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CIRCULARITY

AT SYMPANY

A CIRCULAR PROJECT
TO RESHAPE THE
TEXTILE INDUSTRY

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PROJECT REPORT

ACT 2573E - Changing the textile recycling landscape:
exploring new markets and post-consumer textiles

Executive summary

Sympany is a textile sorting and collecting company with the long-term goal of becoming circular. Currently their main business model is to resell wearable textile, thus falling under the product life extension type of business model. This already makes Sympany a circular company and part of the circular textile industry. The current desire is to move more towards a resource recovery business model by recycling unwearable textiles and become even more of a circular company. However, Sympany operates in an industry that has a distinct linear way of thinking. This has made it difficult to develop innovations that can recycle multiple types of textiles on a large scale, because these innovations are capital intensive.

In this research we have looked at how circularity is perceived in literature and in the industry. We have talked to people who are active in the pre-consumer and communication side of the textile industry, whereas Sympany is part of the post-consumer industry. In combining practical knowledge with lessons and suggestions from academia, we have gained information about what is needed in the industry to connect pre- and post-consumer sides of the industry and close the circular textile loop. There were several findings that need to be addressed for the industry to become more circular. A short description of our findings are mentioned below.

Based on the problem provided by Sympany regarding the growing amount of non-rewearable post-consumer textiles with an unknown destination, we have come up with several recommendations that we believe will help Sympany become a key player in the circular textile industry and create long-term solutions to their problems.

While there is a growing attention for circularity in the textile industry, the vast majority of the industry still thinks in a linear way. This has led many people to believe that legislation is the only way to make the textile industry more circular, by making it mandatory. However, we learned that change needs to come from all parties in the chain and laws would not be able to fully provide that. An increase in communication about problems regarding circularity can increase societal support for new innovations in textile recycling.

If we want to make the textile industry circular, collaboration is needed from all parties in the chain. Each party seems to have different needs and problems that they focus on, Sympany included. At the same time all parties are linked and depend on each other for income to different degrees. Increased communication and collaboration are needed to be able to innovate in a way that serves the industry and makes it more circular. This means looking beyond hardware (technological innovations) and include software (ways of thinking) and orgware (organisations and institutions).

Circularity was identified by Sympany as a growing trend. However, to be able to make this trend permanent more frameworks are needed. Companies that are willing to become more circular struggle to find the right frameworks and there are rarely clear measuring tools available in the industry to be able to create long-term goals for circularity. Clear indicators for circularity could help facilitate dialogues about changing the paradigm in the textile industry from linear to circular.

1 Communication

One of the key success factors for Sympany to reach their strategic goal of closing the circular textile loop is a serious proactive role in influencing the environment through communication. Especially communication about the problems that Sympany experiences is of great importance, because it will create more awareness about the need for circularity as well as the opportunity for collaborations on clear innovation goals.

2 Collaborations

To be able to make the textile chain more circular, collaborations with multiple stakeholders throughout the textile chain are needed. This is especially relevant with regard to circular innovations, because for innovations to be adopted successfully, societal acceptance of the innovation should also be developed. To be able to innovate in the most successful way, we recommend getting in touch with the following stakeholder groups (a list of suggested parties can be found in the appendix):

Fellow technological innovators and textile collectors and sorters.

Circularity is collective problem of the textile industry and a growing topic of interest internationally. Technological innovation on recycling is growing and knowledge sharing regarding these topics is of shared interest all stakeholders in the textile chain. Therefore it is recommended to communicate about Sympany's activities with parties that are in the same chain of the textile industry, so all resources for innovation can be used optimally.

Educational platforms

Any innovation needs to be accepted by the wider public to be able to be useful. That means that technological innovation can never be isolated, but that the need for developments should be shared with society. We recommend Sympany to look beyond collaborations with the municipalities and reach out to platforms that are actively informing the public about problems in the fashion industry with the goal to create a larger awareness and need for circularity in the textile industry.

Company clusters

Circular and sustainably minded companies tend to be small, but very motivated to work on circular textile initiatives. To be able to scale, we would recommend Sympany to explore the opportunity of clustering these circular and sustainably minded companies. Through collaboration, smaller like-minded companies can work together to find problems for similar challenges, while for Sympany these clusters with a similar vision provide an opportunity to scale innovation for textile recycling.

3 Reuse as circular strategy

There are several strategies that a company can implement to become circular. Two of those strategies are concerned with reuse and repair of textile products. Sympany has years of experience in collecting and sorting textiles and this knowledge can be of great value for companies that are starting to implement these strategies. The challenge in implementation is often with finding useful frameworks to set up logistical networks and communication. We recommend that Sympany shares their knowledge with companies that have circular ambitions to be able to increase circularity in the textile chain.

4 Indicators for long-term goals

The textile industry struggles to find practical and legal frameworks for a circular textile economy, but what is most evidently missing in the transition to a circular economy are indicators that set clear long-term goals. We recommend that Sympany communicates clear personal long-term goals by making use of circularity indicators as well as encourages partners in collaborations to adopt long-term indicators. By using clear indicators, circularity becomes more transparent throughout the textile industry and the circular paradigm becomes a long-term goal.

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Introduction

The textile and clothing sector is a fast-growing industry. It is however also among the most polluting and resource intensive industries in the world. Since the demand for clothing will likely triple by 2050, continuing business-as-usual will have disastrous consequences. In this situation the industry is expected to use more than a quarter of the carbon budget linked to the 2°C global warming limit and contribute to an accumulated 22 million tons of plastic microfibers entering the ocean. Besides this, the fashion industry exploits the world's natural resources. These are not in infinite supply, so using them in the most optimal way is necessary to preserve the environment as well as the textile industry. To ensure their existence and profitability in a resource scarce future, it is in a company's best interest to invest in a more circular business model (Ellen MacArthur Foundation, 2017, p.21).

Sympany recognizes this problem and wants to contribute to the transition from a linear to a circular textile industry. As a collecting and sorting company, they play an important role in turning discarded clothes and textiles into input materials again and in this way giving non-wearable textiles a new function. However, there seems to be a missing chain that prevents the textile recycling loop from being closed and Sympany from reaching their circular goals. This problem is multifaceted but becomes clear in a more tangible way in Sympany's excess of non-rewearables for which

there is no purpose. This causes lots of materials to end up as waste, which is not sustainable and forms a problem in the textile recycling landscape.

Until now Sympany has tried to tackle this problem mainly with technical solutions, and even though the quality of recycled materials is very important, this is irrelevant if there are no companies that want to use it or consumers that want to buy it. This lack of demand has appeared to be a problem on both the company and consumer side. Both sides are very much related, which further emphasizes the interconnectedness and -dependence of actors in this industry, and therefore the importance of collaboration and good communication. Innovation on the input side is important, but even if Sympany develops the best recycling technology, this will not solve a problem that is caused by the entire industry. This is why in our research we tried to look at the bigger process in which this innovation is taking place, to find out what Sympany can do to bring the whole circular fashion chain into motion.

The goals of this report are twofold. Firstly, answering the research question: "How can Sympany position themselves as a key player in the circular textile industry to encourage the inclusion of un-wearables/recycled materials on the textile market and close the circular textile loop?" Secondly, providing Sympany with research-supported recommendations on how to deal with this

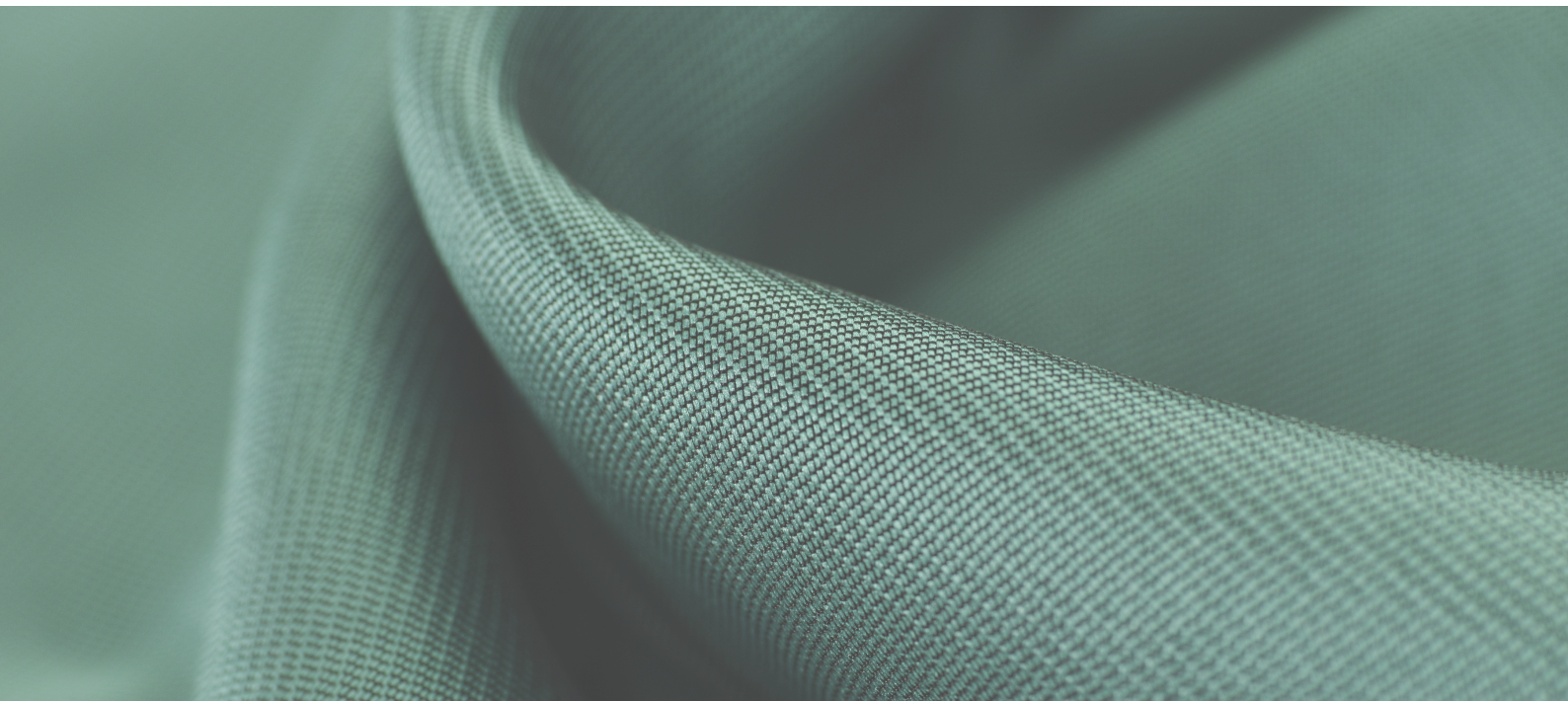
problem, so they can continue working towards their strategic vision of circularity. This report is meant to provide more information on the project and its outcomes. Firstly, the methodology will be discussed, followed by our findings. These findings consist of five chapters on the following topics, respectively: the circular economy, circular business models, barriers and tensions in corporate sustainability, measuring circularity, and communication for collaboration and innovation.

Together these chapters will answer our sub-questions:

1. What view do companies in the fashion industry have of recycled materials and how does this influence their production and sourcing choices?
2. What strategies do circular companies use to try to close the loop in fashion and how effective are they?
3. What communication tactics does Sympany use to promote the value and use of recycled materials and how could this be improved?

The report will end with a conclusion that provides an answer to our main research question and our recommendations to Sympany.

“How can Sympany position themselves as a key player in the circular textile industry to encourage the inclusion of un-wearables/recycled materials on the textile market and close the circular textile loop?”



Methodology

This section will discuss the activities we conducted during our research in order to answer the main research question: “How can Sympany position themselves as a key player in the circular textile industry to encourage the inclusion of un-wearables/recycled materials on the textile market and close the circular textile loop?”. Over a period of 4 weeks, we conducted a literature research and 5 semi-structured interviews. Both the literature and interviews findings were used as sources of information to answer our research question and to provide Sympany with recommendations.

Literature research

Academic literature has been researched to find in depth answers to the research question and sub questions. We started with an introductory literature search on circularity concepts and the fashion industry. The goal of conducting this initial search was to fully understand the concepts and how the fashion industry operates. From there we specified more on the specific concepts linking to the sub questions. Examples of search terms that were used were:

- Circular economy
- Marketing circularity
- Business to business marketing
- Business to consumer communication
- Circular business models
- Circular business strategies
- Circular business examples
- Circular business collaborations

- Barriers for becoming circular
- Effective communication for circularity

During this literature search a lot of different definitions for concepts were found which made it difficult to make a distinction between all the definitions. Because there was so much literature, the decision was made to not include all concepts but always look back at what would suit best for Sympany and what could be implemented most easily in practice. An example of this are the barriers and challenges identified by literature. There were many lists of challenges and barriers companies face when becoming circular, therefore we made the decision to only include the ones most relevant for Sympany.

Interviews

The decision was made to perform a semi-structured interview with multiple parties. A semi-structured interview was decided upon to leave space for follow up questions specific to the expertise of the interviewee. For the interviews we decided to interview Sympany employees and companies operating in the fashion industry. Prior to the interviews with the fashion companies, questions were formulated based on the main topics related to circularity in theory as well as the conversations with Sympany employees. During the formulation of the questions, it was made sure that the questions were as neutral and unbiased as possible. Every interview was conduc-

ted by two team members and was scheduled for one hour. From these interviews we mainly wanted to get insights from the textile market on circularity and find possible openings and directions for future collaborations with Sympany.

Two interviews have been conducted with employees from Sympany to get an as complete picture as possible on how Sympany operates, the company strategy and the projects they are currently involved in. To help us understand the problem of Sympany even better. Next to the Sympany employees, the decision was made to interview multiple sustainable born companies operating in the fashion industry. The decision was made to mainly focus on smaller companies who already have an interest in sustainability/circularity and also show this in their business practices. We decided to focus on smaller companies because smaller companies are easier to reach and are expected to be more open to talking to us compared to bigger companies. Furthermore, we think that smaller companies can more easily implement change than big fashion companies. Additionally, the decision was made to reach out to companies who are sustainable

born companies and thus already have a large motivation to be sustainable or circular. This choice was made because we expect them to have more knowledge on circularity and the benefits and barriers connected to it, compared to companies not interested in circularity in the core. To find these sustainable/circular fashion brands an online search was carried out from which we reached out to more 20 companies. Due to the fast pace of this research, we only had a narrow time frame in which we could conduct the interviews. Unfortunately, many brands did not have time to have a conversation with us. Fortunately, we were able to interview 2 fashion companies and 1 person involved in a fashion network.

After conducting the interviews, the interviews were transcribed using the automatic transcription programme HappyScribe and corrected manually. After transcription the interviews were coded in order to see connections between interviews and to get a clear overview of the topic discussed in the interviews. Theory and literature findings were compared to the interview outcomes to be able to answer the research questions.

**“IN AN IDEAL INDUSTRY PEOPLE
WOULD REALLY FOCUS ON LOVING
CLOTHES AND WEARING THEM FOR
AS LONG AS POSSIBLE. THEY WOULD
REDISCOVER OLD CLOTHES, SHARE
CLOTHES. SOMETHING COMPLETELY
DIFFERENT FROM WHAT WE HAVE
NOW.”**

- circular minded company

Chapter 1: Transition to a circular textile industry

Circular Economy

The concept of sustainability has been increasingly more present in literature and in the fashion industry. From this, the concept of circularity is thought to be the next step within the field of sustainability in the fashion industry. Some interviewees have even said that sustainable thinking is a prerequisite for circularity, because without basic transparency and strong relations with partners in the supply chain it is very hard to

introduce the concept of circularity. At the same time there is confusion about what circularity is. For some, circularity is such an abstract concept that statements like 'the end of the cycle' are made, while a cycle is by definition circular as has no beginning or end. People tend to have a widespread range of ideas about what circularity should be. However, there are no clear frameworks available on the topic. It seems as though organisations have to invent their own way of

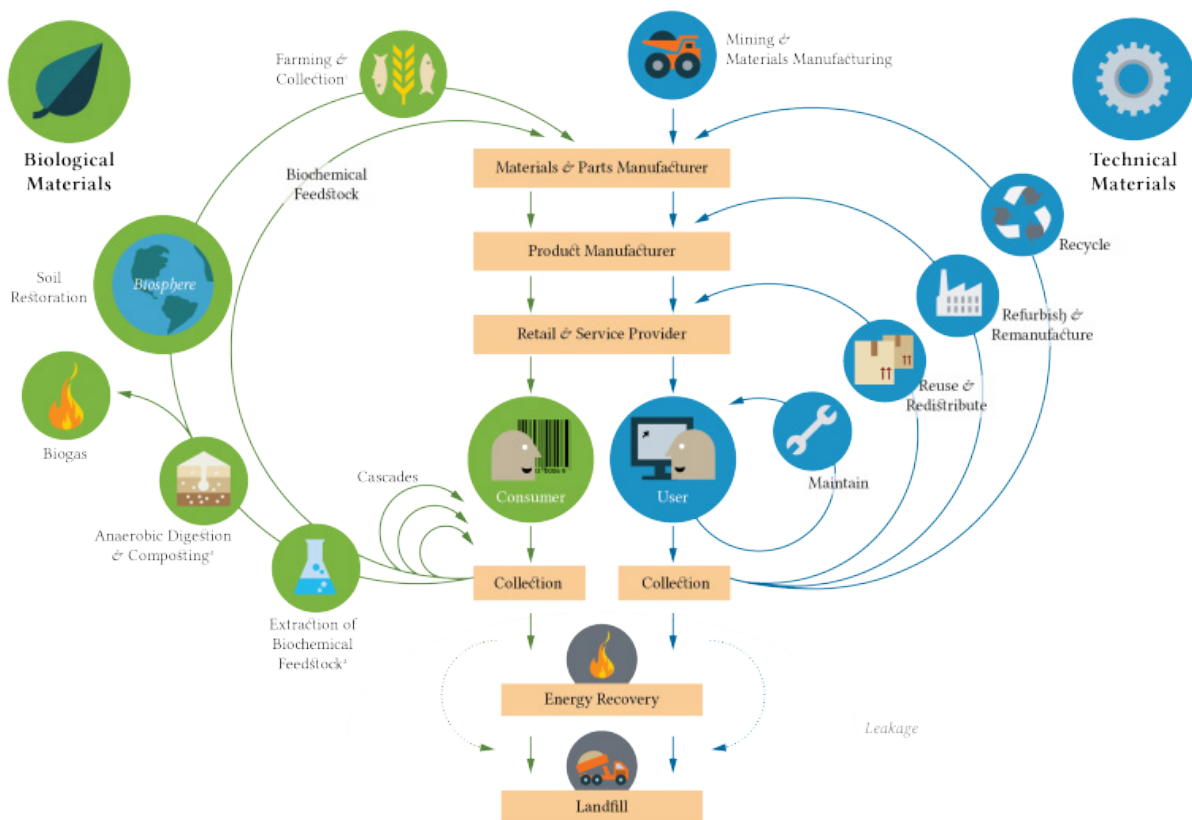


Figure 1: the Butterfly model (source: Boiten, Han & Tyler, 2017)

working if they decide that they want to start becoming more circular. To be able to know how to make a linear system circular, we must first ask ourselves what it means to become circular.

Circular Economy (CE) is a broad concept which often causes confusion because of its wide interpretation. To prevent confusion in this report, we follow the definition of CE identified by the Ellen MacArthur Foundation: “A circular economy is one that is restorative and regenerative by design and aims to keep products, components, and materials at their highest utility and value at all times, distinguishing between technical and biological cycles.” (Ellen MacArthur Foundation, 2015). The goal of CE is to reduce the input of energy and use of raw materials, as well as minimize waste and emissions. This will simultaneously contribute to the economic goal of reducing costs and risks (Rossi, et al., 2020).

The Circular Economy as described above, can be viewed in a model which is shown below. The model is also referred to as the Butterfly Model. The model shows both the biological and technical nutrient cycles. These are cascading cycles of disassembly and reuse. The

technical cycle refers to materials that need to be circulated as long as possible, and the biological cycle is about giving back to nature. In the model the idea is that the tighter the circle, the more valuable the strategy for circularity will be. The multiple cycles within the model refer to the power of circling longer, which extends the life cycle of the (end-)product (Ellen MacArthur Foundation, 2015). Circular Economy is a concept that cannot only be applied to textiles, but to a wide range of sectors such as food, technology and furniture.

Literature suggests creating a shared understanding, a common language, when it comes to CE concepts such as closed-loops, material needs, and mechanical and chemical recycling (Boiten, Han, & Tyler, 2017). A shared understanding can create a more solid base on which a circular textile industry can be built. That way stakeholders can agree on how to retain value of what is collected and produced. The importance of a shared definition in the textile industry becomes clear through the following quote about difficulties in the export of jeans that were to be recycled in Turkey:

“There was a ban, for used clothes, you could not import them to Turkey. So that was a problem for our denims. It was not allowed to get the used denims in the country, because by definition they were seen as waste. Eventually, they did find a solution. Now you can at least import used denims to Turkey, but I don't know if this is also for T-shirts or other clothes.”

This quote shows that in addition to a missing common language on circularity, there is also no unified legislative language that supports circularity. In this example a clear distinction is made between worn clothes/textiles and resources for recycling that could have obstructed the execution of circularity. Additionally, this legislative language is likely to differ from country to country, making it more difficult to integrate circularity throughout a global supply chain.

Linear vs. Circular thinking

Many concepts that are related to CE start from a linear based way of thinking, such as life-cycle assessment (LCA), zero emissions and carbon footprint. They reason from a one-way flow of materials in which the linear approach is not challenged (Fischer & Pascucci, 2017). It should be noted that in a circular way of thinking there is no start or end point, there can only be found an 'opening' in the circle in which you can start to

change things. Important to keep in mind is that the transition toward a circular economy contains a long-term view.

Currently in the textile industry, most actors still use a linear model instead of a circular model. In fashion, the main approach to textiles is 'take-make-use-dispose', which confirms to a linear way of thinking. This is problematic because towards the end of the line, the value of fabrics drops. This means that resources go to waste, they are either incinerated or thrown to landfill. This has negative consequences for the environment, and it puts pressure on natural resources which are becoming scarcer. Additionally, there are social consequences for people working in the recycling industry. Their work is also regarded to be of lower value within a linear model. These consequences are most visible in Panipat, India. This city is called the recycling city of the world, where a large part of the world's textiles is

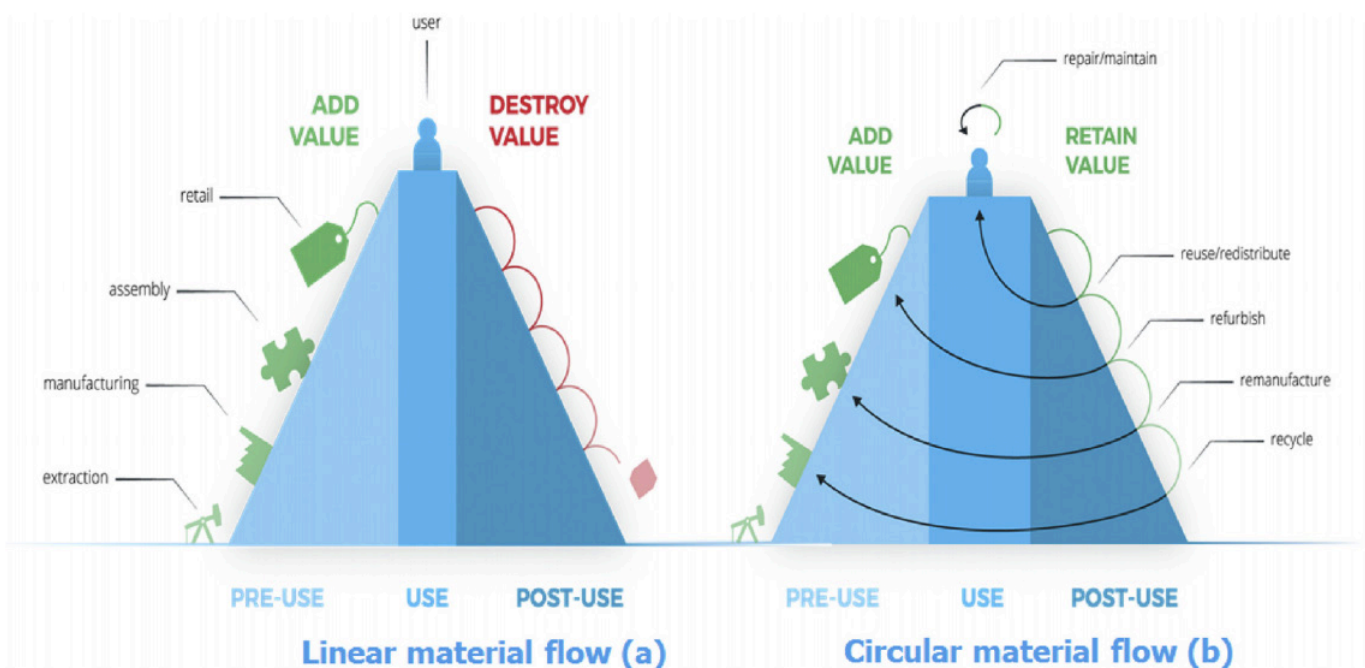


Figure 2: The value hill (source: Fischer & Pascucci, 2017)

recycled and where many unregistered recycling factories and child labor exist. That this current linear system poses a problem is clear. However, how to solve this problem is far from clear because the entire textile industry contributes to this problem. This problem is not solvable by a few actors in the industry, the whole industry has to transition towards a circular system.

A tool that is often used in the circular economy context is the value hill. This tool helps companies positioning their business in a circular context, by developing strategies for a circular economy. There is a difference between the value hill in a linear economy and a circular economy. The value hill shows the loops in which materials and products circulate, to create and retain value (Fischer & Pascucci, 2017). On the righthand side of figure 2 the circular material flow is pictured. Sympany is engaged in a circular loop which leads to more interdependency with other companies in the textile value chain. A circular loop is more complex than a linear one because of the retainment of value. It needs all actors in the chain to collaborate with each other. The following was said about the value chain during an interview with a

Sympany representative:

“The first thing is to get the higher-level products of the post-consumer textile because then the whole value chain is lifted to a higher quality with better labour conditions”

This refers to moving towards a higher step in the circular value hill, by trying to retain as much value from the post-consumer textiles. Again, the importance of the whole value chain is mentioned, because as said reaching circularity is not possible by just a few actors in the value chain.

Position of Sympany in the textile chain

If we position Sympany within the Dutch textile value chain, the company can be positioned at the post-consumer end of the chain, as can be seen in figure 3. This means that Sympany has to deal with the consequences of the choices made by the

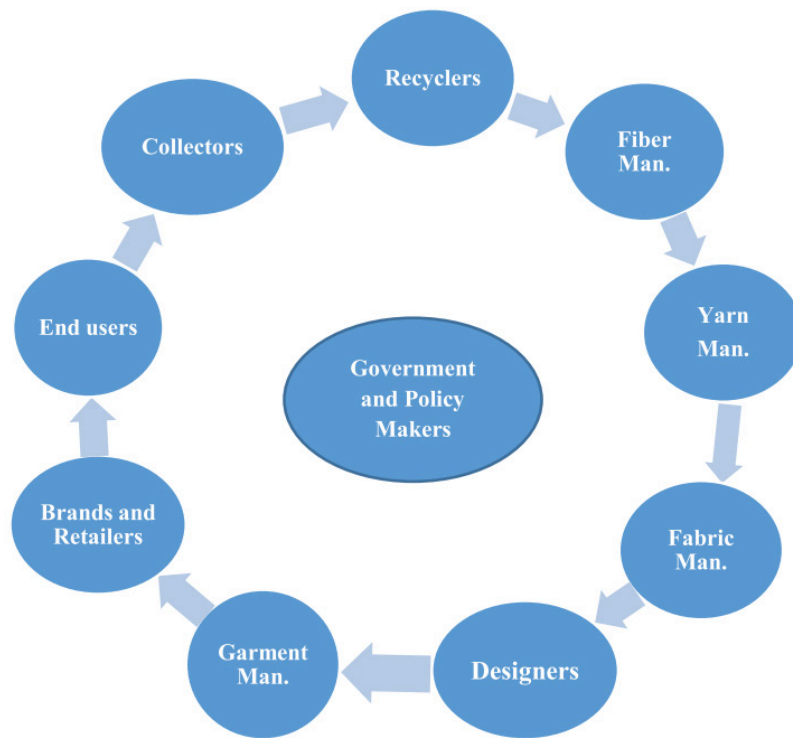


Figure 3: Circular Supply Chain (source: Kazancoglu et al. 2020)

Dutch textile industry and its consumers. Sandvik & Stubbs (2019) state that the collection of garments is directly related to circularity, because circularity is all about reclaiming products at the end of their life. According to them, Sympany can be viewed as an enabler factor of circular supply chains because they have access to post-consumer textiles and therefore have the ability to create a recovery stream for textile-to-textile recycling.

The problems that Sympany faces, are consequences of actions taken from all actors in the textile chain. Currently the textile waste that Sympany has seems like an individual problem, while it is a problem of all actors in the chain because they are together responsible for the textile waste. In figure 3, the circular textile supply chain is shown. The government and policy makers are pictured in the middle of the circular chain because of their significant role and influence in the implementation of CE. They directly or indirectly affect the behaviour of stakeholders in line with

CE (Kazancoglu et al. 2020). Statements from interviews can support this, because it was believed that demand for circularity in the textile chain can be created through legislation and mandatory requirements.

“Looking at the industry now, I think that they will try, by all means, not to change too much. So we need it from the lawmakers. [...] think the biggest solution has to come from the ministry.”

Legislation is seen as the main solution to all problems and guaranteed to bring about change in the industry. However, it is not clear what kind of change will be brought about, since there is no agreement about what specifically circulari-

ty or sustainability is and how it will be measured. There is no guarantee that there will not be a rebound effect. Therefore, the importance of the governance in getting the circular movement going can be questioned. Another statement from interviews that contradicts the importance of governance was that legislation will not be able to do much if the whole textile value chain is not willing to change.

Barriers towards a circular textile industry

Based on literature and interviews, transitioning towards a circular textile industry indicates a paradigm shift, which faces multiple challenges and barriers. Many studies identified the lack of collecting, sorting and recycling as being the most important barriers in transitioning to a CE in the textile industry. Kazancoglu et al. (2020) also identified the reluctance of accepting a circular economy model by companies in the textile industry. The reluctance of accepting a circular economy model indicates that most actors in the textile value chain still prefer to use a linear economy model over a circular economy model (Vermunt et al., 2019). This relates to the lack of willingness to be circular and the negative perception some companies still have of circularity, also because of the economic barriers of high costs and investments.

Baltussen (2019) concluded that the most important categories are attitudinal, economic, and structural. The attitudinal category is of high importance because the willingness to develop a circular business model needs to be present in the firm. The structural category refers to collaboration and information sharing which should be performed in a clear and transparent way. Hvass (2016) states that the volume of returned garments is too low, the current way of sorting is not fulfilling the recycled needs, and the existing recycling methods are too small scale to be economically efficient. Sandvik & Stubbs (2019) indicate that changes are thereby more than a technical matter. It requires way more, such as new design practices, the collection of the textiles, and supporting legal frameworks. All by all, current literature states that systemic change is needed, as well as technological development for textile recycling and collaboration in the whole value chain.

Thus, there is a need for technology innovations in the textile industry because the current technology is insufficient for improving the sorting and recycling of textile wastes. This seems to form the main (current) problem for Sympany, and probably other companies in the textile industry as well. Although, innovations do not only consist of tech-

nological advancements, but also require societal and institutional adaptations. These parts are often seen as external conditions to check after the new technology emerges, but for optimal adoption of innovations the re-ordering of relations and social networks should be integrated in the whole innovation process. In literature these different parts of innovation are conceptualized as 'hardware', which is the technology itself, 'software', which represents the change in a way of thinking, and 'orgware', which refers to new institutions and organizations. On top of this adaptation on multiple levels, the current dominant 'socio-technical regime' should be actively influenced, redesigned or destructed as part of the

innovation process. Since their interest probably lies in maintaining the status quo, this is not an easy job (Leeuwis & Aarts, 2011). For Sympany this would mean that only recycling technologies are not enough to make the innovation of circular textile successful. Something that is just as important and possibly harder, is changing people's way of thinking about circular fashion and their consumption pattern, influencing institutions and organizations to change, and actively try to go in against the dominant but unsustainable 'fashion regime'.

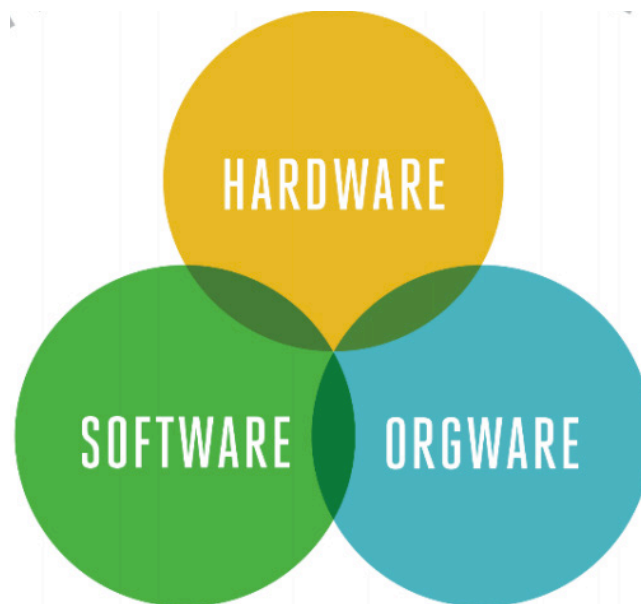


Figure 4: dynamics and dependence in the innovation process (source: Aarts, 2018)

Chapter 2:

Applying circularity

There are different strategies that can be applied in a circular economy. To set-out the strategies for circularity used in the textile industry, we use the 9R framework. The 9R framework is seen as a core principle and 'how-to' of the circular economy. It is used by both academia and practitioners. There are multiple R frameworks, varying from 3R to 4R, 6R or even 9R. We identified the 9R framework as the most prominent one because it is the most nuanced. The 9R framework is shown in figure 5 (Kirchherr, Reike, & Hekkert, 2017). The strategies in the framework are ordered from lowest to highest ability to reach circularity. The 9R framework should be considered as a useful orientation in the field of circularity and not a 'rule of thumb', because there is not always a full consistency in the order in practice (Morseletto, 2020).

As can be seen in figure 5, recycling is viewed as one strategy for a circular textile industry, among the 9 strategies in the 9R framework. To avoid loss of value and materials the goal for recycling is to upcycle instead of downcycle (Guldmann 2014). Upcycling is related to closed-loop recycling in which the recycling takes place in the same product system and it prevents downcycling. Downcycling can happen more in an open recycling loop in which materials move between product systems and loose value. Upcycling and closed loop recycling are preferred, but currently difficult to reach.

Recycling and recovery relate to end-of-life products. Both these strategies, recycle and recover, have little direct influence on the production and consumption system. In the framework we can

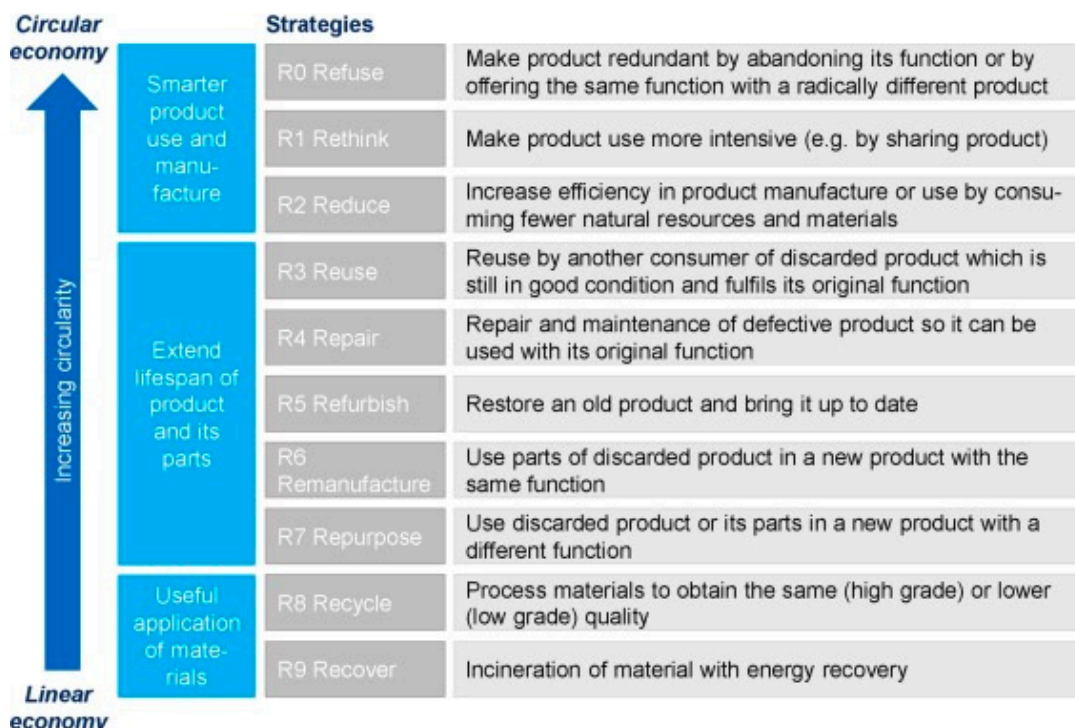


Figure 5: The 9R framework (source: Kirchherr, Reike & Hekkert, 2017)

see that instead of a product approach, recycle and recover strategies are more related to a material approach to circularity. More value is maintained in other strategies that are more product aimed, which is why they are described as having more influence on circularity. To have a product keep its value for longer means it can stay in the loop longer and the resources that were needed to produce the product can be spread out over a larger period. The 9R framework shows that there are multiple strategies to reach a circular textile industry. While other strategies in figure 5 are identified as being more powerful in reaching circularity than recycling, strategies with both a product as well as a material approach are needed to create a circular economy.

Circular Business Models

In order to become more circular as a company, it is not only important to know what strategies can be applied, but also how these strategies can produce a profit. A business model shows the core elements of how a business operates. It focusses on 3 main elements; value proposition, value creation and value capture (Henry et al., 2020). Regarding circularity,

Guldmann (2014) mentions 5 main types of circular business models that can be applied by companies to both be able to make a profit as well as become part of the circular economy:

1. Resource recovery
2. Circular suppliers
3. Sharing platforms
4. Product as a service
5. Product life extension

The circular BM of resource discovery focuses on waste materials that can be reclaimed and reprocessed cost effectively. This model is very much focused on new technologies and closed-loop recycling. Central in the circular BM of circular suppliers, is that there is a focus on renewable, recyclable or biodegradable resources. There is extra attention for minimal waste and central is the principle of circling materials longer. The third business model, sharing platforms, encourages more intensive use of assets and products through collaboration. The product as a service BM is a model in which a company remains owner of a product for which the client pays a user fee. That means that the responsibility of that product remains with the company. Lastly, product life extension, is con-

cerned with extending the lifecycle of products through repairing, upgrading, remanufacturing or remarketing. All these business models are active in a different part of the textile cycle. Some strategies such as resource recovery and circular suppliers focus more on materials, while the products as a service and product life extension models have products central to their business.

When we look at the business model of Sympany, their main income comes from reselling the wearable clothes that they have collected and sorted. That makes the main business model of Sympany part of the product life extension business model. Sympany's brand change that happened last year, seems to indicate another BM.

Their slogan: "from material to resource", point towards Sympany developing as a sourcing company that operates with a resource recovery business model. However, this is not to say that one business model should replace the other. These business models show distinct opportunities for circularity that can co-exist. We would therefore like to stress that while development in textile recycling is encouraged, a too strong emphasis on this strategy would underestimate the opportunity of increased reuse in the textile industry.

A business model that deals with rewearable clothing is high up in the Value Hill (figure 2) and can maintain a lot of product value. Maintaining value in a product for a longer period also me-

“If a piece is still good,
why would you ever recycle it?”
- Sympany representative

ans that resources are kept useful over a longer period, thus being more resource efficient. However, to create a fully circular economy we should not only focus on a product specific approach but also increasingly adopt a material specific approach (Hvass 2016). Looking back at the 9R framework (figure 5), strategies with both a product and material approach are needed to create a circular textile economy. For the textile industry this means we should not only focus on the reuse of products but also on the reuse and recycling of materials. In this way the value of a product can still be captured in its material value after the garment is not suitable to be re-worn again. However, recycling of materials can only be profitable if done on a large scale and efficiently. To make this possible, new technologies are needed to make this happen and they are capital intensive. What makes innovation for these new developments difficult is that the need for recycled textiles is currently just beginning to grow. According to conversations with Sympany, the situation that currently exists is that recycled material is competing with cheap virgin materials. This challenge to create a recycled material that can compete with cheap and accessible virgin materials is incredibly difficult. New opportunities can rise if the demand for recycled material would grow. Simi-

lar to how the need for a sustainable approach is gaining more attention in the fashion industry.

For already existing companies it is often a big step to completely change up their business model. This often means they must change the core elements of their business. Literature has shown that companies more often go for strategies like recycling when trying to decrease their environmental burden. Strategies like recycling do not necessitate a shift in their core business models (Henry et al., 2020), but pose a mere change to their sourcing strategies. Often these companies let other companies recycle their waste and do not have to change their business model as it is. In that approach, partnerships would make a process circular, rather than all businesses having to adopt circular processes. However, a circular way of thinking would be needed to adapt and become part of the circular economy.

Tensions in corporate circularity

Making the economy circular is not an easy task. However, circularity is important, because eventually all resources are finite (Ellen MacArthur Foundation, 2015). The difficulty is that resource scarcity is not yet a direct threat to the production of fashion, and change requires a lot of effort and

drastic transitions in the whole value chain (Daddi et al., 2018). There are many actors involved that are 'locked-in' a certain way of producing. These interdependencies in the industry, on top of a lack of a feeling of urgency among most big fashion brands, make changing even harder. Even companies that are 'born sustainable' or do want to transition to a more circular way of production, experience challenges because their economic objective and promotion of consumption on the one hand can clash with their environmental objective to decrease waste and pollution on the other hand.

“But that’s the thing. If you want to run a business, you also have to think about running a business and surviving. And this is just what we do. We would love to have more like a closed loop. We would like to take and take back the clothes and we will start doing that probably in the next year with a resell system for second-hand clothes. But the next step would be to also offer recycling. And this is just, we’re not there yet, so that’s not possible yet because our volumes are too small.”

- born sustainable company

The previous example is by a company that produces in small quantities to prevent dead stock and overproduction. However, their small production numbers prevent them from developing

into certain fields of circularity, because the costs will be too high. Cost efficiency is also important for Sympany, because they must keep profitability in mind to stay afloat as a company. That is why currently, not everything is recycled while everything has the potential to be recycled. This tension between economic factors, environmental and social factors differs per company. Different kinds of companies deal with these tensions in different ways. For instance, companies that are reluctant to deal with sustainability issues but still see the importance of it, tend to deal with it in defensive ways. This means that their strategy is still focused on the economic objective and increasing their competitiveness. While ignoring the tensions this produces from an environmental and social point of view. Facing these tensions and actively engaging with it in order to show the companies' commitment to the circular economy is seen as a proactive strategy. However, one action can be considered both defensive and proactive, depending on which 'pillar' (economic, social, environmental) is emphasized how it is framed and marketed by the company. For instance, companies that use recycled inputs and mainly focus on keeping the same quality materials to increase competitiveness can be considered defensive. At the same time, using recycled inputs can also be considered proactive, if the focus is more on environmental and social practices in the production process (Daddi et al., 2018).

In the optimal situation companies are able to replace 'regular consumption' with sustainable consumption, by reducing the number of raw materials that are used during the production process. Important here is that a large part of the raw materials is replaced with recycled materials, instead of using recycled materials in addition to the normal production. For instance, if companies launch an additional 'circular line' instead of replacing their regular production with recycled materials, this only promotes more consumption without decreasing the use of raw materials and creates a rebound (Zink et al. 2017). If companies can replace their current ways of production with circular methods or use their resources more efficiently, this will create a win-win situation in which both economic and environmental objectives are met. However, literature shows in practice using recycled materials is often considered a trade-off. This is especially applicable to high-end products, because consumers of these products view recycled products as being of a lesser quality. This means that the appeal of recycled products decreases, and high-end product loses part of its value. Changing this perception requires not only good quality recycled clothes, but also creating awareness to refute the prejudice that recycled materials are of lower quality (Daddi et al., 2018).

Chapter 3: Communication for innovation

All companies that want to keep producing clothes in the future should become circular at some point. From the interviews it has appeared that there are, generally speaking, two reasons why companies want to become circular. Circularity is either a way to solve problems that are seen in the industry or exist in one's own organization or is a strategy in reaction to external pressure. This is underlined by literature that teaches us short-term barriers and paradoxical tensions can make the transition to circularity seem too difficult and stop companies from engaging with circular companies. This is a problem that a lot of companies experience and where openness and collaboration could really help in defining and in the end solving the problem, but the lack of legislation that we mentioned in chapter 1 leads companies to focus mainly on their own problems instead of on the industry-wide problems. Besides the importance of problem-sharing and collaborating, it is also important to communicate

the possibilities circularity can offer to a company, how to deal with tensions between economic and environmental objectives, and to promote circularity among consumers to potentially increase the demand for circular textiles and clothing.

There is not one silver bullet method of communication for innovation, because the interdependence between multiple actors and network in this process also means that 'the most optimal communication' depends on many contextual factors. Everyday conversations and interactions between stakeholders could be considered equally important as or more important than contributions of communication experts and intermediaries. For instance, informal conversations with customers in stores can show how they deal with adapting to a more circular consumption pattern, which also gives companies an indication of how they should approach their customers and what they 'are ready for'.

“A lot of people actually wanted to buy secondhand clothing, clothing from us. But for example, the leasing, there was hardly anybody who responded to this. So there even though you hear a lot about leasing, apparently our customers are not ready to lease. And in stores as well, conversations we've had with the customers, even buying secondhand is for some of them is like a huge leap, something they would only consider it if you would introduce it in a like in the slow manner.”
- born sustainable company

These changes on a micro scale can serve as a mechanism that creates stability and 'space for change'. However, communication professionals can still have a role in interventions for change: **1. Protect the innovation initiative** in its early stages when it cannot yet compete with the current dominant regime.

2. Change the potential for change. This sounds a little vague, but it can be explained by the picture below (Fig 6).

The line represents the landscape and the ball the current situation. The ball tends to roll back and forth in a basin, but without a sudden push it will not go over the hill (Leeuwis & Aarts, 2011). Right now, there is a dominance of using raw materials for clothing, single interventions towards circularity will bring the ball into motion, but in order to push it over and move into a new dominant situation, more dras-

tic interventions are needed. It also matters how high this hill is of course, so this is where the potential for change can be altered. Efforts of communication professionals can lower the amount of work that is needed to move into a different system in which circularity is more dominant.

Responsibility

A way to find out to what degree pre-consumer companies take their responsibility regarding circularity is to look at the way they communicate their actions. This can be done by looking at sustainable marketing of companies. Originally marketing is focused on selling a product, but with sustainability marketing maximizing consumption is not solely the goal anymore. Instead, the company must balance their marketing in such a way that it is not only focused on the inter-personal and intra-personal anymore, but also on the needs of future generations (Kumar et al., 2012).

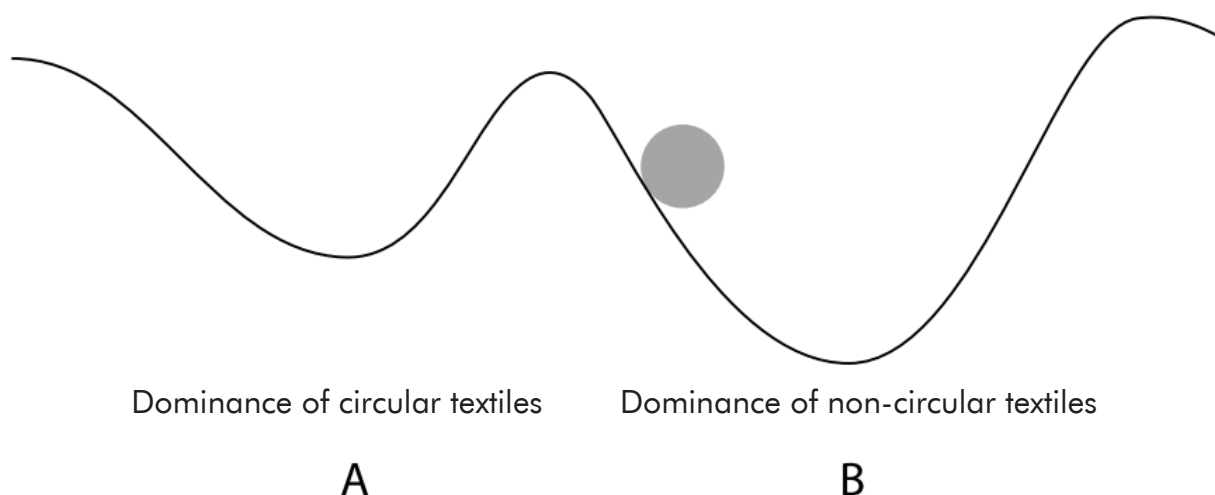


Figure 6: landscape and dynamics of change (source: adapted from Leeuwis & Aarts, 2011)

“You really need to know what your customers’ needs are. And in the world of sustainability, there are a lot of needs you can please. You can please, because it’s better for the world; it’s better for the next generation; it’s better on Instagram. These are all different needs you need to consider in defining and shaping your message.”
 - Circularity communication expert

All companies communicate to their clients and have to address their needs in their way of communication. Pre-consumer companies differ in the degree to which they are committed to sustainability and how they communicate this. Figure 7 shows a self-assessment tool for sustainable initiative transparency, which is divided in four types of companies. Dark companies are not concerned with sustainability, neither in their commitment nor their communication. Translucent companies are committed to sustainability, but they do not use this to market their products, which makes consumers not aware of everything the company does in the field of sustainability. Opaque companies are the opposite: they are aware that sustainability can be used as a marketing tool, but they are not committed to it. Sustainability is used in an opportunistic way: appearing is more important than being. Lastly, transparent companies do see the importance of

sustainability and are open in their communication on their actions that support this. It is used as a competitive advantage and to increase the company’s reputation (Baldassarre & Campo, 2016).

		Appearing sustainable →	
Being sustainable	↑	Translucent companies	Transparent companies
		Dark companies	Opaque companies

Figure 7: self-assessment tool for sustainability transparency (source: adapted from Baldassarre & Campo, 2016)

The idea of promoting consumption with sustainability becomes less contradictory if committed companies (translucent and transparent companies) use it for marketing. They can actually reduce the amount of raw materials used in

the industry when more people would buy from them instead of from other companies, so there is less tension between the economic and social objectives (Kumar et al., 2012). Transparency is at the basis of using sustainability as a competitive advantage (Baldassarre & Campo, 2016). However, it is not easy to say which companies are actually circular. Circularity metrics, which we discuss in more detail in the last chapter of this report, can help in increasing transparency and to find out to what degree companies are circular.

This tool does not only show the importance of putting effort in appearing sustainable on top of being sustainable, it also shows the importance of taking responsibility and matching actions with words. This can be a useful tool for Sympany to assess companies they want to engage with or are engaging with. Dark and opaque companies using sustainability as a way to market their whole brand can be regarded as greenwashing. If companies use collaborations with Sympany as a way to 'correct for' their normally unsustainable behaviour, instead of working together from a shared vision, this can also be harmful to the image of Sympany. Customers could regard the company as hypocritical and not trust their claims anymore, which could reflect badly on Sympany as well. This is why it is important to keep companies accountable to stay transparent on their practices and in which ways they help and harm the environment, and for Sympany to try to assess a

company's intentions in collaborations. Collaborations will be further discussed in the next chapter.

This chapter has explored ways in which communication can be used to promote innovations and how this can be done responsibly, the next chapter will go deeper into communication with other businesses for successful collaborations. It will also go into the importance of good communication towards and with consumers.

Chapter 4:

Collaborations

Business-to-business relationships

In order to get to a circular fashion industry, as well as get the fullest potential out of Sympany, collaborations are really important. These collaborations between stakeholders are needed between every stage of material flow and production. Only then a circular textile industry can work effectively. For these collaborations to work effectively vision and trust are important factors. To consolidate an innovative collaboration, it is important that the partners share a similar vision and have trust in each other (Franco (2017)). This shows that transparency about the motives of a company are not only important in communication as discussed in chapter 3 but are also needed for lasting collaborations. This trust and similar vision are a great base to build collaborations on, but they are not the only factors that matter in having successful collaborations.

The position of a firm in the textile value chain is found to determine the willingness of supply chain partners to cooperate in innovation for circularity (Franco, 2017). Firms that are 'in-the-middle' of the supply chain were revealed to be unable to pull or push demand, while firms upstream and downstream the chain were way more effective in influencing other actors in the chain to innovate. Companies could make more use of this position in the chain and try to influence other parties to innovate in circularity. Furthermore, the size and power of firms determined the willing-

ness to engage and invest in a joint innovation effort. From the interviews this is also seen, as some companies do express an interest in textile recycling, however they are too small to really implement this. One company expresses that they would love to collaborate more with other companies so they could become a bigger player.

Economy clusters

One suggestion for collaborations are circular economy clusters. Through collaboration or network innovation (seeking external partners), multiple players can join forces to develop new products and services, exploit new technologies and share cost and benefits. This could be beneficial to smaller companies wanting to collaborate but were not able to because of their size. Furthermore, this would be a great opportunity for different textile collecting companies and technical companies looking for recycling innovations. Such collaborative networks can help to accelerate the uptake of new technologies and to alleviate the risk-taking efforts by individual companies. These kinds of collaborations would be great for the development of recycle techniques and could really benefit the whole chain.

One example of a collaboration leading to success is the collaboration between the H&M foundation and HKRITA (Hong Kong Research Institute of Textiles & Apparel) on textile circularity and recycling research and development. They rea-

ched a breakthrough regarding the recycling of blended textiles. This means that a technique has been developed by which polyester and cotton blends can be separated at large scale. The great news is that this technique will be made widely available to the fashion industry (Fashion takes action, 2020). This shows that collaboration between parties can lead to great successful innovations and lead to big steps for the entire chain.

In order to get to these collaborations, facilitators are needed that could facilitate a dialogue between stakeholders (Niinimäki, 2018). This facilitator could bring multiple stakeholders together like fashion companies, second-hand sellers, other (international) clothing collectors and recycling companies and create a dialogue about what is needed in the textile industry and how every stakeholder can contribute to this. Currently this is not being done enough in the textile industry, which leads to companies focusing on their own problem instead of a joint effort focusing on the bigger problem. This dialogue could also create more transparency in the chain and between stakeholders and could be a step in the direction of more collaborations between different parties.

Environmentally conscious brands

In order to make the textile chain circular it is, besides collaborations for innovation, also important to have enough parties who are interested in greening the supply chain and therefore buy more green supplies. Another important part of greening the supply chain is managing demand. Sympany has for example a lot of material that is currently downcycled and thus loses value. Therefore, they are innovating in technical solutions to be able to upcycle this material. In relation to this it is also very important to make sure that there are enough companies who will be interested in this product in the end. Often in companies, a lot of attention is paid to the design of the product, especially the environmentally-consciousness of the design. However, there tends to be a lack of attention for marketing's role of managing the demand of the product (Sharma et al., 2010). Therefore, it is important for companies investing in innovation to not only focus on the technical part and how the final product will look like, but to also make sure enough parties are interested in this final product, and that a demand for this product is created. An example of companies who are good at environmental marketing

are Ben & Jerry and Patagonia. They are both brands who have a clear environmental image and reputation. Because they have this environmental image, they also look for suppliers to match this image. So, they do not only try to reach environmentally aware consumers to buy their products, but also build relationships with ecologically conscious suppliers in order to create a green supply chain (Sharma et al., 2010).

To create a circular fashion industry this would mean to begin with focusing on environmentally conscious brands who are interested in creating a green supply chain, and collaborate with them. These could both be companies who had a circular business concept from the start or companies trying to change their business model towards a more sustainable or circular one. The big fast-fashion brands, however, are still the brands who can make the biggest impact on the circularity of the fashion industry as well as on Sympany. But from the interviews it has been mentioned that the change will most likely have to come from the small players: that they will start the transformation and that the big companies will follow, mainly because they have to. From this insight it will be

most wise for the fashion industry to start collaborations with smaller companies that are already interested in circularity, and from there start the movement towards circularity. For the companies investing in circularity this can also create competitive advantages because incorporating more sustainable practices in a business will mitigate risks and can build resilience (Geissdoerfer et al., 2018). Furthermore, companies could sell their products for a higher price because of the green image and social responsibility (Lee & Lam, 2012).

Start-ups

Another possible direction to look for collaborations are start-ups. Both sustainable born start-ups as well as start-ups only just exploring sustainability could be interesting partners to help make the textile chain more circular. In contrast to longer existing companies, start-ups are often more flexible and quicker to respond to market changes. Therefore, they are better in adopting a more radical business model compared to established companies. Established companies have often already made big investments and changing towards a circular model of doing business would make them lose this investment.

This might also be where opportunities lay for Sympany. Looking into collaborations with start-ups might be very valuable. As mentioned above start-ups are often new to the market and are therefore still more flexible and easier to collaborate with than established companies. They also do not have a large established network yet or many stakeholders they have to take into account.

Once parties are found to collaborate with or do business with relationships become important. Especially in business-to-business marketing a good relationship between the buying and selling companies has been proven to be crucial. In this context the communication is a two-way process, so both the buying and selling organisation are actively engaged in developing and maintaining a good relationship (Brennan et al., 2020). This investment in relationships together with the trust and shared vision mentioned earlier are great points to keep in mind for both future and existing collaborations and are important to invest in.

Business to consumer communication

Until now we focused on relationships with other companies to promote circularity. However, the evidence from literature shows that consumers play an important role in the success of the cir-

cular market as well. If consumers keep choosing for non-circular products, this will hold companies back from investing in this as well. This is backed up by the interviews, with one interviewee saying "it will be very hard to change the textile system if nothing changes on the consumer side. So, change needs to come from all parties in the chain." In the interviews it was also mentioned that Sympany currently mainly focuses on communication with the municipality.

“From a communication point of view we have a three at target audiences. The first is civilians, the people that put their clothes in our bin. But the most important one is the municipality itself, because the municipalities are clients. And if we work with a municipality, then the people that live in the municipality are also our target group.”

- Sympany representative

This shows that the municipality is seen as the most important stakeholder and that the communication with consumers has a less prominent position. However, this communication towards consumers has been proven to be equally important. A way in which consumers can be included is by more collaboration with platforms that promote circularity. This has the potential to educate people and, in the end, create more demand for recycled clothing. On top of educating people, platforms can also be used to influence the societal agenda and promote certain solutions. Moreover, it can be a way to build networks, and to get into contact with other circular initiatives and organizations with similar interests. Interactive communication would be especially effective, social learning through for instance discussions and exploring current trends and possible futures together engages people with Sympany and what Sympany stands for (Leeuwis & Aarts, 2011). Moreover, the platforms can be used to share information on how circular companies are as well as how to measure this, which will create more transparency for both consumers and the whole chain in general. The next chapter will go more into depth about these measurements.

Chapter 5:

Measuring circularity

“It’s not really measured. There’s no impact measure like: “what’s the situation right now and where do we hope to be in four years or ten years? And how are we managing to do that? We don’t measure anything.”

- circularity communication expert

This quote highlights the importance of measuring circularity which, despite the existence of circularity indicators within the literature, are not widely used in practice yet. Many companies have adopted sustainability or circularity features in their businesses and claim they are sustainable or circular. However, it is very hard for outsiders to check if this is really the case and to what degree, especially since there are a lot of different definitions of circularity and what people perceive as circular. Indicators are therefore important to create more transparency in the whole supply chain. Often when companies do use indicators to measure circularity they only focus on their business and specific problem. Moreover, in the interviews it was also mentioned that these indicators are often only used to look at short term goals and in a linear way, instead of looking at the long-term goal of becoming circular. Therefore, there is also a need to create a common framework for parts of the textile chain to measure circularity and to create a common vision. From the interviews it has become clear that, for many companies, cir-

cularity is a fairly abstract thing, and companies have to invent for themselves how to become circular. A common framework for different parts of the textile chain on what works to become circular would create a more common vision of circularity. Moreover, we believe that this common vision could lead to more collaborations in the chain instead of every company focussing on their individual problems. When companies are ranked according to these indicators it is much clearer to see which company really makes an effort to be circular. Both from a consumer perspective and business perspective this transparency is important.

In the literature, circularity indicators have been developed to which a company can be linked to. Again, a lot of different definitions of circularity are used to define what has to be measured. In this report an overview of different indicators will be provided to which a company can be measured according to the level of circularity. Often additional calculations are made to see how a company ranks on a scale from 0-1 or 0-100, however these calculations are often very technical and require a lot of information. Therefore, we will only provide indicators to indicate how a company operates regarding circularity. The core of the indicators come from the material circularity index developed by the Ellen Mc Arthur foundation (Fig 8), additional indicators from Rossi et al. (2020) where build on this to create an as complete overview as possible. For the fashion industry it would be beneficial to make more use of these kinds of indicators and to clearly communicate them to other businesses as well as consumers. This will create more transparency in the whole chain, which is needed to see where improvements can still be made and for consumers to be able to make in-

formed choices on where they buy their clothes. The following overview displays the mentioned indicators:

- **Input in the production process:** The origin and the relative amount of the input material. The materials applied will be differentiated among virgin materials, recycled materials - which are divided among used recycled materials and post-consumer textiles - and reused components
- **Product longevity:** The durability of the product compared to an industrial average. This also includes time added by reparations.
- **Destination after use:** How much material

goes into landfill (or energy recovery), how much is collected for recycling? which components are collected for reuse?

- **Efficiency of recycling:** How efficient are the recycling processes used to produce recycled input and to recycle material after use?
- **Stakeholder diversity:** Mapping of stakeholder in the circular value chain.
- **Reduction of toxic substances:** The quantity of reduction of toxic substances
- **Renewability:** The amount of used energy that is generated by renewable resources in relation to the total amount of energy used.

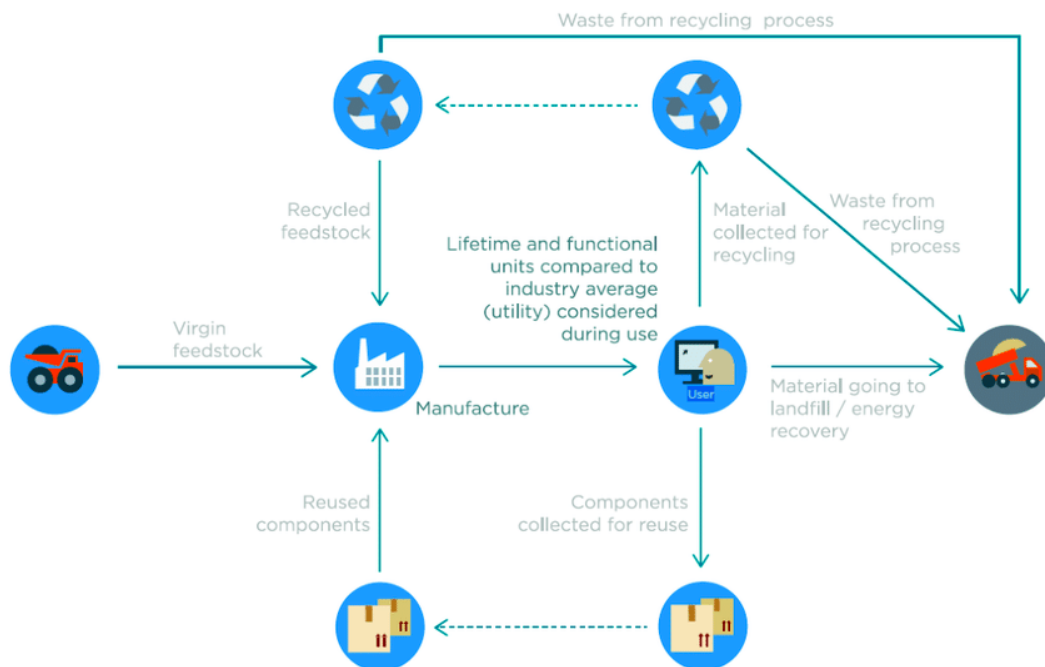


Fig 8. material circularity index. Ellen Mac Arthur foundation

Conclusions & Recommendations

Conclusions

Sympany is a key factor in the textile industry because of their knowledge in collecting and recycling, and their great ambition to start a movement in the entire textile chain: “We brengen de hele keten in beweging”. So the challenge for Sympany to become circular is at the same time a challenge to encourage the whole textile industry to aspire the same goal.

This research was focused on exploring how the post-consumer side of the industry, where Sympany is part of, can be connected to the pre-consumer side of the industry to close the circular textile loop. During our preliminary research we found that Sympany experienced the urgent need for technological innovations to recycle the immense input of textiles, as well as the struggle of finding demand for recycled textiles. However, focusing on a single solution for these particular problems might distract from moving the textile value chain as a whole toward a more circular one. Based on our findings we will provide Sympany with some directions to possibly use to become more part of the circular movement in the entire textile chain.

To reach circularity in the textile industry, Sympany can be of great value. The position of Sympany on the post-consumer side of the textile industry and their knowledge on collecting and recycling can make them a great key player to promote circular thinking in the textile chain. This leads to our main question which is: ‘How can

Sympany position themselves as a key player in the circular textile industry to encourage the inclusion of un-wearables/recycled materials on the textile market and close the circular textile loop?’, we will first answer the three sub questions.

1 *What view do companies in the fashion industry have of recycled materials and how does this influence their production choices?*

Based on interview results and literature research it can be concluded that most actors in the textile industry still apply a linear way of thinking, even if they consider themselves active in the circular industry. This linear thinking refers to thinking with a start and endpoint in mind. Every company in the value chain seems to be focussed on their own problems and how to solve them directly with collaborations. However, all the different kinds of problems that each actor in the chain faces, are not individual but collective problems. In other words, linear thinking influences production choices and collaboration is needed to make the industry circular.

We have found that especially small sustainable and circular minded companies are more open to the use of recycled materials. However, they are often too small to source the recycled materials that are available right now. For them, the prerequisite of scale seems to be a challenge. Additionally, there is uncertainty in consu-

mer demand. It is unclear how consumers react to sustainable textile and strategies. This makes fashion companies hesitant in adapting circular practices. Current preconceptions in society are that garments from recycled materials are of too low quality and too expensive. Many consumers have a lack of knowledge when it comes to recycled materials. These perceptions on recycled textile should be addressed.

2 *What strategies do circular companies use to try to close the loop in fashion and how effective are they?*

For Sympany the main problem in becoming more circular is the lack of demand for recycled material. This makes it in turn much more difficult to upscale the production process that recycles the large amount of non-rewearable post-consumer textiles. Additionally, the current technological innovations are not yet able to recycle textiles in a way that they are compatible with virgin materials. However, when it comes to new innovations also social and institutional adaptations are required. This is about changing people's way of thinking and making sure that when the technological innovations are there, the institutions and organizations are also ready to shift the paradigm to a circular one. In other words, instead of innovating recycled textiles to compete with virgin materials, more attention should be paid to creating a demand for recycled materials in

ways of thinking, institutions and organizations. This to be able to create societal support for future technological innovations in recycling to thrive.

While research has emphasized the need for a systemic change to reach circularity, in practice companies that are trying to become circular are struggling how to. In general, there seem to be two reasons for companies to become circular: either as a way to solve current problems that exist or as a strategy in reaction to external pressure. The large challenge to become circular for companies originate in the fact that circular economy is still a new concept for which there is no clear practical framework yet to apply circular strategies. This lack of a practical as well as legislative framework for circularity complicates collaborations and strategies that are needed to make a change in the entire chain. A strategy that is currently often implemented by companies is a product-take back system and repair options to extend the life cycle of the product. This is a good start, but it is not fully closing the circular loop. The focus is still too much on a product specific approach instead of a material specific approach.

3 *What communication tactics does Sympany use to promote the value and use of recycled materials and how could this be improved?*

Many stakeholders think that legislation will be the key in solving problems in the textile chain,

while this will not be effective if other actors in the chain are not willing to change to a circular paradigm. This link emphasizes the importance of communication. From literature we found that everyday conversations and interactions with stakeholders are considered equally as important as conversations with communication professionals. The communication with municipalities for instance could be more focused on the current problems of Sympany instead of how to solve these. For solving these problems all actors in the textile chain need to be aware of problems, because the problems that Sympany is facing are the result of all actions taken from all actors in the chain. The position of Sympany on the post-consumer side of the chain makes Sympany an ideal player to start a dialogue with different stakeholders to close the circular loop. Literature states that actors are needed to facilitate the dialogue between stakeholders, which could be a position for Sympany to take. Together with different stakeholders more transparency in the chain can be created and more collaborations between different partners can be established.

In order to establish more collaborations, good communication is important. Measurable indicators can help improve the communication in collaborations. These indicators will inform all stakeholders in the textile chain about how cir-

cular each actor is and can provide an overview of the progress within the sector. A shared framework consistent of clear indicators will provide stakeholders with more shared knowledge on circularity and can set long-term goals. The efforts of communication professionals are specifically important to accelerate the paradigm shift within the industry and society from linear to circular. Interactive communication throughout the textile chain would be especially effective in this case, which could be made possible by collaborating with platforms to educate people.

How can Sympany position themselves as a key player in the circular textile industry to encourage the inclusion of un-wearables/recycled materials on the textile market and close the circular textile loop?

Currently, linear thinking is dominant in the textile industry. The actors that are working on circularity are highly motivated, but often working on their own problems. To be able to make the textile industry more circular, more collaboration is needed. Through collaboration isolated problems become more visible and clearer to the wider industry that influences this problem. This is especially relevant for Sympany. Because Sympany operates on the post-consumer side of the market, their problems

are a result of the problems of the entire industry. Increased transparency about problems can foster collaborations and show a need for circularity. It is important to communicate with both consumers and companies about the need for circularity and the problems that are caused by the linear textile system. That way, more societal support is created for future technological innovations in textile recycling and there is a larger chance that the textile industry and society will adopt these innovations. In short, Sympany position itself as a key player in the textile industry by facilitating dialogues between stakeholders by communicating about their problems, as well as by collaborating with different actors in the textile chain to reach a circular way of thinking and innovating.

Conclusions & Recommendations

Recommendations

At the end of October, we were asked to investigate how Sympany could maximize textile re-use and recycling with the goal of becoming a circular company. Because of their large share in the Dutch textile collecting and sorting market, Sympany could play a key strategic role in circularity for textiles. Such promising ambition could be challenged by several elements of the fashion industry. Especially, by the dominant linear way of thinking that leads the market. During our research, we found that for Sympany to overcome such obstacles, and for the company to move towards a more circular way of thinking and working, it will require more than an individual effort. We believe that the problems communicated by Sympany benefit from being analysed and tackled on a bigger, more strategic level.

Key findings

The problems Sympany faces seem to be a result of the choices of the wider textile industry. While we noticed and encourage the responsibility that Sympany takes for their actions, we would like to emphasize that the problems that Sympany experiences are not caused by Sympany and should thus not only have to be solved by Sympany. We found that it is crucial to find a solution together with other companies to be able to solve the origin of the problem. Especially since every company seems to focus on their own specific problem regarding circularity. A network of strong collaborations is necessary to develop innovative solutions and to get the whole chain moving towards circularity, because circularity can only be achieved in the entire chain and not individually. In other words, we believe that Sympany should

not try to solve the challenges that are present in the textile industry themselves, but that this is a common effort. A company cannot achieve circularity on its own.

Based on the problem provided by Sympany regarding the growing amount of non-rewearable post-consumer textiles with an unknown destination, we have come up with several recommendations that we believe will help Sympany become a key player in the circular textile industry and create long-term solutions to their problems. These recommendations will be addressed in the following sections.

1 Communicate about the problems that Sympany experiences

From our research we learned that the role of communication to promote innovation is essential. Everyday communication as well as efforts of communication professionals are necessary to create space for change. We think that a company whose vision is to become a key player in the recycling textile market, should make this vision clear towards all relevant actors, from producers to consumers, in order to develop strong and reliable connections. Transparency about goals as well as actions is not only helping Sympany's brand, but also promoting the idea of circularity, which in turn can create more demand for Sympany's work. A more practical step which can be taken is improving the website by giving more periodical information about the status of the company and the market. To share individual problems of Sympany also means to unveil common problems of the industry, such as the linearity of the market or the damages caused by the "make, use and throw" of the fast fashion market. Putting more effort into communication could lead to new and better connections with partners. Moreover, it could improve knowledge on all the possibilities of the market, for instance new technical innovations or circular platforms where companies can together discuss the problems they are facing.

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2 Collaborations to educate the public about circularity

There is a need for technological innovations in the textile industry because the current technology is insufficient for improving the sorting and recycling of textile waste. These technologies are the hardware. However, innovations do not only need the hardware but also need software (a change in the way of thinking) and orgware ('new' institutions and organisations) for optimal adoption of an innovation. Therefore, we recommend to not only focus on technological innovation, but to also pay attention to communication about innovations to change the perception and consumption of consumers and organisations regarding textile recycling and recycled textiles. From the interviews it has been confirmed that without a change from the consumer side, it will be hard for the pre-consumer companies to make the change to circularity as well. At this moment, Sympany mainly focusses on communicating with municipalities. Through these municipalities Sympany also targets the citizens of that municipality. We recommend that, in addition to communication via the municipality, collaborating with platforms that educate consumers on the problems of the fashion industry could be a next step to increase awareness on circularity among consumers.

3 Collaborate with fellow innovators and textile collectors and sorters in the industry

Recycling in today's textile market is challenging, and technical solutions are needed to implement recycling on a large scale in the fashion industry. Sympany is not the only company working on technological innovation in the textile market. We believe that for Sympany it would be beneficial to collaborate with companies that work on technical solutions for recycling in the textile industry. That way multiple players can join forces in developing new products, exploit new technologies and share cost and benefits. Through collaborating with fellow textile collectors/sorters and recycling innovators in the industry, more knowledge can be combined about progress on technological innovations as well as the kind of innovations that are in demand in the textile market.

4 Share knowledge on reuse of textiles

Sympany has a lot of experience in collecting and sorting textiles. From the interviews we learned that several companies who are working on circularity are setting up logistical networks but are having trouble with finding practical frameworks and ways to make this happen. Sympany could be of great value for these companies and would get involved in their circular journey, because of year of experience in collecting and sorting textiles. Through sharing knowledge on logistics, Sympany will be more aware of what companies are working on and struggling with, as well as be able to influence the way these companies grow in circularity. That way, sharing knowledge could enforce Sympany's position as a key player in the circular textile economy.

5 Collaborate with company clusters

The collaborations that Sympany has within the fashion industry seem not to be enough to boost the transition to circularity. What is evident from the interviews is that Sympany is looking for ways to upcycle their recycle processes and that small, circular minded companies cannot process enough material to allow for an upscaling of the process. However, in our research we have found that circular minded companies are more flexible and motivated to get the circular movement within the textile chain going. From the interviews we learned that small companies with a circular vision are open to collaborate with other companies with a similar vision on recycled materials. These collaborations would create economic clusters that could provide an opportunity to scale. Additionally, during our research it became clear that the small companies are more likely to have a pioneering role and start a movement. The bigger companies are more likely to be the ones that will eventually follow because they have to. Trying to collaborate with several small companies could boost the creation of a platform within the market of circular clothing, which can both sustain a reasonable demand and provide a “reference point” to all the companies that would like to become circular. Having collaborations with several companies could also give Sympany some publicity and lead to a better company image in the market.

6 Use of measurable indicators for circularity

Currently it is difficult for all stakeholders in the textile chain to determine how circular they are and how circular other companies are. In chapter 5 we gave an example of multiple measurable indicators that can be used to find out to what degree companies are circular. The shared adoption of indicators could help to create more transparency in the whole textile chain. This will not only help Sympany in communicating their circular activities more with external parties, but it will also provide Sympany with more clarity about how other actors in the textile industry score on circularity. In other words, the presence of a comparable and coherent measurement framework regarding circularity throughout the whole industry, could lead to more collaboration in the entire chain. We recommend that Sympany will make more use of industry accepted indicators in their collaborations to set long-term goals that guide the textile industry towards becoming part of the circular economy.

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Appendix I

Interview questions

Semi-structured interview

1. Welcome and thank you for talking to us. Can you tell us a bit more about what you do at (company)?
2. Why are you interested in circularity and what brought (company) to act more circular?
 - a. Relevance of circularity for the company
 - b. The meaning of circularity for the company, and the difference to sustainability
3. How have you seen the textile industry change over the last few years?
 - a. What have been the most significant changes?
 - b. Why is change towards sustainability so important?
4. Have you seen a change in companies regarding circularity and circular thinking?
 - a. How are ideas shifting?
 - b. What are the strategies
 - c. How has attention for circularity grown?
5. How do you think progress in sustainability and circularity is measured?
 - a. How have you seen/measured progress?
 - b. What are your goals when it comes to circularity?
6. What do you think are the biggest challenges to be a sustainable/circular company in an industry that is not?
 - a. Who do you collaborate with?
 - b. What is planned for the future?
7. Can you tell us a bit more about the collaborations you have, how they have developed over time and why these are so important?
 - a. Biggest challenge in collaborating
 - b. What do you look for in collaborations? (long-term or short-term projects)
 - c. What parties would you think of when you would like to collaborate on sustainability/circularity?
8. Value Hill: where do you think the textile industry is now and where do you think they will be in 5-10 years?
 - a. What are the biggest challenges to get there?
 - b. Innovation

Appendix II.1

Possible collaborations

Networks

- Fashion for good: a Dutch platform for sustainable fashion innovation
- Modint: is a Dutch trade organization specialized in clothing, interior, tapestry and textiles. This network and knowledge center that brings companies, projects, and people together.
- MVO Nederland Network Textiel: a Dutch network in which companies are working together on innovations to create circular textile.
- Dutch Circular Textile Valley: works on the creation of a circular textile chain to reduce the environmental impacts together with multiple organizations
- Het Groene Brein: is a Dutch network with almost 150 researchers that supports companies that want to transition towards a more sustainable economy
- Textile Exchange: a global non-profit organization who builds a community of organizations that want to advance their sustainability efforts. They organize a yearly conference. Located in over 25 countries
- Circular.fashion: a German sustainable change agency creating product- and system innovation for a circular economy in fashion and textiles
- Fashion takes action: Canadian non-profit organization to advance sustainability in the fashion industry
- Fashion positive: a, international non-profit initiative focused on the use of circular materials for the fashion industry'. Its members are from apparel companies and retailers that drive the circular fashion movement. They have been working on circular guidelines for organic materials to be applied by the textile industry.
- Circle Economy: is a Dutch non-profit organization that 'enables cities and businesses in the practical and scalable implementation of the circular economy'
- Mumster: a Dutch conscious campaign agency part of 'the sustainable fashion movement' that connects people through their creative conscious campaigns. They have mainly knowledge on the consumer side regarding circularity.

Appendix II.2

Possible collaborations

Fashion companies/ producing brands

- **Armed Angels:** German clothing company which mission is combine fair working conditions and sustainable, high quality materials with beautiful design. Committed in having a traceable supply chain and more general in transparency issues. This company could be a good collaboration for Sympany and is highly interesting in learning more about sourcing options for their production.

(<https://www.armedangels.com/de-en/about-us/philosophy>)

Located in Germany

Contact person: katharina.liefner@armedangels.com

- **Joline Jolink:** Joline Jolink is a small Dutch company that is deeply devoted to understanding their clients' need, but also to educate them in "wearing more sustainable". They are very open to form a collaborative cluster with like-minded brands that are looking for ways to use more recycled materials in their collections. Located in the Netherlands

- **C&A:** well-known clothing company. Broadly committed in sustainability issues, could be a good collaboration to sustain an upscaling process for Sympany, considering also the knowledge and expertise that the company has (<https://www.c-and-a.com/uk/en/corporate/company>)

Located in Belgium

Contactpersons: catherine.louies@canda.com; suman.bethapudi@canda.com; aleixgb@canda.com (Aleix Gusquets Gonzales)

- **Bella and Frank:** a circular minded brand that produces clothes for children, originally from UK. Their vision is to help raise a generation of environmentally aware consumers. They stress the importance of using low environmental impact materials, while trying to educate and sensitize consumers on sustainability issues (<https://bellaandfrank.co.uk/sustainability>)

Located in UK

**“IN AN IDEAL INDUSTRY PEOPLE
WOULD REALLY FOCUS ON LOVING
CLOTHES AND WEARING THEM FOR
AS LONG AS POSSIBLE. THEY WOULD
REDISCOVER OLD CLOTHES, SHARE
CLOTHES. SOMETHING COMPLETELY
DIFFERENT FROM WHAT WE HAVE
NOW.”**

- circular minded company