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Master Thesis

The EU Green Deal and its Impact on the Supply Chain of the Apparel Industry in Switzerland

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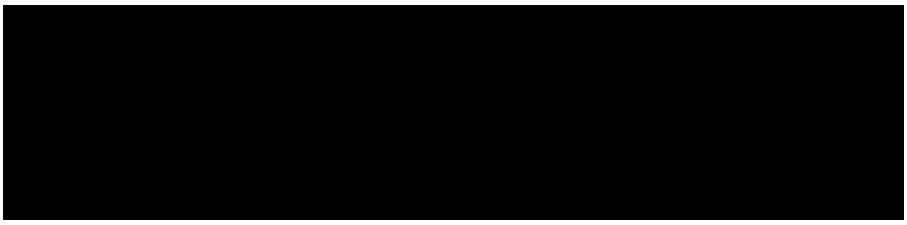

Management Summary

Excessive greenhouse emissions produced by humankind have led to global warming, making 2020 the hottest year on global record, leading to major consequences for humans and the environment. With the EUGD, the EU aims to firstly turn Europe into a society that works resource-efficiently, secondly, serve as a competitive environment that by 2050 counts no net emissions of greenhouse gases, and thirdly, create an economic evolution that is disconnected from the usage of resources. Its overarching goal is to become the first climate-neutral continent by 2050.

As the textile industry was declared the 4th most polluting industry with an almost linear production due to the rise of fast fashion, the sector must change its strategy. As a highly resource-intensive industry, the EU selected it to be a focus sector with its own industrial strategy. Hence, this thesis aimed to find out how Swiss apparel brands will be affected by the EUGD due to production sites in Europe and Switzerland's central location in Europe. The focus was the impact on their supply chain due to stricter measures and inevitable changes in business model, their competitiveness, and recommendations for an efficient and effective supply chain.

To ascertain the impacts of the EUGD, a qualitative approach was chosen. Seven semi-structured interviews with four brands and three industry experts were conducted for the primary data collection. The questions posed were based on the EUGD framework and existing literature on supply chains and corporate responsibility and varied depending on stakeholder group. The answers were then evaluated with the help of two qualitative coding cycles, which allowed for categories and patterns to be drawn.

The results showed that all areas of the supply chain are affected and very tightly linked to the whole value chain. In the future, all garments must be designed for longevity and recyclability, and the number of suppliers must be reduced to increase control and transparency beyond Tier 1. Certifications on production sites and products increase traceability and information for the consumer. Logistics are still tied to trucks; nevertheless, more sustainable inputs and transportation will significantly increase costs. Finally, circular business models are not seen to increase a brand's competitiveness because the customer is believed not to be ready yet.

Brands today are responsible for their actions and those of their suppliers and consumers. Therefore, Swiss apparel brands are just as subject to the EUGD. The environment will become the heart of the supply chain, so new companies should increasingly target younger customers. From the beginning off, either the cycles (biodegradable or technical) should be chosen. Product-as-a-Service will eventually become the new normal, which is why a focus should be laid on a reverse supply chain process. Most importantly, however, the consumer's awareness must be raised before changes in the supply chain can be made.

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List of Abbreviations

EU	European Union
EUGD	European Green Deal
MOQ	Minimum Order Quantity
PaaS	Product as a Service
SME	Small and medium-sized enterprises
USP	Unique selling proposition

Terminology

European Industrial Strategy

The groundwork for a dual transition to a green and digital economy, as well as making the EU industry more competitive worldwide and increasing Europe's strategic autonomy (European Commission, 2021c).

Industrial Emissions Directive

To regulate pollutant emissions from industrial sites in Europe, the Industrial Emissions Directive (IED) is the primary instrument (European Commission, n.d.b).

Extended Producer Responsibility

As part of EPR, manufacturers are assigned major financial and/or physical responsibilities for the treatment and disposal of post-consumer goods (OECD, n.d.).

Reverse Supply Chain

Involves a sequence of necessary actions for the manufacturer to reclaim a used product from the consumer and either reuse or dispose of it (Jr & Wassenhove, 2002).

GOTS

Global Organic Textile Standards that recognizes responsible organic textiles processes (GOTS, 2021).

GRS

Global Recycled Standard verifies recycled contents of garments and responsible production conditions (Control Union, 2021).

Oekotex-100

Label for textiles acknowledging that it has been tested for harmful substances (Oeko-Tex, 2021b).

Higg Index

Measures value chain sustainability – assessing social and environmental performance of apparel brands (Sustainable Apparel Coalition, n.d.).

STeP-Certification

Certifies production facilities that have environmentally friendly, credible and transparent production processes (Oeko-Tex, 2021a).

1 Introduction

Since 1970 the population on this planet has been overexploiting the earth's resources. Today, 1.73 times the amount of resources in the number of earths is being used more than what it should be, and the tendency still upwards. For example, the ecological footprint of Europe alone is at the use of highly concerning 2.97 earths (Global Footprint Network, 2021). And according to the NASA (2021), there is more than 95 percent certainty that humankind is responsible for global warming over the past 50 years.

In 2020, the global mean temperature was up by 1.2 °C above the 1850-1900 pre-industrial benchmark (World Meteorological Organization, 2021). This makes the previous year one of the three hottest years on global record. Evidently, humans and the environment are both affected by this obvious shift in the climate (MyClimate, 2021). For human beings, pollution can be the cause of cancer, coronary heart disease, neurological and mental conditions, obstructive pulmonary disease, diabetes, and more, and is responsible for one in eight deaths in the EU every year (European Commission, 2021a).

If Europe does not act now, a number of quantifiable consequences will come into play. According to the European Commission (2019b), these will entail 400'000 pre-mature deaths per year due to air pollution, due to heat and droughts 90'000 deaths will be recorded yearly as a consequence of heat waves, at 5°C temperature increase 660'000 additional asylum applications will be handed in in the EU, and 16% of the species bare the risk of being extinct at a temperature increase of 4.3% (European Commission, 2021d).

Moreover, 40% less water will be available in southern regions of Europe, and half a million people will not be able to avoid yearly flooding, and many more will be exposed to coastal deluge. Economically speaking, global warming of 3°C will be accountable for EURO 190 billion in losses, food prices will increase by 20% by 2050, and EURO 50 billion of costs per year due to heat-related mortality could mount up (COACCH, 2018).

1.1 Implementation of the EU Green Deal

In light of these developments, the European Commission (2019a) presented the EU Green Deal (EUGD) in December 2019 in order to tackle global warming and hamper the negative effects of climate change on the environment and humanity. With this growth strategy, the EU's aim is to 1) convert Europe into a successful society that works resource-efficiently, 2) serve as a competitive environment that by 2050 counts no net emissions of greenhouse gases, and 3) create an economic development that is not reliant on the usage of resources. However, its overarching goal is to become the first climate-neutral continent by 2050.

> *"For the health of our citizens, our children and grandchildren, Europe needs to move towards a zero-pollution ambition. My Commission will put forward a cross-cutting strategy to protect citizens' health from environmental degradation and pollution." - Ursula von der Leyen, President of the European Commission*
>
> *(European Commission, 2021b, p. 1)*

The European Commission (2019a) states that this change will require a lot of public efforts and investment to guide private capital into the direction of environmental and climate-friendly actions so to prevent getting stuck in unsustainable practices. Therefore, the EU is dedicated to taking the lead in the coordination of international efforts and creating a unified financial system that fosters sustainable investments. The European Green Deal (2020f) will hasten and strengthen the necessary transformation in all industries.

Since climate change and the loss of biodiversity is an issue that is not limited to national borders, Europe must align with like-minded alliances which can be persuaded to hop on the bandwagon and take the sustainable path with Europe through their high level of influence, expertise, and financial resources (European Commission, 2019b).

Integral parts of the EUGD (2019b) the United Nation's 2030 Agenda and sustainable development goals and will be at the center of future actions taken by the EU. At the heart of the economic policy, sustainability and the citizen's well-being will be found, whereas the sustainable development goals will focus on the policymaking and action level of the EU.

The illustration below (Figure 1) shows all the major elements that the European Green Deal includes:

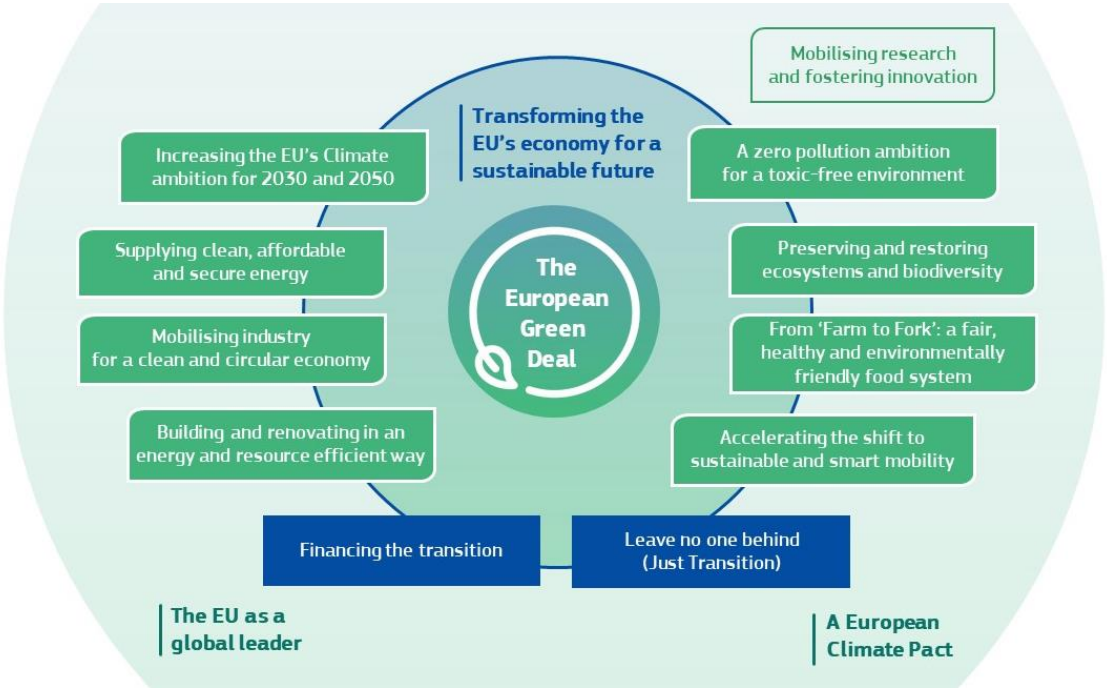


Figure 1: The European Green Deal (European Commission, 2019a, p. 3)

With its goal to create a sustainable EU Economy, challenges are transformed into opportunities by laying out a strategy for increasing resource efficiency by transitioning to a clean, circular economy, as well as restoring biodiversity and reducing pollution. Moreover, movements from all sectors of the economy are necessary, that according to the European Commission (n.d.a), entails:

- *"Investing in environmentally-friendly technologies*
- *Supporting industry to innovate*
- *Rolling out cleaner, cheaper and healthier forms of private and public transport*
- *Decarbonizing the energy sector*
- *Ensuring buildings are more energy efficient*
- *Working with international partners to improve global environmental standards"* (European Commission, n.d.a).

Important for this research are the policies looking at "**sustainable industry**" concerning sustainable production cycles, "**sustainable mobility**" regarding the transportation of goods. These policies will be elaborated in the literature review in more detail.

To reach climate neutrality by 2050, a number of initiatives will be carried out by the European Commission (2020e) to foster the protection of the environment as well as a green economy. The initiative that is set out to most likely be the most game-changing one is the European Climate Law. The law is currently under preparation for orderly approval. As soon as this law comes into force, every entity, if private or public, will have to comply with the laws intact to reach the 2050 targets. A frequent tracking mechanism will ensure that consistent progress is made and no one is left behind (European Commission, 2020g).

1.2 Problem Statement

The issue of global warming is not an emerging topic anymore but one that nowadays dominates almost any business decision. The production of textiles is the industry that, after food, housing, and transportation, is the fourth highest-pressure sector using primary raw materials and water and fifth highest-pressure for greenhouse gas emissions (European Environment Agency, 2020), and therefore needs to rethink its strategy (Azoia et al., 2020).

Fast-fashion increased manufacturing, as well as the environmental impact of the textile sector (Azoia et al., 2020), resulting in today's clothes production, distribution, and consumption system being almost entirely linear (Ellen MacArthur Foundation, 2017). Vast amounts of non-renewable resources are needed to make garments that are frequently worn for just a short time before being disposed of in landfills or incinerated. More than half of fast fashion is assumed to be discarded in less than a year (Ellen MacArthur Foundation, 2017). Only around 1% of all textiles worldwide are recycled into new textiles, according to estimates (European Commission, 2021f). Not only does this linear system strain resources, pollute, and damage the natural environment and the ecosystem, but it has also been missing out on economic opportunities, leading to substantial negative consequences for the society, as the Ellen MacArthur Foundation (2017) reports.

With these new specifications by the EU Commission to make Europe the first CO2-neutral continent, the apparel industry is required to change its business models and adapt its supply

chain to reduce pollution and CO2 emissions. This has a large influence on the choice of materials, suppliers, production practices, and transportation ways.

According to Swiss Textiles (2021), both the apparel and home textile divisions, Switzerland's textiles and clothing industry concentrates on the creation and production of high-quality goods. Textile and garment manufacturing has evolved into a worldwide business during the last few decades. Today, the Swiss textiles manufacturing industry encompasses a total of 2506 companies, equaling 2369 micro-companies with fewer than ten employees and 137 small to large companies with more than ten employees. These companies count over 10,000 employees locally in Switzerland and employ additional 27,352 people abroad. From this, total sales of CHF 3,061 million resulted in 2018 - CHF 1,268 million from clothing alone.

As Switzerland is located in the heart of Europe and shares many common sustainability goals with the EU, the EUGD will hence have a considerable impact on future business conducted in Europe.

1.3 Research Objective and Significance of Research

Although there is a foundational understanding of sustainability efforts, little is known about the implications that the EUGD will have on the supply chain in the apparel retail industry, more specifically, the apparel retail industry in Switzerland. Companies have consistently been adapting their supply chains by improving processes to be more efficient or act more sustainably. However, it has previously been more of a pull factor for businesses, whereas it has now become an inevitable measure.

Broadly speaking, this research sheds light on the impact that this new, soon to be, legal framework will have on the apparel industry. From this, the questions arise, such as to what extent Swiss apparel brands and their supply chain will be affected by the EUGD in terms of changes in the sourcing of materials as well as the production processes and more. Furthermore, the increasing sustainability measures that are required will surely bring about changes in business models sooner or later, and therefore interesting to find out if well-known brands have already started the shift. The transition to a more circular business model will most likely affect the supply chain again, and so the question remains if they can still provide the same fashion and stay competitive this way.

Moreover, it was to find out if suppliers of Swiss fashion brands will be able to comply with the eco-labels set out by the EU and how they look to increase supply chain transparency and traceability. And finally, the question lay in how future businesses should set up their supply chain efficiently and effectively to minimize emissions and comply with the EUGD requirements and be better prepared for what is to come.

The overarching goal of this research was, therefore, to discover what impact the EUGD specifically has on the supply chain of Swiss apparel brands and provide guidance to future businesses trying to evolve in this still highly resource-intensive industry.

The following research questions (RQ) are addressed in this research paper:

RQ 1: What impact does the EU Green Deal have on the supply chain of the apparel industry?

RQ 2: How will inevitable changes in business model affect the supply chain and competitiveness of the brand?

RQ 3: How should new apparel brands set up their supply chain in an efficient and effective manner to comply with the requirements of the EU Green Deal?

The domain of this research directly targets the supply chain of Swiss fashion brands producing in Europe; however, not limited to these. The findings can also be applicable to fashion brands from abroad that are operating in the EU zone. Moreover, it can bring useful insights to industry experts who are interested in a holistic opinion triangulation with respect to the EUGD.

As this research paper looked at the phenomenon of the EUGD and how it has and will impact future business, this was best answered by doing an empirical study, according to Black (1999). Empirical research allowed to make specific observations through in-depth interviews, in this case, how apparel companies will have to react and adapt to the new regulations, as well as gather expert opinions, which were then analyzed. From this, patterns were able to be recognized in terms of crucial measures to the supply chain that all interviewees saw as necessary, and subsequently, general conclusions formed.

1.4 Research Scope

This research is limited to the parts of the EUGD that were considered by the author to be the most relevant areas impacting the supply chain of an apparel brand, based on the literature reviews. Because the author is not a specialist themselves, the areas were chosen to the best of the author's knowledge and hence, a subjective choice. This limitation was made due to the extensivity of the EUGD, which required a focus on the most relevant themes to stay within the scope of a master thesis.

The findings are based on the supply chain of Swiss apparel brands that produce in Europe only, without regard to the type of garment or company size.

1.5 Structure of Thesis

In chapter 1 of this report, the stage was set, introducing the topic by providing necessary background information on climate change, the implementation of the EUGD, and the issue of the overly pollutive textile industry, in order to frame the research problem and state the research questions. Henceforth, chapter 2 provides an overview of the relevant terminology and laws to be defined. Following that, a literature review on the EUGD framework, with a focus on the EUGD industry roadmap, i.e., EU Strategy for Textiles with the associated initiatives, is done to describe the framework in depth. Additionally, the supply chain, in general, is supported by Porter's Value Chain (1998) that helps to understand and analyze the relevant areas of a company's supply chain. Subsequently, the supply chain of clothing brands is elaborated on to comprehend better what procedures and steps this entails in that industry specifically and which areas of Porter's value chain are affected. Moreover, the Triple Corporate Responsibility model by Mathias Schüz (2019) enables an analysis of the companies' interview answers in terms of economic, ecological, and social efforts.

Both these parts serve as a foundation for the qualitative interviews that were conducted in the next step. Chapter 3 is sought to explain the research design and methodology of this research, describing the methods and instruments used to collect and analyze the data, including the coding procedure. This is followed by the findings of the conducted interviews in chapter 4. Subsequently, chapter 5 discusses the results of the company and expert interviews in relation to the EUGD framework and the literature review. Finally, the

conclusion of Chapter 6 summarizes the key findings in terms of most pregnant impacts, conclusions, and actions for existing and new businesses in the apparel industry.

2 Literature Review

This part of the paper firstly reflects on existing literature that there is so far. Next, the EUGD framework of *Sustainable Industry* and *Sustainable Mobility*, supported by the *EU Climate Law* and *Just Transition Mechanism*. Subsequently, the supply chain and, more specifically, the clothing supply chain is explained, followed by an introduction into the circular economy and consequential circular business model, with a focus on PaaS. Lastly, the responsibility of companies in this society is explained.

2.1 Existing literature

Already in 2011, Yang & Sheu (2011) reported on the effects that environmental regulations have on green supply chains and what issues companies must address to suit these requirements. This study was conducted on Chinese and Taiwanese manufacturing companies in the computer industry. Findings were that green partnerships should be fostered, and the agility of a company to comply with new regulations depends on the firm's environmental management strategy. Further research on the impact of the EUGD on supply chains is non-existent.

When taking a closer look at more recent research on the impact of the EUGD in general, reports can be found on the geopolitical issues that it will bring along (Leonard et al., 2021). At the same time, a recent report by the International Tax Review (2021) talks about the arising challenges for the industries resulting from the EUGD. It touches upon the risk of industries moving their production sites to countries that have less strict emission regulations, so-called carbon leakage. In doing so, carbon emission in Europe would be reduced, however, not on a global level. In addition to that, the legal and financial challenges have been analyzed by Sikora (2020).

In the textile industry, a fair amount of research has been conducted, especially on changing business models due to increasing sustainability demands and the influence of climate change (Barcellos & Broega, 2018; Brewer, 2019; de Brito et al., 2008; Jedrzejczak, 2020; Niinimäki et al., 2020). In these reports, the focus lies on circular business models and the aspects of

"slow fashion" and "sustainable fashion". The exact impact that the EUGD will have on the apparel industry's supply chain, or supply chains in general, has, however, not been researched yet.

2.2 EU Green Deal Framework

The main goal of the EUGD is to set up a climate law, which is meant to transform the political movement into a legal obligation for all parties in the EU and, with that, attracts green investments. The main targets that the EUGD has set so far are listed in Table 1 below.

Key Climate Targets 2030
At least 55% net greenhouse gas emissions reduction target (below 1990 levels)
At least 32% share for renewable energy
At least 32.5% improvement in energy efficiency
Key Climate Targets 2050
Climate-neutrality
Net-zero greenhouse gas emissions
Keep global temperature increase to 1.5C
80%+ renewable energy

Table 1: Key Climate Targets of EUGD (European Commission, 2020f) – own illustration

In the EU Commission's Zero-Pollution Action plan for a toxic-free environment (European Commission, 2021a), more measurable targets are defined to be reached by 2030, namely:

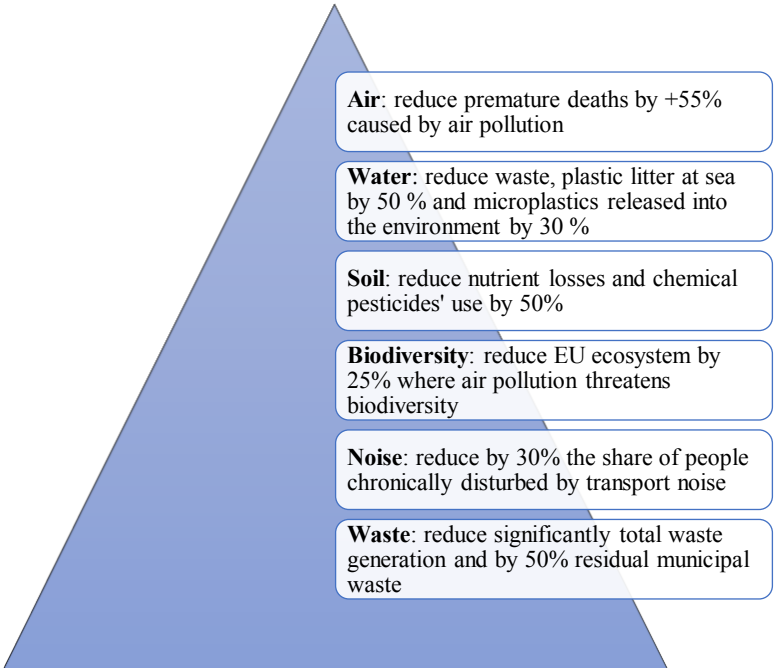


Figure 2: Zero Pollution Action Plan (European Commission, 2021g, p. 1) – own illustration

By 2050, the degree of air, water and soil contamination is not allowed to harm health and natural ecosystem anymore, and with that, create an environment that is toxic-free.

As mentioned in the introduction, there are eight elements in the EUGD from 2019 that need to be addressed to reach a climate-neutral Europe. All the areas are interlinked and mutually reinforcing (European Commission, 2019b), i.e., collective efforts will create maximized results. In this report, the focus lies on the areas of *Sustainable Industry* and *Sustainable Mobility*.

2.2.1 Sustainable Industry

The transformation of an industrial sector and its value chain takes 25 years. Hence, important decisions and actions must be undertaken by 2025 to ensure climate-neutral and circular industries by 2050, as the EU Commission (2019b) states. The EUGD will go in alignment with a new industrial strategy for Europe which aim will be to make the EU a frontrunner in circular economy and clean technologies and to reduce the carbon emissions from energy-intensive sectors.

The targets of the EUGD (2019b) brought about the need to establish "A New Industrial Strategy for Europe" to push forward changes in the most highly polluting industries. Within this field, together with the industrial strategy, a Circular Economy Action Plan was put in place in March 2020 and is one of the key building blocks of the EUGD. While the Circular Economy Action Plan (2020d) will assist the transformation of all sectors, resource-intensive industries such as textiles, construction, electronics, and plastics will receive special attention. It is foreseen for new business models based on renting goods and services should help change consumption behavior to use fewer single-use or limited-use products (European Commission, 2019a).

2.2.1.1 EU Strategy for Textiles

When addressing the key product value chain of textiles, as it is the category that uses the fourth-highest amount of primary raw materials and water (European Commission, 2019b), the Commission is determined to tackle these challenges through the introduction of a separate **EU Strategy for Textiles**.

The textile industry is not only known for its impact on the environment but also for its long, globalized, and diverse value chains. Lower production costs and fewer environmental and

social standards in place in third countries have resulted in an unlevel playing field for European textile and clothing providers. It is difficult for them to demonstrate that their products are manufactured under appropriate environmental and labor circumstances. The textile industry also has large skill gaps, shortages, and mismatches as a result of the frequently quick technology developments that ask for global workforces to constantly re-adapt (European Commission, 2021e).

The goal of the EU Strategy for Textiles is to increase the competitiveness, sustainability, and resilience of the EU textile sector, following a lengthy period of restructuring and delocalization, and taking into consideration its strengths and weaknesses, and addressing its environmental and social consequences. Additionally, it will be made sure that the EU Strategy for Textiles conforms with and complements the initiatives under the *European Green Deal*, the *Circular Economy Action Plan*, the *Industrial Strategy* and the *Chemicals Strategy for Sustainability* (European Commission, 2021e).

More so, it is aimed to foster innovation, promote the demand of the EU market for sustainable and circular textiles and textile reuse, tackle the issue of fast fashion, and encourage the change to new circular business models (European Commission, 2020a). The EU Commission (2021b) sets out to do this by:

- A recovery plan and sustainable investments aimed at production processes, design, new materials, new business models, infrastructure and capacity, in particular, will be encouraged through the EU Strategy for Textiles. This includes technological support in terms of digitalization with regards to new textile innovations, tackling the issue of microplastics release, and manufacturing and recycling processes to allow for the green transition.
- Targets might be set to ramp up reuse, recycling, and green public procurement efforts in order to monitor the employment of this initiative for speedier attainment. The objectives will be defined with the help of the industrial ecosystem and other stakeholders such as consumer associations, investment companies, R&D, and member states.
- Actions by the EU will aim at creating a readiness of the textile ecosystem to transition to a circular economy. This will be done through a thorough analysis of

the weaknesses concerning sustainable production and lifestyles, presence of harmful substances, and ameliorating waste collection and recycling for textiles.

- Employing the new sustainable product framework which entails the further development of eco-design measures to make sure that products are circularly compatible, shifting to secondary raw material, confronting the issue of the presence of hazardous chemicals, and sensitizing organizations and customers towards picking sustainable textiles over linear ones, as well as making re-use and repair services easily accessible for all (European Commission, 2021f).
- Businesses will receive incentives and support to adopt product-as-service models and circular material and production processes by bettering the EU's business and regulatory framework for circular and sustainable textiles. Voluntary advances such as the EU Ecolabel will also be endorsed.
- In order for EU member states to reach the legal obligation of greater levels of segregated textile waste collections by 2025, advice is provided to them.
- By means of innovation, promotion of industrial application and regulatory measures such as extended producer responsibility, sorting, recycling, and re-use of textiles will be enhanced (European Commission, 2020a).
- Reinforcing the responsibility of protecting human rights, the environment, and due diligence across the value chain, in order for traceability and transparency to progress.
- More sustainable consumption and production designs, entailing conditions for land and water, and chemical usage will be achieved through progressive international cooperation and partnerships, as well as trade aid.
- Promote international cooperation for increased transparency.

The stakeholders of the industry that must be consulted are fiber, yarn, fabric or clothing manufacturers, SMEs and global companies, suppliers, retailers, service providers, collectors, sorters, recyclers, research and innovation centers. Additional stakeholders include public authorities, consumers and consumer associations or civil society (European Commission, 2021b).

2.2.1.2 Circular Economy Action Plan

In its resolution from 10 February 2021 on the New Circular Economy Action Plan, the European Parliament (2021) underlined that products and materials must be sustainable, circular, safe and non-toxic and that that will become the norm in the EU market. This should be seen as the default choice, which is attractive, affordable and accessible for all consumers.

Sustainable Product Policy Initiative

It, therefore, welcomed the European Commission's plan to propose a legislative initiative on sustainable products to set horizontal principles for product policy and binding requirements on products placed on the EU market. It also stressed the importance of providing market incentives for the most sustainable companies and sustainable products and materials in parallel to legal minimum standards for product design (European Parliament, 2021).

Sustainable Product Policy Framework

As part of the Circular Economy Action Plan (European Commission, 2020a), to ensure the making of climate-neutral, resource-efficient, and circular products, waste reduction, and guaranteeing that the measures of sustainability leaders gradually becomes the standard, the European Commission (2020d) is preparing a sustainable product legislative initiative. This legislative initiative is supposed to go beyond the previously introduced Eco-design Directive that was only applicable to energy-related products, and make it relevant for most possible products and thus contribute to the circularity of these. Constituent elements that are targeted through this legislative initiative by the European Commission (2020d) will be:

- enhancing product durability, reusability, upgradeability, and reparability, addressing hazardous chemical presence in goods, and boosting energy and resource efficiency
- increasing the percentage of recycled materials in goods while maintaining their functionality and safety;
- allowing for high-quality recycling and remanufacturing;
- lowering carbon and environmental footprints
- limiting single-use items and preventing premature obsolescence;
- banning the destruction of unsold durable goods

- encouraging the use of product-as-a-service or other business models in where the manufacturer retains ownership of the product or responsibility for its performance throughout its lifespan;
- taking advantage of the possibility of digitalization of product information by introducing solutions such as digital passports, tagging, and watermarks.
- Products should be rewarded based on their various degrees of sustainability performance, particularly by tying high-performance levels to incentives.

To support businesses and ensure that the new sustainable product framework is applied efficiently and effectively, the Commission (2020b) will set up a collective **European Dataspace for Smart Circular Applications** where data on product information and value chains can be found. Additionally, the introduction of **inspections and market surveillance actions** in collaboration with national authorities will enforce the sustainability requirements and control the products that are sold on the EU market.

Empowering consumers (and public buyers)

In order to get the consumers to hop on the bandwagon and take action themselves to move towards a circular economy, the EU Commission (European Commission, 2020a) is concerned to revise the EU consumer law so that "*...consumers receive trustworthy and relevant information on products at the point of sale, including on their lifespan and on the availability of repair services, spare parts and repair manuals."*. Moreover, they strive to establish minimum requirements for sustainable labeling and logos and information tools to protect the consumer against greenwashing and obsolescence before time.

In addition to that, consumers should receive the **"right to repair"** as in receiving spare parts or have access to a repair service, and companies are advised to provide proof of their environmental allegations through product and organization environmental footprint methods. Also, the commission will try to integrate these systems into the EU Ecolabel and incorporate factors such as **durability**, **recyclability** and **recycled content** more comprehensively into its criteria. (European Commission, 2020a) The detailed EU Ecolabel criteria can be looked at under the following link: EU Ecolabel.

Circularity in production processes

Not only does circularity work towards a climate-neutral planet and long-term competitiveness of firms, but it also has the potential to save significant amounts of material in value chains and manufacturing processes, as well as provide additional value and open up new economic opportunities (European Commission, 2020a).

In alignment with the objectives that are defined in the Industrial Strategy, the EU Commission (European Commission, 2020a) strives to achieve more circularity in the industry sector by firstly looking at methods that can make industrial processes more circular by reviewing the Industrial Emissions Directive and including best practice circular economy practices. Secondly, the establishment of an **industry-led reporting and certification system** will help build **industrial synergies,** and the utilization of **digital technologies that allow to track, trace and map resources** is fostered. And finally, verified green technologies should be applied more widely and should be registered as an EU certification mark through the **EU Environmental Technology Verification** scheme.

The EU Commission (2020b) also aims to foster circular industrial collaboration amongst SMEs, since the industry contains mostly SMEs, by offering training and guidance on cluster collaboration within an industry and knowledge transfer.

2.2.1.3 Chemicals Strategy for Sustainability

The EU has two chemical regulations impacting the textiles industry. The first one is the regulation on Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH), as well as the regulation regarding the Classification, Labelling, and Packaging (CLP). In the EU's goal to create a toxic-free environment through the usage of sustainable chemicals, the EU's chemical industry is required to follow the environmental urgency as well as economic chance to innovate new chemicals that are safe and sustainable by design. This is an inevitable action since secondary raw materials (i.e., recycled fabrics) can only be included in the production processes if the primary material is toxin-free (European Commission, 2020c).

By including the target of minimizing the presence concerning substances in products in the Sustainable Product Policy Initiative, the European Commission (2020c) wants to ensure non-toxic material cycles. The Commission gives priority to the industries that are most

endangering populations and have the highest potential for circularity, where textiles is one of them. Moreover, it will give support to sustainable innovation investments so that waste streams can be decontaminated, safe recycling is enhanced, and waste exports minimized, which occur mostly from plastics and textiles. In addition to that, the aim is to protect society from harmful chemicals in textiles and other products that can provoke cancers, gene mutations, etc.

2.2.2 Sustainable Mobility

Transportation, in general, is the cause of a quarter of the greenhouse gas emissions in the EU and, therefore, must be reduced by 90% by 2050 in order to reach climate neutrality.

In terms of freight, the goal of the European Commission (2021f) is to transfer a large amount of the 75% of inland freight that is currently transported by road to be moved to train and inland waterways. This means that the capacity of railways and inland waterways must be enhanced drastically. Moreover, more sustainable **multimodal freight operations**, i.e., combined transportation entailing rail and waterborne transport, as well as short-sea inland shipping, need boosting. To create avoidance of using roads, the Commission is ascertaining how to establish an effective road pricing system in the EU (European Commission, 2019b) in which is applied on a "polluter pays" basis (European Commission, 2021b) and setting an end to subsidizing fossil fuels (European Commission, 2019b). Road charging can also be a beneficial instrument to generate new sources of revenue to help advance Europe's vital infrastructure, as well as modes of transportation that are cleaner and more energy-efficient (European Commission, 2021b).

2.2.3 Supportive Initiatives

In order to ensure suitable financial and legal conditions to allow for companies to transition, supportive initiatives have also been set in place. Two important examples for the textiles industry transformation are the following.

2.2.3.1 Just Transition Mechanism

The "Just Transition Mechanism" initiative will help to provide financial support and technical assistance throughout the process to companies and sectors that are carbon-intensive. The textile industry has been declared to be one of those.

Companies and sectors can be expected to be safeguarded by the Just Transition Mechanism through (1) receiving support in transitioning to low-emission technologies as well as climate-resistant investments and jobs resulting from economic diversification. (2) Public and private investors will be attracted through appealing investment conditions, and (3) companies will gain access to loans and financial support more easily. Moreover, (4) investments will be made in the establishment of start-ups, new firms, and SMEs, and lastly, the Just Transition Mechanism will (5) increase money flow into research and innovation (European Commission, 2021g).

2.2.3.2 European Climate Law

Since new measures alone are not enough to reach the ambitious goals of the EU, the initiative that is set out to most likely be the most game-changing one is the European Climate Law, according to (European Commission, 2020g).

The law is currently under preparation for orderly approval, and in agreement with the European Parliament and Council, it will contain (European Commission, 2020e):

- *"a legal objective for the Union to reach climate neutrality by 2050*
- *an ambitious 2030 climate target of at least 55% reduction in net emissions of greenhouse gases compared to 1990, with clarity on the contribution of emission reductions and removals;*
- *recognition of the need to enhance the EU's carbon sink through a more ambitious LULUCF regulation, for which the Commission will make proposals in June 2021;*
- *a process for setting a 2040 climate target, taking into account an indicative greenhouse gas budget for 2030-2050 to be published by the Commission;*
- *a commitment to negative emissions after 2050;*
- *the establishment of European Scientific Advisory Board on Climate Change, that will provide independent scientific advice;*
- *stronger provisions on adaptation to climate change;*
- *strong coherence across Union policies with the climate neutrality objective;*
- *a commitment to engage with sectors to prepare sector-specific roadmaps charting the path to climate neutrality in different areas of the economy."* (European Commission, 2020e).

As soon as this law comes into force, every entity, if private or public, will have to comply with the laws intact to reach the 2050 targets. A frequent tracking mechanism will ensure that consistent progress is made and no one is left behind (European Commission, 2020h). As confirmed by the European Commission (2020e), every five years, the progress will be assessed.

2.2.4 Relations between Switzerland and the EU in the environmental field

Both Switzerland and the EU recognize the need and duty for long-term climate and environmental protection. When it comes to seeking global solutions at international conferences on sustainable development or climate change, they share similar viewpoints (EDA, 2021).

Since 2006, Switzerland has been an active member of the European Environment Agency (EEA) as well as the European Environment Information and Observation Network (Eionet). To identify the current state of the environment in Europe, the EEA collects and analyzes environmental data. It makes sure that the gathered data is similar in order to fulfill shared requirements and ensure comparability, as the Swiss Federal Office for the Environment states (BAFU, 2019). In a five-year cycle, the EEA publishes a current state report of the environment in Europe. Also, light is shed on challenges that are to be expected with regards to the European environmental and climate policy.

Switzerland shares many of the challenging goals of the EU's roadmap to climate neutrality in the EUGD that was presented in 2019. In particular, Switzerland wants to join the force of playing a leading role in fighting climate change. What can further be said is that in their individual environmental, sustainability, energy, and climate policies, they are pursuing the same level of ambition (EDA, 2021).

Switzerland will surely benefit from the ambitions of the EU. However, new product rules could lead to trade barriers, and challenges could arise from the introduction of carbon adjustment mechanisms at the borders (BAFU, 2021).

Incorporation of EU environmental legislation into Swiss law

in line with the concept of equivalence, aside from the EEA and emissions trading agreements, bilateral agreements between Switzerland and the EU typically call for

Switzerland to adopt EU law or modify Swiss legislative provisions to those of the EU. Furthermore, Switzerland autonomously adopts aspects of EU legislation in areas not covered by bilateral agreements, primarily to eliminate economic obstacles, i.e., trade barriers.

Greenhouse gas emissions trading scheme

On January 1, 2020, the Swiss Federal Office for the Environment (BAFU, 2021) declared for the agreement connecting the Swiss and EU emissions trading schemes to come into effect. The Swiss trading scheme is an eminent market-based tool with the goal to diminish greenhouse gas emissions created by the largest emitters in Switzerland. By linking the EU and Swiss trading scheme, the participation of Swiss businesses in the larger EU emissions trading market is enabled. In addition to that, it will converge the Swiss and EU CO2 prices, allowing for a fair playing field for participating businesses.

The European ecolabel and resource efficiency

Switzerland opted against creating its own official ecolabel and instead elected to join the European ecolabel program. Companies in Switzerland can already apply for this designation, but they must do so through an EU Member State's authorities (BAFU, 2021).

2.3 General Supply Chain Description

A *supply chain* is defined as the involvement of three or more entities that directly participate in upstream and downstream flows of products, services, finances, and information right from the source to the consumer, according to Mentzer et al. (2001). In other words, the firms and business activities required to design, make, deliver, and use a product or service are included in a supply chain (Hugos, 2018). In his book, *Supply Chain Management Best Practices*, Blanchard (2010) puts it a bit more broadly by saying: *"A supply chain is the sequence of events that cover a product's entire life cycle, from conception to consumption."* (Blanchard, 2010, p. 3), and points out that there is no one-size-fits-all in supply chains. Stadtler (2005) emphasizes the need to design all operations along a supply chain around the demands of the consumers being served. As a result, the (ultimate) customer is, at best, an essential component of the supply chain.

Mentzer et al. (2001) identified three levels of supply chain complexity in their research (see Figure 3). (1) Direct supply chain: Describing a supply chain that entails a company, a supplier, and a customer; (2) Extended supply chain: Adds suppliers of immediate suppliers and customers of the immediate customer to the "direct supply chain"; and (3) Ultimate supply chain: Entails all organizations that are involved in any up- or downstream flows from the ultimate supplier to the ultimate customer.

There is a clear distinction to be made between supply chains as commercial phenomena and the management of such supply chains. The former is simply something that exists in any business, but the latter necessitates overt management efforts on behalf of the supply chain's entities (Mentzer et al., 2001). As Hugos (2018) and Atltuntas & Turker (2014)state, only companies that understand how to create and participate in robust supply chains will have a significant competitive edge in their respective industries.

Both Blanchard (2010) and Hugos (2018) mention more or less the same supply chain processes in their publications – whilst Hugos divides the supply chain core processes into Planning & Sourcing and Making & Delivering, Blanchard, however, calls them Planning and Forecasting, Procurement, Manufacturing, Transportation, and Distribution and Warehousing 91 as main processes, but also adds on downstream activities as in Site Selection, Globalization and Customer Service. Stadtler (2015; 2005), on the other hand, calls the areas Plan, Source, Make, Deliver, and Return. As the author of *Supply Chain Management Best Practices* explains (2010, p. 56), procurement, purchasing, and sourcing are all words that define one of the primary supply chain management procedures, although the term is not necessarily used in an interchangeable fashion.

As a broad explanation of the supply chain operations, Hugos (2018) book on Essentials of Supply Chain Management serve the purpose the best:

1) Planning: Is to plan and organize the company's operations.
2) Source: Describes the required activities to attain inputs in order to create products, as in procurement being the acquisition of materials.
3) Make: Refers to the operations necessary to develop and build products, including product design production management and facility management.

4) Deliver: Entail the undertakings of customer orders and delivery of the products to the customers.

   These operations encompass the activities that are part of receiving customer orders and finally delivering the products to customers/end consumers.

A classical supply chain overview is this one (Figure 3) by Beamon (1998, p. 282):

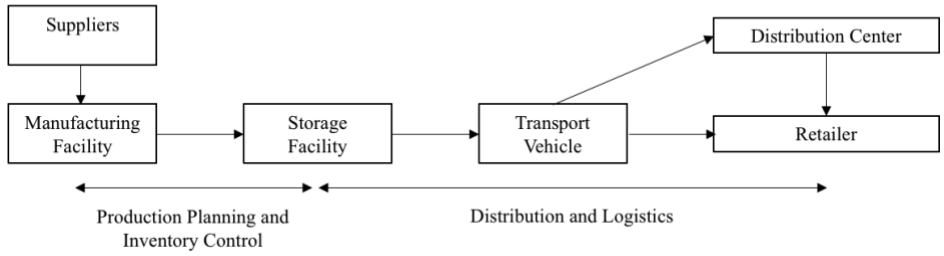


Figure 3: Supply Chain Overview (Beamon, 1998, p. 282) - re-illustrated

2.3.1 Porter's Value Chain

The seminal book on *Competitive Advantage* by Michael E. Porter (1998), a former professor at Harvard University, has been cited over 111'000 times and entails one of the most renowned management models today. Porter's Value Chain (Porter, 1998, p. 36) framework defines the five key primary activities of a firm that will enable a company to become more profitable, i.e., create a competitive advantage (Porter, 1998), and on which its supply chain framework is built, according to Blanchard (2010):

1. *Inbound Logistics.* Entails the actions that are associated with receiving, storing, and disseminating inputs to the products, for example, material handling, warehousing, inventory control, vehicle scheduling, and returns to suppliers.
2. *Operations.* Are the activities linked to the transformation of inputs into the product's final form, for example, machining, packaging, assembly, equipment maintenance, testing, printing, and facility operations.
3. *Outbound Logistics.* It is concerned with the activities linked to collecting, storing, and distributing the product to the buyers, i.e., finished goods warehousing, material handling, delivery vehicle operation, scheduling, and order processing.
4. *Marketing and Sales.* Includes the actions that create the means by which customers can buy the products and also influence them to do so through advertising, promotions, salesforce, channel selection, channel relations, and pricing.

5. *Service.* Activities related to offering service to improve or maintain the product's value, such as installation, repair, training, spare parts supply, and product adjustment.

The exact activities can and will vary depending on the industry.

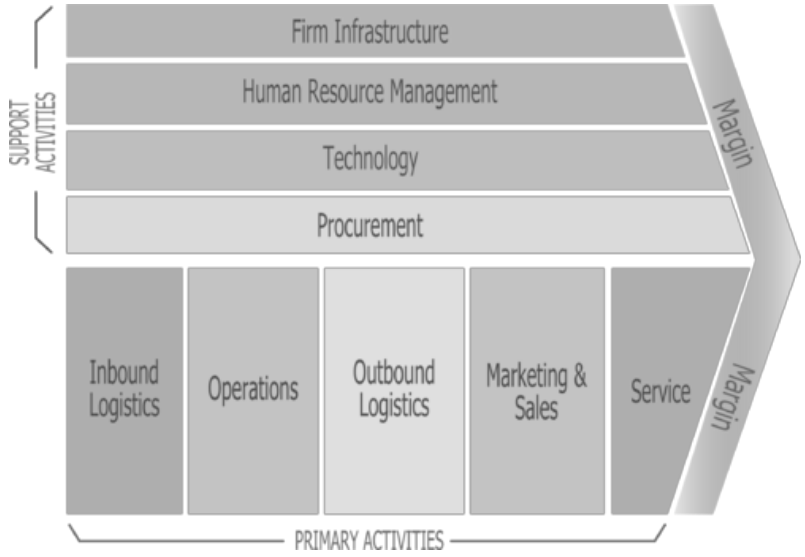


Figure 4: Porter's Value Chain (Porter, 1998, p. 36)

As illustrated in Figure 4, the support activities of a company of any industry are segmented into four categories. The activities within the specific areas again vary depending on the industry, however.

As Porter states (1998), the first support activity is *Procurement*, which is commonly known for purchasing raw materials but can also spread throughout the firm into different business areas. Second is *Technology Development*, which improves the product and processes and is linked to research & development. The third support activity is *Human Resource Management* that provides the management of personnel in terms of recruiting, hiring, training, development and compensation. Lastly, *Firm Infrastructure* upholds the entire chain and not merely single activities and includes general management, planning, finance, accounting, legal, government affairs, and quality management.

2.4 Clothing Supply Chain

A clothing supply chain relates to the process of tracing each step of the clothing manufacturing process, from the procurement of raw materials through the factories where those resources are turned into garments, and the distribution network via which the clothes are distributed to consumers (Zoltkowski, 2021).

As retailers respond to the combined problems of lower price pressure, more product diversity, and shorter product life cycles, the demand for fast fashion has resulted in a wide-ranging restructuring of international supply chains, as Perry and Wood (2019) and Sarnow and Schröder (2019) state.

Hence, due to the apparel industry being under constant change in the past thirty years, its supply chains have become more globalized and complex, meaning there is not one supply chain model alone that can be applied to all apparel retailers. The main distinctions that are to be made are between a vertically and non-vertically integrated supply chain as well as indirect or direct sourcing. Moreover, the apparel supply chains are required to become more and more sustainable in response to environmental and social pressures that businesses are experiencing from stakeholders.

Garment Sourcing Model

According to Fernie et al. (2014), there are three different ways for apparel brands to source garments. The first way is through third-party specialists, the second way is via their headquarters sourcing directly from suppliers, and lastly, through sourcing hubs set up overseas.

If brands source directly, i.e., directly from suppliers, Fernie et al. (2014) state that retailers either use:

- Contract manufacturers ("cut-make-trim" – CMT suppliers) are responsible for the cutting, assembling, and shipping finished clothing under the buyer's brand name from inputs that were imported.
- Or Full-Package suppliers who handle the whole production process on the buyer's behalf, from product creation and raw material procurement through to manufacturing and shipping (Gereffi & Neidik, 2006). In order to provide a complete

package, it is necessary to have pre-production capabilities in design and product development, as well as obligations for fabric sourcing.

Fashion supply chains are governed in a variety of ways, from vertically integrated to independent suppliers. Table 2 depicts the different potential types of relationships in a fashion supply chain.

Vertically integrated or tight control of supply network
- Luxury fashion houses or those with a unique business model (e.g., Zara/Benetton) - As these companies have developed a greater international store network, more offshore sourcing has occurred
Mid-market retailers with collaborative relationships
- QR concepts applied offshore - Development of international sourcing and distribution hubs - Use of full package intermediaries
Fast fashion retailers
- Strong emphasis on sourcing from cheapest supplier - Relationships can be short and variable - Markets classified into short and long lead times - For Western European retailers, a gradual shift from China to Vietnam, Turkey to Egypt and Romania to Moldova in terms of sourcing patterns.

Table 2: Typology of Fashion Retailer Supply Chain Relationships (Perry & Wood, 2019) – re-illustrated

Vertical Integration

A vertically integrated apparel brand has a fully vertically integrated network of operations, where all business functions are retained in-house, Perry & Towers (2013) explain. In volatile environments, vertical integration is not typically seen as the preferred way of setup. However, vertical integration can help to implement quick reactions to changing market needs, like those present in the fashion industry (Richardson, 1996). According to some (Teece, 1992), vertical integration creates an unyielding commitment to assets and capabilities that are in danger of losing their benefit when conditions change.

Luxury brands tend to keep their production operations in-house and follow a vertically integrated supply chain in order to keep craftsmanship skills and brand equity guarded (Perry & Towers, 2013). Chanel, for example, acquired its long-term Scottish cashmere supplier in 2012, and Kering and LVMH, as part of a deliberate attempt to ensure a sustainable supply of high-quality raw materials, have purchased a number of exotic skin suppliers and first-class tanneries (Socha, 2013). The mid-market high-street brands, however, are better served with the design/source/distribute supply chain model (Perry & Towers, 2013).

The drive towards cooperation and vertical integration in order to increase supply chain efficiency is the most notable distinction between quick response (QR) and more conventional clothing supply chain (Barnes & Lea-Greenwood, 2006). The simple illustration of a vertically integrated supply chain can be seen in Figure 5.

Vertical Disintegration

A recent key trend that Perry & Wood (2019, p. 100) describe in the book *Logistics and Retail Management* is vertical disintegration. Here, the apparel brand has a completely independent network of organizations where the focal firm outsources its business functions to third-party suppliers and primarily acts as a coordinator between the two (Perry & Towers, 2013). They have discovered that the mid-market high-street sector is more frequently vertically disintegrating its supply chain and outsourcing the manufacturing function of its products to a global network of independent subcontractors, generally in lower-cost nations. This supply chain model is gaining in popularity as retailers are forced to live up to downward price pressures by competitors and consumers (Perry & Wood, 2019).

The degree to which a retailer is prepared to outsource reflects the level of control it wants over its supply chain operations and how its sees sourcing within the company. This can be explained by Cox's (Cox 1996) contractual theory of the firm. Rather than using third-party specialists, a firm that views sourcing to be a core skill with high asset specificity will keep control of this activity. In turn, the degree of asset specificity will define the level of the relationship with the third party. Low asset-specific skills will be obtained through arm's-length market-based arrangements, whilst high asset-specific skills will be managed by long-term partnership arrangements.

So, in order for retailers and brands to be able to concentrate on their core competencies of design, branding, and retail, they will outsource production to independent suppliers across the globe. Hence, the new supply chain (DSD), according to (Perry & Wood, 2019), is designed as follows (Figure 5):

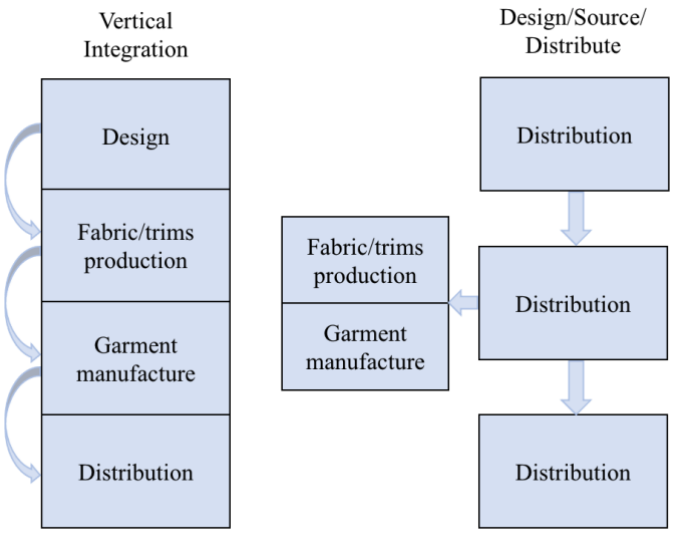


Figure 5: Supply Chain Models in the Fashion Industry: Vertical Integration (VI) and Design/Source/Distribute (DSD) (Perry & Wood, 2019) – re-illustrated

Schröder (2019) calls the design/source/distribute the “modern clothing supply chain”.

The steps of a clothing supply chain, as illustrated above by Perry & Wood (2019), is best described by the article *What On Earth Is A Clothing Supply Chain?* (2021) and also reflects the current state of the clothing supply chain, taking into consideration the transformation to more sustainable cycles.

2.4.1 Design

Based on research by Şen (2008), the first stage of the supply chain is the designing of the new collections. Design either takes place in-house or is outsourced to smaller design firms. First, research is conducted on the customer that the firm intends to attract. The design process is then inspired by the works of other designers displayed at fashion metropoles such as Paris, Milan, and New York, as well as trade fairs from previous seasons.

Specifics of fabrics, silhouettes, trims, and finishes are decided on in this step. As the clothing designs are based on current trends, most items are only supposed to last a season. This consumption behavior is labeled as "fast fashion" and is why large amounts of clothing are incinerated in landfills. The design of "Slow Fashion" items, on the other hand, thinks about

each step of the supply chain and takes into consideration the impact that the materials, production, and the consumption behavior will have on the greater whole, and tries to minimize the unfavorable effects, as Zoltkowski (2021) explains.

In order to help internal decision-making, prototype garments are created. This party takes a significant amount of time into consideration. Typically, the design process begins while the clothes collections of the previous year are still being sold on the market (Şen, 2008).

Fortunately, many brands are starting to employ more sustainable approaches by following the Cradle-to-Cradle design framework by Braungart and McDonough (2002), which states that the design of a product must either comply with one of two cycles:

> ***Biological*** Cycle - The loop is closed when products are returned to nature in an environmentally friendly manner.
>
> ***Industrial*** Cycle - Non-degradable materials are recycled

2.4.2 Sourcing

As retailers try to keep their focus on their core competencies, i.e., design, branding, and retailing of apparel, and non-core manufacturing functions are outsourced, sourcing has increasingly moved from domestic production to more offshore production (Perry & Wood, 2019). According to Sarnow & Schröder (2019), low-budget retailers and basic collections are often sourced according to a multi-sourcing strategy, where several suppliers provide the same products, whereas high-value products are predominantly sourced through a single-sourcing strategy, to build up a close cooperation as only possible.

Conventional clothing manufacturers are involved in all aspects of apparel production, including product design, material sourcing, apparel manufacturing, and finished goods marketing. There are several decisive factors that brands take into consideration when choosing suitable suppliers to work with. The first set of factors affect the efficiency of the supply chain and includes production or buying costs, inventory costs, and transportation costs. The second set of factors and related to the responsiveness of the supply chain are how fast, and accurate the supply can match the demand on the market, as claimed by Fisher (1997). The report from J. Safra Sarasin (2014) agrees that the cost factor is a critical selection

consideration and is the heart of the constant supplier dilemma. Shareholder pressure pushes the apparel firm to optimize its supply chain as soon as costs rise in the supplier's nation.

2.4.2.1 Fabric and Trims Productions

In this step of the process, textile materials are grown or created, spun into fiber, woven into a fabric, as well as dyed and finished (Zoltkowski, 2021). Historic regional specialization can impact garment sourcing choices. These specializations are difficult to replicate, which is why certain countries turn into manufacturing hubs for specific types of fabrics. The vicinity to the source of the fabric, like China for cotton, quality of the basic fabric, as in Southern India for silks, profound specialization in design and production, Italy for leatherwear and tailoring, and deeply skilled sewing details, India again, for hand embroidery and embellishment (Dunford, 2006; Fernie & Perry, 2011).

This part of the process contributes significantly to environmental pollution due to the high levels of greenhouse gases that are correlated with textile production. Lots of chemicals are used to turn raw materials into clothing which contaminate air and freshwater supplies that might afterward be used by human beings or for agricultural purposes (Zoltkowski, 2021)

2.4.2.2 Garment Manufacture

Zoltkowski (2021) explains that first, the cutting, then the sewing, and finally the finishing of the garment is performed in this step. As mentioned above, the majority of production has moved to develop countries in the last 30 years. Originally, this came with the hope of emancipating the workers in those countries. However, these have more so become victims of inadequate working conditions.

Retailers have encountered growing problems in managing the trade-off between cost and lead time in off-shore sourcing as apparel product life cycles have accelerated, particularly with the development of fast fashion in the 2000s (Tokatli et al., 2008). There have been counter-trends, as fast fashion styles are frequently manufactured closer to the point of sale in order to prevent missing the limited selling season, and hence react to market trends more quickly (J. Safra Sarasin, 2014; Tokatli et al., 2008). While the production costs for "local outsourcing" are substantially greater, they can be mitigated to some extent by decreased transportation expenses, as the report about Supply *Chains in the Clothing Industry – A House of Cards?!* (2014) further describes.

As an example, fast fashion is frequently made in Turkey or Eastern Europe for UK shops, partially to avoid the long shipping periods from Asia, but also because they are places that mediate between the requirements of cost, quality, and responsiveness (Tokatli et al., 2008). As stated by Bhardwaj and Fairhurst (2010), responsiveness and flexibility have become crucial characteristics that brands must have in order to be able to align supply with demand efficiently. While suppliers in Asia have a three-month lead time, orders for items produced in southern Europe may be delivered within two weeks. This can be a critical success element (J. Safra Sarasin, 2014).

2.4.2.3 Supplier Tiers

A supply chain is, in its essence, a network of supplier firms that are interconnected (J. Safra Sarasin, 2014). A tier system is used to explain these complicated, often intercontinental supply chain operations that involve many phases of production (Fairify, 2020).

As the *Sustainability Investment Focus* report states (2014), many firms have opted to outsource manufacturing operations as part of a broader trend toward specialization, which is a result of increased product complexity as well as constant cost and price pressure on brands. Manufacturing is frequently outsourced to nations with cheaper production costs, i.e., mostly developing countries.

An overview of the different supplier tiers is set up based on the example of the fashion brand *Esprit* (Esprit, 2021), an international clothing manufacturer.

Tiers	Example of activities
Tier 1 Supplier	Apparel Manufacturing – place of fabrication: Cutting, sewing, assembling, garment finishing and packing for shipment
Tier 2 Supplier	Processing facilities: Spinning, weaving and knitting, dyeing, printing, fabric finishing
Tier 3 Supplier	Raw material suppliers: Sewing yarn suppliers (e.g., cotton plantations), chemical suppliers, machinery suppliers, filament and staple fiber suppliers

Table 3: Supplier Tiers (Esprit, 2021) - own illustration

In some cases, the supplier tiers can also be separated into four Tiers: Tier 1 – Apparel Manufacturing, Tier 2 – Textile Embroidery and Cutting, Tier 3 – Yarn spinners and fiber

processors (weaving and dyeing, etc.,) and Tier 4 – Raw material suppliers (Fairify, 2020; J. Safra Sarasin, 2014).

Developed nations mostly have strict processes in place to protect worker's rights, whilst in less developed countries, protection measures are regularly insufficient or not existent at all (Howard-Hassmann, 2005). As a result of the increasing complexity of global sourcing networks, it is therefore extremely challenging to ensure that labor rights are adhered to throughout the entire production chain in the fashion industry, especially in lower supplier tiers, as Mares (2010) explains. This is especially true because increased complexity in global sourcing networks not only reduces supply chain transparency and negatively impacts the control over ethical issues in lower tiers. Hence, Mares (2010) also questioned how effectively the buyer is able to bear the responsibility of ensuring compliance beyond just the first tier of suppliers when brands have an outsourced business model.

2.4.3 Distribution

Distribution and Retail: After the manufacturing of the garments, they must be transported to retailers and consumers on a global scale, and increased pollution results from the widespread movement of clothing and textiles. In distribution, carbon emissions are unavoidable (Zoltkowski, 2021).

The geographic needs of distribution centers include a favorable placement between the individual clusters of suppliers and clients to reduce the distance traveled by transportation, trucks in particular. Most global fashion retailers prefer their centers to be in the geographic vicinity of their stores, and therefore often position their centers in their various sales marketplaces, e.g., Europe, Asia. As Escalona-Orcao & Ramos Pérez *(2014)* further state, companies have centralized distribution systems, and it is common that air transportation is becoming more vital for transporting clothing to far-flung markets.

Zoltkowski (2021) adds the "**consumer stage**" as a final stage of the supply chain which addresses how the consumer uses the garment, washes it, and finally disposes of it. Laundering actually accounts for a large part of a garment's environmental impact and not solely the growing, processing, and production of the materials. As the report from 2017 by the International Union for Conservation of Nature (2017) estimated, 35% of all the microplastics in the ocean are due to the washing of synthetic textiles such as polyester.

2.5 Corporate Responsibility in Apparel Supply Chains

A series of social and environmental crises in recent years have occurred due to the globalization of supply chains. Subcontracting relationships across the globe have increased complexity and restricted visibility and control over ethical concerns in the fashion supply chain (Perry & Wood, 2019). Respectively, companies such as Greenpeace (2016) and Swiss Textiles (2020) are calling for more transparency

Schüz (2019) explains that the attention that companies give to the environment today is due to increased awareness that natural resources are limited and natural disasters are happening more frequently. In the long-term, the firms' actions can lead to negative impacts and hence jeopardize the business' future interests. Fortunately, many companies have adjusted their attitude thanks to public pressure that has been executed on their damaging social and environmental operations.

The high-profile fashion sector has been a focal point for the discussion on sweatshops, child labor, and worker exploitation as a result of rising globalization and vertical disintegration of the supply chain in response to chronic downward price pressure (Smestad, 2009). Therefore, nowadays, global operators are also being held responsible for the social performance of their suppliers in underdeveloped nations far away, and ultimately the entire supply chain's social performance, and not just for their own (Andersen & Skjoett-Larsen, 2009; Seuring & Müller, 2008).

As stated by Perry & Wood (2019), SCM initiatives in the fashion supply chain must empower retail customers and suppliers to integrate ethical concerns with cost and lead-time demands. In certain sectors, such as industrial pollution and contemporary slavery, legislation is becoming more prevalent. However, these concerns are often handled at the level of individual companies by private and voluntary standards due to the lack of uniform laws on social elements of CSR in particular.

Because social and environmental concerns are interwoven and impossible to disentangle in practice, the words "corporate social responsibility" and "sustainability" are frequently used interchangeably nowadays (Perry & Wood, 2019). Rasche et al. (2017, p. 6) define it today as: „CSR refers to the integration of an enterprise's social, environmental, ethical and

philanthropic responsibilities toward society into its operations, processes, and core business strategy in cooperation with relevant stakeholders.“.

As McKinsey & Company (2019) state, the question is no longer whether to scale social and environmental sustainability in clothing sourcing, but rather how. Sustainable fashion is gaining popularity among customers, is becoming a genuine driver of purchase decisions, and will most certainly be important for competitive success in the near future.

2.6 Circular Economy

According to the Ellen MacArthur Foundation (2015), the origin of circular economy is innate and was not called into existence by one single author or date. A few academics thought leaders and businesses were, however, able to increase the importance of the topic since the 1970s through their profound efforts creating practical applications that could be applied to modern-day economic systems and industrial processes.

2.6.1 Origin of Circular Economy

The schools of thought for a circular economy are from five different authors.

1) **Regenerative Design** (1996), by the American professor John T. Lyle in the 1970s, represents the idea that the energy and materials that processes consume are renewed or regenerated by the processes themselves. 2) **Performance Economy** by Walter Stahel (1981) looked at the impact that a circular economy would have on job creation, economic competitiveness, resource savings, and waste prevention, and had four main goals: product-life extension, long-life goods, reconditioning activities, and waste prevention in all aspects. He also supported the stance that services should be sold rather than products.

Shortly after, the 3) **Cradle to Cradle** concept was designed by German chemist Michael Braungart and American architect Bill Mc Donough (2002). They differentiate the material inputs between technical and biological. The goal of the Cradle to Cradle framework is to design products with a positive impact on the world rather than trying to reduce negative impacts. Moreover, it goes by three principles; 1) *Everything is a resource for something else*, meaning that any product should be able to be disassembled and returned safely to the soil as biological nutrients, or used again as high-quality components for new products and serve as technical nutrients that are free of contamination. 2) *Use clean and renewable*

energy, in the sense of solar, wind, geothermal and gravitational energy, and other energy systems that are being developed. 3*) Celebrate diversity* by adapting to locale, geology, hydrology, photosynthesis, and nutrient cycling can yield an amazing diversity of natural and cultural life. Hence, things should be designed in response to challenges and opportunities that are presented by each place. In 2005, the Cradle to Cradle Certified Products Program was created to acknowledge high levels of sustainability and inspire others to follow (McDonough, 2021).

As a fourth, **Industrial Ecology** is based on a study by Professor Roland Clift (2015). This method seeks to develop closed-loop systems in which waste serves as an input, therefore removing the concept of an undesired by-product. And finally, 5) **Biomimicry** is a method by Janine Benyus (2009) and described as a new discipline that examines nature's greatest ideas and then imitates these designs and processes to address human problems. It is based on three fundamental ideas. The first idea is *nature as model*, which includes studying the processes, form, systems, and strategies of nature and copy these. Second, *nature as measure*, i.e., the level of sustainability in our innovations, should be measured by an ecological standard. And lastly, *nature as mentor*, which implies seeing what can be learned from the natural world, and not just look at the nature as in what can be extracted from it.

2.6.2 Butterfly Diagram

Based on the Cradle to Cradle diagram of Braungart and McDonough (2002), the Ellen MacArthur Foundation (2013) created the so-called “Butterfly Diagram” (see Figure 6), which draws together all schools of thought into one system diagram that depicts the constant flow of technological and biological materials via the “value circle”.

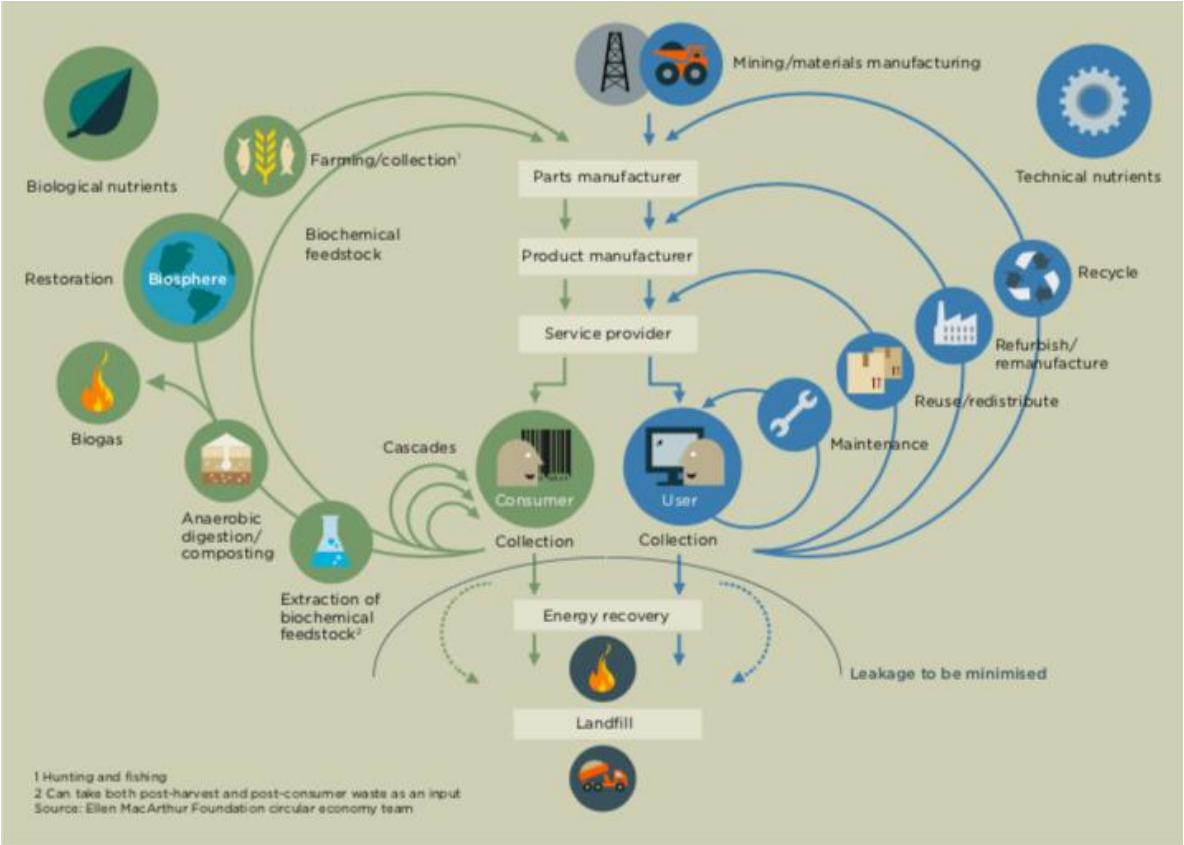
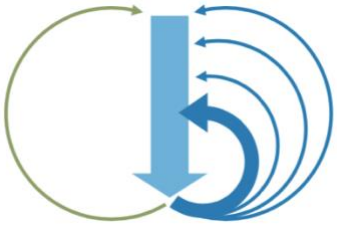
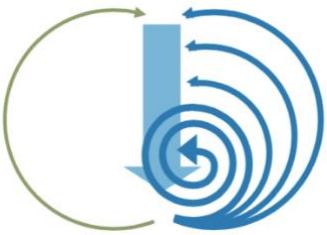


Figure 6: The Circular Economy - An Industrial System That is Restorative by Design (Ellen MacArthur Foundation, 2013)

Within this model, there are four circles of value creation.

Source of Value Creation	Explanation
The power of the inner circle 	The tighter the circle, the more valuable the strategy is said to be. Hence, if a product can be repaired or maintained, most of its value can be stored. Through this strategy, more value can be preserved than if the item is recycled. Also, the labor, energy and complexity that was invested into the product are maintained.
The power of circling longer 	Circling longer aims to maximize the number of consecutive cycles and/or time spent in each cycle for products through prolonging the product's life or reusing the products several times. Like this, the material, energy, and labor put into developing a new product can be saved.

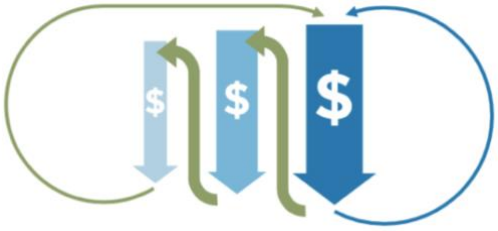
The power of cascaded use 	Cascading suggests reusing materials across the value chain to replace virgin materials that would usually be required before they are finally returned to the biosphere.
The power of pure inputs 	The strength of pure inputs is found in the fact that uncontaminated material streams improve collection and redistribution efficiency while preserving quality.

Table 4: The Four Circles of Value Creation (Ellen MacArthur Foundation, 2013) - own illustration

An example of "cascading" within the textile industry, i.e., keeping materials in the circulation longer, has been illustrated by the Ellen MacArthur Foundation and Accenture report (2013) in the following way (Figure 7):

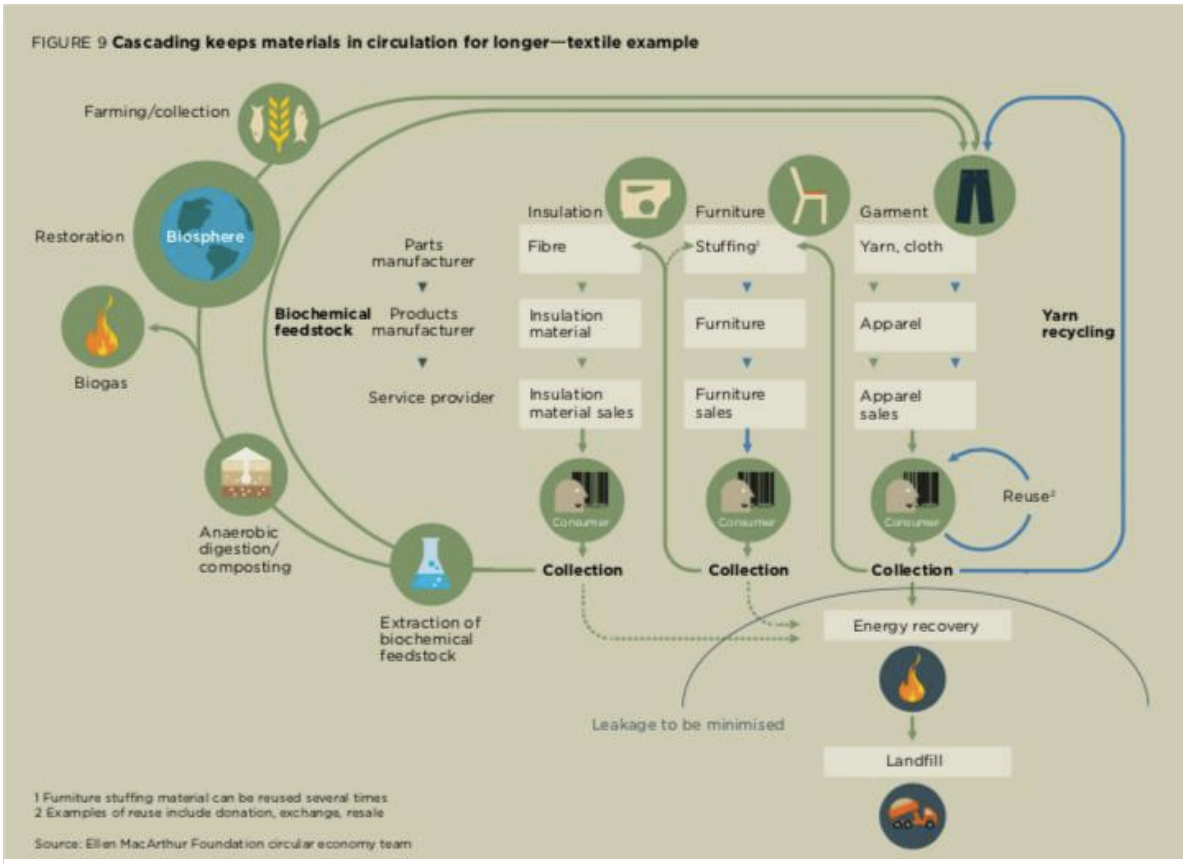


Figure 7: Cascading Keeps Materials in Circulation for Longer - Textile Example (Ellen MacArthur Foundation, 2013)

To help companies contribute to creating a circular economy, five different circular business models have been established: *Circular Supplies*, *Resource Recovery*, *Product Life Extension*, *Sharing Platforms*, and *Product-as-a-Service* (Accenture Strategy, 2014; WBCSD, 2017).

The circular business model that the EUGD focuses on and will hence be explained in detail is "*Product-as-a-Service*".

2.7 Product-as-a -Service

There are several different terms that are used to define the business model Product as a Service (PaaS). Whilst PaaS is more common in the business field, in academia, Product-Service Systems (PSS) are referred to (Faber & Jonker, 2021; Rombouts, 2020). This term is unique and describes the whole shift that is necessary for the implementation of this business model (Rombouts, 2020). The business model PaaS allows for profit and production volume to be disconnected from each other, i.e., economic growth is not dependent on resource use anymore (Circle Economy, 2015).

Through a lease or pay-for-use arrangement in which products are used by one or many customers, the traditional business model of "buy and own" can be replaced, according to Accenture (2014). This business model focuses on ensuring durability and upgradeability, where product longevity, sharing, and reusability benefits revenues and reduces costs and is no longer considered as sales cannibalization.

As Faber and Jonker state in their book *Organizing for Sustainability* (2021), the key is that the functionality of the product is provided through a service and not through owning it. Hence, based on its usage, which is often connected to time, availability, deposit, replacement (entailing upgrading and refurbishing), or intensity, the payment for accessing the product is calculated. The total time is with regard to the time that the product is available to the customer, as in renting a car. With this model, customer experience becomes the new value proposition for a business, and by providing a service that will satisfy the customer's needs, without the customer actually owning the product, consumption patterns can be changed, according to Circle Economy (2015).

Tukker (2004) identified three categories of Product as a Service: *product-oriented services*, *use-oriented services*, *result-oriented services*. These strategies are summarized well by Faber and Jonker's (2021) recent publication in the following way:

1) Product-oriented service strategy:
   This strategy is still limited to the sale of a product, however, with a compulsory maintenance package or purchase in order for the product to function. (e.g., printer which only functions with toners of its own brand)
2) Use-oriented service strategy:
   Ownership of the product remains with the manufacturer. The consumer is able to use it through a ***rental*** or ***lease*** (also known as a subscription) contract. The supplier is responsible for conducting any maintenance to the product if necessary. The product should be as long-lasting as possible and easily repairable.
3) Result-oriented service strategy:
   The consumer pays for an outcome of a product, i.e., for a part of the product. Examples being payment per wash, per night, or per print. A frontrunner of this model was Philips, selling light instead of a lamp or light bulb.

This strategy that is most applicable to clothing, since clothing is worn, i.e., used, is the *use-oriented services*.

Renting & Leasing

Renting and leasing are the two instances of use-oriented product-service-systems. By leasing or renting the product to the consumer, the firm retains ownership of the goods and is responsible for its care upon return (Circle Economy, 2015), and also to recapture residual value of the product at the end of its life cycle (Accenture Strategy, 2014).

This model would be attractive to companies whose products' cost of operation share is high and that have a skill advantage relative to their customers in managing the maintenance of products (giving them an edge in selling services and recapturing residual value at the end of life), as Accenture further reports (2014)

A caveat that the Circle Economy organization (2015) addresses is that the product-as-a-service models are not necessarily more ecological in practice which is why particular

attention to detail must be given in order to earn benefits. However, these models do have the biggest potential to reduce resource usage if applied in combination with circular strategies.

2.8 Triple Corporate Responsibility Model

In response to the persistent conflict of interest that companies experience between striving for success and profit and being only concerned about their own survival and neglecting competitors, but on the flipside keen to preserve good relationships with all their stakeholders, Mathias Schüz published the textbook *Applied Business Ethics: Foundations For Study and Daily Practice* (2019). The aim of this publication is to help company managers (in this case, companies) shape their actions into sustainable and responsible ones by teaching them how to reflect on their behavior.

For businesses, he has created the Triple Corporate Responsibility (Triple CR) (Schüz, 2019, p. 67) model since the company's very existence can be jeopardized if it separates itself from its responsibilities to the greater whole.

The Triple CR (Schüz, 2019) model splits the complexity of universal responsibility (principle of self-preservation, the principle of co-preservation, and the principle of preservation of the whole into three dimensions:

Economic. The economic responsibility aims to generate the biggest economic win with the smallest number of resources and is supported by the responsibility of technical functionality (of the product/service), i.e., the responsibility of deploying the means to an end for its customers. What the product is used for at the end of the day is none of its concern. The economic dimension prioritizes self-preservation and prosperity and aims to avoid risks that directly target its own survival (egoistic).

Social. This dimension is concerned with co-preservation, i.e., the preservation of the people, meaning that everyone gets along well with one another and all the stakeholders of the business. It carries the ethical responsibility to make sure things fit not only the surroundings but also the stakeholders, meaning it aims for a fair exchange with all stakeholders (reciprocal).

Ecological. Cares about the preservation of the whole, being the planet. It is linked to aesthetic responsibility, which tries to ensure that the companies' actions are sensible and align with the natural environment and culture. Aesthetics plays a vital role because it helps to find the right course of actions to serve the planet, hence, also taking the consequences of their actions on animals and plants into account (biocentric).

The Triple CR is supposed to visualize the holistic/overarching responsibility that each and every company carries. See Figure 8 below.

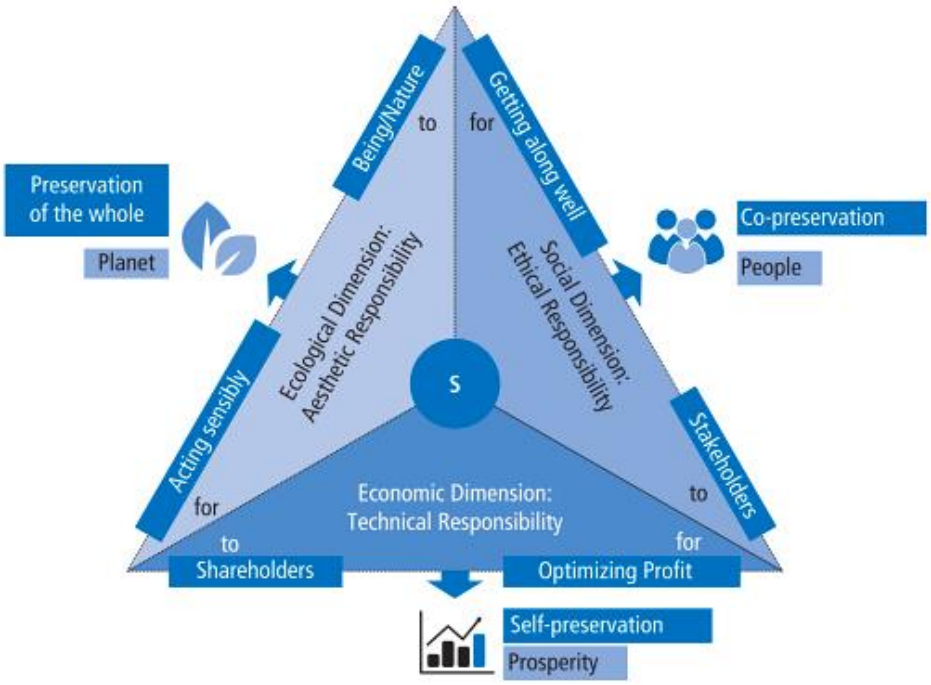


Figure 8: The Threefold Responsibility of Companies - Triple Corporate Responsibility (Schüz, 2019, p. 70)

3 Research Design and Methodology

In this chapter, the research design methods chosen to collect and analyze the necessary data to answer the research topic of the influence of the EUGD on Swiss apparel brand's supply chain are explained. In addition to that, it covers the methodological limitations as well as ethical challenges of this research.

3.1 Approach

Working with the Research Onion by Saunders et al. (2009) as a theoretical guideline, this research was qualitative research with a grounded theory approach (Gay & Airasian, 2003), since up until this date, no theory had been created about actions for companies to implement in order to adapt to the changing environmental regulations.

This research had an exploratory purpose, examining the (potential) impact of the EUGD on the supply chain of Swiss fashion brands. Therefore, a qualitative approach was chosen since it enabled the analysis of the process of adaptations in the supply chain, and the design of the research allowed for change and flexibility within the research to gather the right information that was required to answer the research question in an in-depth manner (Gay & Airasian, 2003).

An inductive approach was taken on this research, i.e., current business practices were observed and facts explored, data analyzed, and patterns found, to finally come up with a broader theory or generalization so that businesses would be able to plan and predict future actions better.

By interviewing four Swiss fashion brands, one textile industry expert, one green party politician, and one circular fashion consultancy, in-depth explanatory data was able to be gathered, providing the necessary data saturation possible for the scope of this report. These detailed and individual interviews created a data triangulation by looking at the supply chain issue from an idiographic and emic perspective, and hence, served as an opinion analysis and first insights into practice. Furthermore, an interview with a circular fashion start-up specialized in creating a product- and system innovation for a circular economy in fashion and textiles could provide valuable information on the future of new technologies that fashion brands will have to incorporate.

3.2 Sampling

This study is analyzing companies affected by the implementation of the new EUGD, which justifies a sample size of seven as being suitable (Creswell, 2012). Since this is an exploratory research, non-probability sampling is applied. Hence the sample was not chosen randomly but purposively, complying with a set of criteria, and out of convenience (Black, 1999), i.e., based on the author's personal network. Therefore, a rather subjective outcome was to be expected, but still providing analytical and detailed data on supply chain amendments that are needed to reach the EUGD goals, and that could generate a hypothesis and thus, be applied to other companies.

3.3 Data Collection

Interviews were conducted with a semi-structured standardized interview approach, asking open-ended questions allowing the interviewee to elaborate on topics that seemed important to the interviewee or the author. With the help of the conducted literature review and the "EUGD Industry Strategy for Textiles", suitable interview questions were defined in order to come up with relevant information about the changes in the supply chain processes.

Interview questions were amended according to the stakeholder of this thesis. Hence, the four apparel brands were asked the same question in roughly the same order. The three individual experts were all asked different questions in order to take advantage of their knowledge from different perspectives. Follow-up questions were granted if regarded as necessary and/or relevant. The interviews were conducted via MS Teams and Zoom.

3.3.1 Interviews with Swiss Apparel Brands

To identify suitable companies, the following criteria were determined in order to ensure the significance of the data gathered as well as the quality of results:

1) Swiss brand
2) Production in Europe (at least partially)

These interviews were conducted to provide first insights into practice, to which extent they already implement sustainable practices, and how these will change for them. Foremost, they allowed to detect common measures. Since Hanro moved its headquarters from Switzerland

to Austria a few years ago, this interview gave insights into a suspected more advanced company.

Company	Name	Professional Background	Language	Duration
Calida	Gabriele Wagner	Head of Sourcing	German	45:09
Hanro	Stephan Hohmann	Managing Director at Hanro International	German	41:47
Jet Set	Katja Grunder	Chief Operating Officer	Swiss-German	43:24
Strellson	Christiane Hügelmann	Head of Sustainability, Compliance & Quality	German	1:04:34

Table 5: List of Interview Partners – Apparel Brands

3.3.2 Interviews with Industry Experts

Expert Opinion 1: **Swiss Textiles –** Swiss Textiles Federation represents 200 member companies of the textile and clothing industry. Swiss Textiles is dedicated to keeping the sector competitive on a global scale. They provide a diverse range of services and activities to their members. Services entail the following: Consulting, Information and Training, Networking.

This interview provided practical insights based on the operations of 200 Swiss companies. The information gained from Swiss Textiles not only elaborated on what practices are best for the industry but also how companies can support each other to create an overall sustainable industry.

Expert Opinion 2: **Regula Rytz, Member of National Council and former president of the Green Party of Switzerland** – Regula Rytz was co-president of the Green Party of Switzerland for four years, 2012-2016, and then became the party's exclusive president until 2020. The Green Party is now the fourth largest party in the National Council. Today, she deals with the Green Deal and its impacts on supply chains.

This interview provided insights from a political point of view as to what they think is crucial to be adapted in the supply chain, how feasible they think it to be, and what support companies can and should expect from the government and public tenders.

Expert Opinion 3: **Circular.fashion** – This is a circular fashion consultancy that serves as a change agency in creating a sustainable product- and system innovation to reach a circular economy in fashion and textiles. It helps fashion brands design for circularity.

This interview provided information on how crucial it will be for apparel brands to adopt new processes and technologies and new sustainable ways of designing fashion. Moreover, it brought the importance and, at the same time, the opportunity of collaborations between members of the supply chain closer.

All three expert interviews delivered information from a slightly different angle and thus provided a holistic overview of the impacts of the EUGD on the apparel industry.

Industry Specialists	Name	Professional Background	Language	Duration
circular.fashion	Mario Malzacher	Co-Founder	Swiss-German	28:57
Green Party Switzerland	Regula Rytz	Member of National Council and former president of the Green Party of Switzerland	Swiss-German	59:44
Swiss Textiles	Nina Bachmann	Sustainability, Technology, Member of the management board	Swiss-German	29:20

Table 6: List of Interview Partners - Industry Experts

3.4 Data Analysis

The transcripts of the interviews will be coded with the most appropriate coding cycles with the help of the explanations of Saldaña (2009).

1st Cycle Coding:

1) Attributive Coding (Saldaña, 2009)	Attributive coding was done in the first stage in order to understand the set-up of the interviewed brand. Firstly, in terms of corporate responsibility so that the brand could be classified on the Corporate Responsibility Triangle (Schüz, 2019) and secondly, to categorize the supply chain of each of them, to give the data more flesh to the bone.
2) Initial Coding (Charmaz, 2006)	After the attributive coding, initial coding was chosen to get an overview of the, e.g., measures taken (or to be taken) by the fashion brands with regards to their supply chain, as well as the experts' opinions on the topic. Here the aim is to look for causes and consequences in order to identify conceptual ideas and come up with related passages.

Table 7: Coding Cycle 1

After the first cycle of coding, the themes were brought together to interpret first impacts of the EUGD (Boyatzis, 1998). The codes that were generated in the first cycle could then be used for further analysis in a second cycle.

2nd Cycle Coding:

1) Focused Coding (Charmaz, 2006)	Following the initial coding, focused coding helped identify the most frequent and significant impacts on the supply chain and measures that will have to be taken to deal with the disruption of the EUGD. Like this, the most important statements and, with that, also the most important areas of the supply chain became apparent.

Table 8: Coding Cycle 2

The first coding cycles (attributive and initial coding) were done in the coding software MAXQDA. For the second cycle (focused coding), the author shifted to Microsoft Excel for a better overview of the patterns. In the final excel sheet, all cycles are aggregated.

3.5 Structure of the Findings and Discussion

The data gathered from the interviews was extremely wide-ranging but specific in its sense. Therefore, first, a company profile of each brand was written in order to get an overview of the attitude, for it to be then placed on the *Corporate Responsibility Triangle* by Schüz (2019). Moreover, a description of the individual supply chain set-ups helped with the analysis of the further findings.

The structure of the findings, as well as discussion, was organized according to 1) the research questions, 2) the areas of the clothing supply chain by Perry & Wood (2019) (*Design*; *Fabric/Trims Production*; *Garment Manufacture*; *Distribution*) as well as additional sections from Porter's value chain (1998, p. 36) (*Technology*, *Marketing & Sales* and *Service*). A section called *Reverse Supply Chain* was added due to significant importance in the findings. Additionally, *Internal Factors* and *External Factors* were findings that could not be allocated to any of the supply chain or value chain areas but were considered influential factors for a supply chain transformation either affected by the EUGD or requiring action. Although many topics are interlinked, separating the topics as well as possible was a necessary measure in order to guide the reader through its results and better highlight important facts.

The section *Distribution* of Perry & Wood (2019) entails both inbound and outbound logistics since the interview answers could not be specifically categorized into inbound and outbound.

3.6 Ethical Challenges and Project Related Issues

In this research paper, all data of participants of the data collection process was treated equally and weighted with the same importance. The interview partners, both clothing brands and experts, have agreed to publish their names. However, further publication of the thesis would need additional approval by the interviewees.

As in any other research with qualitative data collection, there is the risk that interview partners did not disclose all information necessary to answer the research questions or did

not answer questions truthfully, out of competitive reasons or fear of the exposure of the lack of sustainability measures in their value chain.

4 Findings

The findings will be structured into four parts. In the first section, the four apparel brands that were interviewed are placed on Schüz's (2019, p. 70) framework *Corporate Responsibility Triangle*. Consequently, the design of the supply chain of the company is explained in single steps for increased understanding of the findings and further interpretation leverage in the discussion. Both these sections are based on information received from the conducted interviews.

After the introductory section of the companies, the findings are divided into general impacts of the EUGD on the supply chain, followed by the impact of changes in business models on the supply chain and competitiveness of the brands, and finally, a few recommendations for future apparel brands' supply chain that were actively discussed during the interviews. For more information on the structure, see chapter 3.5.

4.1 Company profile

4.1.1 Strellson

Within Strellson, the environment has started to play an increasingly large role. Since 2020, the company has introduced GRS and GOTS certifications on selected products and is now a member of the "Better Cotton" initiative that is concerned about the social standards of cotton farmers. In addition to that, Strellson complies with the ISO standards and has started to measure its efforts with the Higg Index to benchmark social justice and environmental impacts of their products throughout the entire value chain. Not only is it concerned about their own impacts, but also about those of partners and suppliers, for which they want to achieve a better social environment for workers. Strellson has also already switched to renewable energy at its headquarters in Switzerland, their stores, and production site in Portugal.

The company's aim is to transform from a conventional design and lifestyle provider to a sustainable design and lifestyle provider. It is only just changing over to more sustainable

products; however, the economic feasibility and benefits of a circular business model are still unclear to them.

4.1.1.1 Supply Chain Design

1. **Design**: Detailed collection development where fabrics and trims are designed to be produced. Prototyping is done with 3D product development software.
2. **Sourcing**:
    - Sourcing model: Passive contract processing (own all the inputs and send them to manufacturers for their service of manufacturing the garment)
    - Fabric/Trims Production: Briefings are sent to specific suppliers in Italy, Portugal and Turkey that will create the fabrics and trims for Strellson. Parts are also done in Strellson's own production plant in Portugal.
        - Product origin: 2/3 Europe, 1/3 China.
        - Inbound logistics: All inputs are sent to the warehouse in Kreuzlingen, Switzerland, where the best possible manufacturer is chosen for the item.
    - Garment Manufacture: Production takes place in Eastern Europe, Asia, or in the vertically integrated production site in Portugal. From there, it is sent back to the warehouse in Switzerland.
3. **Distribution**: A third-party logistics provider takes over the whole process from there, be it storing, distributing or shipping to all customers worldwide.

4.1.2 Calida

At Calida, Sustainability is deeply rooted in the corporate culture. Approximately three years ago, Calida totally shifted its entire production to Europe because it did no longer want to burden the environment with more than necessary transport activities and profit from its flexible supply chain due to its vertically integrated manufacture. But not only that, but the firm also wanted to create jobs in Europe and be able to work with factories and suppliers that are STeP-certified. The company's strategy is now marked by its sustainability theme of not wanting to do anything that harms the environment anymore. With that, its communicated strategy is to buy less and buy better. The goal is to be able to award 80% of its collection with the "Made in Green" label by 2025, which is very ambitious and will increase traceability extensively.

4.1.2.1 Supply Chain Design

1. **Design / Planning / Forecasting**: In headquarters, in Sursee, Switzerland.
2. **Sourcing**:
    - Fabric/Trims Production: Bought in from abroad and delivered to Hungary.
    - Garment Manufacture:
        - Production subsidiary in Hungary: In-house cutting (most of it), production, and Quality Management (vertically integrated production)
        - Outsourced production to Bulgaria and Romania: From there, the merchandise is sent back to Hungary for quality check.
    - Inbound Logistics: Merchandise goes from Hungary to Warehouse in Sursee, Switzerland.
3. **Distribution**: To individual customers. Either retail stores or online warehouse and further distributed from there.

4.1.3 Hanro

For Hanro, Sustainability is not part of its mission statement and is not necessarily culturally anchored. However, the CEO does claim Sustainability to be part of the brand's DNA since the products it offers are of high quality and long-lasting and have therefore been aware of the sustainability movement years ago. Hanro's fabric production in Austria is Oekotex-100 and STeP-certified, so the factory is powered by renewable energy and production is run in an environmentally friendly way. Production has always taken place in Europe since it is part of Hanro's heritage and characteristic of its garments, and it likes to foster regional sourcing.

4.1.3.1 Supply Chain Design

1. **Design**: Products are developed and designed to fit in Hanro's headquarters in Austria. At the same time, planning and forecasting of each item are made, and a product package is created with sewing data.
2. **Sourcing**:
    - Fabric/Trims Production: Hanro is involved in raw material sourcing and buys the yarns from abroad. The fabric itself is produced in the subsidiary of Hanro's holding company (Huber Holding) in Austria. Only 10% of its

integrated fabrics are purchased fabrics. Other trims are sourced from local suppliers from the region.

- Garment Production: 80% of the production is run at Hanro's exclusive production site in Portugal; the other 20% are sewn in Hungary.

In terms of fabrics and production, Hanro's supply chain is vertically integrated.

- Inbound Logistics: Merchandise is sent from Portugal and Hungary to its warehouse in Hungary, which is independent of the production unit.

3. **Distribution**: Distribution to stores and independent retailers in Europe is done by truck. For markets abroad, the merchandise is shipped.

4.1.4 Jet Set

The environment is very important to Jet Set. However, the topic is not integrated into its mission or vision. Nevertheless, they try to take the environmental aspect into account when in touchpoints with the design of the new collection, supply chain or distribution, as Jet Set stated in the interview.

When the company was still bigger than it is now, they used to produce parts in Italy and partly in Asia. Today, they only produce in Italy. This not only to reduce CO2 emissions but also, they have noticed that it is a good selling point. The suppliers, which are all independent production companies, do not have a professional supplier audit yet try to pay them visits on a regular basis. The biggest pain point that Jet Set mentioned in terms of Sustainability was the costs. As a small company, sustainability is not affordable, and no money can be made there.

4.1.4.1 Supply Chain Design

1. **Design**: Work with external designers for more creativity and flexibility. The designer and Jet Set together define the suitable fabrics which must have a certain environmental thought to them.
2. **Sourcing**:
   - Fabric/trims production: Sourcing mainly takes place in Italy for trims and recycled filling. Fabrics are predominantly sourced from Switzerland.
   - Garment Manufacture: Production takes place at third-party suppliers in Italy.

- Inbound Logistics: Merchandise then travels from Italy to Jet Set's central warehouse in southern Germany.

3. **Distribution**: From Germany, the distribution starts to wholesale business in Europe. For everything outside of Europe, Jet Set delivers ex-works, meaning that they do not carry responsibility anymore for transportation to the customer.

4.1.5 Represented Corporate Responsibility Within the Brands

In Figure 9, the above-described company profiles can be seen in their different colors. The size of the ball was defined by the importance that that dimension has within the company.

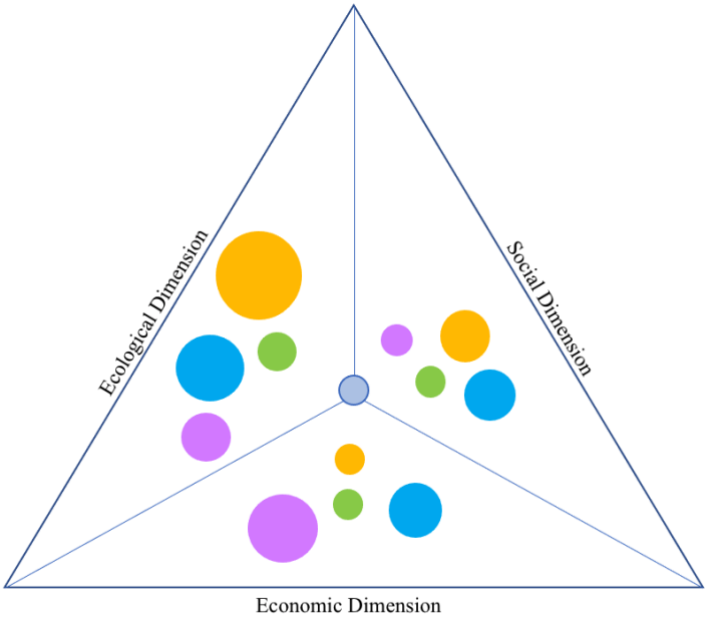


Figure 9: Degree of Corporate Responsibility in the CR Triangle (Author)

4.2 Impact of EU Green Deal on the Supply Chain of Apparel Brands

The following section is structured according to the explanation in chapter 3.5*, Structure of the Findings and Discussion*, listing the impacts from the findings that are directly linked to the EUGD.

4.2.1 Design

What has become apparent is that the topic of eco-design is gaining increasing importance not only with industry specialists but also within the companies themselves. Garments are supposed to be designed according to circular guidelines, which include being designed for

longevity, meaning, the garment: *"…lasts as long as possible…is beautiful for as long as possible*" and "*is worn as long as possible*" (Calida, personal communication, July 22, 2021). Three out of four companies stated that they already produce for longevity. They do so by choosing durable, high-quality fabrics. However, one interviewee stated that "*…fashion is still fashion*" (Jet Set, personal communication, July 30, 2021), explaining that if an item cannot be produced in a fully sustainable way, they will still design it. In terms of design, for this company, the lowest possible purchase (or procurement) price of the garment is still more important than an ecological design due to higher costs for sustainable inputs, hence little overall margin.

Secondly, a garment should be designed for recyclability. As stated by circular.fashion Co-Founder Mario Malzacher and Regula Rytz from the Green Party of Switzerland, recyclability means not using mixed materials and excluding harmful raw materials and chemicals. Also, Calida highlighted that it is very important for them that their merchandise does not leave any toxic residue on the planet. Circular.fashion elaborated on new technologies that must be taken advantage of, such as a product configurator that ensures the fit of different fabrics for the same recycling streams and offers guidelines for different product groups in the designing stage. Because the more complex the garment, be it a ski jacket or safety equipment, the more challenging it will be for apparel brands to make it sustainable.

With the introduction of the Extended Product Responsibility, Regula Rytz and circular.fashion both said to believe that this step is necessary to set off the motion and that it will promote ecological design. Designing clothes that last longer will be the new normal.

4.2.2 Fabric / Trims Production

Whilst Tier 1 and 2 suppliers are often discussed with regards to sustainability, the transparency of Tier 3 suppliers is where the actual focus should lie now, as several interviewees stated. It is not enough anymore to only know all the conditions up until Tier 2 suppliers. This is because the responsibility of the brand must go from A-Z. It is expected of the brands that they have their sourced raw materials and semi-finished inputs under control and know where they come from and under which circumstances they were produced.

All interviewed companies claimed to be not fully transparent yet. Therefore, it was said to be crucial to buy ecological raw materials and ensure socially acceptable conditions in production as well as transportation. This will eventually be achieved through more certifications and more on-product labels. An example of what must be avoided is: "*the whole catastrophic development with cotton production, enormous use of pesticides, destruction of local water cycles, monocultures, miserable working conditions, etc."* (R. Rytz, personal communication, July 26, 2021). Regula Rytz further stated, only because companies now produce in Europe, cotton is not all of a sudden planted in Europe as well. For a large company, it is extremely hard to control the sustainability of all tiers, and Scope 3 CO2 emissions are the hardest to control. For some items, apparel brands do not have any other choice than to source and produce in Asia in order to offer the consumer a competitive price.

Though skepticism did arise from one of the companies regarding the fact if production in Europe is really more ecologically friendly with all of its road transportation, whilst in China, everything can be produced in a radius of 50km and then be shipped on a container ship altogether. What was claimed to be sure, however, is that social aspects are surely better in Europe. Swiss Textiles supported this issue by mentioning: "*In China, they produce at half the price and some of them are also very sustainable…If they want to do that, then they can*" (Swiss Textiles, personal communication, July 29, 2021).

The EUGD is said to have a significant impact on the materials that apparel brands use. Partially they are already using recycled fabrics or sustainable materials, and partly the suitable materials are still being searched for. They stated to be aware that in the future, only sustainable materials must be used. For example, cellulose fibers that are produced in an ecological way, mono-material that are completely recyclable, or a mixed form of biological synthetic fiber is very promising. Between the interviewees, it was, however, a bit unclear as to which materials are the best, as each of them has its advantages and disadvantages. Both Hanro and Calida mentioned that there are products, e.g., bra rubber straps or clasps, for which there is simply no sustainable solution yet. This means that these parts of the product cannot be certified. For that particular problem, circular.fashion provides members of their platform a material library with sustainable materials from Europe only (Turkey, Portugal, Romania, Spain and Poland) from which the brands can choose from, to ease the process, according to the interview.

Challenging for apparel brands rose to be the increase in costs, resulting from all inputs having to be sustainable. According to them, sustainable materials are so much more expensive, and for SMEs, it is impossible to reach the minimum order quantities that the suppliers require.

The introduction of the EUGD has pushed companies to work with more sustainable raw materials, going all the way back to Tier 3 to ensure working conditions and environmentally friendly processes from the source.

In the discussion about suppliers, certification such as STeP-certification or being able to comply with the brand's internal label have become a basic requirement for admission, as stated in the interviews. Not all suppliers in any of the interviewed companies' portfolios, however, have this certification already - mostly due to a large supplier portfolio. Some claimed to not even have a supplier audit in place, which makes it even harder to control what is going on behind the scenes. The reason for this is that supplier audits and certifications are linked to high efforts and high costs, as Calida and Jet Set argued. However, Swiss Textiles advised companies to invest in supplier audit (or/and local agents) and small and selective supplier portfolios as, only like this, existing suppliers will be able to be developed and controlled. As one of the brands stated: "*We are building up our supplier base on a very partnership-based basis, which means that we also take them along on the journey.*" (Calida, personal communication, July 22, 2021). Modern suppliers will most likely be able to be kept, whereas the risk, of course, does remain that longstanding suppliers will not be willing to change, which will result in having to switch to new ones, which again involves further costs. Long-term partnerships are now valuable because they are willing to overcome the hurdles with you as a company, as reported by Calida and Strellson. So far, Calida has not had to replace any suppliers. In Europe, Greece, Turkey, and Portugal are advanced. However, good and bad countries of procurement cannot be generalized. Countries to be avoided are conversely ones with social problems and political instability.

Although all interviewees agreed that vertically integrated production, i.e., in-house production allows for more control, as in transparency and traceability, and flexibility, they also agree on the fact that this is not feasible for all companies, and it does not make any sense to move suppliers to their production country as a lot of know-how from specialized

suppliers is lost in the process. Moreover, a positioning around hubs is certainly beneficial and also brings suppliers into closer proximity, increasing control. Companies and experts both supported the fact that clusters will gain importance within the fashion industry. Not only does it bring brands and suppliers closer together, allowing for a collaborative relationship, but it is also seen as being practical, making procurement cheaper, and ensuring regional sourcing. What a few small companies already do is work together to order materials, to gain more bargaining power, as Swiss Textiles elaborated. Given the circumstances, collaboration on an organizational level is believed to increase. In addition to that, industry experts reported that standardization of trims, like in the Swiss watch and bicycle industry, will reduce sourcing costs of sustainable inputs. European economic independence was also stated to be increasingly important.

4.2.3 Garment Manufacture

Not only is a change in materials required but also a change in production processes, as this step generates the most CO2 emissions, as Swiss Textiles pointed out. Calida, Hanro and the Green Party, however, agreed on the fact that a company must adapt its production sites, make production CO2-free and ensure fair working conditions, but that this is feasible to realize. Small things like making sure there is only little excess material, i.e., waste, in production can also be a way of contributing to the sustainability of production sites. Additionally, not only the clothing is affected but also the packaging of the clothing for transportation. Alternative solutions must be found for plastic polybags.

4.2.4 Distribution (Inbound and Outbound Logistics)

The answers of the interviewees with regards to the impact on transportation of the goods were all similar. Currently, inbound and outbound logistics mainly take place via truck, and they agreed that logistics would be the largest challenge to deal with when it comes to CO2 neutrality.

In response to the EUGD regulations of switching to multi-modal transportation with train and ship, the brands reacted synonymously. Waterborne transportation across Europe is, for them, almost unimaginable, whereas they were not averse to train transportation, although uncertainty arose as to if the rail network was already developed enough to transport all European merchandise. They claimed, however, that both options would be associated with

a lot of unloading and reloading, leading to longer delivery times. Additionally, prices for transportation were most likely to increase.

Although some stated that they try to keep transportation routes as short as possible, which will also be promoted through the creation of clusters, it is unthinkable for all the interviewed brands to think away the transportation via trucks completely. Trucks are said to be crucial when it comes to delivering the merchandise to their warehouse, since these are often not linked to train routes or rivers, and the fine logistics during the distribution. However, road transportation for many years has been subject to extremely precarious conditions and can only be continued if the poor social conditions are abandoned, as the Green Party pointed out.

Ideally, transportation could be continued with trucks, but in a sustainable manner. Alternatively, the trucks could be powered through biogas or be fully electric, i.e., e-trucks. For apparel brands, the means of power, or impact on the environment, is however hard to control since logistic services are often outsourced to third-party logistic providers and therefore described as "*...out of our sphere of influence.*" (Hanro, personal communication, July 26, 2021). It is believed that e-trucks or trucks running on biogas will also increase transportation prices.

4.2.5 External Factors

Communication on the part of the EUGD was and is not sufficient as interviewees declared not having been confronted with the EUGD at all so far or even not heard anything of it at all. The concern was raised that EUGD formalities between brands and suppliers will be tiring and extremely bureaucratic. Both companies and industry experts demanded political regulations for everyone to follow the movement since voluntariness of the transformation is limited to the thinnest percentage that is willing to take the responsibility and risk of switching to a fully sustainable supply chain.

4.2.5.1 Consumer

One of the biggest external factors that are influencing the readiness to transform the supply chain is the consumer and his consumption behavior. Discrepancies have been realized in terms of the customer's readiness for sustainable products. Whilst a few said that consumers are ready for sustainability and ready for secondhand and that there is an increasing demand

for sustainable textiles, others say the consumer is not ready to carry the financial burden and that consumers do not associate with second-hand clothing especially the luxury consumer.

The more fashionable brands claimed that sustainable merchandise would cost more, but the consumer is not willing to pay more for it. Hence, if they switch to full sustainability, they will have to increase price levels and will no longer be able to sell their goods. Consequently, Europe will lose its economic power. It is also assumed that as long as the consumer must pay additionally for sustainability, consumption behaviors will not change.

It is believed that sustainability will draw in more younger customers and that the next generation will create environmental awareness since younger generations are more sensitized to sustainable clothing since they are growing up with it.

4.2.5.2 Support

Companies like circular.fashion are offering support to companies in their transition. They do this through training workshops about circular design, software for daily practice, a sustainable materials library, and a network of textile sorters and textile recyclers. They have also noticed that it should cost as little as possible.

As mentioned previously, apparel brands claimed they are struggling with the costs that this transformation brings with it by stating: "*This circular economy is a very expensive thing.*" and "*You can only do that if you get support*." (Jet Set, personal communication, July 30, 2021). They are asking for financial support to realize the transformation. The government should support the transformation process by investing more direct support into a green economy, promoting it through economic policy decisions, and contributing by procuring from circular companies. The Green Party representative, Regula Rytz, declared that the whole conversion is one that can be supported publicly through favorable loans, guarantees, and support of pilot projects. With this, the transformation can surely be accelerated. Also, public procurement, with the procurement law, is a strong lever.

Moreover, they require support from industry associations to create a level playing field in order to achieve the transformation. Fair competitive conditions and market will promote the transformation. For that, industry associations and market surveillance are required to become more active and practice more lobbying on a political level to get the support that is needed.

4.2.6 Internal Factors

On the one hand, a great amount of enthusiasm has developed for the topic of Sustainability. It must have a high priority and "*the topic of sustainability should be strategically anchored and sustainability in the sense of ecological, social and economic."* (Swiss Textiles, personal communication, July 29, 2021). In addition to that, sustainability goals have become much more ambitious, and there is a strong desire to share this with the consumer. If executed correctly, sustainability measures are alleged to gain market share, increase team spirit, and enhance employer attractiveness. Often, however, corporate growth targets are hindering sustainable development

On the other hand, companies are anxious about the outcome if they were to invest a large sum into changing their supply chain activities. Currently, money funds and the outcome is unclear. A statement by one of the interviewees, and supported by others, was that "…*this [sustainability] is not a monetary benefit*" (Calida, personal communication, July 22, 2021). They stated to be missing the proof of success and profitability, and hence, a few of them are taking a more conservative approach. "*Of course, we would love to be totally sustainable, but we just can't in terms of price. We just really can't afford it at all*." (Jet Set, personal communication, July 30, 2021), as the SME amongst the companies specified. The ones that already are far ahead are likely to experience a first-mover advantage.

4.3 Impact of Change in Business Model on Supply Chain and Competitiveness of the Brand

Here, the findings that show the impacts of changes in business model on the supply chain and competitiveness of the apparel brand are presented, again following the structure mentioned in chapter 3.5.

4.3.1 Circular Business Model

Knowledge of circular business models varied amongst the brands. Whilst some were familiar with them and saw this becoming an issue in the future, the others stated to not know these models as of today. The technical cycle was defined as being easier than the biological cycle, in which biodegradability must be ensured. However, Calida claimed itself and was also claimed by competitors to be a frontrunner in this respect, offering a first cradle to cradle collection, as, for them, the biological cycle is the one that makes more sense.

When discussed if new circular business models, i.e., Product as a Service, will increase the competitiveness of the firm, opinions were divided. Answers spread from "*Yes, fully competitive. Actually, I would say, you actually have advantage. I know fashion brands that do that, and they grow faster than anyone else.*" (circular.fashion, personal communication, July 30, 2021) to "*Today no, in X years yes*" (Strellson, personal communication, July 19, 2021), and "*I don't see the model in our brand…*" (Calida, personal communication, July 22, 2021). The overall opinion was that the market is not ready yet.

4.3.1.1 Product as a Service

As stated in one of the interviews, PaaS comes in two forms; 1) Subscription, where the consumer receives new clothes on a regular basis, e.g., every month, 2) Lending/Renting, where the consumer rents items for a limited amount of time and then returns them again to the brand, labeled as short-term lending.

Advantages that were said to be seen in this model were that people who like to follow trends could do so without having to physically buy the new garments but receive the new items once a month and then can return them and be worn by a new person. By doing so, maximum usage of the garment can be achieved. Moreover, income streams would be more predictable and constant in comparison to one-off sales. Likewise, brands and industry experts believed that customer loyalty increases by being able to make special offers to customers through the subscription service, but also a sub-segment with lower price, more specifically second-hand merchandise, can attract more customers.

Contrary to the opinion of attracting more and new customers to second-hand platforms, as COS does it, consumers allegedly are not ready for a second-hand market, yet which is why this strategic step is not being considered hitherto. "*So, I think it's very difficult to get the person to rent clothes. The person knows that someone has worn it before them and I think our society is not ready for that yet." (Jet Set, personal communication, July 30, 2021),* one of the interviewees stated. Although it is comprehended that a lively second-hand market does speak for product longevity and with that for the brand itself as well, it is also perceived to ruin new sales.

PaaS is thought to bring more advantages on corporate level than individual level. Especially in, for example, hospitality, where little knowledge is around in terms of washing and ironing

in a sustainable way. It also makes it easy for them, as dirty laundry is picked up, serviced, and returned. Throughout the interviewees, it was agreed upon that there is a greater willingness of PaaS if personal clothing is not involved. Besides, it is thinkable that PaaS, or "*sharing economy*" (R. Rytz, personal communication, July 26, 2021), can be implemented solely for advertising reasons in order to create awareness for a more sustainable consumption behavior.

What brings the model to a fall was claimed to be the large amount of expensive transportation that will take place between consumers and brands. Companies that had previously implemented PaaS were forced to give it up again. As circular.fashion stated: "*It will become more and more standard and I think there have been some that have been ahead of their time simply and what you can't underestimate are the logistics costs, which are also enormous.*" (circular.fashion, personal communication, July 30, 2021).

Associated with this was high skepticism with regards to the impact on the environment that this transportation-intensive model involves. Swiss Textiles alluded to the fact that washing and reusing can bring more damage than good and ultimately worsen the ecological footprint. Different from a durable garment, the transportation is additional. Hence, it resulted from the interviews that if PaaS is looked at as a substitution for long-lasting, durable garments, then it cannot compete with that. As a substitution for fast fashion, however, it is an eco-friendlier way of being up to date with current trends. Collective pick-up and drop-off points could be defined, but this would not be in the consumer's best interest.

There are high doubts about the profitability of this business model. As companies are said to have stopped offering the service because it was not profitable, it is justified for the companies to ask themselves if it can really be a business in the future and if it is worth investing a large sum of money. More so, transformation to circular business models is assumed to be easier for global corporations than small SMEs.

Not only is the profitability of this circular business model an issue, but also it is unclear to companies and experts how this can be made applicable to clothing in a successful way. It is seen as very critical and unthinkable for underwear and said to make more sense for machines and other textiles other than clothing.

4.3.2 Technology

It was brought to the attention that in order for European brands to stay at eye level with international competition, they must be innovative with developing new materials, integrating new technologies, creating more efficient production processes, save costs, and lastly, become more digital.

So that apparel brands do not have to do all the innovation themselves, circular.fashion explained to have developed a Circularity.ID which is a transponder in the form of a QR code or NFC chip that is on the garment, and can be scanned by consumers to find out, in great detail, where the garment comes from, how it can be treated correctly, and what should be paid attention to when the garment comes to the end of its life cycle or when the consumer decides for the life cycle to end, as the firm explains. Innovation like this provides the means to be in contact with the consumer as soon as they no longer want the clothing item, and like that, create incentives to buy something again from the same brand. Consequently, brands can thus also increase customer loyalty.

In addition to that, Swiss Textiles reported that there are new digital tools now that are being developed in order to enable digital sampling processes, almost up until the industrial production process.

4.3.3 Marketing & Sales

As mentioned in the sections ahead, companies have actually stated to be eager to transform to full sustainability; however, they cannot afford to do so since the consumer is not willing to pay for it. This makes it vital for the consumers' awareness to be raised our built.

In order to convince the consumer of the benefits of sustainability, communication about the topic is needed to be credible, comprehensible, and convincible. Sustainability is believed to be a USP, at least for Swiss companies, which is why they should communicate their actions and transmit the message of the importance of sustainability to the consumer in a powerful way, ideally in a big advertising campaign. This will hopefully increase the awareness of the consumers.

Experts assumed that "*...knowledge is the most important thing so that consumers can make the right decisions.*" (Swiss Textiles, personal communication, July 29, 2021). Hence, the companies must take responsibility and educate the consumer as far as they can and provide

information and traceability on the product. Society will understand the topic more and more, and consequently, the customers will also change their needs.

Currently, companies are lacking sustainability communication in terms of informing the consumer about their actions and publishing sustainability reports. Moreover, information on the product itself is missing for the consumer to understand the impact of its purchase. They cannot decide "…*what consequences the production of the product they buy will have on the environment and on the long-term life chances of them and their children, and the future generation.*" (R. Rytz, personal communication, July 26, 2021). And this is where brands must act. Icons, hangtags, labels and certifications can help with this respect. In turn, transparency can help avoid greenwashing, which is something that brands are worried about. They said to perceive sustainability measure often more on a promotional level to generate sales, rather than actual interest towards society and sustainability.

4.3.4 Service

As understood from the interviews, brands currently can only offer "repair & care" services in their own retail stores. International regulation on import and export customs would be required so that consumers would use the service of sending their defective garments to the repair service. However, the potential is seen in offering more repair services, as in repair cafés, for example.

4.3.5 Reverse Supply Chain

Recycling is meant to have a huge impact on reaching CO2-neutrality, with volumes expected to double in the near future. However, it is stated to be difficult for small companies to recycle goods after use, circular.fashion stated to offer cooperation with textile sorters and recycler as one of their services, for that exact reason. Not only can sorters prepare worn garments for reselling and, by doing so, create another sales channel, but also create jobs for impaired people. It has been noticed that people's willingness to return clothing is higher when it goes towards a social cause. An own sorting system, however, does not make sense unless you are a large brand and have own logistics in place

Several times disposal concepts were mentioned as not being clear yet clear to brands and that they lack credibility. There are not many possibilities of disposal companies and which seems to be a challenge. Moreover, the concern was voiced in terms of not knowing how to

recycle a garment if the tag has come off or been removed. For that problem, the Circularity.ID can help, and circular.fashion is working on a technology that will soon be on the market and able to identify materials through infrared light.

Extended Producer Responsibility that comes with the EUGD is expected to promote the reverse supply chain. Ideally, the consumer receives information digitally on how to do so. The return must be designed as easily as possible for the consumer, preferably through pre-paid parcel return service. And if it is a biodegradable product, instructions for disposal are required as well as what to do with the non-compostable part.

4.4 Supply Chain Design Recommendations

The following section looks at developments and recommendations for the clothing industry, specifically discussed in the interviews.

4.4.1 Industry Developments

Swiss Textiles and Circular.fashion both stated that they believe Fast Fashion will stick around. There will always be people who want fast fashion. Of course, fast fashion providers will also have to stick to some political guidelines; however, Swiss Textiles says that there are always loopholes for the consumer, such as the import from goods abroad. Opinions are very dispersed, as is mentioned in the interview: "*Some say it's on the decline, and others say, no, they're just getting there. It's difficult to say*." (Swiss Textiles, personal communication, July 29, 2021).

Moreover, circular.fashion stated that they do not see fast fashion dying out but that it will have to reinvent itself by adding recycling to the equation. If brands can make products that are fully and easily recyclable, then they can also be somewhat sustainable. A trend that has been seen is Super Fast Fashion. Here, the garment is made out of fully recyclable material. The garment is worn once and then recycled right away after use. Furthermore, it is predicted that whole new channels of second-hand will arise. Brands will sell second-hand goods and new merchandise on the same rack, however, in a different way than has been done previously. For future products, an eco-design will be inevitable. In addition to that, the increased use of digitization will allow the brands to be closer to their customer.

One of the interviewed brands disclosed that currently, it could not see much change in the fashion industry since sustainability is already a hot topic in the industry. However, not many revolutionary amendments have been made so far.

4.4.1.1 Human Resource Management

When setting up a new business, the interviewed brands stated that it is extremely important to have a person or team that manages all aspects of sustainable guidelines and measures in the sense of sustainability management—employees who can keep track of the costs and advise on what actions to take. Also, a local agent abroad helps increase the control over the suppliers and their working conditions and operations.

Furthermore, workplaces could be designed flexibly, in order to save a lot of commuting and with that reduce the CO2-footprint as well. The firm should, however, still provide a place for employees to meet but a large headquarter is not necessary anymore, as one of the interviewees stated when thinking about ways for future businesses to save CO2 emissions.

5 Discussion

This chapter discusses the results of the seven interviews that were conducted on the topic. Firstly, key findings from the primary research are summarized, followed by a comparison with the literature and EUGD framework. The structure

5.1 Key Findings

The aim of this research was to find out how conventional Swiss apparel brands' supply chains, with production in the EU, are and will be impacted by the introduction of the EUGD, which entails the transition to the green industry by promoting new sustainable ways of doing business and switching to circular business models. Therefore, the stage was given to find out how this will impact not only the supply chain directly but also how the competitiveness of the brands will be influenced.

To sustain the competitiveness of Swiss apparel brands that not only produce in Europe but also sell their goods internationally, it is vital for Switzerland to also move towards the regulations of the EUGD. This is because the Swiss holding company today takes responsibility for the emissions and working conditions of its factories and suppliers abroad. Therefore, there is hardly still a brand that is not involved with circular design. The

communication of the EUGD to parties that should be involved in the transition is, however, still failing to take place and can therefore explain the missing knowledge about the details of the EUGD.

The results indicate that fashion brands have understood that they must switch to increased use of renewable energy, a more selective supplier admission process for increased transparency, a sustainable product offering, and introduce more digitization into their processes. They are also aware that CO2 compensation payments will not be sufficient in the future. The increase in costs for sustainable inputs and shift to more sustainable means of transportation, however, seems to be the biggest challenges, refraining them from transforming.

The findings suggest that the supply chain of conventional apparel brands must be extended by the "reverse supply chain" dimension so that the loop can be closed. In turn, this can lead to new sales channels. However, for the changes in the supply chain to be worth it, it has become apparent that marketing activities are crucial to its success. Conventional Swiss brands are more likely to transform their supply chain if they are sure about the fruit that they will bear. Therefore, the PaaS business model is not seen as a potential model yet and hence will not be implemented soon.

5.2 Impact of EU Green Deal on the Supply Chain of Apparel Brands

The following chapter discusses the various areas that are directly impacted by the implementation of the EUGD.

5.2.1 Design

The interviews resulted in the conclusion that garments should be designed for longevity and fit for recycling, which should soon become the new normal. Longevity and recyclability for them are described as using durable material, no mixed materials, and no harmful raw materials. These criteria are in line with the EUGD's Sustainable Product Policy Framework (European Commission, 2020a), however many more criteria are to be considered, such as enhancing upgradeability, reparability, lowering carbon and environmental footprints, limiting single-use items and preventing premature obsolescence, according to the EUGD (European Commission, 2019b).

As Şen (2008) states, design processes are inspired by the works of other designers. However, this primary research and market trends have shown that sustainability will soon enough be just as large an influential factor. Results show, strongly weighted criteria when creating the design briefings is still the cost of inputs which is refraining companies from pursuing an ecological product design. Hence, complex garments will presumably take the longest to shift to sustainable designs.

As Zoltkowski (2021) stated, sustainable approaches should be followed, meaning when designing the garment, it must either comply with the biological cycle or industrial, i.e., technical cycle from the framework by Braungart and McDonough (2002), which is fleshed out in the butterfly diagram of Ellen MacArthur (2013). According to the interviews, only one brand so far designs parts of its collections for the biological cycle, and most brands seem to already design for longevity but not necessarily for recyclability, as none of them state to be doing that. Therefore, the focus must lie on recyclability. In this sense, the extended producer responsibility that will be required increasingly and urging Swiss brands to take responsibility for what consumers abroad do with their merchandise post-use will promote circular design practices, the interviewees and the EUGD (European Commission, 2020a) agree upon.

Because prototyping is one of the steps in the design phase, which is the most time-consuming, as Şen (2008) states, new technologies can come in handy. The interviewees and the EUGD share this opinion. However, the EUGD (European Commission, 2021e) does not specify which technologies can or should be used, whilst a couple of interviewees are convinced by the use of 3D product development software.

5.2.2 Fabric / Trims Production

Data from the interviews indicates that the responsibility of brands must nowadays go upstream all the way to Tier 3 and downstream, up until the consumer. By Tier 3 suppliers, raw material suppliers are meant (Esprit, 2021), as Esprit shows in its supply chain. As transparency beyond Tier 2 cannot be ensured yet by apparel brands, Tier 3 suppliers are where the sustainability focus should lie. Company and consumer should be able to trace where raw materials and semi-finished inputs come from, the findings, theory (Howard-

Hassmann, 2005), and EUGD in its circularity in production processes (European Commission, 2020a) demonstrate.

Historical regional hubs, as Dunford (2006) and Fernie & Perry (2011) call them, are still existent, as brands claim to source from these, e.g., Lace from France. If, however, the ecological factor of producing in Europe really is more beneficial, is called into question. Product labels such as the EU Ecolabel or Oekotex and Bluesign certificates can help bring about more transparency with regards to the materials used. Good fabrics for garments are declared in the findings to be cellulose fibers, mixed forms of biological synthetic fibers, and ones that do not contain any hazardous material. Since, the fabric production is one of the most polluting stages of the supply chain, where not only greenhouse gas emission is high but also many chemicals are used to turn the raw material into a fabric which contaminates air and freshwater sources, as Zoltkowski (2021) states, it is vital for textile and clothing manufacturers to comply with the REACH and other chemical regulations (European Commission, 2020c). According to the EUGD (2020h), this will also contribute to the orderly recycling and reuse of primary materials.

As stated by Dunford (2006) and Fernie & Perry (2011), there are specific countries that have a specialization, for example, silk, or cotton, etc. The results of this paper go beyond previous reports because, in terms of fabrics, highly sustainable and recyclable fabrics with European origin are mostly sourced from Turkey, Portugal, Romania, Spain, and Poland, as the findings revealed. What is further not necessarily stated in the theory nor in the EUGD is the increased procurement costs that companies will incur due to sustainable inputs still being more expensive than the average ones. Not only will companies be affected by the increase of costs in the material itself, but also the certifications which they are supposed to acquire require a lot of financial and physical input. Brands of complex garments can expect to have even higher procurement costs

Answering the interviewees' response of not being able to reach minimum order quantities with sustainable fabric suppliers, the EUGD (2020b) sees for industrial collaborations amongst SMEs. The EU will provide them with sufficient training, guidance on cluster collaboration and ensure smooth knowledge transfer. This will help build industrial synergies, such as standardization of trims, reporting and certifications systems, and common

track/trace/map systems (European Commission, 2020a). Based on the results, it can also be concluded that standardization can increase the competitiveness of a brand since it creates a level playing field within the industry in Europe.

Suppliers

Due to constant cost and price pressures that brands are experiencing (Perry & Wood, 2019; Sarnow & Schröder, 2019), they often outsource to nations where production is cheaper (J. Safra Sarasin, 2014), and protection measures for workers are almost non-existent (Howard-Hassmann, 2005). Outsourcing to countries like these means it is extremely hard to ensure transparency, especially in lower tiers, as Mares (2010) explains. Findings from the interviews are very much in line with these previous studies, as all companies stated not to be fully transparent yet throughout all supplier tiers.

Swiss brands believe they will not have to switch many suppliers; however, should it be the case, this will trigger additional costs again to find reliable suppliers. STeP certification, which has become one of the admission requirements for suppliers, can be assumed to be supported by the Industrial Emissions Directive (European Commission, 2020a) that ensures more circular processes within the factories to avoid extreme CO2 emissions (Zoltkowski, 2021).

Whilst vertical integration, where business functions such as fabric production or manufacturing are kept in-house (Perry & Towers, 2013), serves for more flexibility and quick response times (Richardson, 1996), is supported by the primary data. However, it also is restrained in its feasibility since it is a high investment and liability for small companies, as the results show. The trend of vertical disintegration has therefore risen, mostly outsourcing to lower-cost nations (Perry & Wood, 2019), which is confirmed by production said to take place in Eastern Europe.

Brands and industry experts from the findings propose a smaller supplier portfolio since a large range of suppliers is far less controllable. Similar conclusions were drawn by Cox (1996), who states that the degree of outsourcing that a company is prepared to do depends on the amount of control it wants over the operations of its supply chains. So far, this has not been a priority for every brand, as the data suggests. Therefore, in order to ensure the necessary sustainability within the supply chain, the results propose for brands to invest

money in supplier audits as it is defined to be crucial in any case and any company today. Countries that can be prioritized for sustainability and social standards cannot be defined yet, although Greece, Turkey and Portugal are advanced.

As the findings imply, clusters within the apparel industry will gain importance as even shorter transportation routes between inputs are sought (Escalona-Orcao & Ramos Pérez, 2014), and industry-internal collaboration will be required to advance. The EUGD (2020b) supports this fact by aiming at fostering these, especially amongst SMEs, so that knowledge can be transferred and synergies gained. A cluster in terms of getting all suppliers into the close vicinity of the headquarters does not make any sense, but brands should better position themselves around hubs. This will also become beneficial to ensure regional sourcing as a USP.

5.2.3 Garment Manufacture

Because quick response and short lead times have become more important as fast fashion has taken the stage, brands are placing their garment manufacturers closer to the point of sales in order to react to changing styles quickly (Tokatli et al., 2008). Manufacturing has been moved back to Europe for a significant number of apparel brands, but data illustrates that it is less due to limited sales windows that should be seized but more due to the ambition of wanting to become more sustainable and in the eyes of the European consumer, “Made in Europe” replicates that.

Similar to mentioned above, circularity in production processes, as the EUGD (2019b) explains, is just as important at this stage of the supply chain as it is during the fabric and trims production. This stage, however, is easier to control, as it is more often the case for apparel brands to have their own manufacturing center rather than fabric production, as the results have shown. Hence, it will be necessary for production sites to be adapted in order to run on clean energy, use clean manufacturing technology, and provide fair working conditions. These are the main areas to be improved. According to the gathered opinions, this transition should not be a problem though.

5.2.4 Distribution (Inbound & Outbound Logistics)

In correspondence with Escalona-Orcao & Ramos Pérez (2014), brands’ primary mode of transportation is by truck. Either they position their distribution centers in the geographical

vicinity of their stores or markets, or they stay in the company's country of origin (Escalona-Orcao & Ramos Pérez, 2014). Data support this assertion. Namely, half of the interviewed apparel brands' centers are located abroad, and half are in the home country, from where the merchandise is then distributed.

Primary data, however, opposes the literature, which states that air transportation is commonly used for distant markets. Results show that air transportation is only used in most urgent cases. Other than that, sea shipment is employed.

Zoltkowski (2021) and the findings agree on the fact that transportation is the largest challenge in becoming sustainable, as carbon emissions are unavoidable. Future transportation should be multimodal freight operations, meaning the combination of rail and waterborne transportation even for inland shipping, as the EUGD (2019b) states. Furthermore, road transportation will soon be subject to a road pricing system in which the polluter pays. Although the EU Commission (2019b) intends to use the incomes from that for the development of transportation infrastructure within Europe, as well as cleaner and more energy-efficient ways of transportation, the findings reveal that waterborne transportation is unimaginable. For rail transportation, there is a bit more enthusiasm. However, the railroad infrastructure is said to be completely underdeveloped and unable to transport the amount of freight that the EUGD (2021b) is foreseeing it to do. Moreover, the results disclose that waterborne and rail transportation can only be realized in combination with truck transportation and that it will account for a lot of unloading and reloading, which will lead to significant delivery delays. Additional to those delays will also be assumably higher transportation costs.

The interviews and EUGD (2020b) both state the benefits of a cluster in the regional vicinity. Although these are often in higher-priced locations, these can be balanced out with shorter transportation of the garments to the point of sale, i.e., lower transportation costs. So, while routes are trying to be kept short, the results show that in- and outbound logistics are still unthinkable without trucks. In the opinion of brands, it is of utmost importance when it comes to firstly, delivering to the warehouse, and secondly, for the fine distribution to customers.

According to the findings, important in transportation is more the means by which it is powered, rather than the means of transportation. Therefore, as of now, Swiss apparel brands

will stick with truck delivery until forced to do so otherwise. Ideally, e-trucks or trucks using biogas would be preferred. However, the precarious social conditions in the transportation industry must be dealt with first, and not only the pollution, which Zoltkowski (2021) refers to.

5.2.5 External Factors

The data makes it obvious that that the factors "Consumers" and "Support" significantly influence the transformation of the supply chain, as well as the willingness to transform.

5.2.5.1 Consumers

As brands state that they often conceive sustainability measures of other brands as greenwashing, it can only be assumed how confusing and credibility-impairing this must be for the actual consumer. This is supported by the Safra Sarasin (2014) report that doubts the fact that the buyer can bear the responsibility for the compliance of the product he buys when suppliers have an outsourced business model where transparency is not guaranteed.

For that reason, the EUGD (2020d) sets out to change consumer laws. At the point of sale, consumers should be able to rely on honest information about the product and its lifespan, as well as instructions for repair, including spare parts, and information on repair service accessible to the consumer. Moreover, labels will have to comply with a set of minimum standards to protect buyers from greenwashing. The EU further envisions the EU Ecolabel to entail sustainability factors such as durability, recyclability, and recycled content for easier classification of the product by the consumer. The findings, however, allow for the assumption that as long as the EU Ecolabel is not compulsory, the situation at the point of sale will not change considerably.

The results weighed heavily that, although the brands are ready to offer and use more sustainable garments and practices, the consumer is perceived as not being interested enough yet and not willing to spend the extra money. Also, second-hand markets are not appealing enough yet to the regular and high-end customers. Consequently, apparel brands are anxious that their existence might be jeopardized if they switch to more sustainability in the first stage and circularity in a later stage. The risk of investing a lot of money and not getting the expected return is large. Clearly, the awareness of the inevitability of sustainability lacks in

the consumers' minds. It is thought that the consumer does not really understand and is not concerned as to why the sustainable product is more expensive than the conventional one.

Brands, however, believe that the young customers will automatically increase the environmental awareness since it is a topic that they are dealing with much more than the older generations. It can therefore be concluded that future brands should target the younger consumer more. It can further be assumed that the EU Commission is aware of this issue and hence will also put in place measures to empower consumers to get involved in the circular economy.

5.2.5.2 Support

The findings show that the companies are dependent on financial support because they claim that achieving a circular economy is extremely expensive, and they oftentimes cannot afford it themselves.

Governments are expected to give financial support in order to ease the transition. This can be in the form of loans, guarantees, and support on pilot projects. In line with the demand from the apparel brands, the Just Transition Mechanism (2021b) will try to increase the support by offering access to loans and financial support more easily. Additionally, it will also make conditions more attractive for sustainable investors, so that money can be raised and allocated to research and innovation. Moreover, the EU wants to help start-ups, new firms, and SMEs take root in the industry. In line with the EUGD (2021b), the results show that public green procurement is also ought to be a huge lever in supporting circular businesses. What remains to be found out is if Swiss companies have access to these support measures since vertically integrated production sites are located in the EU, however, the headquarters are in Switzerland.

Industry experts suggest for Swiss brands to seek support, i.e., become a member of textile associations like Swiss Textiles, in order to gain access to latest industry innovations and technologies and exert pressure on politics. A level playing field is required in order to ensure international competition so that they can still compete against low production cost areas, which the EUGD (2021a) also refers to.

From the findings, it can, however, be professed that brands are not as enthusiastic about sharing innovations with the industry. This can be due to the market still being too

competitive in this respect, i.e., brands are trying to make this a competitive advantage for themselves and not an indispensable action in order to save the planet. This is when providers like circular.fashion come in extremely handy.

A business like circular.fashion provides a brand with all the necessary resources that are needed to become circular. From product development software for sustainable garments, a list of certified sustainable material suppliers, Circularity.ID for traceability and repair and disposal instructions, all the way to a textile sorter and recycler network with the best technologies, which can resell and recycle in a circular manner. These services are rather expensive, and the EUGD (2019) does not mention supporting or subsidizing any of these. Finally, the EUGD (2021a) mentions that there is a large skills gap in the workforce due to fast ongoing developments in technology. However, it has no suggestions as to what brands should do about it or how they will be helped.

5.2.6 Internal Factors

For this section, there is no literature in this paper that it can be compared to since it is not part of the supply chain but is still considered to be an influential factor.

Affordability is a huge topic for businesses since a sustainability and/or circular economy seems to have no monetary benefits for a firm. Often corporate growth targets are still hindering the transition to circularity. Though, a sense of doing something good for the world has shown to empower employees and create a good work atmosphere and team spirit. In turn, employer attractivity increases, and it can be expected that this will lead to better talent acquisition.

5.3 Impact of Change in Business Model on Supply Chain and Competitiveness of the Brand

In this section of the paper, the impacted areas resulting from the transition to more circular business models, as well as the effects on the firm's competitiveness, are compared to the literature.

5.3.1 Circular Business Model

Business associations anticipate that fast fashion will stick around or reinvent itself, whilst brands think it will die out. Nevertheless, the EUGD (2020d) urges the textile industry to

transition to the use of PaaS or other business models where the manufacturer keeps ownership and responsibility throughout the product's entire life cycle. This is one of many criteria from its legislative initiative of the Sustainable Product Policy.

The knowledge of circular business models, such as Circular Supplies, Resource Recovery, Product Life Extension, Sharing Platforms, and PaaS, as Accenture (2014) and WBCSD (2017) explain them and are illustrated in Butterfly Diagram (Figure 6) by the Ellen MacArthur Foundation (2013), is not very profound, the results show. The most comprehension is found in circular supplies and resource recovery, i.e., recycling.

Hence, contradicting the statement of McKinsey & Company (2019) that says that sustainable fashion will be important for competitive success, the findings are very divided. On the one hand, brands say, circular business models, especially PaaS, will not increase their competitiveness, or at least certainly not today. And on the other hand, circular fashion expert stated it to be an advantage and that there is a lot of growth potential. However, the overall opinion was that the market is currently not ready for it yet.

5.3.1.1 Product as a Service

Findings show that the understanding of the experts about PaaS is in line with the one of Circle Economy (2015). In the PaaS model, a garment is used to its maximum. In comparison to regular one-off sales, income is more predictable and constant, and economic growth of an apparel brand is not dependent on the usage of resources anymore.

Tukker (2004) explains all three of the possible PaaS options; however, Faber & Jonker (2021) and the findings agree that *use-oriented service strategy*, i.e., renting and leasing (subscription), is the suitable strategy for clothing. Ownership is kept, like the EUGD (2020d) has required, and the clothing is supposed to be long-lasting and easily repairable.

The primary data describes this model as short-term lending, in which a garment is yours for a limited amount of time and then returned. Faber & Jonker (2021) complement this by explaining how the price is calculated for the consumer. The price is connected to time, availability, deposit, replacement, or intensity of usage.

Although this is a circular business model, this strategy is not necessarily more eco-friendly in practice, as Circle Economy (2015) puts it, and corresponds with the opinions of the

findings. They state that the washing and transportation in between customers will even worsen the environmental impact. Nonetheless, what must not be undermined is that when in combination with other circular strategies, PaaS is the model that has the most potential to reduce the use of resources. Moreover, the transportation costs are extremely high and with under a reason why brands so far have failed, as the results show. Something very interesting that circular.fashion states in the interview is that PaaS should be more looked at as a substitution for fast fashion rather than a substitution for long-lasting garments.

Opposing the literature and the EUGD (2020d), the findings state that PaaS is more suitable at the corporate level. It is unclear as to how this model should be effectively applied to personal clothing. This is seeming to be very tricky, especially for underwear, and is considered to ruin new sales of an apparel brand. The results reveal a strong skepticism towards the profitability of PaaS, which is also justified, as many have had to give it up already because they were not expecting costs that high. However, as the EUGD (2021) states, incentives and support will be given to those implementing PaaS.

Other circular business models such as second-hand clothing sales channels are means to attract new customers, and the two types of PaaS can also be looked at as proof of the clothing's high quality, as in that it can be resold after having been worn for a good amount of time, and by different people during its life cycle. Additionally, PaaS allows for the company to recapture the residual value at the end of the garment's life (Accenture, 2014), and so the consumer does not have to take care of that part.

5.3.2 Technology

The EUGD (2020d) and the findings agree on fostering the use of digital technologies that allow to track, trace and map resources, and taking advantage of digitalization of product information which will be stored in product passports. Moreover, it is seen to be essential to get production sites up and running with the newest green technologies.

The findings do also suggest new technologies that are and will become valuable to apparel brands. These new technologies are, for example, Sustainable product configurator, digital sampling software, product passport (circularity.ID), and new sorting and recycling gadgets that ensure full reuse and/or correct recycling. The EUGD (2019) supports the fact that with new innovations, the likeliness of the loop being able to be closed increases. The renting and

subscription model would also give a new base for increased customer loyalty due to customer data being collected analyzed.

5.3.3 Marketing & Sales

Findings have shown this section to be more important than it was initially set out to be at the beginning of this thesis – unaware that marketing would play such a significant role when transforming a supply chain. However, as Porter (1998) predicted, any supply chain is built on the foundation of Porter's Value Chain (1998), which includes Marketing & Sales.

The findings also show that creating awareness is more important than the EUGD (2019) states it to be. No supply chain can increase procurement costs without increasing the final sales price as well. As the findings imply, brands are anxious to change since they fear losing their customers and thus their income. That is why the consumer needs more knowledge in order to understand what he/she is buying. Communication must be credible, comprehensible and convincible, as is also stated in the EUGD (European Commission, 2020a). The consumer needs the knowledge to be able to decide what part of the impact of the product he/she is buying is good and what is not. Therefore, brands must provide information on the product itself through labeling at the point of sales, the results and the EUGD (2020d) both state.

Hence, awareness should be raised through large advertising campaigns, and sustainable corporate communication must be fostered too. More understanding will most likely lead to a change in consumer needs, i.e., the need for more sustainable garments. And, as soon as awareness has been raised, companies will be more willing to transform. Until consumption behavior, however, has fully changed, it might take a while.

5.3.4 Service

As part of the Sustainable Product Policy from the European Commission (2021b), consumers shall receive easy access to re-use and repair services, which ensures the right to repair of every buyer which is aimed for (European Commission, 2020a). This can, however, not only be done by offering repair services but also by providing the consumer with spare parts or a repair kit, as the European Commission (2020d) explains. The findings agree with this approach, stating that more repair cafés could be served, but a few issues still remain. Currently, brands can only offer repair services where their standalone stores are, or even

only at their headquarters. Customs from import and export of garments to be repaired or that have been repaired would first have to be regulated.

5.3.5 Reverse Supply Chain

In line with the supply chain theory of Stadtler (2005; 2015), who, as one of few, claims "return" to be part of the supply chain. Through the sustainability movement, it has become apparent that this is an inevitable step.

As the EUGD (2020d) and the results confirm, innovation and regulatory measures in the field of extended producer responsibility, sorting, recycling and re-use of textiles will become more prevalent. With the introduction of the Extended Product Responsibility, Regula Rytz and circular.fashion both believe that this step is necessary to set off the motion and that it will promote ecological design. Designing clothes that last longer, as well as brands being responsible for the recycling, will be the new normal. And soon, even recycling procedures of clothing without tags will be able to be defined, thanks to innovation.

In order to ensure that the sorting, recycling, and re-use of the item can be executed correctly, the consumer must be informed by the brand about the return process. This process should be designed as easy and effortless as possible, e.g., a pre-paid parcel return service. A driving force of this will also be the legal obligation of higher levels of textile waste collections by 2025 (European Commission, 2021b)

Although this stage of the loop is an expensive one, especially for SMEs, as the results state, a one-time investment in a company like circular.fashion could accelerate the transition of a company vastly and also contribute with partners to work with. In addition to that, reselling items that were returned by customers can become a new sales channel and become accountable for additional sales; However, this aspect is not yet elaborated on in the EUGD by the EU Commission.

5.4 Triple Corporate Responsibility

What can be said is that the brands that seem to be still more conventional have a stronger financial incentive, and hence a larger focus on the economic dimension. Their goal is to provide the consumer with the fashion that he is believed to desire. From these more economically driven companies is also where most resistance towards PaaS comes from in

terms of profitability and preparedness to change the way fashion is designed today. They fear the transition to more sustainable products will jeopardize the company's existence.

The social dimension of ethical responsibility is the one that was touched upon least, as the size of the circles show, implying that for brands, this is less important than either preserving the whole (ecological dimension) or securing its own survival (economic dimension), as MS (2019) defines it. However, it can be assumed that social conditions are better in Europe, although findings have clearly shown that this is not always the case and cannot be generalized (e.g., precarious social conditions in truck transportation in Eastern Europe).

The ecological responsibility of actions being sensible and in alignment with the natural environment (Schüz, 2019) is the overall most pronounced dimension, as the findings show in Figure 11. Concerns for impacts on the environment for many go beyond just those of their own operations. They try to create as little harm as possible to the world. Actions of some are due to a solid anchoring in the corporate cultures, and others have beneficial business models that help ensure it. Contradictory to Stadtler's (2005) opinion of creating a supply chain around the demands of the consumer, findings reveal that the environment should be at the center of the supply chain.

5.5 Implications

With the results of this thesis, Swiss apparel brands producing in Europe can now be more prepared in terms of, firstly, which part of the complex EUGD framework they specifically must comply with. Secondly, it allows them to be more informed about issues within the industries and, thirdly, helps them understand where they should lay the focus in their sustainability strategy. Like this, more challenging problems can be tackled first, and quick wins can be achieved later.

6 Conclusion and Recommendations

In conclusion, Swiss apparel brands cannot take themselves out of the equation, or they will not be internationally competitive anymore, assuming Switzerland is not their only sales market.

Especially the SMEs within the interviewed brands lack knowledge, financial and human resources. The, so far, lack of communication about the EUGD is most probably the reason for not more companies than usual reaching out to textile consulting companies such as circular.fashion to help with their transition to circularity.

Although brands have not necessarily been implementing the changes in the supply chain due to the EUGD, the green deal is certainly a driving force to progress swiftly in these respects. It can be assumed that as soon as the consumer is more aware of the environmental impact that his/her behavior has, the willingness to pay more will arise. Consequently, it can be expected that paying a fair price will lead to consumers keeping a garment longer and for circular business models to be more profitable.

6.1 Answering the Research Questions

RQ 1: *What impact does the EU Green Deal have on the supply chain of the apparel industry?*

The impacts that the EUGD will have on Swiss apparel brands are far from few. As some will take place closer in time, others are already being practiced on the brands' own accord, and others will come into practice expectedly in a few years, as soon as the consumer has been sensitized to the fashion industry changing in its offers, prices, and business model.

Starting from the top of the supply chain, eco-design of garments will be inevitable. Eventually, garments must either be designed for either longevity or recyclability. In doing so, the fabrics and trims will become more expensive, leading to higher overall procurement costs. So that also SMEs are able to stay competitive, it will be necessary for them to join a cluster so that they can work together with other small brands and reach MOQs.

Most suppliers will be able to be kept so long they can comply with certifications such as the STeP certification. However, new suppliers must be chosen selectively. Also, vertically integrated production sites must comply with sustainable standards. Furthermore, it is

required that apparel brands know their suppliers from Tier 1 to 3, with a focus on Tier 3, in order to ensure more transparency and traceability. This not only for the company to know that standards are complied with but also to increase credibility and trust within the provided information to its consumers.

With respect to means of transportation, currently, no large change is foreseen, as trucks seem to stay the prioritized mean. If they were forced to switch to more rail and waterborne transportation, it would still have to be in combination with truck delivery. Higher transportation costs are assumed to be the case, though, either way, because if not from waterborne and rail, then because of the road pricing system that the EU will introduce.

Moreover, brands will have to extend their supply chain by the "reverse supply chain" dimension since extended producer responsibility will require brands to deal with the product at the end of its life cycle. Today, the knowledge of circular business models is still too vague, which is why the impact on the business models of the Swiss brands is less today, and probably more severe in the future, as they will assumably have to catch up.

A positive side effect that this sustainable transition will have on apparel companies is a good team spirit, and with that, its employer attractivity increases.

In order for all these impacts to come into play, there are two areas that must be tackled first: Support and consumer awareness. Then, without consumer awareness and understanding of the necessary change, any transformation in the supply chain will not be successful. Overall, it can be said that the EUGD will provide the support that companies seek; however, the extent to which this will actually reach Swiss brands is unclear from this study.

Brands with enough financial resources should subscribe to services such as circular.fashion, and the more financially strained ones should become a member of textile associations in order to ease the transition.

RQ 2: *How will inevitable changes in business model affect the supply chain and competitiveness of the brand?*

Switching to a circular business model such as PaaS will lead to significantly more logistics efforts through the transportation back and forth, as well as packaging. Moreover, this means brands will have to build infrastructure for care and maintenance of the garments before they

go to the next customer. In addition to that, fewer resources are needed because a product circles for longer.

Today, it can be concluded that PaaS does not increase the competitiveness of the brands since the consumer is not ready. Also, PaaS is considered to be more harmful to the environment than normal sales due to washing and transportation. Only the industry experts see huge potential in it. For PaaS, the largest competitive advantage is, however, seen on a corporate level rather than personal clothing. In personal clothing, this is not expected to increase competitiveness because the consumer does not want it.

In the future, as soon as circular laundry processes and e-trucks are in place, this could be a very promising model because it lowers resource usage significantly. Moreover, PaaS should be looked at as a substitution for fast fashion. With this, the latest fashion can be produced but in far smaller quantities. This business model can, at the end of the day, only be competitive if the consumer is ready to not own products indefinitely.

RQ 3: *How should new apparel brands set up their supply chain in an efficient and effective manner to comply with the requirements of the EU Green Deal?*

To begin with, new apparel brands should decide on which cycle they want their products to comply with – either the biological or the technical one. The simpler the clothing, the easier it is to comply with the EUGD requirements. In addition to that, they must be aware of the fact the environment must be placed in the center of the supply chain. What today might seem a bit over-exaggerated will be appreciated in the future. In the case of a transformation, however, the consumer must be at the heart of it because a transformation will set off a series of reactions throughout the value chain. Targeting younger consumers can ease the start since they are more sensitized with regard to sustainability.

From the beginning, the supply chain must also cover the returning of goods, in other words, the reverse supply chain, which will become inevitable. Also, suppliers should go through a selective admissions process to be sure that suppliers have suitable certifications and working conditions from the get-go. Ideally, local agents could be present in those countries to ensure a good supplier audit. Sourced material should be either sustainable or biodegradable, and transportation should be conducted via rail as far as possible. Additionally, flexible workplaces can reduce CO2 emissions from commuting.

Although it can be expensive, especially for SMEs, a one-time investment into a circular fashion consultancy like circular.fashion from which trustworthy partnerships can be gained is certainly beneficial.

6.2 Limitations and Further Research

Recommendations for materials are only based on a few answers and hence not fully representable. Separate study as to which materials they can use best. None of the interviewed brands were fast fashion brands, although this would have contributed a great amount to this study. Unfortunately, the Swiss fast fashion brands such as Tally Weijl and Chicorée did not respond to any interview requests made via LinkedIn, e-mail, or phone. Moreover, there are for sure more circular fashion consultancies on the market which potentially offer the same or different products. In this study, however, only those of circular.fashion was considered, since they have also been working with the EU on the sustainable product passport, and hence confirms its credibility.

The findings and consequently the assumptions and conclusions that were drawn were made based on the selected EUGD content in this paper, without the consideration of further EU laws or guidelines. This limitation had to be made due to the extensivity of the EUGD and the degree to which all initiatives are intertwined. Furthermore, the conclusions, impacts, and recommendations made are broad generalizations of the most important topics and concerns that apparel brands seem to have. Hence, the final result of this study serves as a first overview of impacts, pressing matters, and areas where action is required.

Due to the extensive scope of a supply chain, future research could investigate one area at a time and go more into detail on every single one of them to create more specific recommendations for apparel companies. Further research could also be conducted either per type of garment, e.g., underwear, streetwear, etc., or type of business model, e.g., fast-fashion retailers, mid-market retailers, luxury retailers. Again, this can bring more explicit proposals for their type of business and supply chain model. Moreover, the whole EUGD could be taken into consideration to identify impacts on supply chains of the apparel industry, as well as other highly polluting industries.

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Appendix

Appendix 1 - Qualitative Coding

See Excel coding sheet attached.

File name: Interview Coding_Master Thesis_Madeleine Bourne

Appendix 2 - Interview Questionnaires

Appendix 2a: Apparel Brand

1. What importance does the topic "environment" have in your company? Is it part of the mission statement? (cultural anchoring)
2. In which countries in the EU does your company produce? And how long have they been or have they always been? When did they come to Europe? (Offshoring / Nearshoring)
3. How is your supply chain structured and why? (Vertically integrated or not etc.)
4. To what extent have you already had contact with the EU Green Deal? Have you been made aware/educated about it?
5. How transparent is your supply chain? Is there the possibility for the customer to check where his e.g. T-shirt is from?
6. How familiar is your company with circular business models?
    a. Is there any change in sight...→or alternative plans if not CBM?
    b. Which ones are you implementing?
    c. Take-back? Recycling? What do you do with clothes they don't sell?
7. The EU Green Deal recommends circular business models for the textile industry, and primarily the "Product as a Service" model. Do you have any ambitions to move in this direction?
    a. What is your opinion on this? Do you think this is the right business model, where do you see strengths/weaknesses?
    b. How would they implement this?
    c. How do you assess the competitiveness of this model, today and in the future?
8. How has or will the sourcing of materials change? (Chemical-free and sustainable materials)

   a. What kind of materials do they need now? (Recycled materials?)
   b. How hard is it to make an end product that is chemical free?
   c. Sourcing of materials: Will you have to change suppliers of raw materials/textiles?
   d. What kind of effort does this represent for you?
9. You already produce in Europe, which is already a first step towards reducing CO2 emissions, because the transport routes are shortened. Now the EU Green Deal aims at multi-modal (train and ship) transport routes (train more expensive than lorry).
   a. What means of transportation do you need now?
   b. Impact of multimodal on you and on prices? Delivery times?
10. How do you think the relationship with suppliers will change?
   a. Mutual satisfaction, cost?
   b. Clusters? Any potential there?
11. Design (Eco-design requirements) - Sustainable materials etc.
   a. Do you look at it during collection development?
   b. Where is your priority? And why is the focus there?
   c. Where do you see the biggest challenge? And why?
12. The EU has its own Ecolabel (not mandatory). Do you think your producers/suppliers could comply with these...with or without a price premium?
   a. Do you have internal Ecolabels? How do you market them?
13. According to theory, it is recommended that the customer should be placed at the heart of the supply chain in order to satisfy their demand. Do you think the environment will take this place in the future?
14. For which part of your supply chain will it be most difficult to become EU Green Deal compliant?
15. Will the EU Green Deal also have benefits for your company?

Appendix 2b: Circular.Fashion

1. Can you quickly explain your business model at Circular.Fashion?
2. What kind of customers do you mainly have at the moment? Large/Medium/Small brands?
3. Since the introduction of the EU Green Deal, have you noticed an increase in customers?
4. Do you have many competitors offering the same thing?
5. In general, what do you think will be the impact of the EU Green Deal on the supply chain of traditional garment manufacturers?
6. What importance should the environment have in a company?
7. How competitive are you as a company right now if you have an all-circular business model?
8. Where do most of your recyclable material manufacturers come from?
9. For what type of clothing or what parts will it be easiest and most difficult to switch to circularity or become CO2 neutral?
10. Will each company need its own sorting station in the future or is this not necessary?
    a. Do you also think about how the goods get from A to B? Or is transport too small a part of the CO2 contribution?
11. In terms of the Green Deal - what specifically do you see as important points that need to be considered for a fashion brand?
12. The EU Green Deal recommends circular economy business models for the textile industry, and primarily the "Product as a Service" model (the product remains in the possession of the producer in order to have control over the product at the end of its lifecycle). - increases re-use, refurbishing and recycling
    a. Where do you see strengths/weaknesses? And how should a company implement this in the best possible way?
13. How can the changeover be made as cost- and time-efficient as possible? How would you advise a new apparel company on the EU Green Deal? How should a supply chain be set up technically?
14. How do you get consumers to rethink buying less and be willing to pay more money for it?

15. What are your predictions for the fashion industry? How can the brands remain competitive and competitive?
    a. Will fast fashion become extinct?

Appendix 2c: Green Party Switzerland

1. What importance should the environment have in a company?
    a. What are your expectations of businesses in relation to the EU Green Deal?
2. According to theory, it is recommended that the customer should be placed at the heart of the supply chain in order to satisfy their needs. Do you think the environment will take this place in the future?
    a. How do you imagine that the customer accepts that the environment comes first? A company only works with customers.
3. With the implementation of circular business models, how will supply chain activities change?
4. The EU Green Deal aims at the "Product as a Service" model, i.e. the ownership of the product remains with the producer.
    a. What is your opinion on this - do you think this is the right business model? And where do you see strengths/weaknesses?
    b. How can clothing manufacturers do this in the best possible way?
    c. How do you assess the competitiveness of this model, today and in the future?
5. After all, such a changeover costs a company a great deal –
    a. As stated by interview partners - How can a company survive if there is no guarantee that the new circular business models will ultimately be profitable?
    b. A company that can't afford to trudge into new waters, are they somehow supported by the government? - Subsidies?
        i. And if not, how can you condone a company going down the drain?
6. In which countries does it make the most sense to produce, but so that the expertise does not fall away and production costs become too high?
    a. Conflict - transport less, i.e. less CO2 emissions, but costs higher.

7. Shift to multimodal transport - What do you think will be the impact on prices and delivery times of clothing manufacturers, and how should they deal with them? - Accident Channel. Less via air - risks. How to deal with them?
8. For the increasing costs of switching to green energy, green distribution i.e., train and ship - multimodal - (or truck with biogas), sourcing recyclable/chemical-free materials, etc., do companies receive government subsidies?
    a. Or other incentives? Label for the companies that convert.
9. What do you think the optimal supply chain of a garment manufacturer looks like?
    a. Should the production facilities be located from a-z of the company for more control?
    b. For which part of the supply chain will it be most difficult to become CO2 neutral?
10. How can the changeover be made as cost- and time-efficient as possible? How would you advise a new clothing company on the EU Green Deal? How should one set itself up?
11. All these climate targets - for a profit-oriented company, is there anything positive in it?

Appendix 2d: Swiss Textiles

1) What importance should the environment have in a company?
    a. What are the expectations of businesses in relation to the Green Deal?
2) According to theory, it is recommended that the customer should be placed at the heart of the supply chain in order to satisfy their needs. Do you think the environment will take this place in the future?
    a. How do you imagine that the customer accepts that the environment comes first? A company only works with customers.
3) In general, what do you think the impact of the Green Deal will have on the supply chain of traditional apparel manufacturers?
4) With the implementation of circular business models, how will supply chain activities change?

5) The EU Green Deal aims at the "Product as a Service" model, i.e. in the future the ownership of the product should remain with the producer in order to have control over the product at the end of its lifecycle.
    a. What is your opinion on this - do you think this is the right business model? And where do you see strengths/weaknesses?
    b. How can clothing manufacturers do this in the best possible way?
    c. How do you assess the competitiveness of this model in the apparel industry, today and in the future?
6) To what extent will the sourcing process for traditional apparel brands change?
    a. Which materials should be used in the future?
7) How do you think the relationship with suppliers will change? (Companies are choosy, and so have the suppliers become)
    a. Mutual satisfaction, cost?
    b. Clusters? Any potential there? (Network Supply Chain)
8) Shift to multimodal transport - What do you think will be the impact on prices and delivery times of clothing manufacturers, and how should they deal with them?
9) Which business model makes the most sense today for the future? (For companies producing in the EU)
10) What will happen to fast fashion vendors?
11) In which countries does it make the most sense to produce, so that the expertise does not fall away and production costs become too high?
12) How do you get consumers to rethink buying less and be willing to pay more money for it?
13) How do you see the optimal supply chain of an apparel manufacturer that is EU Green Deal compliant or CO2 neutral by 2050?
    a. Should the production facilities be located from a-z of the company for more control?
    b. For which part of the supply chain will it be most difficult to become CO2 neutral?

14) How can the changeover be made as cost- and time-efficient as possible? How would you advise a new clothing company on the EU Green Deal? How should it set itself up?
15) All these climate targets - for a profit-oriented company, is there anything positive in it?

Appendix 3 - Interview Transcripts

Apparel Brands

Appendix 3a: Interview Calida 22.07.2021

MB: For you in the company at Calida, what is the importance of the topic "environment" and how firmly is it anchored in your mission statement and also in the culture?

Calida: Well, I have to be honest and say that we have very high standards, because of course we really make sure that sustainability is guaranteed on the basis of our sustainability theme. So our strategy is: buy less, buy better. So that means we also try to offer really good quality, which also plays a big role in sustainability.

MB: Mhm. So, you produce in Europe. In which countries in the EU exactly does your company produce and for how long?

Calida: We produce in Hungary, which is our main hub, and from there we distribute to various countries. At the moment we are working with Bulgaria and Albania. We have now totally shifted production to Europe, totally for a good two years now. I only joined the company last year, and by then we no longer had any production in Asia, i.e. three years ago we started to shift all production from China to Europe.

MB: What were the motivations behind this?

Calida: The motives were, on the one hand, we wanted to have shorter transport routes, and on the other hand, we no longer wanted to burden the environment with precisely these transport activities. And on the other hand, we wanted to continue to maintain and build up jobs in Europe. And we are simply much more flexible. In other words, flexibility plays a very important role.

MB: Yes. Can you explain to me quickly what your supply chain looks like from A to Z and whether it is vertically integrated?

Calida: So, from A-Z....

MB: Som let's say from designing to sourcing, production and on to distribution. Just the individual steps that you have.

Calida: Well, we start with an innovation meeting, which was just now for the spring/summer 2023 collection in July, where we exchange all the trends and directions with the product management in sourcing or determine which strategy we are pursuing for the next collection. Then the sourcing starts with the actual task of supplying the designers with the necessary materials. Then there are always update meetings in between where we fix the materials and at the same time get quality assurance on board. It is very important to us that we only use materials in the collection that have been approved in terms of quality. And our quality tests all take place in Hungary, so we no longer have a laboratory in Sursee. Everything takes place in Hungary, but we still have employees in my team here who are also responsible for quality assurance, so they work very closely with the laboratory in Hungary. Then the materials are approved by quality assurance and then by us for the creation of the collection. At the same time, the individual sketches are created and then there is a time, that is a

milestone where the collection outline plan with the qualities is discussed with us and recorded, where we also present the first forecasts to the suppliers, so that they know approximately what is coming up, but in advance we also give the information about what we need in terms of sample material, because that can already be estimated approximately. That means we are very closely connected with the product management. Then the materials always arrive very tight in time with us, so that we can make the prototypes in the right colors and styles. I've never seen a company that really pays attention to the right colors during prototyping, but it's very important to see the product when it comes to pricing, so that everyone can imagine the value of the product, what it looks like, and whether the price we want for it is justified. Of course, this is all discussed before the prototype meeting, because the prototype meeting takes place with the sales force - at the moment digitally, so everything is presented digitally - and then it goes on to the sample duplication in order to have all the complete photo samples in house at the right time. At the same time, of course, we are working on the quantities, which are the preparation for production. And based on a collection production plan in which all the timelines are fixed, we then move on to the deadlines for the cutting approvals and material releases, and then Procurement can start. We are divided into Sourcing, Purchasing, Engineering & Quality Assurance, which are the three departments that I'm responsible for, and then we move on to Procurement, which also works very closely with us.

We then hand over the materials to them, so to speak, so that they can be listed in SAP, and then we check what material blocks we need to set. This means that with the first forecast, the suppliers already know exactly what we will need in order to stock the raw material, and in the next step, Procurement actually gives a forecast to the suppliers based on the planning figures we have actually stored, so that they can go into the color. Of course, we also try to work with contracts so that production doesn't have to start three times in a row. This is also very important for us in terms of the environmental aspect, that we try to make production as efficient as possible. In other words, it's better to have a large print run and call it off, rather than having to run it five times and then perhaps not reach the minimum quantities. That's how we handle it. Then the material is delivered back to Hungary and checked according to the supplier category, i.e. randomly or every article, depending on which category the supplier is in. And then it goes on to the allocation. Procurement then works very closely with the production hub in Hungary. They then discuss which materials are available, what needs to be cut to size based on the delivery dates. Then it goes from there, which is organized independently by Hungary. Most of the cutting is done in Hungary. We have one or two production sites that cut to size themselves. One is in Bulgaria, I know that for sure. We can send the fabrics and all the ingredients there, and otherwise we just send all the materials with the specifications to the production facilities, with a sample of where it will be made. Now, when an article runs for the first time, a technician also goes along to explain how it is to be sewn. That's why we do the patterning. We don't have a sample department in Sursee, but everything is done in Hungary, and that has the advantage that the technicians on site already sew the samples, so they know exactly what they are doing and how it would be optimal. Then the products come back and are checked. We have a quality assurance department on site that also checks the finished products, packs them, and sends them to Sursee. And in Sursee we have the high-bay warehouse and from there it is then distributed to the individual customers. Either to the retail stores or to the online warehouse and then it is simply distributed.

MB: So the sourced materials are all purchases is that correct?

Calida: It's no longer our own production. We had one, but I don't know how long it's been gone. But it has been for a long time. And we buy in every material.

MB: And the production facility in Hungary, does Calida own that?

Calida: Yes, this is a subsidiary of Calida.

MB: More in terms of the Green Deal. To what extent have you already had points of contact with the EU Green Deal? How were you made aware/educated about it? Due to the fact that you produce in Hungary and that this is a subsidiary of Calida, all activities there must also be Green Deal compliant.

Calida: Well, we are STeP-certified. So we try to make sure that all the suppliers we take on have STeP certification, so that we can really label our products "Made in Green". That's a basic requirement for new admissions. But of course we have suppliers that have been in the supplier portfolio for a longer time that don't have this certification yet, but that's a few of them but not many. We want to increase the proportion of "Made in Green" to 80% by 2025. We already have a lot, but we want to increase it enormously in the next 2-3 years, and I am also very confident that we will achieve this, because we are also working on the "Made in Green" award, which must be distributed in terms of percentage and weight so that we can give this award. And in some cases it is simply the case that the weight of the elastic bands in a bra is enormously significant, so that we often do not have the "Made in Green" award for bras at the moment. But we are now in the process of carrying out the STeP certification with our main suppliers for the elastic bands, and if god will, we will have this in the fall and then we will have made a giant leap again. If, for example, we now take on a new lace supplier and realize that a lace is coming into Basic, then of course I do everything in advance to ensure that we get this STeP certification. Of course, this always involves costs and effort, so it's not that easy. However, many suppliers are prepared to take this step because they are already doing a great deal in terms of sustainability, but this "Made in Green" label includes various pillars, and the whole area really has to be covered, in terms of occupational safety, chemicals, and then energy supply. That's 5 or 6 pillars that have to be taken into account. We also ask this of new suppliers, and actually we don't want to have any new suppliers in our portfolio, because we have enough anyway, and the ones we do have are all good so far. They also have a lot of certificates, but not all of them have this STeP certificate.

MB: With the production facility in Hungary, do you also need renewable energy there?

Calida: I don't think we're quite there yet, but I think I'll have to pass on that. Since I'm still very young in the company, I haven't yet dealt with the production sites and these issues. It's better to have contact with my boss, but he's also on vacation right now, because he has the whole issue of sustainability and his patronage. So I hope I can tell you as much as possible.

MB: Yeah, sure, that's not a problem. Now, how transparent would you say your supply chain is? Is there the possibility for the customer to check where, for example, a bra has been produced or where the fabrics come from?

Calida: So everywhere where we have STeP certification, it's traceable. So where we have the "Made in Green" label, it is traceable. Not with the other articles, of course, because you can't find out there. But it is traceable via this hang tag.

MB: Good. I saw on your website that Calida offers the Viktor and Rolf collection, which is, yes, Cradle to Cradle, so it goes in the direction of Circular Economy. To what extent is Calida otherwise already familiar with circular economy business models?

Calida: We have been working in the area of Cradle to Cradle since the fall/winter 19 collection, where we really pay attention to fulfilling the biological cycle. And on our homepage, we give consumers the opportunity to return the items to Calida so that they can be disposed of properly. But I have to admit that in the area of Cradle to Cradle, of course, there are not so many possibilities or disposal companies at the moment that can properly dispose of these articles in the way we envision, because this system itself is not yet 100% closed and that is a project for us now that we will definitely tackle in the next 1-2 years, so that we can really get such a disposal concept up and running. That is a challenge that we have. The merchandise that we produce in the Cradle to Cradle area is biodegradable. But we're trying to expand the collection because it's important to us that our merchandise doesn't leave toxic residues in nature. So that means we really put it through its paces. For example, in the ViktorXRolf collection we have bras that have closures that are not biodegradable, because that is not yet available on the market. But we then give a notice that if the product is disposed of, then the closure must be disposed of separately. So of course we do that. But I think the economy in general, and we as Calida, still have quite a way to go to close this loop. I think it's easier with the technical cycle, because the components can be chemically separated from each other, but we don't follow that path. For the moment, we have decided to follow the biological cycle, because that is the more important option for us.

MB: In the EU Green Deal, the goal for the textile or apparel industry is to offer the "Product-as- a-Service" circular model. That means that actually every company either lends its goods or offers a service. Do you have aspirations to go in this direction or to what extent do you think this is realistic?

Calida: We have a completely different department that deals with this. I can't get my head around the way On does it. You buy a running shoe, so you rent it, and if you want a new shoe then you can send the old one back in the box and they can bring the shoe back into the cycle 100% and that is of course brilliant. I don't see that at all with us now... So they just don't remain in possession of the shoe, but in possession of the material, so to speak, if the end user gets involved. And that's a bit difficult for us now and something that I haven't felt yet. So if I'm a customer now - um, and I return a textile that's broken at some point - well, our goal should be that the textile lasts as long as possible, is beautiful for as long as possible, and is worn for as long as possible. Now I have the question, which I have not yet been able to clarify internally, of how we do that when the goods are returned, how Calida can find out, for example, if the underwear marks have been cut off, what kind of product it was. That's still a challenge for us to solve. I mean we have a tampon print in the back of these 100% natural articles so that we don't have these underwear marks. But what do I do if the tampon print is no longer visible after 50 washes. These are all questions for me that have not yet been clarified. That's why I can't give you a clear answer, because there are still so many things that have to be taken into account. If I have a part there now 10 years, how much one sees then still. There is still fast fashion, but we don't have these customers.

So it's our turn to think about what is the best way and how we can sustainably tell our customers that the product is ours. And then we also have to categorize it - is it Cradle to Cradle or is it something else? And that is still so unclear to me.

MB: Okay, yes that's definitely also an answer.

Calida: That's an exciting story. H&M also advertises that they take the goods back. That's great, but how do they dispose of it? What do they do with it? How do they dispose of it properly? That's not really clear to me. And that is now for example, I mean they have an insane marketing concept but for me something like that is brainwashing. I think you really have to think about what you're doing and then it has to be credible and comprehensible for everyone. And I'd rather have a good concept that will be introduced later instead of something wishi-washi about what you advertise marketing-technically but has not yet properly hand and foot.

MB: As an example though, H&M rents suits in Sweden and after the event you return the suit.

Calida: ON does something interesting. You pay an installment, so you rent the shoe, when it's worn out you send it back, they dispose of it and you get a new one and you rent it again. That means theoretically, of course, you could do that with laundry. You have customer loyalty. You rent the garment, the linen, when they send it back, they get a new one. But I don't think that will be our model. I think that's also confusing for the end consumer. But I think that's also a marketing thing, so that's a concept that we haven't talked about internally yet.

MB: Now when you think of the model like ON has and you imagine that Calida would also have this concept, do you think it would increase Calida's competitiveness?

Calida: I can't say anything about that, because I don't see the model in our brand..

MB: Now in terms of the Green Deal, have you had to change your suppliers in terms of sourcing materials.

Calida: No, they go along with us. We didn't have to replace any suppliers. We are building up our supplier base on a very partnership-based basis, which means that we also take them along on the journey. We don't have suppliers in our supplier portfolio who don't fit in with our pillars, let's say. They accept the challenge of only using environmentally compatible chemicals. And we have our main material supplier in Switzerland, which is very far ahead in terms of all these environmental aspects and renewable energy and reduced water consumption. And you could also buy in biogas, but that would make our product even more expensive, and we're not there yet. But they are very careful that they produce in a water-saving way, that we use equipment that doesn't cost too much energy. We are very very very conscious about this and I have to say that this is perhaps not yet as transparent for the end consumer, others do this better in their communication, but we are now planning to make it as clear as possible for the end consumer by the end of the year, so that they can see what we are already doing. We already do so much and have been doing it for so long that others talk about it and we just haven't done it yet. And they actually say, do good and talk about it.

MB: Yes exactly, that's right. And that doesn't make my next question right now either. But now I would like to ask you one more question regarding Clusters. You said that your main production site is in Hungary. Do you think it would make sense that the textile production would also be in Hungary and all other suppliers of components would be in the vicinity of the production site? Do you think this will come more in the future?

Calida: That doesn't work. It can't work at all. If we now have the children's motif printers, there's one in Hungary and one in Italy and that's also where the products are manufactured, no problem. The fabric production, which makes up the largest part, these specialists, like we have, our supplier, the company Schellenberg in Fehraltorf, you can't find something like that there. You can also, for example, fabric specialists from Italy, so you don't find that. And we buy our materials mainly in Europe. We buy almost nothing in Asia. Maybe small things, for example bra shells, but we have already brought that to Europe. Our goal is to keep the transport routes as short as possible and to have European material origin. In Hungary, you can't do that.

MB: If you would say now, we have supplier XY from Italy, come we move you to Hungary.

Calida: That's not possible. Because you have jobs in Italy. Italians work there. And you can't just move these skilled workers to Hungary. That makes no sense. So you can do that with the small ones, e.g. embroiderers and motif printers. But the others, then you would not need any more fairs. The lace manufacturers, they're all in northern France. That's a lace court. No, that would not make sense.

MB: Um, well, you produce everything in Europe, which means that the transport routes are also shorter. The Green Deal now focuses very much on multi-modal transport. That means more train and more ship, and also short distances by ship. How do you transport at the moment?

Calida: Well, we currently transport everything by truck, if I'm not mistaken. By ship there, the question doesn't even arise.

MB: So, in Europe-internally the EU Green Deal seeks to use the rivers..

Calida: I'll send the material across the Danube by ship, but then I have to get to the Danube first. No, I can't imagine that. So the train is maybe an option, but even that, I'll have to talk to our logistician.

MB: But if you were to switch to the train now. Train transport is actually significantly more expensive than by truck. Do you think that would have an impact on the prices you offer and on delivery times?

Calida: On the delivery times, for sure. Because the truck is fast. And not so with the train. Because I need a combination of truck and train, and train and truck, and maybe I have to shift in between. I'm thinking about it right now. I am now only with the fabrics that come mainly from Switzerland. There it can be halfway reasonable, from Zurich, via Vienna to Budapest goes. But from there it has to be loaded onto a truck again. So first it has to be loaded from the company onto a truck so that it can be transported to the train. Then I have this train route. I don't mind if it runs overnight. But then it has to be unloaded again so that it can be loaded onto a truck again and then taken to the company. In my opinion, this means that the transport time is then doubled.

MB: And what do you think about the prices?

Calida: I know too little about how much it costs. I have not yet dealt with that enough.

MB: That means basically would be more ideal with the truck because of the delivery times, but that you then run these with biogas?

Calida: Yes, for example. That would be the most optimal solution for me.

MB: According to theory, it is recommended that the customer should be placed at the heart of the supply chain in order to satisfy their demand. Do you think in the future the environment will take this place?

Calida: No, I think it will be equivalent. On the one hand, the customer, that is what we generally notice about the environment and the people, that our customers pay a lot of attention to what they buy. And I see it also with the young people that they of course pay a lot of attention to where the goods come from. I think that will continue. So for one thing, with us it's an insane goal and we try not to do anything that's harmful to the environment. For example, we are thinking about changing the packaging. We already have recycled polybags, but we are now trying to find an alternative material that is also biodegradable. Of course, there are now a wide variety of substitute materials, for example made of corn starch. But that is out of the question for us, because we would then be using a feed as a foodstuff, which could also be genetically modified. In other words, we really make sure that we regulate it as well as possible. So everything that has to do with corn starch, we try to avoid. And we also had an appointment with a start-up company called "I'm plastic-free". And I just asked what this material is, I mean they currently sell mainly straws for the hospitality industry. And he told me that he was in Indonesia and saw all this waste. And they actually extracted starch from the Indonesian potato root to make these plastic-free straws. And that's something else again. That's a residual waste from a product that can be used. And of course I'm all for that kind of thing. But I have my difficulties with cornstarch. And of course we are burning for such things and try to support them, and I am really curious to see what comes out of it. I mean, of course, you have to take into account all these conditions that this bag then halts, but these are innovative ways to replace perhaps a polybag.

That doesn't really have much to do with your question, but I believe that the customer, that is, we are trying to get the younger customer. At the moment, we have established that our average customer is currently 58, which I don't believe at all. And with this new lineup, to simply push this environmental and sustainability character, we are sure that we can lower this average age enormously, because we are of course addressing a different target group. I think they are very close at the moment. So for me, target group and environment are already one.

MB: And just roughly from your point of view - for which part of your supply chain will it be most difficult to make EU Green Deal compliant? So, where will you have to put in the most work to make it CO2 neutral?

Calida: I think logistics will be a challenge. In other words, everything that has to do with transport routes. Most of our production facilities are already STeP-certified, so we're quite fine there. Printing could still be an issue, but yes I think actually the transport will be the most difficult. But that is my personal opinion. Maybe someone who has an overview of the whole supply chain has a different opinion.

MB: Switzerland has introduced similar targets to the EU, for climate neutrality.

Calida: Thank God!

MB: What kind of benefits will result from this for you as a company? So, from the Green Deal now, do you think you will also benefit from it?

Calida: Well, I think we will possibly, if we are fast enough, even faster than we already are, that our market share will grow if we communicate it credibly, if we communicate it in such a way that it convinces. Then I believe that we will be able to gain market share. And I also believe that this is not a monetary benefit, but it is for the crew. We are all enormously proud to work for such a company that does good things for the environment. It doesn't matter whether we talk about it or not. Because now, for example, I'm totally happy that I can now shape my last years of work in such a way that I leave something good behind. And that makes us all enormously proud and gives us this drive to continue working even more intensively in the area of Cradle to Cradle, because we know what we are doing and why we are doing it. And I think it is simply the basic conviction of the entire company that we have our goal in mind to simply do something "for a better world", and I think that is great.

MB: Yes, that's great to hear! Let's get to the final question, though. It's a very open-ended question. What would you advise a new apparel company to do in terms of the EU Green Deal? How should one set itself up?

Calida: So right from the start I would actually set it up in such a way that you, I would already set it up with the flexible workplaces. That has now really turned out to be very successful. That you don't necessarily have to have a huge headquarters. Of course, you need a place where people can meet at some point, but I would start there, because of course we also save a lot on commuting. Bringing suppliers on board who also fulfill these environmental aspects, and following the motto "less is more". I would make the collections as small as possible, but also really produce sustainably. So I would be so far today that I would dare to offer only one Cradle to Cradle collection. But also try to be really consistent with the packaging and offer a return system. And with the knowledge that I have today, I could also advise a young company in terms of suppliers and where they can go. But yes I would advise to really focus on this area. And just choose either the biological or technological cycle, where I think the biological is better. So I think that's already very exciting.

MB: Great, thank you very much for your answers! Is it okay for you if I mention you and Calida by name in my work?

Calida: Yes, that is fine for me. That's not a problem.

MB: Yes, I think you as a company have also come a long way and have also not said anything that would stand out negatively.

Calida: (laughs) I can't say anything negative about Calida either. I've been working in the textile industry since I was 18, but it's really still great now. For one thing, I've met a lot of people again in the company with whom I've worked in some combination before and then to meet up there again and now to get such topics off the ground and to push through such projects is really fun! So I can only recommend everyone to pursue what we are doing.

Appendix 3b: Interview Strellson 19.07.2021

MB: So, the first question is a more general one. How important is the topic of "environment" for you in the company?

Strellson: An increasingly large one. Ultimately, the ISO and the XY guiding principles for the clothing industry define that human rights are not only lived in the area of social issues, but also in the area of the environment, and with that background it is becoming increasingly relevant. And we have our own production plant in Portugal and last year we installed a photovoltaic system on the roof there, we have, um, um, also partially switched to green electricity in our headquarters, but only very little. But we compensate the rest by payments, so to speak, already today, but certainly have the goal to continuously convert to alternative resources. So we are using biogas for heat generation and have also switched to green electricity as far as possible in our retail areas in Germany.

MB: To what extent is it already in your mission statement and how firmly is it anchored in your culture?

Strellson: Well, we have set ourselves targets for 2030 in the direction of climate neutrality, um, setting milestones. Also in the area of sustainable production and products, the environment is already anchored in our guiding principles. So we want to switch to 100% sustainable resources wherever possible, so as far as possible, by 2030 and basically go from a conventional design and lifestyle provider to a sustainable design and lifestyle provider, but the fashion grade and the design claim should not suffer. So for us, we will never be a food-nature, so we are not now suddenly an eco-label from the outside but we just want to integrate the best possible internally into our lifestyle culture. But we are not yet in such a way that we go public with it, we are not present with it to the extent that we already have a sustainability report or so. So this is all in the process of being developed, and it is perhaps anchored in our guiding culture to the extent that we are pursuing strategic goals on the one hand and have joined the Higg Index as of June 30, 2021 on the other.

There is the so-called SACs, Sustainable Apparel Coalition, that is quasi one of the highest committees worldwide in the area of clothing and sporting goods sector, which quasi includes the textile sector or also home textile sector and quasi has also prescribed a comparability of values via an index - how can you then if you want to procure more sustainably quasi a MRSL (Manufacturer Restricted Substances List), so that has with the garment maker or the manufacturer in the preliminary stage gets prescribed which chemicals he may not use at all to make this product possible. This means that if you have an MRSL that is based on ZDCH, i.e. zero discharge or detox, then you no longer need an RSL because the MRSL already specifies that these harmful substances that you want to try to keep as low as possible or eliminate via the RSL (Restricted Substances List) are no longer in the chain. And, how can one now compare companies with each other in the area of social commitment and environmental commitment, and actually only in which one has certain guiding principles and monitors these. And it's not just about Tier 1, i.e. the garment maker and the wet press, which are much discussed, but it's really about the entire supply chain and with that you can create a comparability of companies and compare David and Goliath. In the end, there are values, and of course it is more complex for a large company to control this, but in the end, if it says you are 46% sustainable in the area of the environment and 37% sustainable in the area of social issues, then that is a clear indication that more homework

needs to be done in one area. And in the end, it's not what the companies are already doing that interests us, but rather what the companies are not yet doing, i.e. more fields of action, so to speak. And we have just decided to join this year and so we are now also in a certain public um, with where we stand and what we want to undertake as goals. And next year it will be exciting, not. Have we managed to improve. And that is of course very difficult with 2020 as the baseline year because of the pandemic, because now all the values are particularly good. So the bottom line is that the goal is not to worsen next year. Exactly, so it will certainly also be more successively in the public eye in February. Last year we decided to be audited according to the GOTS standard, and the Global Recycling Standard, and then of course also in the area of animal welfare - responsible down, responsible wool - but through these two very very heavyweight um standards, GOTS and GRS, we are also anchored in an environmental policy. So we are also obliged to make our goals accessible to the public. It is not yet on our homepage but we have already written it down and it is just a question of time that it will come. So in this respect I think we can, because of the way I'm already answering - this must flow anonymously into your work, but if you want to say something to us, you can perhaps name us and then comprehensively perhaps write a section and then I would have to then once quasi counter-read in order to say, yes, with that we can read, if that comes up so, because normally it is also so with us, if someone writes a master's thesis with us in the company, then it is always provided with a blocking notice. The data may not be published, because it is confidential data.

MB: Yes, that's fine. The way you tell it, you're already doing a lot in the sustainability area. You said you produce in Europe, so in Portugal you have your own production facility, is that right?

Strellson: Yes.

MB: How long have you been producing in Europe? Has it always been like this or did you switch and why?

Strellson: We have always produced in Europe, but of course we do not only produce in our own factory. So, um, our assortment, so our factory is a classic ready-to-wear company for men's suits, but our range is in principle from shoes to sunglasses, just everything, and not only for men, but also for women's fashion. And in this respect, we have a relatively large producer framework worldwide and you can well say that we have produced a good half to 2/3 in the past in Europe and the other half or the last third in Asia. Because there are certain areas, such as a down jacket, that I can no longer produce in Europe today, and if I produce them in Europe, then I no longer have the customer base there that is willing to pay for them. These are then jackets that cost, so I would say Moncler produces maybe still individual jackets in Europe, but that are then CHF 2500 - 3000 jackets and up. But we sell a winter jacket already but CHF 300-400 upwards and you can no longer get produced in Europe. So that means the down production, that's actually classically in the Far East. So there are certain areas that you simply can no longer pay in Europe. So you could, but the consumer must then also be willing to pay the price and in this respect we have parts of our production in Asia.

MB: What were the reasons for producing in Europe from the beginning?

Strellson: Well, that's a bit in the nature of the procurement process, we're just different from most companies. Most people say, the blouse you're wearing is great, I'd like to have it. And

then they send a technical description and say it should be 100% cotton, maybe they even cut off a piece of the blouse and say, that's the quality I would like to have. And then, theoretically, anyone can run out and say, okay, yes, I can make the fabric, I can copy the design, I'll do it all like that. And that's kind of how the mainstream works. Most casual brands work like that. But we are in the premium sector and have a different claim.

That means, for example, that we are already developing this stripe with the Italian weaving mill. It's not just any stripe, it's the stripe that we specify. A designer sits down and says I would like the stripe to be exactly the same. And I want exactly this quality, and this handfeel, and it should have this level before washing, and after washing it should only crinkle so hard, and so on. This means that there is a lot of development work, which then not only applies to the fabric, but also every button is developed in-house. So we develop everything ourselves. And in the supply chain, we talk about tiers, so tier 1, tier 2, tier 3. And tier 1 is the garment maker, tier 2 is the supplier, so the fabric manufacturer, the button manufacturer, the yarn manufacturer, the condiment manufacturer, so what accessories, what blingbling, what interlining, what fixation, what do I need. So, and historically we don't leave that to chance, that means we get involved from the beginning. And because we get involved, we also say okay, we'll develop it all, we'll buy it all, and we'll have it all brought here to Switzerland to our warehouse in Kreuzlingen, and from here we then decide which production company can manufacture which product for us in the best possible way. And then we send a truck to the factories where exactly the fabric, the buttons, the zipper, and the cut are counted, so everything is there. And this is called a so-called passive contract processing. We don't buy FOB (free on board) in the finished classic merchandise module, but we really buy with this passive contract processing. This means that we already own everything and we pay someone to turn the material into a product in the production plant. But we are always owners of the goods that are quasi passively refined by wages. The one who creates the added value on the fabric, i.e. a blouse from a fabric, sells a service, so to speak, but does not have to take care of the entire procurement process from the preliminary stage in this full-scale business. And so we have grown, as have many of our competitors, but most of our competitors have not survived. There are many that no longer exist, such as Renée Lazar, and many others are weakening. It's a very expensive procurement process. It's just of luxury. You have to have all the designers, you have to do the development, you have to have the resources, and um, a lot of companies can't afford that anymore and that's why they're doing everything in commodity in the Far East, but we're just holding on to it. And we just see now in the course of the sustainability discussion and the supply chain transparency that this is very very valuable for us, that we know our business partners even in Tier 2. And especially with the discussion, is it more environmentally conscious to produce in Europe, is a big question mark, because if I have everything produced in a radius of 50km in China, and bring it on a ship with a container, and this container ship has a high CO2 balance, but if you break it down to the number of containers and the number of quantities, then the CO2 balance of these articles is probably quite good. But if you think about how many thousands of kilometers a product of ours travels on the road, then it's not a good result. So environmentally it is probably better it goes once in China on a container ship and comes here, but when it comes to jobs, working conditions in Europe to create and maintain, then the social component, the environmental requirements that exist in Europe, if all this is followed, is certainly a better. And that has to be calculated against each other. We actually don't do that yet, but we are currently evaluating how our CO2 balance will look like, and

we are currently evaluating with which partners we will do that. There are a number of important companies in this field. And for us, it's not just about Scope 1 and Scope 2, but certainly also about Scope 3, because that's certainly our biggest construction site. From the background we are also in the discussion at the moment, to participate in a project for <<Science-based-targets>> and we are also thinking about whether we might even define perspective SBTs. And then we are also in the obligation to fulfill that.

MB: Now you have already explained your supply chain a little bit. Can you explain to me the individual steps of your supply chain, i.e. how you are structured there, from design, sourcing, etc.?

Strellson: We are not involved in the raw materials trade, we start at Tier 2 with the suppliers and develop everything ourselves, as described, outer fabrics and ingredients, and therefore know the supply chain very well from Tier 2 to Tier 1 to delivery. This means that the supply chain is semi- transparent for us, but we are now also interfering because we are now GOT-certified, so that would be virtually up to the raw material. Because we are a member of "Better Cotton", we are now also getting involved and saying we want to work for a more sustainable cotton. It's not perfect yet, we know that, but it definitely contributes to bringing more social well-being to the small farmers who are involved with Better Cotton. That's blurring. A year or two ago, we would have said supply chain tier 2 and tier 1 and basta, and then everything that comes after that all the way to the end consumer. And today, we're already breaking away from that and going more backwards in the supply chain.

Otherwise, of course, digitization is also very important. We already make many product groups with 3D development so that no samples have to be created, and we are also very advanced in this respect. And this has now been driven by the pandemic. We now have a digital order tool, which means that theoretically every customer can go through our entire collection from any desk or any place in the world as long as he has a tablet and order it from us.

MB: Okay, yes, okay. So, that means if I understand correctly, you have a partially vertically integrated supply chain? So that means the production facility that you have in Portugal is yours and is vertically integrated and what you procure in the Far East is not vertically integrated?

Strellson: No, exactly. We have our own factory, the production facility in Portugal, and everything else is bought in. Whether it's in PLV (19:39) or merchandise. They are all long-term, loyal companies that we work with - of course, there are also sometimes changes and some are not so good - then they just get kicked out, but we are already trying very hard to bring about an improvement in the social and environmental area with the partners. Regardless of whether they belong to us or not.

MB: Okay, then to what extent have you already had active points of contact with the EU Green Deal?

Strellson: Well, let's put it this way, we welcome the fact that there is a discussion at EU level about the so-called Green Deal, um, I personally also see the need as a company to take precautions and these are also to be complied with. We have our main sales market in Germany today, which means that the supply chain law, which has already been passed, is clearly relevant for us as a first step. Because as an SME, we are clearly excluded from this.

We are too small for the Supply Chain Act to apply to us, which means that theoretically we could say: "It doesn't matter", but a) that would not be right, because as an enlightened company you naturally also have a role of responsibility in society, and I think it would be short-sighted to say that it is none of our business. That would also be wrong and I wouldn't be right in this company either, because that wouldn't suit me, because I think that our prosperity only works if we exercise responsibility throughout the entire supply chain. On the other hand, we are wholesale-driven, which means that we sell our goods very successfully through large companies, and our customers are supply chain- relevant. So they are already in this order of magnitude with 3,000 employees, they will also have to provide evidence from next year. This means that even if we now say we are so small and we are not interested in this, our customers are interested in this and they would then also sort us out if we do not comply with this. And the Green Deal, or the consequences that are now manifesting themselves in the discussion that Europe also has and the Commission (22:08), now this summer, will be much stricter than the German supply chain law. That means there is actually no getting away from it anymore. And ultimately, the better it is regulated, the better you can orient yourself as a company to these rules. I think it's good if there are perspective guard rails.

MB: Great, yes. Then, to what extent are you as a company already familiar with circular business models or what are you already implementing?

Strellson: I have already explained to you that, in principle, we are aiming for certain activities via the Higg Index, that we are currently evaluating the, um, CO2 balance measures at ..... You also have to ascertain the status quo, so to speak, in order to then also derive what kind of improvement measures are needed. In other words, whether any are needed and, if so, how. And I believe that every company has its own baggage to carry today and must then see how it can best integrate this into its business operations. After all, what good is a climate-neutral company if it ends up selling no more goods? Basically, the feasibility must also be adapted to the business model.

MB: So that means that your company does not yet have, for example, any re-use or recycle measures that you implement and promote to the customer?

Strellson: No, we have not yet developed a collection system that gives consumers the opportunity to return goods to us. Of course, we are already involved in a recycling process, so to speak, with German recycling - we are not obliged by law to take back goods today, but we are already obliged to ensure that goods are returned to the recycling process, so to speak. Whether it's the Green Dot in Germany or recycling plants in Switzerland. We pay a lot for this, but nevertheless it is of course a good idea to think in terms of the circular economy. But in my opinion, before you can achieve a circular economy, you first have to do your homework. And in this respect, this is not yet at the top of our agenda, but it will certainly come in the future.

MB: In the EU Green Deal, the goal for the textile industry was to eventually offer "Product as a Service", which is the ultimate circular business model. What do you think are the strengths and weaknesses of this model, i.e. that the company remains in possession of the product? And do you also think that this is feasible?

Strellson: It is the case that good lifecycle management is necessary for this longevity of products and that the spirit of the times also demands this today. And there are, I don't know

how many platforms that are already very well valued today, financially speaking, which means that the market is definitely there and the rethinking in society, in the generation that is just growing up, is perhaps even the new normal to say I'd rather go to the secondary market than buy it new, if you look at a clothing exchange now. Ricardo in Switzerland is now also a format that includes all product groups, but that is now also working super successfully. In this respect, you have to think as a company in this direction, and there are different possibilities, whether you make a repair service, as, for example, Mammut is already doing for tents, etc.. If it's not clothes, I think there's a greater willingness and expectation in society today, but in the long term we have to get involved. And we have not yet developed a concept for this, but we theoretically have the possibilities, because we have our own sewing production here at the site, but it would certainly also need a regulator on the part of the Swiss import and export customs situation, because offering a repair service now only for Swiss customers would probably not pay off at all, and vice versa, we have the infrastructure here and therefore it is difficult for the German consumer to send something to Switzerland to then get his favorite piece repaired back with import and export duties. This means that if we do not find a regulation and do not say that this customs issue will be solved in the future for internationally operating companies, then there are first of all completely different building sites that need to be solved.

Cos now has a QR code on the shop window. They've opened a secondary market for Cos customers, and that's something you have to watch; does it work? Because clearly, if the Cos customer says, okay, I can't afford the new product, but here on the platform I have the opportunity to buy my favorite pieces from last year, for little money, then that is certainly on the one hand new sales kanabalisiert, ne, so we live on the fact that we sell goods and not that we create goods for longevity, but on the other hand, this is exactly our quality standard, that one has quasi with pride even after 20 years the good quality, so to speak. Whether the spirit of the times and the degree of fashion still allow this is another story, but we are not the taste police. It's up to the customer to decide for himself whether it still meets his requirements. But qualitatively our goods are certainly made for longevity.

MB: Do you think that a company's competitiveness will increase by implementing a circular business model, such as leaning out, or second-hand?

Strellson: Today no, in X years, yes. So today it just costs money. And the question is, do I have the money to invest in a future model and do I have the resources today to dare to try it out? This is certainly easier for global corporations than for SMEs like us. So we're still on short-time working, we're just changing over to more sustainable product ranges, we're fighting to keep the jobs - you won't necessarily get applause in the company if you say you're taking a five- or six- figure sum in hand to try something like this. Now is simply not the right time to make an investment with an uncertain outcome. So if you had a model calculation today that said, if you invest CHF 100,000 today, you will have your ROI in 5 years and then it will only go steeply upwards with a growth rate of 1,2,3,4,5 %, then a clever entrepreneur would immediately say: "I'll do that". But if you invest CHF 100,000 now and in 5 years the money is burned, then nobody does that. That's why we are not necessarily the spearhead of the discoverers, but we let others discover and see how we can integrate it. We're not entrepreneurs, but very conservative in our approach and not very eager to experiment.

MB: All right. We talked before about sourcing materials and the Cotton certifications that you mentioned. Do you need recycled materials or something along those lines right now?

Strellson: Yes, we use a lot of recycled fabrics and recycled fillings, so when it comes to padded jackets, we have quite a lot already in use. But we are now also starting to communicate about it. A lot of things used to have question marks around them. Ripping wool, for example, is recycled wool, i.e. wool is bought and shredded and then spun and woven into new wool. It's been around for a hundred years in the area around Prato in Italy, and Prato has become successful and big with it, the whole region. And every fashion manufacturer who thought something of himself and was still able to buy Italy, until a few years ago, wrinkled his nose and said no, I don't buy wool from Prato. I buy the pure, new pure Italian wool. Today the prateser wool mills are the entrepreneurs and the leaders in the recycling sector. Kering, for example, has a large wool mill, but in the south of Italy, and is one of its most important partners in the field of recycling development in natural fibers, so to speak. Greenpeace has awarded this company and so there is just a reversal, and yes we have also used recycled wool in the past, we have just not communicated it strongly. But if you go to the homepage now, you can see all the icons in the description. And there is now a campaign, which is called "Wear2Care" and is described very precisely in relation to recycled fibers, recycled filling, etc. and that will then also be in the delivery from fall / winter 2021 with the corresponding icons and hangtags on the goods. And that is the first step, and the next step is to start with certified product categories and to have them produced in certified factories, and then to have the certificate on the product.

MB: Great, now you've answered another question of mine right away, too. Do you think in the future the relationship with suppliers will change? I think your suppliers will probably have to adapt and produce new fabrics or different fabrics. How do you think the relationship will change and do you see an added value of more of a network supply chain, where let's say everything would be in Portugal or close by with all the suppliers of the different parts?

Strellson: I think the topic of locality is being rewritten and will become increasingly important, as we have seen from the Suez Canal blockage what a terrible impact an interrupted supply chain has. We also realized through Corona what it means when Chinese suppliers suddenly can't deliver anymore. Because even products manufactured in Europe and also raw materials or intermediate products from China fall back. For example, these fine spunbonded fibers are usually produced in Asia, and then they are delivered to Europe in an intermediate stage, where they are processed into the expensive European product. This means that if you order a reed in Austria or France, for example, then strictly speaking it is not a French or Austrian product. But the majority of the work has happened in these countries and thus it gets the European origin, although the origin was actually once in Asia. I think you have to create an independence today, so that if there is a pandemic again or if this pandemic becomes more complex, you have a basis to say that you have a stability in your direct local environment, so that you can produce quasi independently. We have seen that with our old-fashioned way, with passive contract processing, production in Eastern Europe and fabric development in Europe, whether that's in Italy, Portugal or Turkey, it suddenly doesn't play a big role, that we are actually relatively independent of the overall market. And I think that this model is promising for the future. I think there will be a movement back out of Asia. I don't want to promise that we will suddenly experience a revival of the great textile years of 150 years ago in Switzerland or Germany, but there will certainly be tendencies in this direction. So, and we already have a very good network today because we are so classically positioned and that is an advantage for us.

MB: Then we take another step in the direction of transport routes. You are already producing in Europe, which means you are already closer to the European customer. What means of transport does Strellson currently use?

Strellson: For us, the majority is by road and by sea. So we fly very little and we would very much like to bring more by rail, but we cannot. So, we bring a lot by rail from Asia, but during the pandemic the big problem was that the train routes were interrupted because there were countries that banned the passage of trains from China because they thought that the large passage of trains would bring the disease into their country. This means that the China Beltroad was interrupted from time to time or was busy with very long breaks and it was not possible to control whether the goods would be brought in by rail in ten days or in four weeks. And that is simply not calculable with the supply chain steps that then come and a big entrepreneurial risk. And the ships have traveled, but much more slowly and that was also a big difficulty and I think you could bring a lot of things in Europe better by rail from A to B, but the rail network is not developed enough for that. Switzerland is certainly a pioneer, but the Swiss comparison is sought in Europe. In Germany one decided in the 70's against an extension of the goods traffic on the rail and one would have had at that time actually the possibility parallel to the highways also the goods rails to let run, but one decided against it and today there is no more place. But that would certainly have been necessary to reduce this traffic exodus. And in China, things work differently. There one is simply expropriated from the country and there whole cities are made flat so that there then the large freight network is built, and that is not possible in the western world.

MB: The EU Green Deal predicts that they want to promote multi-modal transport, meaning mainly by train and ship, and that also in Europe. Do you think this will have an impact on prices and delivery times?

Strellson: So, by law, I wouldn't be allowed to use delivery trucks anymore, then my delivery time would brutally deteriorate. Because the recourses for plan B "I go by rail" are not available. Or plan B "I go by ship" - how should that work in Europe. We don't have enough rivers to make that possible. From here to Portugal for example, yes of course theoretically you can get there somehow, but only with reloading times and everything and that means it would slow everything down significantly and everything would become much more expensive. And that would possibly put a question mark on the economic power of Europe, because the end consumer is not willing to spend more money on more sustainable products today. And if he has the possibility to choose between a sustainable and a conventional product, he will always take the more sustainable product, but only if it costs at most the same. And in the end, as long as the consumer is not willing to accept this appreciation in the form of added value, then the one who breaks the green deal will be the dealmaker and not the one who adapts his organizational processes in the sense of the green deal. I think the trick will be to continuously invest in more sustainable models, and certainly to look at the big picture, but whether it is actually the abandonment of road transport in the end, or an indulgence that I pay to compensate for my CO2 burden from road transport, then the latter is probably the bigger issue.

MB: According to theory, it is recommended that the customer should be placed at the heart of the supply chain in order to satisfy their demand. Do you think in the future the environment will take this place?

Strellson: Yes, so certainly yes, but also certainly... Do a survey and everyone says I buy green, of course I buy organic, and of course I only want the healthiest. Migros does an analysis. So, if you are a Migros card customer, you get an analysis of how sustainable your last shopping cart was. Once a month or every three months, you get an analysis; that's how sustainably you shop. And I have to say that I should be a little ashamed of myself, because I obviously don't buy enough organic products, even though I have the feeling that I'm buying healthy. And in this respect I think there is still a long way to go until the consumer does that. Um, there is a research project that should be initiated here from the three-country region - so especially with financial support from Switzerland - that failed. It was precisely about this model test, to say that we want to research that the customer decides how sustainable the product is that he orders. So that the end consumer can decide - I want the product to be produced in Switzerland, and there it costs ten times the price, but I get it the day after tomorrow, so I get it quickly but locally and therefore very environmentally friendly, or I get it under dubious conditions at the other end of the world in the context of mass production, where the seamstress can not live on her salary demonstrably, and thus at a discount price. And a research project is to be set up and we have also been asked to participate, because it is incredibly exciting to find out. Because as I said, we would even have the opportunity if customers were there. But I dare to doubt that, because I think even if we would ask the customer in the premium segment the 1400.- suit we can also produce for 5000.- or 6000.- on your body mass here in Switzerland, I think that would be a nice marketing story, but we would not earn money with it. Because in the end the customer thinks, then the part that hangs here in the store is just as good. And then he prefers to go on vacation for the difference. I think there is still a long way to go and as long as there is no regulation that the consumer is asked to pay, because he can decide freely, nothing will happen. But the moment you have to take responsibility for your personal CO2 balance as a consumer, then it's something else. When I book a flight with Swiss today, I have the option of offsetting the flight, and I am asked "Would you like to buy your flight CO2-neutral?"and then you can click yes and then you can decide whether you want to quickly compensate CO2 and then pay maybe about 50% of the ticket again on top, but virtually without concern for the environment within a year, or do you say yes the environment is close to my heart but it's enough for me if trees are planted, then the compensation of the flight takes 15 years, but costs me maybe only 15.-. And with it one is already taken as a consumer into the responsibility. But I believe a statistic has already proven that the fewest are willing to increase the price of their flight ticket, and if they do, then they choose the most convenient way for themselves, but not the most convenient way for the environment. And as long as the momentum is based on voluntariness, it is only perhaps the top, thinnest percentage of a pyramid that is willing to take responsibility in an enlightened way. These are also the ones who buy the organic cucumber at Lidl and not the Swiss cucumber, but it is still the discounter and not the nice farmer around the corner, where you pay maybe twice as much, but you know it comes from the neighborhood and you do something good for the family. It is then not yet so far. As long as there is no regulation on the part of a taxation, this rethinking will not really happen and no country in the world wants to be the first to introduce this regulation, because there is an economic location disadvantage. And you can't say on the one hand, the population is now obliged but the industry is exempted. And that brings us back to the Green Deal, the Supply Chain Act, the European Supply Chain Act, the Corporate Responsibility Initiative, um, if you are not held responsible as a company for the actions

that you cause at the other end of the world, so to speak, this causality is not broken. So, at the moment when I as a company am obliged to face this challenge, I have to find ways and means to buy better, to manage better in order to give my customers something better to take with them on their way, so to speak, without leaving the price levels. And I think that's where the answer comes from. And that's why it's actually more of a disadvantage for Switzerland as a business location that the corporate responsibility initiative has now been shot down in the first step. But you didn't even ask about that.

MB: No, it's very interesting what you say! I have two more minor questions. One, which part of the supply chain will be the most difficult to make EU Green Deal compliant?

Strellson: Everything. Where do we start, where do we stop! For us, the biggest challenge we are facing at the moment is certainly to take a serious look at Scope 3 in the CO2 balance. Scope 1 and Scope 2 can be analyzed relatively quickly, I think, because that's basically information that I have from my annual reports, which I have to prepare anyway, from service provider contracts with energy suppliers and car manufacturers, etc., because there is master data and I can work with it well. But in Scope 3, at the moment when I am very diverse in procurement, it is incredibly difficult to allow a serious consideration and then also to fill it with life in such a way that I can then also credibly achieve my CO2 neutrality. And yes, I think that will be the most difficult part of the EU Green Deal to achieve CO2 neutrality in a credible way. So I mean, if it says this is your CO2 balance and this is the amount X you have to pay, fair enough, but that is not the solution. The solution must actually be that I achieve the smallest part through compensation payments in the long term, but that I change organizationally so that my entire procurement system manages to achieve CO2 neutrality on its own. And at some point, a recycling system will certainly have to be incorporated into the organizational structure, but until I know what the external impact of my actions will be, I don't think I need to make any effort to say, "Well, I'll start collecting now.

MB: Yes. Yes. The EU Green Deal brings with it a lot of things that companies have to change for the first time. But what do you think is a benefit for you that you can take out of it?

Strellson: Certainly the future viability of all companies, and I am convinced that only those companies will still exist in 20 years' time that are aware of this challenge, i.e. the SDGs, which is one of the main reasons for the Green Deal. We always talk about pieces of the pie, and yes, the Green Deal is certainly nice to have and yes, it is certainly necessary, but the Paris Climate Agreement 2050 and 2030, SDGs, these are actually the actual To Dos that precede it. And every company takes the responsibility to first ask itself which of the SDGs are in my direct, immediate sphere of influence and how can I implement them, and the great benefit for the population, for the world, is actually that if all companies make their small contribution to doing business a little better, we will be able to preserve the beauty of the wonderful planet Earth for longer. And I think that is the responsibility of every company to contribute to this.

Internally in the company, I think it is very positive for the spirit within the company, because today this issue is also discussed very strongly in society. And I believe that it also makes the company more attractive as an employer if you say that sustainability in general is a particularly important issue for us. And it's not just about whether you have a canteen that

offers subsidized breakfast, etc., but how sustainable a company is. Does it have a CO2 balance? What does it do to provide for tomorrow and the day after tomorrow in society? I think that this enthusiasm that is developing in our company right now, based on the realization that we have done the certification, yes we want to invest in the products now, we want to get better in the supply chain. I do believe that this will greatly strengthen our internal position in the employer market.

MB: Um, another question just occurred to me regarding biogas, which you use. Do you also use it for distribution to the department stores or branches?

Strellson: No. So as far as the delivery of the goods is concerned, we are on the road with a third- party provider, so we do have our own logistics apparatus, but we work with a service provider in Germany with whom we have outsourced the entire logistics process. The trucks arrive there and deliver our goods there, and then a service provider takes over the entire process of receiving the goods, storing them, distributing them, shipping them to all the customers worldwide. So it's beyond my understanding what the status quo is there. I know that it is a very stable and well- positioned partner, which is also ISO certified, and which also did the G.O.T.S certification and the GHS with us without further ado, so in this respect it is certainly also a company that deals with these topics at least as intensively as we do.

MB: Yes, perfect, great! Sorry that it went a little longer!

Strellson: Yes, very much so! It's certainly interesting to see what they're already doing with a fast fashion retailer like Tally Weijl. Personally, I would be very interested in that as well. I don't think fast fashion has any future viability. I think if it doesn't turn around then it's a model that has had its time.

We could theoretically manufacture everything except for jackets, that is, virtually everything that is clothing, in Europe, but we simply can no longer transport the prices for everything. So we would no longer sell the goods, because we have a basic cost model. And the customer demands today not a production in Europe but the customer demands that the product is as cheap as possible.

Appendix 3c: Interview Hanro 26.07.2021

MB: I'll start with the first question: What importance does the environment have in your company and how is it anchored in the mission statement?

Hanro: So I think the topic, so I'm talking about the company now, so there's Hanro and then the Huber holding company to which Hanro, as its own company belongs. And Hanro does not include the production, but the production is part of the Huber holding, as well as the fabric production that belongs here. Topic environment is not that I know of anchored in a mission statement. I'm not sure if a mission statement exists, but I certainly don't know it. On the other hand, the environment is an issue here in that we were aware of it years ago. We installed solar panels on the roof years ago and thus have renewable electricity. Our fabric production is Oekotex and STeP certified. So here on the Rhine you can't do anything else. So the fabrics and dyeing works also according to environmental issues and there is of course also chemistry involved.

MB: Mhm okay. Otherwise, can we take a look at your supply chain right now? How is it organized in your company?

Hanro: From Hanro it is so that here the products are designed and also developed to fit. So the fabrics come 90% from here from the house and 10% are purchased fabrics where we sew in fashion sometimes more original things. Otherwise, we buy in the fabric production the yarns and knit them here (39:00). The product is then created here at Marko Hanro in the design department with its own product development department, which practically determines and sets the consumption and production data, sewing data, etc. of the product, so that practically also such a product pack is created with which then both patterns and later then the finished patterns can be produced. These are sewn in Portugal, to the very largest part. And another part is essentially sewn in Hungary. But Portugal makes up 80% for sure. This site also belongs to us and produces exclusively for Hanro.

MB: Yes, okay. And then I read, the warehouse of yours is in Hungary, is that correct?

Hanro: The warehouse is in Hungary and is independent of the production unit, but was once here and then moved to Hungary. And it is indeed close to the Austrian borders, and had certainly been cost transfers. The produced goods in Portugal must then be brought to Hungary and stored and then shipped from there.

MB: And the sewing plant in Portugal is also located at Hanro or the holding company?

Hanro: Yes, exactly, also in the holding company. Does not belong to Hanro but to Huber Holding or production company, so part of the group. 100% part.

MB: Okay, all right.

Hanro: Ah, and I forgot, we also have five products that come from China. So a minority.

MB: Why exactly do they come from China and not also from Europe?

Hanro: Because it's a bra series that was developed in China a very long time ago, and the fit and everything is right, so it wasn't relocated. It didn't make sense to move it to Hanro Hungary, because padded bras are almost exclusively made in China. This has become a domain of China.

MB: Well, they produce 90% in Europe. So, first of all since when and secondly why?

Hanro: So the fabrics we make 90% in Europe and we produce and 98% here, and only the five products in China.

MB: Ah all right. That is, have you always been in Europe, or since when?

Hanro: Otherwise, we have always been in Europe. The factory in Portugal has been there for over a quarter of a century, at least 30 years. At some point, a few things were sewn in Austria and also in Switzerland, when Hanro was still in Switzerland. So Hanro was bought in 1991 by Huber Holding, but remained in Switzerland and only in 2004/2005 moved from Switzerland to Austria to the headquarters.

MB: Do you know, what were the motivations behind why they decided to produce in Europe rather than sourcing from the Far East or somewhere?

Hanro: We source in Europe because historically it has always been produced in Europe. Secondly, one of the characteristics of our brand is our fabrics. Hanro is not a classic bra

brand but we have loungewear, we have nightwear, we have camisoles, shirts etc. that are made of our fabrics. So here is also this idea to bring the fabrics to Asia for expensive money and a lot of energy to fly to Asia and sew a nightgown there and bring that back with a lot of energy is neither cost wise nor environmentally wise.

MB: Okay, yes, then that makes little sense. But let's go one step further in the direction of the EU Green Deal. To what extent have you already had contact points with the EU Green Deal? Have you been made aware/educated about it? Have you received any instructions?

Hanro: No.

MB: Nothing at all?

Hanro: No.

MB: So that means it's all more on your own initiative and as soon as it becomes law you have to go along with it?

Hanro: Yes, we have Oeko-Tex certification for our products and for all our suppliers as well. We also have other things besides fabrics, for example elastic bands or straps. Every one of our suppliers has to be Oeko-Tex certified, which is already a good and reliable basic material, and you can also see that with every H&M article, they are also all Oeko-Tex 100 certified, but it is also a credible certificate.

But the Green Deal has not yet arrived in this form. We are monitoring all the movements in the sustainability story, but as I said, the supply chain law in Germany is already moving in that direction.

MB: That means with the Oekotex 100 you already know that the goods come from a certified producer or supplier. Is it now possible for the customer to check where, for example, the cotton comes from for his lounge wear? Can the consumer already see that or not?

Hanro: The consumer?

MB: Yes.

Hanro: No. The consumer can't see that, no.

MB: Is that what you have in mind, that the consumer will be able to track completely at some point?

Hanro: In the end, yes. But for many materials it's not quite possible yet. Just on the subject of cotton, we work with Swiss spinners, for example, but where does the cotton come from...we need very high-quality cotton, but in the end I can't tell you exactly where this cotton comes from. We have Egyptian cotton, we have American cotton, so very different cottons.

MB: In the EU Green Deal textile strategy, companies are supposed to switch to circular economy business models. Are you already familiar with these models and/or do you have in mind to move in this direction?

Hanro: No, I'm not familiar with these models, which means I also don't know if we want to go in this direction.

MB: *Explanation circular economy business models based on Ellen MacArthur Butterfly framework.*

Hanro: We don't have that at the moment. We're working on a care & repair service right now, so people can say, I have this part here, can you please fix it for me. We can do that where we have our own stores. But you have to see, we don't only have our own stores like Zara, we also have a lot of independent retailers. Basically, one character of the Hanro brand is always, and we also understand this from our customers, that the goods are also very durable because of their good quality. If you ask the customers what interests them, so the end consumers, so if you ask what do the customers actually want exactly, what do they want to know, then it is once the issue of "Made in Europe", so the production in Europe, because that sounds like social standards, etc., and a small CO2 footprint. The other thing that the end consumers are interested in is also the fabric production here at the site, in Austria, as here behind my office is also the factory for the fabrics. And then at the end are the consumers, so they presuppose the longevity. We see that as a plus - the sustainability of the consumers. If you buy Hanro, you get something out of it. Less is more. I buy one part well than many parts cheap and then throw them away, that is still part of it. And other aspect is also if you have a store situation that consumers in fact a sustainable environmentally conscious behavior is then rather times leave the packaging or say I do not need a bag. Interestingly, what consumers ask less about is the topic of "organic cotton", for example, and you would think that many would ask that now, but with us it is assumed that our cotton is good and comes from good sources.

MB: *Opinion on Cradle to Cradle, and explanation of Product as a Service when asked by Hanro.*

Hanro: Yes, cradle to cradle is one thing. Ultimately, it won't end up in the compost heap. The question is always, is it really Cradle to Cradle? In Switzerland, there is also a certification for Cradle to Cradle, which Calida also does very strongly, or rather selectively, and they have incorporated Cradle to Cradle very strongly into their marketing. But I think the only solution for the textile industry is actually its own abolition, so in the quint-essence, of course not really, but in the quint-essence it is simply to produce less. I mean they go through Zurich once and there you think, who buys all this stuff, yeah. Who needs all this stuff. And that is a basic problem that we have. There is simply too much production and a lot of cheap stuff, of course, and it's not very easy to change this consumption behavior and this production behavior when everyone comes along with growth targets.

MB: But what do you think if the consumer consumes less, let's say the customer only buys new things every six months instead of every three? That would also have an impact on you as a company, because you would make fewer sales. How do you think you would deal with that if it were to happen?

Hanro: Well, actually it's not a scare for us, because we generally don't get large quantities and don't sell at knock-down prices. We actually benefit from this movement when people say I'm buying less because they have something from us for a long time. Then you would rather have to ask at ASOS.

MB: So I think sooner or later the fast fashion business model will die out or have to change.

Hanro: Yes exactly, so we are definitely profiteers from this reserved buying behavior. We're not really worried about this sustainability, because it's part of our DNA.

MB: Do you think it's realistic that you could ever offer Product-as-a-Service?

Hanro: What does Product-as-a-Service mean?

MB: So that you sell your goods on subscription-base, for example, and you take the goods back and then resell them, for example?

Hanro: No, I do not see at the moment and with the laundry quite difficult. Whereas there is quite a lively 2nd hand market of Hanro on Ebay.

MB: And that you would offer that, for example, as Hanro's 2nd-hand platform?

Hanro: No, we haven't thought about that yet. So this platform, where would it be? And are there companies that have it like that?

MB: Yes, Cos does that. They have their normal stores, plus they have a 2nd hand online platform just for COS items, where COS customers can offer their old merchandise, online.

Hanro: Oh, okay.

MB: In terms of the Green Deal, has anything changed for you in terms of the sourcing of raw materials or the production of materials in any way?

Hanro: Yes, we have, so not specifically in terms of the Green Deal, because we have not necessarily perceived that, but we have quite with Organic Cotton and another story "supreme green cotton". This is actually a label of a Greek manufacturer, which uses about 80% less water and otherwise needs many less harsh pesticides, but is just not really economic. But I find that from the concept, sometimes a bit more credible than an organic theme. Because he knows what he's going to do and how he's going to do it and he's laid out his fields this way and that way, for sustainable agriculture. But you can not completely abandon the fact that there must also be yield.

MB: Yes, exactly. Do you see potential in a supply chain network or cluster, for example, that you now have, say, in Portugal or Austria, everything in the surrounding vicinity from all smaller suppliers, whether they are top suppliers or whatever?

Hanro: That's a good question. If you take a look at our Hanro website, you'll see that we source from a lot of regional suppliers. So we have a big area here in the Vorarlberg area with embroideries that are 10 minutes away and that's where we source our embroideries from. The laces come from northern Italy, so there are many lace manufacturers there, and yes but we make sure to work with regional products as much as possible. We know that the textile industry in Europe has gone through a very big relocation process. Away from Europe to China, or to the cheaper production countries like Turkey. You have to see that. That means the resources to make here are also smaller.

MB: And that you would have your embroidery in-house now?

Hanro: That's a separate business and that's not really realistic. We already have our own fabric production, and that's how we differ from practically everyone else. Neither Calida, nor Zimmerli, nor Mai has that. Let's say we are almost vertical in terms of the supply chain. So with the fabric. There are also elastic bands, but we don't make them, because that's a separate profession. Rubber bands is a separate business, where you can live on your own as Hanro with a rubber factory and you need customers to utilize it to capacity.

MB: You already produce in Europe, which is already a first step towards reducing CO2 emissions, because the transport routes are shorter. Now I have read correctly on your homepage, you have been transporting only by train since 1989, is that correct?

Hanro: No. Unfortunately not.

MB: No?

Hanro: With the truck.

MB: So the distribution is by truck?

Hanro: Yes.

MB: Okay, now the EU Green Deal is aiming for multi-modal transport, so everything by train and ship. What impact has this had on the prices and delivery times of your products?

Hanro: Yes, I think it needs more delivery time. I don't know if it's that bad in terms of price. First of all, we also ship a lot. USA is our biggest market, Japan is our 9th biggest market, and if it's somehow possible and we don't have any delays in production, then it's transported by ship. And then we go to the next question; in Europe, from Portugal to bring the goods to Hungary to the warehouse, and from Hungary to a store in Rostock, that's a truck. That goes through DHL and these stories. So the small scale, the retail split, our business is not big enough at all. It's a small box, you could get it at home. So I can't imagine that it would make sense to work with a container.

MB: Then you think the best solution would actually still be with the truck but with biogas, for example?

Hanro: You know, that's a difficult question. I don't mind people driving around on biogas, I think that's good, but right now we don't have the luxury to choose. That's more of a question that you really have to ask the trucking industry. We're not there yet, and I don't know if Calida already transports everything with biogas, I can't judge that, but that's almost out of our sphere of influence. We can already say, Hanro wants to transport only with e-trucks in the future, but then we probably won't manage to get the goods to the customer as quickly. For me, the other problem besides mass production is just-in-time thinking. That's the most unecological thing there is. And when you're driving on the highway and you see the trucks, you know exactly that's because you can have everything tomorrow or the day after tomorrow. The small package that you ordered from ASOS will be there in two days. These are all things that have no positive impact on our carbon footprint.

MB: Okay, yes, exactly. Um, then, according to the deal, the collections are supposed to be developed more sustainably, so they have a lot of eco-design requirements that are in the green deal. Do you pay attention to such aspects in the collection development?

Hanro: Our priority is, let's say, to use our own fabrics, where we know how they are made and under what ecological principles they are made, that plays a role. We have also been very involved with regenerative fiber. We're trying to get that to the man. We are a cotton company. We know about the advantages and added value that cotton has for the consumer. But on the other hand, we also know that cotton production is partly negative in terms of water consumption. That's where labels like "Supreme Green Cotton" come in. These things play a role for us. If we find suitable qualities, we try to include them in the collection. So

let's say as far as fabrics are concerned, that's the main part of the product. And these certifications of our suppliers play a role in the collection development.

MB: Yes. I see. Okay, then already the second last question. According to the theory, as you read it in the books, it is recommended that the customer should be placed in the heart of the supply chain to be able to satisfy their needs. Do you think in the future the environment will take that place?

Hanro: No, I don't think so. I think the order would have to be different. I believe that we will encounter another generation that will shop with a different environmental awareness and demand certain sustainability criteria. And only with the consumer will the environment be thrust into the center of consideration. We end up doing business and selling "Customer First." So "Environment First" will be a requirement that comes from the generation, that would be the nicest thing, and will be a requirement that may also come from legislation. That's a probability.

MB: Okay. Now, broadly speaking, for which part of the supply chain do you think it will be most difficult to make EU Green Deal compliant?

Hanro: I think it is possible to produce with green energy within the framework of a sustainable energy policy here in Austria, because we have a lot of hydroelectric power and a high share of regenerative energy, and I therefore think it will also be feasible with wind energy in the next few years. Distribution, on the other hand, is a challenge, because it is a matter of speed, of availability immediately. This also has to do with consumer behavior and how environmentally friendly the transport vehicles are, but I don't know that for sure. If they switch late, then that's an issue but that's also the issue with regular cars. When will we all start driving on electricity and what kind of electricity will we drive on, that's also a question. I think that's a challenge.

MB: Do you think the EU Green Deal will bring any benefits for you internally, except that you will have to comply with many laws?

Hanro: I think the Green Deal moves us forward. I think some sanction by the state or bodies, the government or the EU does end up moving things. You're not going to get anywhere with the pure free will story. I think in the overall pressure, the competition is too great. And if you lose a competitor just because he is a good-guy, then it becomes very difficult. Very few companies can stand that. We are not in an uncomfortable situation now, but when I think about it, many are in a very uncomfortable situation. I think that's why you just have to sanction certain things. And if you just allow everybody to buy a water bottle every day in the supermarket and then throw it away in the evening, then I'm sorry, we don't need a Green Deal. For me, these are just huge steps where you can avoid plastic waste. And yes, I think the state has a huge task here. So I think what is also important as a last point is also to establish a sustainability management in the company. That means that someone is responsible and keeps track of everything. How quickly and easily it is said that the electric car is the right one. But is it? When the electricity comes from a coal-fired power plant? So very difficult questions. And if you use the dryer when you wash, then that causes a lot of microplastic. And the main source of microplastic comes from polyester from textiles.

Appendix 3d: Interview Jet Set 30.07.2021

MB: How important is the environment to your company? Is it included in the mission statement? (cultural anchoring)

Jet Set: Well, the thing is, we are a very small firm. We are very very small today in 2021. We are 6 people in the company, but the environment is very important to us. We also have, which is quite exciting, every age group represented in these six people and it is still quite exciting to always hear what the older ones think about it and also what the very young ones think about it. We discuss it a lot here, but we haven't integrated it into our mission statement or vision at the moment. As a very small company, it really is very difficult to implement this properly and to have the resources to do so. But it's a big topic for us and is actually discussed again and again, whether we're talking about a collection or about the supply chain or distribution. Environment and sustainability is always a topic with us, it's always there somewhere. It's not written in black and white at the moment, but we're working on it to see how we can do it ourselves.

MB: But so it's always in the back of your minds so those aspects are taken into account?

Jet Set: Yes, yes exactly.

MB: In which countries in the EU does your company produce? How long has it been producing there or has it always been producing in the EU? What were the motivations to produce in Europe?

Jet Set: Well, our company has been around since 1969. It was the same with the old owner, who has always produced a lot in Europe. At the moment we produce everything in Italy. The former owner already produced in Italy, but of course, because he was much much bigger than we are now, so I mean in the past Jet Set was a huge worldwide brand and of course they already produced partly in Asia, but still had a large part in Italy. Nowadays we are really rather small and we produce everything in Italy at the moment and we try to stay in Europe. So we don't want to leave Europe.

MB: And with what reason?

Jet Set: Partly the idea of sustainability, because we think that if we have shorter transport routes in the supply chain, then we also have fewer CO2 emissions. From that point of view, it's of course quite good if we produce in Europe. And the other thing is that we simply say that Europe still has a good status, and for a luxury brand it is also a really good icon to say that we produce in Europe. But in terms of the supply chain, we naturally have the idea that we don't have to fly or ship anything. It's really only a quick 4-5 hours on the truck and then it's there.

MB: Can you explain to me how, that your supply chain is built from design, raw material sourcing, production and further to distribution?

Jet Set: Mhm. For us, it's like, we have the collection designed. We have external designers. We don't have internal designers. That gives us flexibility to maybe adapt our collection with a new designer, so we're not so rigid and that's what fashion has to be. Once we have designed the collections, we choose the materials for them. We do that together with the designer. Maybe he or she has already found materials that he or she envisions for the piece they are designing. But these materials must also have certain quality characteristics. They

have to have a certain environmental thought behind them. So we are also very keen that we also really have the sustainability thought in it, especially with the material sourcing and the filling material, because there are already very very many options nowadays. We are actually already doing that. I mean our big part that we are really known for is ski clothes and all the filling material is recycled material that we use. And we source that and we source that actually mostly in Italy. As for the fabric itself, the fabric that we use a lot and are also very well known for comes from Switzerland. So the sustainability idea is not quite there, because we ship the material down to Italy and then back to Switzerland again. But as long as it's not all the way to Asia and back again, I think it's still okay and you can still stand behind it. The worst thing I find is when you produce in Asia but then source somewhere in the world where you are actually already and then the goods are shipped there and back and makes the journey 5 times.

For us, it's like this: we design, then we source, and then we produce. And then everything goes to a central warehouse that we have in southern Germany. And from there it is distributed. And, that's where we no longer have any responsibility for how it's distributed, because our big business is wholesale and we actually deliver everything ex-works, which is outside of Europe. In Europe we deliver ourselves, but everything else the customers have to organize.

MB: Can I ask, the manufacturing facilities in Italy where Jet Set manufactures, are those part of Jet Set or are those independent companies?

Jet Set: These are all third parties. That means they are all independent production companies and there can be a change every season, but we also look at how they are organized. We don't have a supplier audit in that sense yet, but we are there regularly and see how they work. How energy-conscious and environmentally aware their production is. It's important to us that they have the same ideas as we do in this respect. For the fact that we are so small, but unfortunately we can not always choose. But in Italy, it is also so that they are all under the EU law and must follow certain standards. And from that point of view, it's not such a big danger to get into something bad.

MB: Then let's go one step further in the direction of the EU Green Deal. By the fact that you produce in Europe, have you already had any contact points with the EU Green Deal, have you been educated about it, or are you expected to be proactive? Because at the end of the day, you take responsibility for the products that you produce in Italy.

Jet Set: Well, I must say quite honestly, I had never heard of it before I got your questions. Then of course I googled it yesterday because I was thinking, there's no way I don't know this. I'll certainly look into it a bit now and find out what it is, but probably won't have the time to fully deal with it. Neither will the others on our team because we're just so small and everybody has to do everything possible and we just have our thought and try to follow it and hope that we do everything right with it. So the way we think it is right. And then, of course, if there is something forwarding-wise, then we will automatically anyway, because we always work with suppliers, they will automatically deal with that.

MB: Yes, of course. I mean, this Green Deal has not been around for very long. It is based on the Paris Agreement, which aims to prevent global warming from increasing further. The EU Green Deal was signed off in 2019 and it is only now that it is becoming a law that

everyone has to adhere to. But if you say that you as a Swiss company have never felt anything, even though you produce in Europe, then that is also a statement.

Jet Set: Well, I also have to say I worked in big companies before and I really never heard anything about this. And also in my network, I have never heard anyone talk about this.

MB: Yes, that may also be the case, of course. Then regarding the transparency of your supply chain - can the customer track where the ski jacket comes from, for example, track where the materials are from and who produced it?

Jet Set: No, not the consumer. But our wholesale customers do. They get all the information about the substances and the products. I'm not quite sure about that, but I think the big online shops also show where the products come from. With us at the moment you don't see it, but we are now creating a new webshop and there you should see it.

MB: To what extent is Jet Set already familiar with circular economy and its business models?

Jet Set: It's an issue, absolutely. We were just talking about doing a promotion in September at our outlet. It's a difficult issue though. I come from the company Navy Boot, after all, and they used to belong to the same owner as Jet Set belongs to now. And we used to do that there every year twice. So twice people could bring their shoes back and we passed them on. We would like to do something like that at Jet Set now, although we don't know exactly how it will come out or how it will be received by the customers, but we would like to try it now. But it is also a very difficult topic. Especially if you are as small as we are, it is difficult to recycle the goods afterwards and I think it is also very difficult in the luxury sector with these second-hand things. Regarding recycling, we are currently looking at a new filling material for winter clothing, which is made from old textiles. And there are also really good suppliers in Italy who are already doing this. The only problem is that it is very expensive and makes the clothes very expensive and the consumer is not willing to pay for it nowadays. Because everybody wants to be sustainable and environmentally conscious, but they still don't want to pay for it. And I also think that's why with many companies at some point then also that they simply make a collection. So if you look at big companies, they do a capsule area that is sustainable, and the rest is just not, because you just can't afford it as a company. That's just the way it is because you don't earn anything from it anymore.

MB: Yes, in the interviews that I conducted, it was also mentioned that it is very expensive, and brings a whole rat race with it, and you don't know exactly whether it is still profitable at all.

Jet Set: Exactly. So I also think that consumers are not ready for that yet. I mean, I work in the middle of the city in Zurich and next to us is Zara and that's probably the worst example ever of sustainability. I mean, they have a new collection coming in every two weeks and people are lining up. That's really tragic...and just because they get awesome fashion goods there that are just cheap. So first of all I think the consumer is not willing to carry that financially, even though everybody wants to be sustainable. But they still don't want to spend the money for it. And I also believe that fashion is simply not ready either. So, I think financially the consumer is not ready and also otherwise the consumer is not ready. You also have a question with the second-hand story and the lending of clothes. I don't know many people who would do that. And I think that area does exist and that's the second-hand

business but I think that's a very different clientele than someone who buys a new garment. So I think it's very difficult to get the person to rent clothes. The person knows that someone has worn it before them and I think our society is not ready for that yet, except for the very people who already buy second-hand.

MB: Yes absolutely, I understand your point.

Jet Set: Well, I think there are areas where you do that, for example, festive dresses. But now in the normal area, I don't think so. I also don't think that it would become such a big business. Zara still has far too many customers for that.

MB: But yes, suppliers like Zara would have to follow. Legal regulations would have to be introduced or political pressure would have to be exerted to ensure that companies offer these circular models so that slower consumer behavior becomes the new normal.

Jet Set: But then you can only do that if you get support. This circular economy is a very expensive thing. I mean, who pays for the transportation of these things? Because, these things are shipped and come back, and are shipped and come back. That's then again a question of the whole environmental consciousness with sending these goods all the time. So I was once at the post office in a distribution center and the number of containers of Zalando packages was insane. That's what you have to stop. This throwaway society. You won't be able to stop it unless you go after people's money. Only then will humanity rethink, I'm convinced of that.

MB: We have now already discussed product-as-a-service and materials a bit. You will be required to use more and more sustainable materials. Can you tell me how much recycled materials you use and what kind?

Jet Set: Well, the filling for us is all recycled. So if you take either a ski jacket or a light padded jacket, we don't have any down jackets anymore, then the filling is made from recycled material, or exactly from PET bottles. With the fabrics themselves it is a huge problem. Since we would very much like to switch to reused textiles, but the problem is that we are too small and cannot reach the minimum order quantities. We sometimes look at the t-shirts and we can't even do that because we have to order something 1000 meters of fabric, which would last us about ten years. It's very very unfortunate because we would love to do it but we can't right now because we're just too small.

MB: But now, if this becomes law one day, and only a handful of materials, for example, or specific materials are allowed to need that are sustainable, do you think you'll have to change suppliers, or can you grow with the suppliers you have now?

Jet Set: Well, I think we'll have to adapt, because I don't think every supplier will be able to follow so quickly. The modern suppliers who already offer both will not be the problem. But otherwise it could be that you have to change suppliers and that's actually a cost point for the company that is additional to what you already have for costs, because a change of supplier is never without costs.

MB: From the sound of it, you already have a bit of a cluster in Italy with suppliers in close proximity. Do you think that's a big advantage for other apparel manufacturers as well, if you set it up like that?

Jet Set: Yes, absolutely! You can save a lot of time, and you can also save a lot of money. It's not just that, of course it's a bit more expensive in production, but if you look at the entire value chain, it's not always the case that it's cheaper to go to Asia. Personally, I think it's very important that we in Europe have a certain economic independence compared to Asia. And that's why I always try to support Europe whenever I can.

MB: Do you think that also brings increased control over its suppliers?

Jet Set: Yes, of course! I mean, I have four hours by car to my suppliers. That means I can decide today if I'm going to Italy the day after tomorrow to see how things are going. That's difficult if I produce in Korea or China, for example. It only takes me two days to get there and the costs involved are unbelievable. So of course you have much better control with these short distances, unless of course you have people on site. But as a small company, you can't always afford that.

MB: Then regarding transport routes - the EU Green Deal states that goods transport should only take place via train and ship, and via ship also means using the rivers throughout Europe. What means of transport does Jet Set currently use and what do you think will be the impact on prices and delivery times?

Jet Set: Well, we use groupage shipment at the moment, so trucks. We try to always get into groupage if possible, because we don't fill a truck ourselves. That's why we work with a freight forwarder who collects goods in the area where we produce anyway, brings that back to his hub and then drives from there to Germany with a full truck. We do that when we have enough time, because that takes a lot longer. You have to calculate at least a week from Veneto, which is near Venice, to Munich, which is not really a thing. But if I order it express, then we still have the goods almost the same day, but we try to prevent that whenever possible.

With the ship, yes, the goods would travel all over Europe and then still back on the truck, because I can't get to Bavaria by ship. There is no Rhine there, nothing. So I simply can't get there by ship. That simply exists as well. You can't always take the ship or the train, because the train doesn't go through there either. We have our central warehouse in Bavaria, quite a bit out in the country. And that is a very small supplier with whom we have been working for many years. He has a few brands that he looks after and it's super great to work with him. But you really can't get there by train or by ship, so we have to take the truck. But in that we work with Groupage, we actually try to transport as environmentally conscious as possible.

MB: But if you had to switch to the train now, for the routes as far as it goes then you would have to expect higher transportation costs?

Jet Set: Yes, you would have to factor in even more time and also higher transportation costs, exactly.

MB: We already discussed collection development a little bit earlier. Now, to what extent are you looking at an ecological design and where do you see your focus or priority in design?

Jet Set: What do you mean by ecological design?

MB: Yes, so materials, durability, etc.?

Jet Set: Yes, it's designed so that you don't need too much material. But I have to be honest, we don't pay much attention to that. We pay attention to the cost point, but not to the

environmental point. There's still the fact that fashion is fashion. If this jacket needs batwing sleeves, then we'll do that, too.

MB: Yes, an example now would also be to need a material that is durable and robust and lasts for 10 years instead of just 2 years.

Jet Set: Ah, we try to do that anyway, of course, because we also want to be very good in terms of quality. Our fabrics and everything are all selected so that they last longer. Especially in the ski area, they have to be very durable.

MB: Where do you see the biggest challenge with your products in terms of the product itself, making it biodegradable or CO2-neutral?

Jet Set: Well, with the suppliers, with the fabrics, with the materials, that you can really get them at a price that you can afford. So, of course, we would love to be totally sustainable, but we just can't in terms of price. We just really can't afford it at all.

MB: Yes, understand. But if we look more at the garments now. A ski jacket needs a coating and a certain water column. Can you do that without chemicals?

Jet Set: Unfortunately, I can't answer that now, whether it's possible. But we certainly try. That then also flows back into a quality consciousness. Wherever we can, we try to use other colors or something. You can also dye fabrics with chemical dyes or less chemical dyes. I think that's a thought that fashion companies have to have, but even there, if you take a closer look, it's just that it's more expensive. And there we are back to the topic from the very beginning. I wonder why everything is more expensive. Most of the time it's just that there's more transport, which we don't really want, but the goods have to get to us somehow and then you simply have more steps in production if you want to make it more sustainable. It just gets more expensive and you'll never get it right that way.

MB: Do you already have eco-labels or certifications on your products?

Jet Set: Yes, we have fabrics that have the BlueSign Certificate. Oh now I just have to take a quick look. So we have, yes, but I'm not involved with that on a daily basis. But we have different certification for our fabrics.

MB: Another label would be Oekotex-100, for example?

Jet Set: Ah, yes, exactly, we have that almost everywhere, especially in the latest collection. We make sure that we are always there.

MB: Do you need that as a marketing strategy as well?

Jet Set: Either marketing or sales strategy, yes. In sales, of course, we already brag about it.

MB: As you read it in the textbooks, the customer and their needs should be at the heart of the supply chain. Do you think the environment will take that place in the future?

Jet Set: Hmm... quite a good question. I don't think so, no. I just don't think the consumer is willing to pay that. They'd rather buy a Zara T-shirt for CHF 15, but for that money you probably can't produce it sustainably. So, no, I don't think so.

MB: Okay. Then we're coming to an end soon. In the supply chain in general, which part will be the most difficult to make CO2 neutral?

Jet Set: Hm... I think the fabrics. That's going to be the hardest part, to be really CO2 neutral there. I think with shipping etc. You can get there very easily, especially with these electric trucks, which are becoming more and more common. With the materials, I think it will take a bit longer, because there is no other solution for certain materials.

MB: Exactly, and the more complex the product, the more difficult...

Jet Set: Yes, exactly, and certain things you can't just replace like that.

MB: Then, do you think from this Green Deal, so I think in the future there will be a little bit more to come - do you think there will be something positive for them, besides a lot of effort in converting and costs for certifications?

Jet Set: Well, I don't know, I can imagine that people who haven't thought about it so far will finally start to think about it. But I don't think there will be much change in the fashion sector at the moment, because at the moment there is no other topic in fashion, because sustainability is the number one topic in fashion and if you don't pay attention to that, then you have a problem anyway. But I do believe that in other sectors the Green Deal can bring about a rethink...especially in other countries. There, a rethinking is more critical.

MB: Mhm yes. Now as a final question for you. Just from your knowledge and your knowledge that you have and based on what we have discussed now - How would you advise a new company now? How should they set up their supply chain, as CO2-neutral as possible?

Jet Set: Yes, simply that sustainability is always "on top of the mind. That you always think about the environment and also look at the whole value chain. I think you can become CO2-neutral very quickly for a small part, but then ignore the other 80%. That's why you really have to keep an eye on the whole so that you can become CO2-neutral or at least more environmentally conscious.

MB: Okay, so keeping that in mind and also considering that in any decision making.

Jet Set: Yes, exactly. But really always look at the whole thing. That's the way it is with the supply chain anyway, that you look at the entire value chain. That you don't just look at production, but at everything from A-Z, and that's how you find the points that you need to discuss. And I also believe that it is very important to have employees who are responsible for this and who look at everything, because otherwise you won't get it right. Otherwise, everyone works a little bit everywhere, but if you hire someone specifically for this, then they can look at the whole thing and really make a profit from it. So that you become CO2- neutral but keep an overview of the costs.

Industry Experts

Appendix 3e: Interview Green Party Switzerland 26.07.2021

MB: What importance should the environment have in a company and what do you think are the expectations for companies in terms of the Green Deal?

Regula Rytz: All right. The Green Deal is a European project and not a Swiss one. We are talking about Switzerland here and in this respect, unfortunately, there is not such a strategy here that tries to make the entire economy more sustainable. And from our point of view, this is a major shortcoming of Swiss economic policy, because from our point of view as Greens, the economy, i.e. the companies, have an enormous lever but also a major responsibility to ensure that the production and consumption of goods and services are sustainable, i.e. that they do not pollute the environment but are also organized in the sense of a circular economy in such a way that absolutely efficient use of resources and raw materials is guaranteed.

MB: According to theory, it is recommended that the customer should be placed at the heart of the supply chain in order to satisfy their needs. Do you think in the future the environment will take this place?

Regula Rytz: Well, I believe that customers and citizens should not be excluded, i.e. these different positions. And that it is also in the interest of the customers, who are at the same time citizens or parents of children who want to live in freedom and security for the next 30, 40, 50 years, that these interests must be brought together. And that means that often the customers do not have the possibility to decide what consequences the production of the product they buy will have on the environment and on the long-term life chances of them and their children, and the future generation. Therefore, as soon as more transparency is created about what exactly is in the products and what effects their production, their distribution and the trade have with it, that then also the needs of environmental protection and those of the customers come much closer together. We often see this with food, keyword "animal welfare", where we can still import battery eggs from abroad in Switzerland, but they remain on the shelves.

MB: Do you think then also that the understanding will come increasingly from the customer?

Regula Rytz: Absolutely, but there is a lack of information, whereby it is clear from our Green point of view, and for me personally after many many years of politics, that you cannot delegate the responsibility for a sustainable economy to the individual, but that there are also very clear political framework conditions for it to become sustainable. As an example, there is a popular initiative that the Greens have launched, the so-called "Fair Food Initiative", proposing that there are also possibilities for generally binding agreements by importers and wholesalers for sustainable products. So, that if all importers in the food sector, especially the big ones like Migros and Coop etc.. If all importers in the food sector, especially the big ones like Migros and Coop etc., agree that they will not import asparagus in January, voluntarily, that they will declare this generally binding and that the competition from others who do not participate will not be undermined afterwards. So like generally binding agreements are from our point of view an important way to make the products that

are offered more sustainable. And also save the customers from having to go to the store with a book where everything is written about the risks and side effects of the products they buy.

MB: Mhm, yes. Companies are now increasingly expected to adopt new business models, i.e. circular economy business models. How do you think this will change activities in the supply chain for an apparel manufacturer?

Regula Rytz: Well, Switzerland is not involved in this regulation, but for Europe, so what is necessary from my point of view, for Europe it is of course enormously important that the whole fast fashion situation changes, so that these are sustainable production chains that are supported. Actually as we have demanded for the Fair Food Initiative for the food sector, where it is a bit more obvious that you harm yourself if you consume very unhealthy food, that really the kind of production, the compliance with international standards, ILO, guidelines or requirements for the labor sector against exploitation, etc., should be supported. That these importers and producers have to make sure that the international regulations to the environment and ecological and social aspects are respected. So I think that is already expected from the producers that they have their raw materials or semi-finished products that they need, that they have them under control and know where they come from and under what circumstances they have been produced.

MB: The EU Green Deal says that the textile and clothing industry should focus on the circular business model "product as a service". That means that the producer retains ownership of the product. Are you familiar with this model?

Regual Rytz: Yes, we know this model, we know that it exists. It is still rarely used and especially with textiles it is still relatively difficult to implement, I have the feeling. So we know that the model exists in the area of household machines, for example Jura coffee machines. It is such a product that is manufactured in the circular economy and there it is possible, for example, that one leases or uses a large coffee machine for an entire office and it continues to be maintained and supported by the company, but how that works in the textile sector, I can't imagine.

MB: Explanation of Product as a Service in the apparel sector.

MB: Do you think in the future this will influence or increase the competitiveness of a company?

Regula Rytz: Well, I can't judge that it increases competitiveness. There is already a lot of such sharing models, i.e. classic flea markets or clothing exchanges, so that's nothing new, but for me it's more a question of whether it's worth it A) to really make it a business or B) is it simply like a flagship performance that a company wants to shine a light on for advertising reasons, and above all, is it really more ecological in the long term to lend out clothes in a certain size that have to be cared for again afterwards. Ultimately, the whole online trade with clothes with Zalando etc. has almost become such a model. Since many younger people order large quantities, try them on, wear them once and then send them back and part of them is then destroyed. And if you look at it as a whole package - how can you guarantee that these garments will be reused, especially if they are high quality garments, then I would like something that really fits me. I'm all for trying things like that, but I think it's very often more promotional than it is really long-term environmental benefit.

MB: I've done a few interviews with companies already and it's often said that they're expected to go green and to change to circular business models, but these manufacturers are still specialized in selling products. So if they just guarantee a longevity of the product then the question is how do they make money?

Regula Rytz: So I think the textile sector is really very demanding in terms of the circular economy. In textiles, there is actually a cycle for textiles. You put them in a garment bag, one part is recycled or sent to Africa, where the local textile markets then destroy it, and one part is taken apart and reused as insulation material. There are already some reuse processes already, but that you reuse the finished textiles, except now with flea markets, there are limits here.

And in the case of Jura coffee machines or bicycles, the entire maintenance or repair process is of course also subject to a charge, which means that you earn money with the care of the textiles afterwards. So that would be cleaning, or repairing, or adjusting, and these are services today, especially in the textile sector, that are not very well paid, because they don't have a high added value. And I think that's already a problem. And that's why I have the feeling that in order to make the textile sector more sustainable, you have to start in production on the one hand, namely that you pay attention to biologically produced raw materials, i.e. the whole catastrophic development with cotton production, enormous use of pesticides, destruction of local water cycles, monocultures, miserable working conditions, etc. So that's where the biggest problems are. So there you have the biggest levers for sustainability.

MB: It's now also a thing that production used to be in China and is now being relocated back to Europe. This has now become a bit of a selling point and you have shorter transport routes and lower CO2 emissions. Now, however, there is a bit of a conflict here with regard to less CO2 emissions, but higher costs, because production takes place in Europe...

Regula Rytz: This is an issue that is exactly the same in every other area and it is clear that if you sell goods, whether it is food or textiles, where today there is a very large low-cost sector that does not pay attention to sustainability in the ecological and social area, then this leads to an increase in costs and end consumption costs. This means that customers must be prepared to pay appropriate and fair prices for textiles produced in Europe. And that automatically means that you don't throw them away every month, but that you try to maintain or adapt them as long as possible. I think this is a completely different kind of consumption. I once met a textile entrepreneur from Switzerland at an economic symposium who used to produce in Ticino but has now shifted production to Slovenia and who said that as soon as the transport costs were calculated at true cost prices, production in Slovenia would no longer be worthwhile and he would be able to produce in Ticino again. But road transport is so cheap today and is carried out by totally precarious carriers from Eastern Europe and as long as this is the case, global production and global trade will be the issue. This means that without cost truth in transport, it will be very difficult to bring back the production.

MB: Are there then any countries in Europe that you find make the most sense to produce in, so that production costs don't get too high and too much expertise doesn't fall away at the same time?

Regula Rytz: Well, there are the Eastern European countries, such as Slovenia, and there are very well qualified employees who are also tied to the company and they try to implement a progressive company philosophy there and also with good social benefits, etc. So I mean Europe is big and there are the very specialized high price and high wage centers and Switzerland is one of them and Baden-Württemberg and there it will be difficult to relocate a textile industry now, but now in those countries where there is higher unemployment and lower labor costs, there is a wide spectrum in Europe. It depends very much on the wage costs and minimum wage standards and all the specifications in the social area.

MB: In your opinion, it simply needs a change in thinking from the consumer rather than, the product being sold at the current price and that somehow being subsidized?

Regula Rytz: So subsidizing consumption now seems to me to be a very big break with our current economic system and especially of non-essential products. So I mean food, there are subsidies via direct payments, border protection, customs measures, but in the area of textiles, a certain basic need is necessary, but a large part is fashion, leisure or self-dramatization. So I can't imagine that anything would be subsidized. I think we really have to regulate it through global, internationally binding standards. That means compliance with ILO regulations, with global environmental agreements, and you basically have to make the production of cotton, i.e. of basic raw materials, more sustainable by greatly reducing the use of pesticides. And for that, I think it's more the companies that produce or sell here, the retailers have to create transparency about the environmental impact of their products and I think that needs, I mean today's textiles and fast fashion is kept alive by an enormous advertising effort and it needs just as much information or advertising about sustainable products. So that doesn't happen on its own. And the customer can't assume sole responsibility, and companies also have an important leverage effect, but ultimately the framework conditions must be improved politically at national and international level, otherwise restructuring or transformation won't work.

MB: Yes, such a conversion is of course also very expensive for companies, and above all the EU Green Deal also wants people to rely on multi-modal means of transport. That means more trains and also ships, and also ships in Europe. What do you think will be the impact on prices and delivery times and how should companies deal with this?

Regula Rytz: Well, rail transport is certainly more expensive than the totally deregulated and precarious road transport. There you can also ultimately, so it's the whole package, as if you simply say you have to switch textiles and other goods in the future in the name of the Green Deal to rail and sea transport, but then you also have to take the precariousness out of road transport at the same time. So then we need minimum European wages for road transport. And I spoke to a CEO of a large Swiss transport company that had set up a branch in Belgium and said that before the eastward expansion, things were going extremely well. He built up a large road transport company in Belgium in a very short time and really with Swiss Quality requirements and as soon as it opened up and Eastern European countries came into this market with completely deregulated working conditions, they could no longer offer competitive prices. So if this continues, i.e. the precariousness continues to be accepted and the whole tax differentiation, that you hardly have to pay taxes in the Eastern European countries, that trucks are manipulated, all environmental regulations are ignored, then it is of course incredibly difficult to implement a cost structure that will hold up afterwards. So

in this respect, it really only works as an overall model, and then the sustainability framework conditions must also be improved at the same time.

MB: That means train and ship are the preferred means of transport in Europe. But if the social conditions for road transport are now in order, could we simply use trucks that are powered by biogas?

Regula: Road transport, for example, has been an issue in the CO2 law, that CO2 limits should also be introduced for heavy goods vehicles, so that is clear to me, train and ship, but also there depending on the drive technologies. In Europe, for example, there is still a railroad system that is not yet electrified, and then it doesn't change very much. So I think ultimately the means of transport is not the most important decision but the question of what environmental impact has the means of transport that you choose. And of course train is absolutely today, despite the gaps that still exist in electrification, the most environmentally friendly means of transport. With shipping, there can be gaps there as well. There were problems with shipping on the Rhine in the summer of 2015 and 2017 because the water levels dropped and today floods are the problem. It has risks associated with it everywhere. But road transport under today's conditions is certainly the absolute worst means of transport there is with enormous environmental damage but also enormous social damage.

But in Europe, it is clear that rail and ship must have priority. Air freight must not be an issue, and road transport must only be cost-reflective, i.e., include climate and environmental damage in the price. The Paris climate agreement will lead to a complete decarbonization of all forms of transport. This will generally relieve the CO2 footprint of the transport chain. Of the carbon footprint of a garment, transport (which covers tens of thousands of kilometers) currently accounts for between 7 and 10%. Around 30% is attributable to manufacturing. According to Umweltnetz Schweiz, the rest is due to use - as washing, ironing, micropollution, disposal. The longest possible use of a garment and low-energy care (washing only at 40 degrees, no dryers, filtering microplastics, no ironing if possible...) is therefore an enormous lever! Whether commercial "sharing" will bring big improvements here is doubtful. From my point of view, it is rather awareness-raising - and therefore important. However, eco-design, i.e. the conversion of the entire production and utilization process into an environmentally compatible circular economy, is central.

MB: There are now many challenges for a clothing manufacturer. It's all very expensive and if they don't receive any subsidies, what is the incentive for a company to participate here, apart from the legal requirements?

Regula Rytz: So the whole question of the conversion to a circular economy as you know it in other areas, the textile industry is just not so important in Switzerland, that's why they don't talk about it so much, it's more machinery, metal, watches and environmental technology and so on, which very strongly discuss circular economy, and printing, cradle to cradle printers and all kinds of things, there is already a great progress in Switzerland. And by the way, there is also a strong political will to promote this. So the whole research, conversion, transformation is for me also quite an area that can be supported publicly. Through favorable loans, guarantees up to and with projects that help, for example, support pilot projects. That is the moment when you can also accelerate the transformation with public money. And afterwards, it is certainly prioritization decisions of economic policy, i.e. settlement strategies or economic policy support that can be guaranteed. E.g. Canton Geneva

has provided lances for Ecosite, i.e. ecologically producing companies that optimize their cycles among themselves through favorable leases, land prices that are made available to them, i.e. a classic economic promotion that can also be used for the support of circular economy enterprises. And also the procurement law - 40 billion Swiss francs that are awarded annually by municipalities, cantons and the federal government for uniforms, police, military, clothes for hospitals, nurses, so that one consciously says in the tenders that one only wants products that are manufactured according to the rules of the circular economy. This certainly results in additional costs for the customers, but these costs are borne by the general public and are thus borne socially.

MB: But do you think that support will actually come or do you just think that would be nice?

Regula Rytz: Well, Ecosite has a study that my colleague from the Council of States in Vaud has done, where she shows how you can promote the green economy in the cantons through economic policy decisions, and in the whole area of procurement, we have revised the Procurement Act 3 years ago, where also according to WTO criteria new ecological or sustainable differentiations can be made. That means you no longer have to take the cheapest price for procurement, but you can take very strict sustainable conditions, except in transport. And it is interesting that transport has been deliberately excluded from international procurement law, but for example, that one makes a tender, that is an executive function, and in the construction sector we have made tenders where only companies can apply that have the latest machinery that is CO2-free or filters particles.

MB: Oh, okay. So that means one has priority.

Regula Rytz: Yes, you can include quality requirements in the tender criteria. And what is also being done more and more in the technical area is that you stipulate repairability, durability or long guarantees. And as soon as this is included in a tender in a large public market, companies that produce quality and fulfill sustainability criteria immediately gain a market advantage. This procurement law is an enormously strong lever and especially in the textile sector I have discussed this with the professional clothing supplier who went to Slovenia, he says, if you focus on sustainability in public tenders, then we have a huge market in Switzerland.

MB: So what happens to the other companies that don't have the money to transform?

Regula Rytz: From my point of view, the whole transformation process is something that can be supported, and it is now our turn at the national level. We now have a budget debate and receive 1 million francs more for support. So that's a small part, that's InnoSuisse. And also Secco in the area of green economy, which can support such processes, and we as Greens assume that even more direct support must flow there. Also very important are guarantees and credits at good conditions. So that a company can be guaranteed 50,000 or 100,000 francs as start-up aid for a conversion for a production process with direct funds from a fund.

MB: If we go a bit more industry specific now. Do you think that the production sites of the supply chains should best be located at the garment manufacturer for more control and transparency?

Regula Rytz: That is probably still difficult to implement. Well, it might be possible with the really big ones. This is happening more and more in the food sector. For example, Danone,

a huge food company from France, is buying more and more land in Eastern Europe in order to designate it for direct production.

It would certainly be optimal, but I imagine this to be relatively difficult and it would again be a greater hurdle for the quick wins, because the investment requirement would again be much greater and also the financial and corporate risks would increase. I have the feeling that it could be done faster, or is already being done today, e.g. Hess Natura, which already has its supply chain under control today in that they know exactly where they buy and also have local agents there, and know under what conditions production takes place, that their quality criteria are met and their entire quality chain is controlled there.

MB: Exactly, that's what I mean about already starting with the quality testing.

Regula Rytz: It is imperative that everything starts with a good quality check, but owning the site is I think too big a hurdle, but certainly not impossible.

MB: Then as a final question, I'm trying to give advice in my master's thesis for a clothing company that wants to start up. So how would you advise a clothing company, based in Switzerland but producing in Europe, on the Green Deal?

Regula Rytz: I would say to them that this environmental problem we have is in two very big areas: climate and biodiversity. So, the destruction of our livelihoods, biodiversity, etc. And, that these are issues that are becoming more and more visible, bigger and bigger, and more and more difficult, and people will understand this more and more. From that, the customers will also change their needs, and from that, if they go ahead quickly, they will definitely have a market advantage. If they go ahead and try to appeal to young people. The young people who work in the climate movement don't buy new clothes anymore, they just exchange them. That means you could also try to create customer loyalty there, in which they offer a sub-segment of clothes that they no longer need at a lower price, but now not consciously only to address the environmentally conscious young generation also and can try out new forms there. But at the same time they must have the main business under control with quality assurance, sustainability, show how and where their clothes are produced, with what economic, ecological and social conditions and that they should bring that much more to the fore. They should really advertise this and say that if you buy these clothes, then you are not destroying our livelihoods. That really has to be built into a big advertising campaign. And, of course, put pressure on politics through the business associations to support the transformation processes more strongly and also put pressure on the procurement authorities so that the efforts that are made are also honored in the procurements. This means that a company can get a grip on its production processes and change them on its own, but it also needs lobbying at the association and political level to improve the framework conditions and increase support for the transformation.

MB: And in terms of clothing - should manufacturers take back clothing and offer recycling activities? Do you think a company should have that in its business model from the start?

Regula Rytz: I don't think it has such a great significance in real terms, because it already works today. Today, young people go to second-hand shops and create their own exchange platforms. So these are things that are already very low-threshold, but perhaps you can gain sympathy on an advertising level by having a company participate in such exchange platforms. But for me, that's more like PR.

In the high-price segment, but there is also already costume rental, there is already everything, but whether that brings something for a company ...? Such parts must then also be changed by very complex processes. But then I wonder what the cost and ecological effect is. But it is certainly consciousness-promoting. Such pilot projects and trying it out is interesting for the promotion of awareness, but whether that really fundamentally changes something about the environmental damage that triggers the textile industry, I doubt it.

MB: So if I understand that correctly, then for you the focus is more on the procurement of the whole and the end of the cycle, how the used product is handled, has less of an impact?

Regula Rytz: It has a big impact on awareness and that is ultimately decisive in terms of how the regulation of the framework is influenced. From that point of view, I don't want to talk it down, but it simply already exists very strongly. There are already strong, established processes there that are also being used more and more by people. But if a company wants to incorporate this and says, for example, that it gives the remaining goods to the Caritas stores for free. That's certainly good on a PR level, but I think the really big levers are the production of the textiles, of the raw materials, and that doesn't happen here, but in Brazil or in Asia. And it is important to buy ecological raw materials and to implement and guarantee social criteria in production and transport. And if you do that in Europe, you won't suddenly plant cotton in Europe. That's why the supply chain still has to go all the way to the countries where the raw materials are produced. That is the very big lever. And the biggest economic lever for the companies is to support the transformation processes through know-how and loans, guarantees and direct subsidies. If the public goes ahead, 40 billion is a huge sum and a significant part of it goes not only into construction but also into textiles, then you can generate a massive acceleration.

More from post-interview discussion

Regula Rytz: The price differences between China and Europe can only be changed through cross- industry regulations. And I think that an important piece of advice for clothing companies is that they get involved in the overall policy through their associations, so that we really create a level playing field and make the competitors who work without taking environmental impact and external costs into account take responsibility for them. Because when the playing field is so uneven, it is incredibly difficult to achieve a transformation.

MB: Now I do have a question - do you think it would make sense for people in Europe to focus more on a network or cluster model?

Regula Rytz: Absolutely. They can still differ from each other, but in order to improve the framework conditions, they simply need an enormous amount of economic power. Because they are fighting against large corporations, oligopolies that want to sell fossil energy, which are much more represented today on these political channels of influence. And they can only improve if they join forces through the strong industry associations that represent the overall interests in industrial policy, energy policy, and climate policy.

MB: And that one would have suppliers closer, where the main goods are produced? So that you also have a button supplier, flow supplier, etc. in the area to shorten the transport?

Regula Rytz: Certainly, too. But you have to see what makes sense. I think I see clusters more in the sense of an organizational level, so that you can prove supply chains, etc. And that you also help each other and help each other out. And that you also help each other and help

each other out, and partly have standardizations that can reduce costs. For example, everyone needs the same type of buttons or zippers. So the industries that have finally been able to hold their own in Switzerland in a huge global competition are the watch industry and the bicycle industry. The watch industry is highly interesting, and it has also been very strongly regulated by the state. Components have been standardized in such a way that they are at all competitive against the cheap Asian products. So industry associations can contribute a great deal to this. They can organize their own large component cycles, which they need, where they can buy cheaply, and so on. But operation and competition is certainly a good combination in such a transformation situation, so that cooperation is also strengthened.

Summary from post-interview e-mail from Regula Rytz

Regula Rytz: In summary, these are the most important levers for me (to bring some order into my statements - I just came from a completely different topic...):

o *Minimize environmental degradation and resource consumption in production and trade*

- *Site-adapted, pollutant- and CO2-free production under fair working conditions and living wages (regulations, certification/labels, transparency), for natural and synthetic fibers*
- *Reduce and decarbonize transportation (regulations, CO2 pricing).*
- *Exclude raw materials that are harmful to health and the environment (regulations on textiles free of harmful substances, e.g. for plastic fibers/microplastics or hazardous chemicals).*

o *Increase longevity of clothes and thus reduce production of constantly new clothes*

- *Eco-design (life cycle model based on sustainable raw materials) and slow fashion (making clothes last longer) as the new normal / new standard by which all must measure themselves.*
- *Guarantee repairability (access to materials such as substitute fabrics, buttons, threads, zippers, ease of handling, etc.)*
- *Expand fashion as a service (sharing economy), also in terms of raising awareness.*
- *Better information on environmentally friendly care, washing and drying (e.g. avoidance/filtering of microplastics!).*

o *Promote transformation, fair competitive conditions and market opportunities*

- *Support transformation of the industry through business development, guarantees and loans, innovation promotion and direct transformation contributions.*
- *Enforce sustainability as a criterion for public procurement.*
- *Strengthen the influence of the industry in preventing distortions of competition (e.g. the possibility of declaring industry agreements on quality and environmental protection generally binding, EPR).*

o *Improve clothing collection and recycling*

- *Introduce eco-design rules for recycling, e.g. no mixed materials that make material separation and recycling impossible).*

- *Promote repair cafes, etc.*
- *Improve in-store clothing collection and increase producer accountability (EPR) (e.g., no destruction of unused goods).*

o *Creating acceptance among consumers*

- *Increase consumer awareness of environmental issues (advertising, campaigns)*
- *More transparency and information environmental labels.*

Regula Rytz: In order to implement all of this, not only politics (regulations, transformation support), but also industry associations and market surveillance authorities must become more active. By creating transparency, for example, the industry associations can contribute a great deal to raising consumer awareness and compensate for green-washing and distortions of competition via online trade and a lack of market controls.

Appendix 3f: Interview Swiss Textiles 29.07.2021

MB: What importance do you think the environment should have in a company?

Swiss Textiles: A very high priority. It is certainly important to comply with all regulations, and this is also done in Switzerland, but I think it goes beyond the environment. In general, the topic of sustainability should be strategically anchored and sustainability in the sense of ecological, social and economic, and this is also done in the companies. It is an extremely trendy topic.

MB: The books on supply chain recommend that the customer should be placed at the heart of the supply chain in order to satisfy their needs. Do you think that in the future the environment will take this place?

Swiss Textiles: Yes, I think so. Of course, it involves a lot of effort, um, the whole environmental issue, environmental protection in the supply chain, precisely because the supply chain is very long, especially in textiles, and very branched out, and therefore not very simple. And it will automatically be the case that it will eat up resources and, in that sense, will certainly also be an important point. However, it will still be a matter of having an economically functioning model, and the customer is at the center of this.

MB: How do you think it will work if sustainability takes such a big place that the customer's needs are still covered?

Swiss Textiles: *Yes...it's always a question of price. So I think the needs of the customer can be covered. It's not a problem in terms of quality, but of course it has an impact on pricing. Now, even if you look at the increasing regulations in the EU, which in part really make production in the EU impossible at the price at which you would like it, then you just look at the customer needs, that is, at the price, and then you have to relocate and that's just a shame and certainly does not serve the environment. It's quite problematic in part what's coming up for the companies.*

MB: Switzerland has similar goals to the EU Green Deal. In general, what do you think will be the impact of the EU Green Deal on the supply chain of traditional apparel manufacturers?

Swiss Textiles: At the moment it looks like that yes, but only partially, so there are regulations for transparency, traceability will come, recycling will be a big impact, just the whole duty to collect textiles, which is coming in the EU. Although there are still no recycling technologies really, it is only a collection. So it will certainly have an impact and for SMEs it will certainly not be easy to deal with, because it is very complex. There are many things that play into each other. For example, the Waste Directive, which, for example, runs parallel to the chemicals regulation, where there are sometimes inconsistencies that are not coordinated with each other and it is very complex to understand and deal with. As a rule, it ends up in a form war, where the customer requests something in B2B and says can you give me this confirmation and the company simply submits something and the customer is also not quite sure what he has to request and everyone simply has a form with some kind of confirmation, but ultimately nothing happens. So that's always a danger with these EU regulations, which are very bureaucratic monsters in some cases.

MB: In the EU Green Deal, the industrial strategy for textiles is now pursuing the circular business model "Product as a Service" as a goal. The producer retains ownership of the product. Now, where do you see the strengths and weaknesses of this model and do you think it is the right model?

Swiss Textiles: Basically, it can be a strength. In the model above all a strength for the customer, especially for customers who understand little about textiles, such as hotels or so, if they have this product-as-a-service. Then you can offload the effort. The laundry comes and holds the stuff and they always have fresh bed linen, more or less, for example. That's certainly beneficial for the customer. From an ecological point of view, a study has just been published that clearly shows that the footprint of items that are washed is much worse than if you just use them once and then throw them away, or use them several times. And that's why, in the case of product-as-a-service, if this is now extremely promoted and only textiles are washed and reused, then ultimately the ecological footprint is worse than it is now. And you simply have to take a very close look. There are also a lot of textiles that don't have to be washed or can be washed, and there it might make more sense, like with carpets or something, where you have individual modules that you can exchange and replace with new ones. But I think with clothes, you have to look closely at whether it's really worth it ecologically.

MB: Do you know of any ways in which clothing manufacturers could implement this?

Swiss Textiles: Yes, this already exists and is particularly widespread in the hotel industry with bed linen, and in Switzerland, for example, Schwob AG is a provider that does this, and they have also set up the entire logistics, so that they actually travel to the hotels, pick up the linen, bring it to a laundry and then leave new bed linen there again. And then there's the workwear sector, where the largest provider in Switzerland is Bardusch. They also do workwear leasing for hospitals or Migros or something. Migros buys the uniforms as a service and they are constantly replaced and washed and so on.

So these models already exist and work very well, but they mainly work at the corporate level and not yet with personal clothing, because the logistics there are probably a bit of a sticking point when you have to go to each individual's home. Well, you could perhaps set up drop-off points, but that might not be entirely in the customer's interest.

MB: Do you think if now, for example, the Strellson brand were to introduce this, do you think it would strengthen competitiveness today or in the future?

Swiss Textiles: Well, I see it very critically that you can really earn money with that. Because these pieces are all so individual, and if you imagine that in a Strellson store all the garments have already been washed once and are hanging on the hanger again, they still have to be presented to the customer in an appropriately beautiful way. It's not like ordering corporate uniforms from a catalog, but rather individual pieces. That's why I think it will be quite difficult if you don't offer exactly the same service as for new goods. So it has to look the same, it has to be presented the same, the customer has to be able to walk into the store and look a little bit what he wants to buy and then either buy something or not. This is very different from corporate clothing, where you say 5 years the same fashion, so the same uniform, and it only goes the.

MB: To what extent do you think the sourcing process of traditional apparel brands will change?

Swiss Textiles: I think it will increasingly be a matter of reducing the number of suppliers so that we have a better grip on them and know where things come from. It will also increasingly be the case that you will have to go right to the beginning of the supply chain. There are new tools and solutions for the traceability of products. And if you want to implement certain sustainability strategies in the supply chain, such as calculating CO2 emissions, for example, or social working conditions. And if you want to set certain targets, as many are doing at the moment, then you can't get around the fact that you know the whole supply chain, and you know it all the way to the field. And that's a challenge that really requires you to either re-engineer the supply chains from scratch. That's what a lot of startups can do; start at the field and then break it down sustainably, which makes it easier than for big companies that have had the same suppliers for 50 years and have to go backwards. But yeah, it's going to improve from there.

MB: In your opinion, are there also materials that should or should not be used?

Swiss Textiles: *Yes, that's always such a hotly debated topic. Which is better - cotton, polyester or organic cotton...? I think it depends a lot. With every material there are advantages and disadvantages, depending on what you look at. If you look at water consumption, for example, polyester is certainly better. If you look at CO2 consumption, then they are about the same, polyester and cotton. But if you look at pesticide use, then cotton is of course much worse. I think every company has to decide for itself, and it also depends on what the product is intended for. If you say it's more about durability, then you tend to use polyester, and if you say it's about wearing comfort, then it has to be more of a natural fiber or an artificial natural fiber, which is also something that is coming more and more. So all the cellulose fibers that are produced in an ecological way of course. So there's not one fiber that you can go for and then you're fine.*

MB: At the beginning, we talked a bit about the suppliers. Well, the suppliers have also become much more selective in terms of which companies they want to work with, and this on both sides. How do you think the relationship will change and do you see potential for clustering in Europe?

Swiss Textiles: Well, the potential is certainly here. There are companies that say that suppliers who are not transparent in five years are out of the picture anyway. So that will have an impact on the supply chain. There will always be the black sheep who don't do anything, there always are. But I do believe that the situation will change.

Clusters already exist. This is not something that is now going to develop anew. It also exists in Switzerland. We tend to have a lot of small companies, and in the case of large orders, they often work together on a single order and also divide it up. And that already works very well today and can of course continue to work well in the future.

MB: If we now had a company that produces in Portugal but now buys in the lace fabrics from Italy, for example. Would you also have the potential to bring all these suppliers to Portugal in order to shorten transport routes and take know-how with them?

Swiss Textiles: Yes, um, of course, so that could be an advantage, but you have to see that there is a lot of know-how behind certain processing steps and you can't transfer that as a rule. So, for example, if you have a finishing company in Switzerland with a hundred employees, which has been at this location for 100 years, it is almost impossible to transfer this company and take the know-how with you. Or vice versa. So is confection. Confection is rarely in Switzerland, rather in Poland. It is very illusory that you can bring a huge clothing company with 1500 employees to Switzerland. It will not work.

MB: The EU is planning to switch to multi-modal transport, i.e. only train and ship transport for goods. How do you see this affecting prices and delivery times?

Swiss Textiles: It will have rather little impact, because most of them do it that way today. Where it doesn't take place like that, i.e. where air transport still takes place, is in sampling. And there it is the case because it simply has to be fast and the quantities are small. In the meantime, however, there are digital tools that are being developed so that the sampling process can actually be carried out in digital form almost up to the industrial production process. So there you certainly have to become more efficient and it is something that larger companies are already looking at. But otherwise, rail and ship transport is almost the most common and rather less air transport.

MB: Yes, air transport a little, but trucking is still very common there.

Swiss Textile: *Ah, yes, that's right. I was just thinking about rail now. Trucks are very common. That's just important in fine logistics. At some point, a truck is needed. I don't know what other solution there would be, except for an electric truck, for example.*

MB: Which business model makes the most sense today for the future? (For companies producing in the EU)

Swiss Textiles: Well, I do have the feeling - I can only speak for Swiss companies right now - that sustainability is a USP that they have to sell better and really push. I believe that without it, you won't get very far, or won't get far for long, because it's really demanded, not only by consumers but also by politicians. You have to have a strategy and you have to be able to communicate what your strategy is. That is certainly a focus that you have to set. And then all the innovation, i.e. developing new materials, integrating all the electronics and simply becoming even more efficient within the production process, saving costs, becoming more digital, yes, these are the topics that are very important for Europeans in order to be able to keep up with international competition.

Because, in China, they produce at half the price and some of them are also very sustainable. Not everyone in China is not sustainable. And if they want to do that and rely on that, then they can.

MB: Also in terms of circular economy models, do you see a model that stands out for you for an apparel company that would be easiest to implement?

Swiss Textiles: *Yes, I know one from Schöller Textiles, which made something for workwear. They actually did something very simple. They have simply developed workwear, i.e. outdoor jackets, in a mono-material that is completely recyclable. That is, up to and including zippers and threads on the mono-material and have worked for that with three other companies, with which they can now also offer the whole logistics and so. This is certainly a very good model, but it sells very poorly because it can not compete in terms of price.*

Otherwise, I have to say, there are some circular models in textiles that at least advertise it that way. However, they do not solve all the problems. They are always single, selective stories that can be told well, but if you look closely, it is not quite thought through to the end or it does not quite work. For example, all the things made of PET or recycled materials that are not recyclable themselves. Or they are recyclable, but are not recycled because there are no recycling garbage cans where you can throw them in, there is no logistics system for this and there is perhaps not even an industrial plant for this. This is still in its infancy, but I think there is a lot in development here and I think in the next 5-6 years we will hear a lot more, because there are a lot of projects going on.

MB: But do you think now to become CO2 neutral, is the biological cycle rather the one to head for or rather the technical cycle?

Swiss Textiles: *The problem today with the biological cycle is that, especially with CO2, it must not be forgotten that all the chemistry has a high impact on CO2 consumption, and with natural fibers this tends to be higher than with man-made fibers in the entire process, be it in cultivation, in processing to make it fine and wearable, in dyeing, etc. The technologies for synthetic fibers are much further along in their development and require less, and I believe that the mixed form of biological synthetic fibers, i.e. cellulose-based synthetic fibers, is simply very promising in terms of CO2.*

MB: What do you think will happen to fast fashion vendors?

Swiss Textiles: Hm, yes, the question is for how long. There will always be those people who buy fast fashion. There question will be how high that mass is. Whether that is an increasing or decreasing trend or not. I strongly assume that fast fashion will also have to adapt to certain political guidelines, but logically there are always loopholes and you can also simply import it and then you don't have to comply with anything. It's difficult, but there's one and there's the other. Some say it's on the decline, and others say, no, they're just getting there. It's difficult to say.

MB: I have seen that Swiss Textiles is also involved in the sustainability goals of Sustainable Textiles, where it is said that a consumer rethink is needed. And in order for all fast fashion to die out, people have to buy less, which is ultimately the goal. How do you get consumers to rethink and buy less and be willing to spend more money on durable goods?

Swiss Textiles: Yes, we are working on this within Sustainable Textiles Switzerland. We are developing a campaign there to raise consumer awareness. We assume that knowledge is the

most important thing so that consumers can make the right decisions. And knowledge includes a basic knowledge that people know that textiles can be sustainable and can also be sustainable. Just as we know about organic food, which was not an issue for 15 years, and suddenly everyone knows all about it. So on the one hand it is knowledge and on the other hand it is information on the product. So if you know that certain fibers are not sustainable, but you don't immediately see on the product whether they are in it or not, then you can't make the right decisions. These are the two things we are pursuing on this point. So on the one hand education, but on the other hand also information and transparency with the product, by the companies themselves.

MB: Let's go back to production for a moment. Are there any countries that you consider to make the most sense in terms of sustainability for production in Europe?

Swiss Textiles: Hm, no actually. I mean, there are different suppliers in each country. For example, some companies work very well with Greece, Turkey and Portugal, where the suppliers are already very advanced. But of course, there are also suppliers in Turkey who are not at all recommendable in terms of social responsibility and sustainability. So you can't make a general statement. Conversely, you can say that there are certainly countries where there is a high risk of child labor, for example. Rather on the negative side, you can usually say it's good, or when the political system is very difficult, like Myanmar, for example. Dictatorships are always very difficult. Xing Yang in China also recently an example. So you can say it more in the negative than in the positive. But you are never on the safe side even if you source from Italy. You always have to look carefully.

MB: Do you have a best practice for what a sustainable supply chain should look like to be CO2 neutral by 2050?

Swiss Textiles: Yes, I think the really central thing is that you know every supplier and also have the capacity to check and visit every supplier. This usually means that you have far fewer suppliers. I know a company that has set sustainability as a goal and has reduced from 30 suppliers to 10 suppliers and those 10 are controlled by 3 people. That's 3 companies per person and of course that's financially very costly because it's three full-time positions. Not every company can afford that, but actually every company should be able to afford that. Because that's really how it is, that's how you have it under control and that's how you can go by and look into their payroll and develop with the suppliers as well and develop the suppliers.

MB: For which part do you think it will be most difficult to become CO2 neutral, that is, from sourcing to distribution thought?

Swiss Textiles: So in the supply chain inside?

MB: Yes, exactly.

Swiss Textiles: Yes, it's usually difficult when you're still sourcing from China, where the majority still relies on coal-fired power. And if you have to buy from suppliers, especially in the spinning mills is a bit of a sticking point, because it is very energy-intensive. If you have little influence on the spinning mill and can not influence how they now manage their energy, or whether they now have solar panels on the roof. But certainly, production is where most of the CO2 is.

MB: As a final question; what do you think is the best way for a company that is still set up in a regular way now to change over in the most cost- and time-efficient way?

Swiss Textiles: Yes, now I'm advertising (laughs). I think it makes the most sense if you join the associations, which is what we offer, because we are part of the Sustainable Textiles initiative and are now developing measures and tools for our members, where we also train them and offer support in recording CO2 emissions, and where we also advise them on working conditions in the supply chain. It is easiest and most cost-effective to join and share what is already being done there. I think it's extremely difficult and totally unnecessary to set something up yourself, because there's so much that's already being done and you can just copy-paste it and people are happy to pass it on. Because it's not the case that if you've developed a sustainability strategy for your company, it only has to be your own, but that you can also pass it on. This has nothing to do with sales.

Appendix 3g: Interview Circular Fashion 30.07.2021

MB: Could you briefly explain the business model of Circular. Fashion?

CF: Yes, so it's multifaceted. As circular.fashion we try to transform the fashion industry to a circular economy. We are active on different levels. On the one hand we do the support of the fashion market for circular products design, for that we do workshops and also trainings, online trainings, where designers and also buyers and different people who work in this field come to us to learn how to design and produce fashion, so that in the end they are also recyclable and can be worn longer, so in the sense of "longevity", but especially also the recyclability. On the one hand, through training workshops, where we earn money, and on the other hand, we have a circular design software, which can be used in daily practice. That means, for example, we make a "Circular Material Library", where fabrics are in it, where yarns are in it, which are all pre-tested that they are recyclable. So we work together with recyclers, who ask us what are the requirements, what can you process in a high-quality way, they test these materials, so that the designer finds the recyclable materials very quickly and does not have to do this evaluation and research himself. Further we have in the Ciruclar design software guidelines, which can be broken down specifically to the product level. For example, for a coat you can find strategies and ideas on how to implement this and a third part is that we build a product configurator where different materials can be combined into one product and it automatically calculates if these different materials fit together and can go to a recycler together or if one component needs to be replaced by an alternative so that they belong to the same recycling stream.

That was the first part, so to speak - the recyclable product design. Then we have a second part, which I lead, where we look at how these recyclable products can actually be kept in the cycle. And for this we have developed a Circularity.ID. This is a transponder that goes into the garment and stores in great detail what is inside this garment and makes this information available to consumers. They can scan it via the QR code or via the NFC chip. They are then taken to a digital product page, i.e. a website, where they can see how it was made, what materials are in it, but also how I can extend the life cycle or where I can return it as soon as I no longer want it, i.e. through which channels.

And the third part is that this Circularity.ID can also be used for the old textile sorters, such as Texaid. There we also build intelligent sorting workstations, which means that as soon as the garment is on the sorting workstation, this ID is read and our software then calculates that if it goes into reuse, then this is the right taker and if it goes into recycling, then this would be the right recycler for the garment. They then still decide if it's wearable or not, but after that it will electronically show them the decision.

And further we are still working on a research project, there is no business model behind it yet, but in the future we will also work with spectroscopy. This is infrared light, which is projected onto the garment and reflected, and we get a spectrum, which is a line that goes up and down, and analyze this with machine-learning to automatically detect materials and chemicals that are in it, so that you can also make a recycling decision for products that don't have an ID in it. And we do automatic image recognition where we take a photo of the garment in sorting and then automatically recognize attributes of the garment, for example, it's striped, it has a breast pocket, and so on. So we can make even more accurate sorting decisions for reuse than you could do with manual sorting. This is also to make second-hand markets bigger. These are the products we are working on and offering.

MB: Yes, very interesting! Of course, I've already done a bit of research on your website and I have to say that I was very fascinated by how every single step is thought of. Everything is very comprehensive and even with Cirularity.ID, every little detail is taken care of, which is also extremely helpful for the consumer. Can I ask, what are your main customers at the moment? Are they more small, medium or large companies?

CF: Everything. From Zalando and H&M to start-ups that don't even have a name yet.

MB: Okay, good. Have you noticed an increase in customers now with the introduction of the EU Green Deal?

CF: Hmm...no not specifically. So we've been around for four years and we've been steadily expanding our customer base, it's grown in size. If we look at it in terms of sales, we have doubled sales every year since then. But I think this is due to small factors I think. But what we have noticed very specifically is this. In Copenhagen, there is this Circular Economy System Commitment or something, from the Global Fashion Agenda. There, over 100 fashion brands have committed to achieve circular economy goals and there, very specifically, fashion brands have approached us and said that they now have the following commitments and now they need our help to achieve these goals. There we have noticed it very specifically. From the EU Green Deal, on the other hand, not really yet. However, it gives the whole thing a certain pressure in the industry, so that they realize things will change. They are already trying to do things proactively so that it doesn't become worse than feared.

MB: In general, what do you think will be the impact of the EU Green Deal on the supply chain of a traditional apparel manufacturer that has not yet addressed sustainability in this way?

CF: What I'm already noticing is that almost every fashion manufacturer is already involved with circular design, at least the big ones. So there's a fashion brand you know that hasn't already made an inquiry to us at least once. So somehow it seems to be a topic everywhere, but it is also the case that it should cost as little as possible. But one tries to make something with small means.

There is the Sustainable Product Initiative, which I believe is part of the EU Green Deal, where there is also talk of a digital product passport. I'm working on that. I've already been to workshops there and given feedback, and the people who are developing it have also looked at our Circularity.ID and found it to be good. This means that it is already possible that things will be adopted there for the SPI. And I am also involved in standardization, i.e. ISO standard, so that the product passport can be defined on the basis of an ISO standard. And we also work for the Federal Environment Agency in Germany, and are doing a project there in the area of what a product passport could look like for textiles and electronics. I think this product passport will have a hard time if it is not politically supported. So we are already doing projects. Zalando, for example, has launched a collection with our ID in it, but we simply realize that it is still an investment, and to really scale this to all products costs money, and ultimately no one will take the money in hand if there are no political measures behind it.

MB: Exactly.

CF: I see the extended producer responsibility, which I believe is being discussed but has not yet been decided, as very promising. In this extended producer responsibility, I could imagine that eco-design is promoted, but also that information is made available for the reverse supply chain, i.e. those who then take it back are also encouraged. I would really have an influence on scaling up circular practices.

MB: How competitive do you think you are right now if you have a circular business model or are completely circular?

CF: Fully competitive. So, I would say, actually, you would have advantages. I know fashion brands that do that and they grow faster than anyone else.

MB: Okay, great. You work together with material manufacturers, who can then offer their material portfolio. Where do most of these material manufacturers come from, where they make these recyclable materials?

CF: On the platform that we have, the majority comes from Europe, but of course the vast majority comes from Asia. Be it China, Southeast Asia. But we made a conscious decision to focus on European materials.

MB: Are there specific countries that are particularly good at this and stand out?

CF: Yes, Turkey, Portugal, Romania, Spain, um Poland. Yes, these are the biggest in Europe.

MB: Which garment or which part of a garment will be the most difficult to switch to circularity or to become CO2 neutral?

CF: So the more complex the product is, the more difficult it is. For example, jackets have a lot of different components, so it's more difficult there, but especially if you go into the outdoor sector and then add different functions. And there, of course, professional equipment is also sold to amateurs in some cases. There it is simply more complex and where it gets super complex is then safety equipment, for example from a fire department the protective clothing that has protective mechanisms. But the vast majority of the apparel that we have, it's easily convertible. So for a T- shirt or pants and so on, it can already be implemented very well today. What is also a challenge is shoes. Adidas once developed a shoe that is completely mono-material.

MB: Ah okay, cool! Now, the EU Green Deal recommends the Circular Business Model "Product as a Service" as the end goal for the textile industry. Where do you see the strengths and weaknesses in this model for an apparel company and how can it best be implemented?

CF: So there are two models there. The first is the lending model, so I lend something for a limited time and then it's returned, so short-term lending. The second is the subscription. There, for example, you get new clothes every month, so you always have something new in your closet. Basically, the model helps people who like to follow trends and then they quickly no longer like it and then they need something new again, etc.. And for these, this is a super model because they can constantly get something new and then it is also carried on and thus the use of the clothes is maximized anyway. Of course, what comes in addition to a durable product where I buy and wear for 15 years, is the logistics in between, so the transportation that comes in addition. But if you look at it as a substitution of fast fashion, then it's worth it. But if you look at it as a substitution of longevity, then you create more emissions, because of the constant transport back and forth. But for fashion brands it is quite attractive to do something like this, because they make money all the time and they don't sell something once and then not for a long time, but they sell something all the time and they have a predictable income stream. However, I know some companies that have started doing this, but also then stopped again.

MB: Do you know the reason why?

CF: Yes, because it wasn't worth it after all. I think that's something that has to grow. It will become more and more standard and I think there have been some that have been ahead of their time simply and what you can't underestimate are the logistics costs, which are also enormous.

MB: You work together with sorting companies. Would it be appropriate for each company to have its own sorting system, or does that not make sense?

CF: No, that doesn't make sense. There are several reasons for that. For example, the recyclers that exist have minimum quantities that they take back. That means that if you want to deliver something to a recycler, then you have to deliver a 40-ton truck and otherwise he's not interested at all. And if you are a small fashion brand, until you have collected these quantities, it takes a while and then you also don't have the expertise.

Ah, wait, I'm giving a presentation to 70 fashion brands next week and I'm preparing it right now. You're looking at a completely unfinished slide here now.

The collectors, they simply have a long experience in judging what is still marketable and what is no longer and that is what the fashion brands lack. The fashion brands actually only want the best of the best before the sale and a collector and sorter have a lot of other sales channels. They can sell it to other countries, export, a lot of things that fashion brands could not sell anymore, can still give them second-hand again. What should also not be forgotten is that these old textile collectors and sorters often have a social background and give employment to people who otherwise might not find a job on the market. Moreover, the willingness to donate things is much higher if you can give it to a collector who also represents a social aspect, while if a fashion brand takes back the goods itself, it would actually have to compensate the buyer.

MB: Oh, yes very exciting!

CF: It might make sense for certain fashion brands if they already have large logistics in place, for example Zalando or Otto, which are also large logistics companies themselves. It could work there, but otherwise for everyone else it's better if they work together with the old textile sorters. What we promote as Circular.Fashion is that we build up the cooperation between the fashion brands and the old textile sorters and the old textile collectors are then also a service provider for the fashion brands in that they process the clothes for them again. As soon as something comes back from them, it is displayed directly via Circularity.ID and they can, for example, take a photo of it for the second-hand online store through which the fashion brand can sell it, and the sorters then send it as a quasi white-label solution directly from the sorting plant to the new consumer.

MB: Ah, wow, okay.

CF: We are promoting this cooperation so that the old textile sorters can develop further and become a service provider for the fashion brands, so that they can then also enable re-use within the fashion brands.

MB: But how do you think you ultimately get the consumer to change their mindset, to buy less and spend more money to buy a more sustainable product?

CF: Yeah, generally it's just about awareness of the whole issue. Um, that's what's happening. There is an increasing market for ecological clothing and also more and more offers in the field. I mean ten years ago people said they would like to buy eco-fashion but it's just not nice. We've been over that point for a long time. There is now a lot of very cool eco-fashion.

So, the offers are there and getting better and better. Price-wise, it is now also in an acceptable range. C&A, for example, has launched a collection that is Cradle to Cradle certified, which is one of the most difficult things to do, and they sold these T-shirts for 7 euros, which means that it is also possible to do it cheaply. But I think ultimately we have to make sure that the fashion industry itself, by default, is just sustainable and the consumer doesn't have the choice at all. Everything simply has to be sustainable. We have to get to that point.

MB: But you also have to get the consumer to return the goods. I think that's still a step that takes a lot of time and effort.

CF: So we are also looking to use the digital product pages to show the consumer where the right return channel is and what I can do with it. We have also noticed that there is a lack of knowledge about what is the right return channel, what to throw in the clothing container and what not. And we also have to make it simple for people. For example, we also offer a parcel return service together with the collectors, which is prepaid and you can simply send it back and it is very simple.

MB: Yes, that's exactly it. So, and the last question. We're perfectly on time. What are your predictions for the fashion industry in general and do you think all fast fashion will die out?

CF: No, I don't think that fast fashion is dying out, but I do think that fast fashion has to reinvent itself. Fast fashion has to include recycling. You have to make products that are completely and easily recyclable and then it can become somewhat sustainable. And then there is another development in this direction. It is called super fast fashion. This is really produced in such a way that you can wear it as an outfit to a party, for example. There's a

dress that's actually made entirely of paper, but it feels like fabric and can be thrown straight into the waste paper collection after the party. And that could definitely be a development as well. That's one area and the other area is "design for longevity." That's where you think about what the weak points of the product are that are going to break. But there will certainly also be increasing digitalization, i.e. IoT, that you have IDs in it, that you are in contact with the consumers and that you control these products and have the possibility to be in contact with the consumers as soon as they no longer want it, and that there is also perhaps an incentive again to buy something new from the same brand, and the brands can thus also increase customer loyalty. Then, eco-design will be absolutely necessary and I also believe that extended producer responsibility is necessary. And the second-hand fashion, we will probably double the collection volumes. Second-hand is already saturated today. We're going to build whole new channels of second-hand, and pretty much every fashion brand that sells new goods will also sell second-hand goods on the same rack, but they'll present it very differently than they did in the past.

MB: I mean, for me fast fashion is also associated with a lot of transportation. I mean on Asos you can order so much and so fast. Could you also imagine that something will establish itself more on a national level?

CF: No, I don't necessarily think so. But what is possible is that through the circular economy, the recyclers are often also in Europe and if the things are then also recycled in Europe, then suddenly there is also a lot of fiber that you don't necessarily want to ship to Asia, and thus also promotes the domestic economy again, so that perhaps a spinner can settle in Europe again and produce threads and fabrics.

MB: And thus also has shorter procurement routes again?

CF: Yes, that is a potential that is here, but whether it can be implemented we will see, because 90% is from Asia and it is not so easy to take it away again.

MB: Yes, wonderful. Thank you very much!