All three companies are aware of the increasing importance of transitioning away from the linear fashion system and the unsustainable processes it relies on. While BWF was created with the intention of avoiding these exact processes and offer a better alternative, they have had the opportunity to deliberately design every aspect of their business to be sustainable and circular from the beginning. This provides a competitive advantage when it comes to circularity and sustainability compared to other companies. Notably, they also operate on a smaller scale than the other companies and are currently occupying a niche in the market. In comparison, WW and BMB already have proven business models that work well for them and that they rely on to keep the company running. The increasing awareness about sustainability has forced them to give these business models a closer look, as to see how they can tweak them to increase the

degree of circularity and sustainability. This is an incremental approach as they are still bound by the existing business model, with all its aspects like sales channels, supply chain and target customers. It requires a balancing act for the companies to maximize their sustainable potential, whilst still maintaining the financial viability required to make profits. For innovation-borne companies like BWF that are seeking to operate as sustainably as possible, the balancing act has the opposite perspective. Their struggle is to maximize their financial potential within the boundaries of their sustainable business model. This is illustrated in figure 4.6.



Figure 4.6: Illustration of the current and desired traits for the respondent companies.

Keeping in line with Elkington's (1994) triple bottom line, companies should seek to maximize all three aspects of sustainability simultaneously. There is nothing in the analysis indicating that neither company is neglecting social sustainability. Where the first two companies can be said to have achieved financial sustainability, they are faced with an increasingly urgent need to obtain a greater degree of environmental sustainability. Contrastingly, BWF have from the beginning been well-founded in environmental sustainability. As such, their aim is to enhance financial sustainability and expand the company. Business size and circularity are not necessarily mutually exclusive, but it might seem like there are trade-offs between the two. The true test for all the companies will be if they are willing to compromise on the quality they possess, to obtain the one they are working towards. If left completely to the market, financial sustainability has historically tended to be favored over environmental. It will be interesting to see if the fashion industry moves closer to an equilibrium between the two – or continues to fall short.

This is also an indication of why fashion brands want to work towards circularity and sustainability. The industry is faced with an increasing body of research uncovering the negative impact of their business-as-usual, especially fast fashion companies (Union of Concerned Researchers in Fashion, 2019). Brands that exploit workers' rights and inhumane working conditions in third world countries have long been facing backlash in Western markets (Hobbes, 2015). Communicating about strategies to avoid this is therefore seen as a required sign of due diligence. Even though producing clothes in sweatshop or using child labor might be cheaper, a brand might become victim of boycotts and consumer renunciation if such conduct is exposed; prioritizing social sustainability is hence also favoring financial sustainability.

Meanwhile the subject of environmental sustainability has been growing in the public discourse over the last few years and has started to affect consumers opinions (Advice, 2019). While issues like harmful substances in clothes and respecting human rights for workers in the product chain has been subject to the fashion industry's attention such as CSR for years, while concepts like GHG emissions and circular economy are relatively new (By Malene Birger, 2020a). Being able to show and document a sustainable business conduct is becoming more of a competitive advantage in the fashion industry that previously (Danish Fashion and Textile, 2020). Across the industry companies are becoming increasingly aware of both the urgency of sustainability, and that it might also present opportunities for business growth (Ibid.) (CSR.dk, 2020). Avoiding unsustainable and unfair practices is an incentive in itself for trying to do things differently (Better World Fashion, 2020a) but also the possibility of aligning the brand with a positive message about doing something good for the planet is appealing to many companies (Xyneto, 2019).

4.4.1 Alignment with circular business model archetypes

In accordance with the figure by Lacey et al. (2014), the analysis results are put into perspective with the literature on circular business models.

Business Models

Circular Supplies: Provide renewable energy, bio based- or fully recyclable input material to replace single-lifecycle inputs

Resource Recovery: Recover useful resources/energy out of disposed products or by-products

Product Life Extension: Extend working lifecycle of products and components by repairing, upgrading and reselling

Sharing Platforms: Enable increased utilization rate of products by making possible shared use/access/ownership

Product as a Service*: Offer product access and retain ownership to internalise benefits of circular resource productivity

* Can be applied to product flows in any part of the value chain

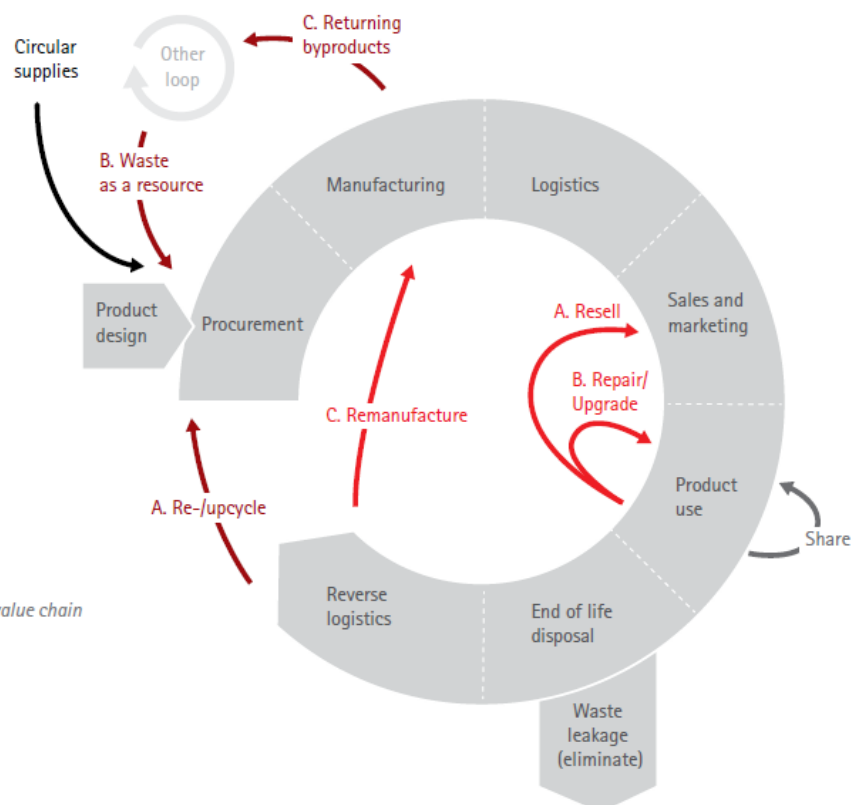


Figure 2.6: Five examples of circular business models and their impact on the product lifecycle (Lacey, et al., 2014).

The first business model, Circular Supplies, fits the data from the cases to a lesser extent. It requires the input materials to be fully recyclable from the beginning, which today is limited by the available recycling technology. Theoretically, synthetic materials like polyester or nylon-6 can be fully recovered with existing technologies (Roos, et al., 2019). These technologies are not scalable at an industry-wide level yet, and none of the empirical data indicates that any of the companies apply these advanced recycling technologies.

Resource Recovery is applied to a greater extent in comparison. Especially for BWF whom source 98% of their resources from recycled/recovered materials (Ivang & Rana, 2019). It also applies to the sustainable collections from WW and BMB - Double A and Made with Care - where a larger degree of the garments are made with recycled fibers, mostly cotton and wool, than in the remaining collections (By Malene Birger, 2020h) (Wood Wood, 2020b). Artefact by WW is also meant to achieve a higher collection rate of post-consumer materials but have yet to prove its full potential. BMB has plans about establishing a take-back scheme in the future to resell and recycle the clothes, but there are no tangible indications as to when this will be implemented.

Two of the business models are rather intertwined; Product Lifetime Extension and Product as a Service. BMB and BWF offer leasing of their clothes, though RTL is still running with only a limited collection. These are examples of PaaS where the consumer does not attain ownership of the garments but enjoy them as a time-limited service. This in return helps to extend the lifecycle of each piece as they are continuously repaired and kept at the highest possible quality until it is worn out. The Artefact resale program by WW also extends textile lifecycles, though through a second-hand resale model.

None of the companies have fully implemented Sharing Platforms in their business model, but there are initiatives that resemble it. WW has plans of establishing a digital channel for the Artefact garments as well but has not yet done so. BWF uses an app to track the story for their jackets with various owners but does not use it as a channel for commercial sales. Instead, it builds the customer relationships by deepening the emotional connection to the jackets.

A combination of several considerations is making companies move towards more sustainability. One is a wish to conduct their business in the best way possible, also for planet and people. Another is avoiding negative consequences of being perceived as unsustainable, something that is likely to reduce a brand's relevance to consumers (By Malene Birger, 2020a). Those seeking to implement circular fashion might both be motivated by reaching new customer segments with innovative products and business models, becoming less dependent on diminishing resources and the following price volatility; or more altruistic motives (Lacy, et al., 2014) (Ellen MacArthur Foundation, 2017).

The likely answer is probably a combination of the above reasons, depending on the context of the specific company.

The answer to the question “*how and why is the Danish fashion industry working with circularity and sustainability?*” can be summarized as:

- The respondent companies focus mainly on complying to various standards and ecolabels and have a strong emphasis on sustainable and – partly – circular materials.
- Some companies have fully embraced circular business models, while others have only recently started to explore the area. The interviews indicate an increasing awareness about the unsustainable practices the industry currently relies on.
- The motivation for implementing CE comes from its ability to combine financial and environmental sustainability. Other reasons include wanting to avoid negative publicity, strengthening positive storytelling, gaining competitive advantages and making the business more resilient for the future.

5. Discussion

The following discussion puts the findings of the analysis into different perspectives in order to answer the question: “*What are the opportunities and barriers towards a further implementation of circular economy in the Danish fashion industry?*”.

While many publications highlight the benefits and future opportunities in place for organizations and nations that embrace CE (Ellen MacArthur Foundation, 2015) (Stahel, 2016), it will likely be challenging. Undertaking such a transition both as a society, an industry or a company will require both resources and innovation at large scale. It seems appropriate to ask if the strategies currently adopted and planned by the companies in the Danish fashion industry possess the required level of ambition or if further action is required.

The current circular business models in the Danish fashion industry mainly include leasing and/or using recycled materials. Aside from the three analyzed companies, other Danish companies who are working with CE include Circos and GANNI. Circos, formerly known as Vigga, provides a platform for leasing baby and maternity wear through a subscription service (Circos, 2020). GANNI runs a similar project to that of RTL called GANNI Repeat, through which customers can lease or buy second-hand clothes (GANNI, 2020). A common denominator is Continued fashion, as the people behind this company have been involved in all the above projects, either by working for the companies or by running their circular platform (Better World Fashion, 2020a).

These efforts represent some of the more significant circular business model on the Danish market for larger companies. Meanwhile many startup companies in the apparel industry is now being funded with circularity in mind. Since a new company cannot compete with the resources and economies of scale a larger business has, they need to have a novel value proposition or business model (Osterwalder & Pigneur, 2010). The respondent from BMB agreed that those starting now have an advantage:

“A lot of brands starting today are born sustainable [...] I would find it stupid to start a brand today without being anchored in sustainability and CSR. It really is about integrating it into your business model and business conduct.” (By Malene Birger, 2020a).

In order to create a foothold in an established market like apparel, new companies must offer new ways of doing things. Novel strategies will make them competitive and help them obtain their niche in the market. Both technologies and business models start at niche level before they can become more consolidated (Geels, 2002).

Circular fashion is such a niche. While the bigger players in the industry are starting to become aware of its relevance it is still mainly populated by smaller businesses with thoroughly sustainable values. A representant for these types of businesses is BWF. As previously stated, they are quite articulated about their value proposition of allowing consumers to shop guilt-free, by making sure the products they provide are sustainable. One would think that if more business followed their example, the sustainability challenges would be solved; so why are more brands not doing so? The answer is a bit more complex. In the case of BWF, the owners are not necessarily financially dependent on the success of the company. What is meant is that all the owners and employees are able to sustain their livelihood from other sources, and so no one is receiving any salary from BWF (Better World Fashion, 2020a). Therefore, they “can afford” to be less compromising in their approach, even though some choices involved in having a circular business model is more expensive. Despite the second-hand leather being cheaper, recycled zippers and the manufacturing are more expensive than for conventional garments, leaving a smaller revenue (Better World Fashion, 2020a).

In companies like WW and BMB the companies’ survival depends on the generated revenue. For this reason environmental sustainability is at times prioritized lower than financial sustainability, especially if projects require large investments or have longer payback times than normally (By Malene Birger, 2020a). For the companies who are not built around CE from their creation, the transition takes time and require dedication to the chosen strategy over longer time periods. RTL and Artefact are currently only pilot projects with a rather limited impact. If they are to develop into valuable parts of the business and not just “circularity trial balloons” it will take massive investments of time, money and development of internal expertise. It might be useful for companies

to get ahead while the circular fashion market is still developing. According to a report from ThredUp the resale apparel market has grown 21 times faster than the retail market since 2016, and is expected to surpass its revenue by the end of the decade (ThredUp, 2019). Meanwhile the environmental challenges in fashion is expected to increase in severity over the same time period. To harness the potentials of this development and avoid wasting precious time on finding the right strategies through trial and error, the fashion industry cannot act alone. A combination of top-down and bottom-up policies is likely to be more successful than either one on its own. The next section investigates the political aspect of implementing CE in fashion.

5.1 The importance of policies

When talking about sustainability issues, especially climate change, many refer to 2030 as a milestone. If widespread global warming and exceeding of the planetary boundaries are to be avoided in the 21st century, the global society needs to be on the right path by this year. This has made it the goal year for both the SDG's and the Paris Agreement (UN General Assembly, 2015) as well as many countries' climate strategies, including Denmark (Government of Denmark, 2019). This leaves one decade to turn things around in terms of the current development across many different areas, including the transition towards a CE (European Commission, 2019). As discussed, many companies in the fashion industry are struggling to find the best path towards a profitable and circular system. These bottom-up initiatives seem to need supplement from top-down as well. During the interviews with WW, BMB and BWF the importance of regulation was mentioned on several occasions, and how progressive laws and a clear set of guidelines could help further the implementation of a circular fashion industry. The political framework was both mentioned as an inhibitor and an opportunity to promote circularity (Better World Fashion, 2020a) (By Malene Birger, 2020a) (Kant Hvass, 2020) (Wood Wood, 2020c).

An example of circularity-inducing policies on textiles is seen in France. An extended producer responsibility (EPR) for textile products requires all companies that sell such products to either establish their own collection and recycling programs or pay to outsource the collection and recycling to an NGO accredited by the French government. So far, all companies have chosen the latter option (Eco TLC, 2020). This policy tackles one of the barriers for CE today; the company's responsibility for the clothes and thus, resources, stops at the store counter.

In most cases when a product is discarded, the responsibility of its disposal lies with the consumers. Despite consumers wanting to do the environmentally "right thing" when discarding products, most will be discouraged if the required effort is too high (Danish Red Cross, 2020). The EU seeks to overcome this obstacle by requiring member states to include textile waste in the waste streams collected at households (European Commission, 2020). Other policy measures will likely still be needed to turn fashion circular from within. Things like public procurement of textiles can provide

clear guidelines for companies that want to win tenders, and can help nudge the industry towards the wanted principles (Ljungkvist, et al., 2018). The European Commission is aware of the challenges for making the textile industry circular, and is preparing to launch a EU Strategy for Textiles in 2021 (European Commission, 2020). Another report by the consultancy Ecopreneur lists five political pillars needed to support a circular fashion industry in the EU:

1. **Innovation policies**; funding research and innovative solutions to make them scalable and viable.
2. **Economic incentives**; EPR, public procurement guidelines, tax shifts and VAT to make circular options more financially attractive and level the playing field between the linear and circular business models.
3. **Regulation**; e.g. landfilling ban on textiles, substance bans and minimum requirements for circular design.
4. **Trade policies**; Altering the waste definitions to exclude post-consumer textile waste and textile manufacturing waste. Since import and export of waste to and from certain countries are forbidden, this could make recycled resources easier and more attractive to trade and use – also on a global scale.
5. **Voluntary actions**; encourage member states and companies to form commitments and initiatives that exceed regulation and help drive the development of CE forward.
(Wolde & Korneeva, 2019)

Accomplishment of all the recommended strategies will require the collaboration and dedication of many different stakeholders across not just Europe, but the world. While the development is seemingly underway, some respondents expressed doubt that the final measures will be ambitious enough to deliver the necessary change. Many companies are deeply embedded in the paradigm of “maximum volume – minimum costs” and will not easily be persuaded to shift towards a circular system that may provide less profits than the existing (Better World Fashion, 2020a). This strategic lock-in might be broken if these companies were forced to handle their own products at their end-of-life; then they would be properly motivated to innovate and change their practices (Ibid.) A cost increase could also push this change, and could come from tariffs on environmentally harmful practices and disposing of textiles in a non-circular manner. If recycling were made cheaper than incineration or landfilling, companies would be motivated to getting the required solutions ready for market at a faster rate (Roos, et al., 2019).

Another obstacle mentioned by the respondent from BMB is management buy-in and commitment. Awareness and acceptance of circular and sustainable business models is growing in the fashion industry (ThredUp, 2019). However, in many companies this agenda is still only being pushed by a

few dedicated employees who have the task to convince the rest of the organization to follow suit (By Malene Birger, 2020a). Since many brands in the Danish fashion industry currently only have small CSR departments (Danish Fashion and Textile, 2020), it might require additional efforts to convince colleagues and managers to buy into new ways to operate. This may be challenging since sustainability projects might have results that are harder to measure than financial profit, and may have longer pay-back times for investments due to their long-term nature (By Malene Birger, 2020a). In a fast-moving industry it can be difficult to commit to long-term commitments, when companies are expected to deliver quick results with tangible outcomes. The BMB respondent did however make it clear, that sustainability projects tend to be more successful in companies where the executives decided to actively support them (Ibid.). Companies are reluctant to explore new business opportunities if they put the existing business case at risk. There is a delicate balance between moving too fast and too slow; to obtain a first-mover advantage a company will have to risk betting on a certain strategy with the risk of failing. Waiting too long to follow a certain trend will also put the company at risk of losing market shares.

In the case of circular fashion, a problem is that the number of successful examples in Denmark is still relatively limited (Kant Hvass, 2020). Some companies may be waiting to go circular themselves until they have a tested and viable business case to compare to – but if too many are reluctant to try then it becomes a chicken and the egg situation. Especially fast-fashion companies can feel challenged by a shift towards a “fewer, but better things-mentality”. But recent research indicates that the future fashion system can consist of a mixture of (circular) fast and slow fashion cycles; both durable clothes with multiple, long lifecycles and mass-produced, biodegradable garments that can be disposed guilt-free after one use (Goldsworthy, et al., 2019). Finding the right time to invest in new measures can be difficult, but the corona crisis may provide a window of opportunity.

5.2 Will the corona crisis help deliver a circular fashion industry?

The COVID-19 pandemic has had widespread global effects. Since the first months of 2020 the disease has forced numerous countries to enforce lockdowns, curfews and other severely restrictive measures to ensure public health. This has hit the fashion industry hard on multiple fronts. Stores and factories have been forced closed and consumers are increasingly prioritizing essential goods like groceries over discretionary ones like apparel. The virus originated in China and hit fashion suppliers first as it spread to neighboring Asian countries. When these countries started to recover and re-open the markets in Europe got hit, effectively putting demand to a halt. As Europe now re-opens, the infection is gaining a hold on the American continent. This has left an already challenged industry on red alert and might pose an even more compelling risk than the financial crisis of 2008, where the global apparel industry shrunk with 5% and took two years to fully recover. This

black swan event has left brands focusing on crisis management and their short-term survival. It is likely that many brands will suffer bankruptcy or become acquisitioned by their competitors (Amed, et al., 2020). Due to the novelty of the coronavirus no one can say how long it will last until things start to normalize. The question is not if, but how, the fashion industry will be changed in the aftermath of the crisis.

As stated in chapter 1, the fashion industry was already met with concern over wasteful and unsustainable practices before the outbreak of COVID-19. A growing number of consumers raised questions about the irresponsible and short-sighted conduct of especially fast fashion companies, and the current crisis is likely to provide further fuel to the fire. Companies with communication reliant on consumerism and individualism are more likely to be perceived as non-essential than those with value-based communication, especially linked to ethics and sustainability (Lindgaard & Busck, 2020). When restrictions are lifted consumption is expected to return, though likely at a reduced level. Regardless, the surviving companies will be facing a changed and more competitive apparel market (Amed, et al., 2020). Despite this the prospects might not be all bleak. Times of crisis often serve as a motivation for innovating and reinventing the ways things were done before. This is likely to also be the case in the fashion industry, though it is unsure to which degree.

In the Danish fashion industry sustainability and to a certain extent CE were already quite discussed topics. Following the Danish government's strategy towards a 70% reduction of GHG emissions by 2030, 13 sector-specific climate partnerships were created. They were meant to identify sector-specific pathways towards reaching the reduction target. The fashion industry falls under the partnership titled "Commerce" and delivered their finished report in March 2020. The recommended textile-specific initiatives included 18 suggestions for the industry itself, the government and joint efforts covered by five categories: Establishing a Partnership for Sustainable Clothes and Textiles, Development of sustainable clothes and textiles in a circular economy, Certification and labeling of clothes and textiles, Sustainable consumer behavior for clothes and textiles and Less and more efficient transport of clothes and textiles (Regeringens Klimapartnerskaber, 2020). The processing of the recommendations has been put on hold since the coronavirus outbreak. Though, at the time of writing, the Danish society is reopening due to the outbreak being under control. It is considered likely that these recommendations will be a point of departure in future political work on sustainable textiles in Denmark. Still, the foreseeable future is probably not likely to look as before.

The combination of a fashion industry in deep crisis and the preexisting ambitions of Denmark becoming a global leader of sustainable fashion may be promising. Promising in the sense that the crisis has made innovation and reshaping of the status quo a matter of urgency and survival, rather

than just talking points and small-scale projects. Analysts predict that companies that are able to adapt to new conditions by making their businesses more digital and circular, will not only survive the crisis but prosper from it (Amed, et al., 2020).

The industry's ability to recover will likely depend on many factors out of the companies' control, i.e. the length and severity of restrictions on retail and travel, the social consequences for workers across the value chain or the degree of overstock in stores. For brands that make it through the coming 12 to 18 months, the predictions are that what used to work will no longer necessarily suffice; consumers will want to reward the companies that demonstrated responsible conduct during the crisis both regarding planet and people (Ibid.). From a less optimistic point of view, the urge for consumers to return to normal conditions after restrictions are lifted may undermine the aspiring movements for change. Instead, people will go back to buying fast fashion because they have grown accustomed. It is too early to say which trends will be dominating, but the apparel industry remains in need of a fresh start in order to transition into CE.

Across other sectors there has already been demands of a "green restart", meaning that politicians and executives should prioritize sustainable investments and policies for future strategies to restart the global economy (Bairstow, 2020). If the same principles were to apply for the fashion industry, some of the mentioned barriers for implementing the circular economy would potentially be overcome; political and managerial prioritizing could come from the green restart, and the current lock-in to the linear/fast-fashion paradigm might be disrupted after the corona crisis.

The benefits that the Danish fashion industry stand to gain from implementing CE are multi-faceted. CE eventually equals no resource waste and would help companies recapture the billions of dollars that are lost due to overstock and unsold products, as well as underutilized clothes (Šajn, 2019) (Ellen MacArthur Foundation, 2017). On an organizational level, more alignment with positive values like sustainability gives companies a stronger communication and can boost employee retainment and attraction of new talent (Thorning Åkerwall, 2020). Investments in circularity are hence beneficial from a financial and ecoefficiency point of view, but also provides the strategic advantage of making the company more fit to meet future challenges (By Malene Birger, 2020a). The latter seems more important than ever, and the coming years will show if sustainability and circularity become the new normal in the fashion industry.

This discussion sought to answer the question: "*What are the opportunities and barriers towards a further implementation of circular economy in the Danish fashion industry?*". The answer can be summarized as:

- The respondents described the main barriers as strategic lock-in to linear business models, lack of buy-in from top management and lack of regulation and policies that promote sustainable and circular choices for apparel companies.
- Benefits of implementing circular strategies include increased resource efficiency and value recapture, decreased reliance on virgin resources and increased positive branding.
- The current financial crisis caused by COVID-19 poses a severe threat to the fashion industry. It also provides a window of opportunity for disruptive innovation and potentially a sooner implementation of planned CE strategies.

6. Conclusions

I have worked with the research question: “*In which ways are the Danish fashion industry working towards increased sustainability and circularity, and what characterizes the efforts?*”. The research was structured around a conceptual framework of circular economy and business models to explore new ways to operate for an industry with a significant social and environmental impact on the planet.

By analyzing the sustainability strategies of three Danish companies (Wood Wood, By Malene Birger and Better World Fashion) the thesis investigated the details of how some firms in the Danish fashion industry works with sustainability and circular economy. The most common initiatives include adherence to various ecolabels and standards, i.e. The Nordic Swan and BSCI. For input materials the emphasis is largely on organic fabrics and recycled fibers, with some companies using almost exclusively post-consumer materials. Throughout the product chain, the companies focus mainly on social sustainability for their suppliers and eliminating harmful substances from their collections. New fashion companies are increasingly being founded to embody circular and/or sustainable business models like working with recycled materials or providing their products as a service. Existing brands with more conventional product chains are trying to venture into circular economy, mostly by establishing take-back or leasing models for their own clothes. However, the number of successful, large-scale circular business models in Denmark is still relatively limited.

The motivation for implementing CE comes from the potentials to combine financial and environmental sustainability. Other incentives for businesses include avoiding negative publicity, strengthening positive storytelling, gaining competitive advantages and making the business more resilient for the future. If implemented in companies, a more circular system could increase resource efficiency and value recapture, decrease reliance on virgin resources and increase positive associations with their brand among consumers. The conducted interviews indicate an increasing awareness among fashion companies about the unsustainable practices the industry currently relies on. The research identified the main barriers towards a further implementation of circular economy in fashion as strategic lock-in to linear business models, lack of managerial buy-in and lack of regulation to promote sustainable and circular choices for apparel companies.

The current financial crisis caused by COVID-19 poses a serious threat to the fashion industry. On the other hand, it also provides a window of opportunity for the industry to innovate and potentially fast-track the implementation of sustainability and circularity strategies and help inspire new ones.

7. Limitations and future research

This thesis has delved into the application of CE in both an industry and country-specific context. This combination is still an emerging field of research and therefore has certain limitations. Implementing a comprehensive concept like CE involves many sectors and stakeholders and should ideally be investigated and undertaken with a holistic approach. As the thesis builds on three single case studies the general limitations in terms of a broader generalization do apply.

For future research within this topic, including a broader set of respondents from not only the corporate sphere, but also consumers, policymakers etc. would have provided a better base for making relevant recommendations for implementing CE. The case companies were found to be frontrunners of CE implementation, though of varying degrees, compared to the industry norm. For better generalization, future research could include a broader selection of apparel companies in Denmark and compare their strategies to those in this thesis.

The scope of this thesis was restricted to characterizing and mapping the applied strategies in the fashion industry on circularity and sustainability. It has done so as one of the first in a Danish context. As the circular business models in Danish fashion are still relatively new, there are limitations regarding their financial impacts. Consequently, the thesis did not get into the details of how to establish a certain business model and running it. The data on market shares and possibly financial development of firms and business models within this field is scarce and remains an area of future research. One approach could be obtaining quantitative data on the share of revenue generated by retail and resale within the industry.

Another area of future research involves how consumers perceive circular economy in fashion and what it might take to persuade them to change their consumption patterns to favor these measures. The same applies to the different actors along the product chain.

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