MUD JEANS

A Circular Economy Business Model Case

Roland Wijnen, Moniek Tiel Groenestege, Business Models Inc BV.

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Executive Summary

This report presents the case study corresponding to the retail company MUD Jeans, which has been selected by the R2π project given its importance in the world fashion market. The adoption of a circular model by fashion companies is extremely important, given the huge social, economic, and environmental impact of this industry.

This report presents the analysis of the MUD Jeans business model. The objective of the report is to offer a holistic view of how the MUD Jeans circular business model creates, delivers, and captures value. We obtained this holistic view through analysis and synthesis of the business context in which MUD Jeans operates and their business model, followed by an assessment of the circularity of their business model.

MUD Jeans is a company with a truly circular ambition: a world without waste. They have a clear and specific vision about circular value creation and are acting on it. Their business model is a circular business model designed from scratch and implements a variety of circular business model patterns. They implement the Circular Sourcing pattern using both recycled jeans (40%) and bio-organic cotton (60%). They implement the Recondition pattern by turning worn and leased jeans into vintage jeans. They implement the Performance pattern by offering a long-lasting and stylish product making people look good while contributing to a sustainable lifestyle. Customers of MUD Jeans are conscious men and women. Initially their customers were confined to a small niche, vegans. Currently, more and more people are wearing their jeans, either by buying (75%) or leasing them (25%). Customers get free repairs if required. Besides that, MUD Jeans offers customer service like any other fashion company. Many customers like their fashionable and modern jeans so much that they actively share why and what they buy or lease from MUD Jeans. This active community leads to word of mouth that grows the customer base as well as sharing the story about their vision and mission. In everything they do, there is the drive to further decouple growth from social and environmental impact. MUD Jeans received several awards for their innovative approach in the fashion industry. At the core of how they organize value creation is their circular design approach, which is implemented and executed with a number of strong partners, who share a similar vision about changing the fashion industry.

The report contains an in-depth analysis and assessment of the MUD Jeans business model in order to better understand the design and dynamics of their circular value creation. We also provide a detailed look at the business context in which MUD Jeans operates. Important contextual factors are the explosion of production and the associated negative effects, consumer awareness of the negative effects of fast fashion, and the growing need of personalized and customized products and experiences. The business model is presented visually using the Business Model Canvas, both the big picture and at a more detailed level.

The MUD Jeans business model is consistently designed and implemented, with clearly defined strategic choices underpinning their model. They have a very strong value network with partners that share a similar vision and help each other succeed in bringing circular fashion to the market. We also include an assessment of the strengths and weaknesses of the building blocks of the business model as well as an assessment of the opportunities and threats for the business as a whole. Three options for future business models are also identified: 1) a shift towards a new customer segment, 2) a shift in the value proposition, and 3) shift in using new materials.

MUD Jeans has traction in the market and is a serious circular company now. They are on a growth trajectory both in terms of increasing customers and revenues as well as decreasing socio-environmental impacts. Their loyal and active customers and strong partnerships work as an enabler in this. The media these days is also paying close attention to these new ways of creating, delivering, and capturing value. There are still some barriers to overcome. Circular business models are treated in the same way as traditional business models with respect to taxes. Another barrier is the financial evaluation of leased jeans, without much recognition of the value of materials that is retained for the long term. It is also difficult for MUD Jeans to find the right investor to double down on growth.

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The report concludes with guidelines for entrepreneurs to make better strategic choices as well as recommendations for policy makers to accelerate circular value creation.

The following guidelines are for entrepreneurial teams working on circular business models:

- Make your vision explicit and clear for everyone in the company and your stakeholders.
- Visualize your circular design philosophy and approach, even if it is yet to be implemented.
- A circular business model should touch customers, besides the more obvious changes that can be made to production systems.
- Bring the right partners on board early. The right partners are those that share your vision and can contribute meaningfully to your business model development.
- Tell stories about what you want to achieve (vision) and what you are working on (business model).

The following recommendations are for policy makers that want to accelerate the circular economy:

- Be clear about your vision for transitioning to a circular economy. Explain clearly to the general public why a circular economy is serving public interests better.
- Create an action plan to achieve circular economy policy goals. Make the appropriate changes to the policy making and implementation process. Most importantly, allow for experimentation and learning.
- Be pro-active and adaptive in the policy making process. Work together with businesses to design and re-design policies.
- Invest in R&D that potentially drives circular value creation in specific industries. Look at the industries (like fashion) that are most polluting and define the change that needs to be set in motion. Engage with leading circular businesses to draft an innovation agenda that accelerates the change and work with them to make that change happen.

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1 Introduction

1.1 Background and context

R2π – Transition from Linear to Circular is a European Union Horizon 2020 project focused on enabling organisations and their value chains to transition towards a more viable, sustainable and competitive economic model in order to support the European Union's strategy on sustainability and competitiveness.

R2π examines the shift from the broad concept of a Circular Economy (CE) to one of Circular Economy Business Models (CEBM) by tackling market opportunities and failures (businesses, consumers) as well as policy opportunities and failures (assumptions, unintended consequences). Its innovation lies in having a strong business-model focus (including designing transition guidelines) as well as in the role of policy development (including designing policy packages).

The ultimate objective of the R2π project is to accelerate widespread implementation of a circular economy based on successful business models and effective policies:

to ensure sustained economic development,

to minimize environmental impact and

to maximize social welfare.

The mission of the project is therefore to identify and develop sustainable business models and guidelines that will facilitate the circular economy, and to propose policy packages that will support the implementation of these sustainable models.

A core part of this project is to work with organisations who are on the journey towards developing circular economy business models, as well as those who have the ambition to do so but haven't yet begun. The project has conducted case studies of 18 selected organisations.

The 18 chosen cases covered all five priority areas highlighted in the EU Action Plan on the Circular Economy: plastics, food waste, biomass/bio-based, important raw materials, and construction & demolition. Additionally, the cases were selected to ensure learning in each of the seven business model patterns defined by the R2Pi project: re-make, re-condition, circular sourcing, co-product recovery, access, performance and resource recovery. To gather wide-ranging lessons from differing company sizes and maturities, the following were selected: 7 large corporations, 8 small & medium size enterprises, 1 public entity, 1 entire value chain with both public and private organisations and 1 ongoing social project.

This report presents the case study of MUD Jeans. It was chosen because it designed, developed, and implemented a circular business model from scratch, introducing the Lease-a-Jeans concept. Their model is interesting because it is a greenfield business model powered by a strong circular ambition.

Link to other case studies

MUD Jeans is a vision-driven company that started with a circular economy philosophy and business model. This is different from Zara (Inditex), the other fashion company described in case study report 'Zara' by Angeles Pereira from University of Santiago de Compostela (R2Pi, 2018). Zara sells a Join Life collection, but this is not actively promoted as circular fashion. The choice for this collection seems to be more context driven, i.e. the pressure from stakeholders asking for change in the fashion industry.

The next section provides a more detailed overview of the case organisation's business.

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1.2 Business overview

This section presents a high-level overview of the MUD Jeans organization, the business they are in, and how this developed historically. Some general facts about MUD Jeans:

- Brand acquired in 2012
- Headquarters in Almere, The Netherlands
- Management team of four (all shareholders)
- 7 employees
- 3 factories, 2 for fabrics & one for stitching and washing
- Turnover (2017) - €822,000 (75% product sales: 25% lease)
- Partnership with RePack, a returnable packaging company

Another fun fact is how they came up with the name "MUD." The word mud has connotations of dirt and soil. However, MUD masks are also applied to our faces as beauty treatments. People around the world build homes from mud. So, mud is a wonderful, ever-changing raw material, straight from the heart of nature.

"It means also, out of the mud, so that a beautiful lotus flower can grow!"

Bert van Son, CEO

1.2.1 History

The founder of the company has been active in the fashion industry for over 30 years. He has seen good things and bad things in the industry. The rise of fast fashion resulted in a steep decline in clothes utilisation rates since 2000. Furthermore, less than 1% of material used to produce clothing is recycled into new clothing, representing a loss of USD 100 billion/year.

His thirty-year experience in the fashion industry made him see the impact fast fashion has on the environment, which triggered him to make a change. In 2012 he bought the Lease a Jeans brand and re-started the business. The question he raised was: "What if we clean up our own mess?" This simple idea was the start of the MUD way of thinking. Fashion is the 2nd most polluting industry (Perry, 2017) and MUD Jeans wants to tackle that problem with their business model. The idea of creating their own Circular Denim Economy, not only to clean up the planet, but also to relieve it, led to the innovative 'Lease A Jeans' concept in 2013.

In 2014, a rebranding was carried out towards a more fashionable and hip positioning. In 2016, customers and stakeholders were (virtually) taken on the Recycle Tour to show what happens when jeans are returned and turned into a new pair of jeans. From 2016/17, the company speaks of itself as a serious circular jeans company, selling jeans in 250 stores in various countries, servicing retailers with a B2B portal, and being featured in blogs, magazines and TV shows worldwide.

1.2.2 The Business

MUD Jeans promises sustainable jeans, made to last. They serve women and men fashionable, guilt-free jeans and a limited number of other items. Customer lease or buy jeans. Many of their customers lease jeans instead of buying them outright, and this trend is on the rise. As of today, around 3,000 people lease a pair of jeans for a period of one year. Jeans are offered through a subscription, along with free repairs. After a year customers have three options: keep, switch, or send back.

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MUD Jeans has a strong community of fans that promote their mission by wearing their jeans to make a statement. A third of MUD's business is generated online. Besides online, MUD Jeans are sold in small and hip retail shops. These retailers serve as sales channel and also as a return channel. If customers bring in their worn jeans (even from other brands, provided they are 96 percent cotton), they receive a 10% discount on new purchases.

MUD jeans are partly (maximum 40% due to current technical limitations in recycling) made from worn and discarded jeans (Ellen MacArthur Foundation). The other 60% is virgin material and certified organic cotton. To make things happen, MUD Jeans collaborates with multiple partners that create or add value in the circular design and production process they are running. To promote the concept of circular economy, MUD works with many partners and is member of several foundations and organisations that all share the ambition of driving a circular, sustainable economy.

1.3 The case study analysis process

The case study process was conducted in two main steps and concludes with this document as the final report (see diagram below). The workshop has not been organized, although we did explore future business model options during a meeting with the case organisation.

The analysis followed the general methodology designed in R2PI project (as shown in Figure 1 and laid out in Deliverable D3.2a). Initially, a big picture analysis was conducted, mapping the business model, context, and vision, as well as a list of questions about how MUD Jeans creates, delivers, and captures value.

Two sessions with MUD Jeans were organized to get deeper insight into their business. Both sessions were with members of the Management Team. The first session was with only one person from the Management Team. The second session was with two people, one of who is responsible for marketing. During this second session, we reviewed the business model and context and drew up the materials flow and value network for MUD Jeans. The whole research process took place in February and March 2018. The case study was presented and discussed during the Warsaw consortium meeting in April 2018. After that, this case study report was reviewed in detail, expanded and improved.

The insights from our perspective as business model experts as well as the insights the case organisation about their business are presented in this report.

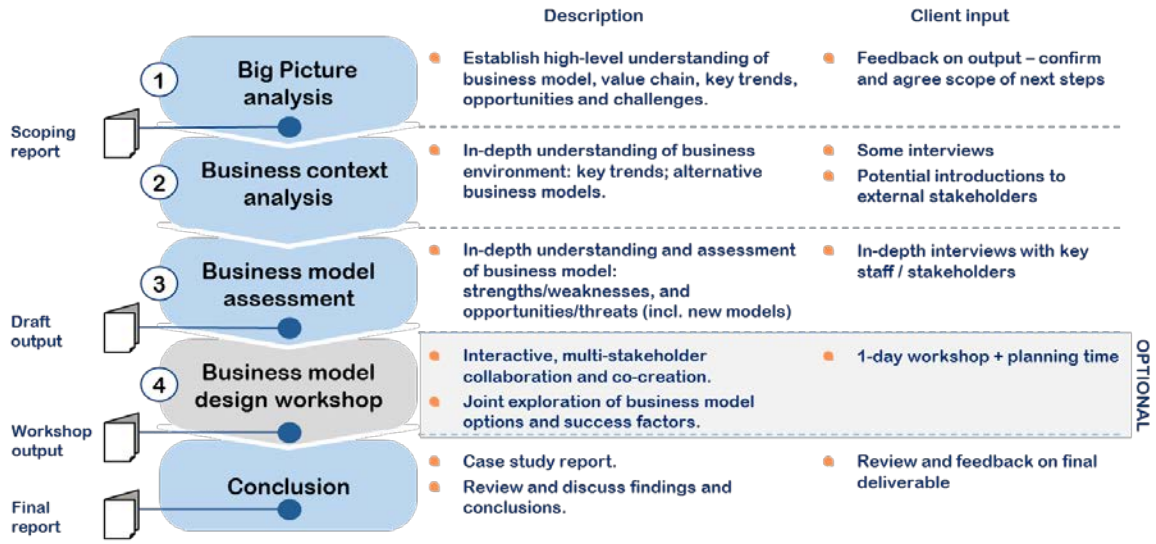

FIGURE 1 RESEARCH PROCESS

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1.4 Report outline

This introduction presented an overall overview of the case study's organisation. Chapter 2 presents the business context in which MUD Jeans operates. The business is assessed in Chapter 3, showing the big picture of the business model, a detailed description of the building blocks, the value network and material flows. The circularity assessment is presented in the second half of Chapter 3, showing to what extent MUD Jeans applies each of the seven CEBM patters. Chapter 3 concludes with a summary of the strategic choices underpinning the MUD Jeans business model as well as an outlook of future business model options. Chapter 4 draws conclusions about the current state of the business and discusses enablers and barriers. This chapter also includes guidelines for entrepreneurs and policymakers.

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2 MUD Jeans' business context analysis

2.1 Scope of the business context analysis

This chapter provides insight into the context in which MUD Jeans operates their business. First, the scope of the context analysis is defined in Section 2.1. The specific context for MUD Jeans is described in Section 2.2 covering all relevant contextual factors.

The objective of the context analysis is to identify the main external factors that are to be considered in order to explain the success (or failure) of Circular Economy Business Models (CEBM), as well as their potential role in accelerating the transition towards a Circular Economy.

The business context research was carried out in two steps. In the first step, the case study team conducted desk research in order to identify all the factors that may potentially affect the business model. In the second step, the team reviewed the context analysis with relevant key stakeholders of the case organisation.

2.2 Contextual factor analysis

This subsection presents the different factors that affect the context of the fashion industry, from a Circular Economy perspective. Information presented is based on desktop research and does not include the view of MUD Jeans respondents on each matter.

The different factors that will be described below are structured into different categories, namely: demographic trends, rules & regulations, economy & environment, competition, technology trends, customer needs and uncertainties.

The business context for MUD Jeans is shown in Figure 1 and described in the following sections. In Chapter 3 we show how MUD Jeans taps into specific contextual trends and developments with their business model (Section 3.2).

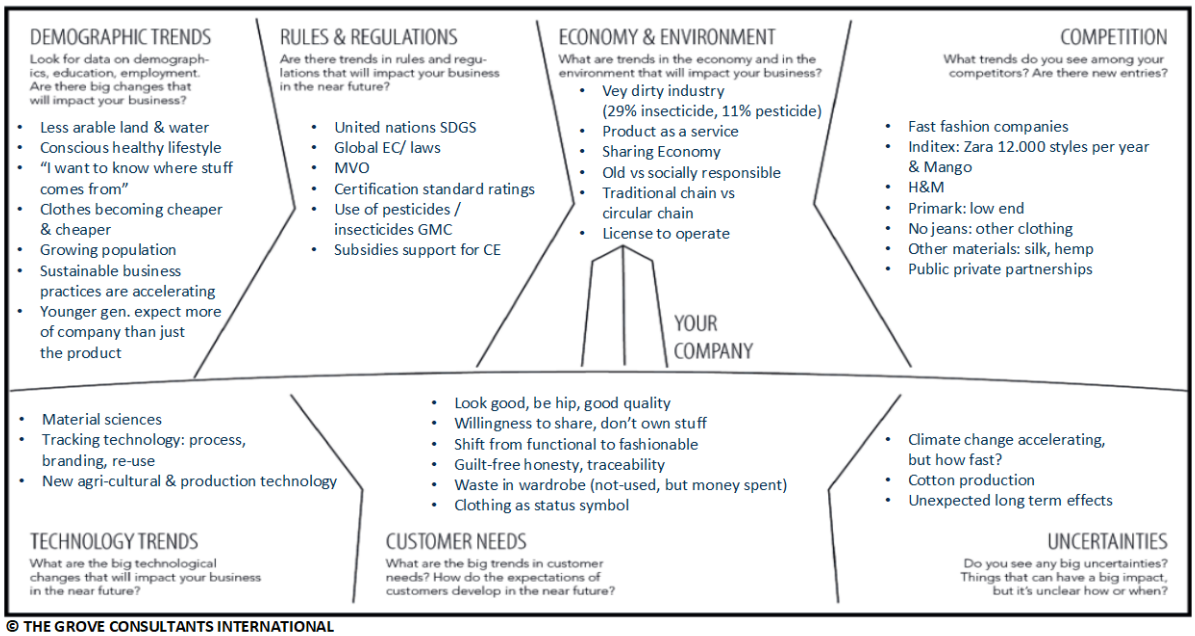

FIGURE 2 BUSINESS CONTEXT

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2.2.1 Demographic trends

The world population keeps growing (Tulloch, 2014). On the one hand, people grow older, living standards improve, and basic income levels increase. On the other hand, living conditions for millions of people are still falling behind or getting worse. There is increasing demand for food, water, and other resources both in terms of quantity as well as quality. The arable land and water that is available to grow food and materials for our clothing is decreasing.

Leaders within politics, government, and business are increasingly aware that sticking to business as usual is insufficient to maintain a decent quality of life for all these people. We won't be able to provide food and clothes to this many people with our traditional linear production systems.

Sustainable business practices are therefore accelerating, within emerging companies (startups and scaleups) and also within large multinational companies. At the same time, there is also a trend to keep lowering production costs, in order to meet demand for cheap clothes.

People in general, but especially younger generations expect more from a company than just a product. Groups of people are emerging that only buy from companies that invest in a more sustainable and fairer world. These people pursue a healthy and conscious lifestyle. They also want to know where stuff comes from.

2.2.2 Rules and regulations

January 2016, the 17 Sustainable Development Goals of 2030 officially came into force. Over the next fifteen years, with these new goals that universally apply to all, countries will mobilize efforts to end all forms or poverty, fight inequalities and tackle climate change, while ensuring that no one is left behind. While the goals are not legally binding, governments are expected to take ownership and establish national frameworks for the achievement of the 17 Goals.

Change of composition of government influences laws and regulations. The government encourages Circular Economies by providing subsidies. It depends on the composition of the government how much money is made available and to what extent support is provided.

Pesticides are used in a wide range of settings with one of the most important areas being in agriculture. Without Plant Protection Products (PPPs), crop losses due to pests and diseases are between 30 and 50% depending on the crop grown (Cerda, Avelino, & Gary, 2017). However, as pesticides are used to kill or control harmful organisms, unwanted pests, weeds, etc. they have the capacity to harm people, other non-target organisms (wildlife) and the environment. Legislation to control the marketing and use of pesticides is designed to minimize such risks and strict controls are in place over their sale and use.

2.2.3 Economy and environment

Fast fashion production in the global economy has exploded. Clothing tended to be functional rather than fashionable. Today, clothes have become something of a status symbol. Production has exploded. The fact that clothing is becoming even cheaper is actually a huge problem, which has created false incentives.

Fashion is the second most polluting industry in the world. The global production of all textile fibres consumes 1 trillion gallons of water. Consumers are increasingly aware that fast fashion is having a detrimental impact on the environment and communities.

The more developed an economy is, the higher the share of the service sector. This is called the shift to services (Kim, 2006). Not only the share of service industries in production, employment,

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consumption and trade grow to be higher, but also the proportion of services in intermediate inputs for other industries' production goes up.

2.2.4 Competition

Fast fashion companies are competitors of MUD Jeans, for example: Zara, Mango, H&M. Primark for low-end customer segment. Also, other clothing is a competitor, like dresses and skirts. Other materials can also be seen as a competitor, such as silk and hemp.

Governments can or are playing an active role here. The switch to a circular economy requires investors and institutions to play a central role with a different mindset. Traditional business models often do not favour collaboration throughout the value chain. Circular Economy Business Models by contrast, depend on collaboration by all stakeholders, and agreement to use components that retain the highest value throughout the lifecycle, thus minimizing waste. More and more circular start-ups are emerging.

2.2.5 Technology trends

As technology enables new methods of production and engineering, materials science has become increasingly important. By investing in materials science, researchers have discovered the most effective way to apply existing materials as well as creating new ones, which are cheaper to use. Some of the areas, which have and will continue to benefit from research into materials science are 3D printing, nanotechnology, quantum computing and health-tech (bio printing and synthetics in particular). Lightweight solutions will also fuel advancements in aerospace, transportation and wearable technology. The purpose of materials science is to understand and manipulate materials to positively impact quality of life.

Organic cotton production is an arduous process. Those who want to make a shift to organic methods are initially forced to wait for two to three years before the ground can be cultivated again. Even then, traces of pesticides often still remain in the soil and the final crop, as these plants present a real challenge in terms of cultivation and pesticides are often used very intensively. Just one percent of global cotton manufacturing is currently organic.

2.2.6 Customer needs

Consumers want clear, concise information in real-time, personalized offering, look fashionable and hip, and live healthy lives. Consumers are more willing to share stuff and don't want to necessarily all the things they use.

As mentioned in Section 2.2.3, clothing tended to be functional rather than fashionable. Today, clothes have become something of a status symbol. Consumers buy more than they need. There is a large decline in clothing utilisation as can be seen in Figure 2. From wearing a garment 200 times in the year 2000, the times a garment is worn has declined to 160 in the year 2015. On average, textile waste is 32 kg a year, per person.

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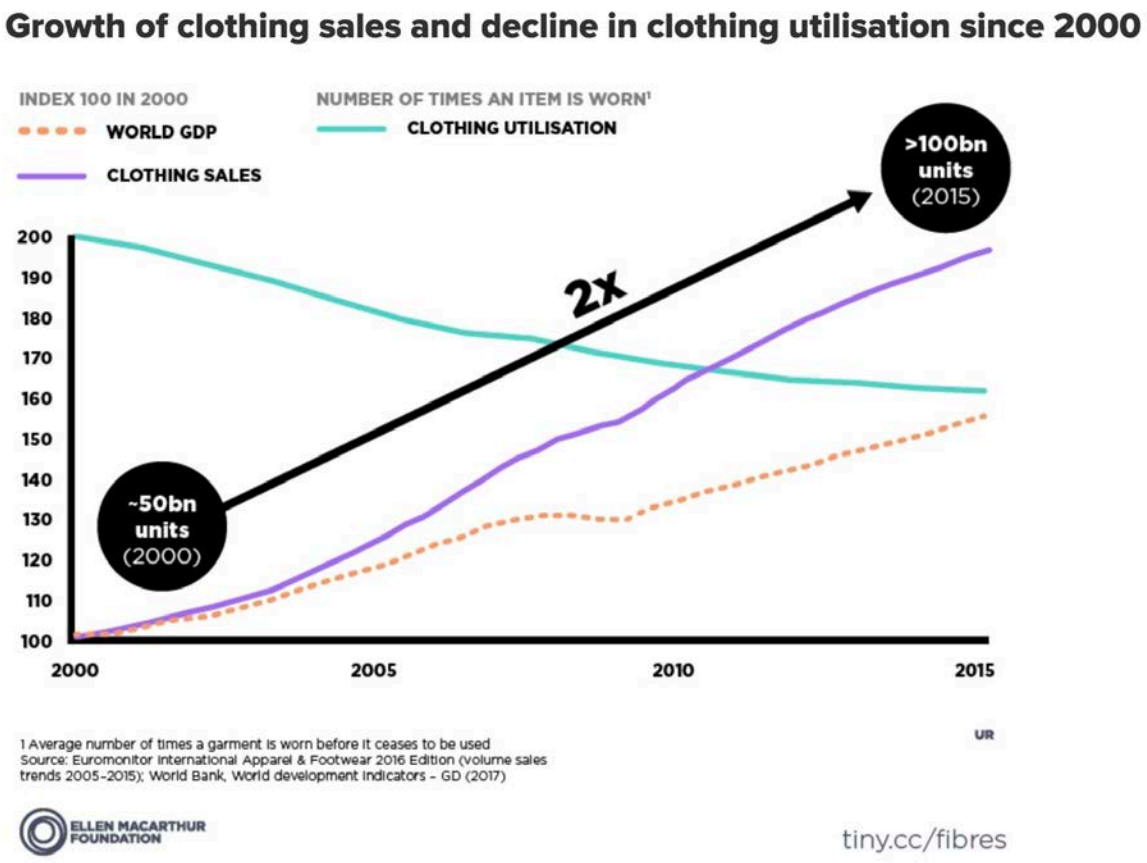

FIGURE 3 CLOTHING SALES AND UTILISATION FROM 2000-2015

Overall, 25 million tonnes of virgin cotton is produced and 3.8 trillion litres of water are used in the production of textile fibres every year.

2.2.7 Uncertainties

Cotton is the most widespread and profitable non-food crop in the world. Its production provides income for more than 250 million people worldwide and employs almost 7% of all labour in developing countries. Approximately half of all textiles are made of cotton.

The global reach of cotton is wide, but current cotton production methods are environmentally unsustainable and not resilient against the rapidly changing climate—ultimately undermining the industry's ability to maintain future production.

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3 Business model assessment

The business model assessment has been conducted through a combination of publicly available information, interviews with the founder and a management team member of the case organisation as well as some documents provided by the organisation.

The objectives were to gain a deeper understanding of the circular business model and to map out the value chain and interactions in more detail in order to enable an analysis of the strengths and weaknesses as well as to consider the replicability and transferability of such a model to other entities and sectors.

This chapter is organised as follows. Section 3.1 describes the business model using different views. We start with a big picture view of the business model, followed by a description of each of the nine building blocks. We then have a look at the value network in terms of interactions with partners and the flow of materials. Section 3.2 shows how contextual trends and development as described in Sections 2.2.1 to 2.2.7 are linked to the business model. Section 3.3. is dedicated to the circularity assessment of the business model. This assessment is done from different views as well. We start with an assessment of the circularity level of the business model, i.e. to what extent are the seven CEBM patterns applied. This is followed by a financial and non-financial outcomes assessment. After that, we assess the Strengths, Weaknesses, Opportunities, and Threats (SWOT) of the nine building blocks of the business model in terms of circular value creation. Finally, an assessment of the underpinning strategic choices driving circular value creation is presented.

3.1 The MUD Jeans business model

How MUD Jeans creates, delivers, and captures value is shown in Figure 3. The right-hand side of the business model canvas shows the value and customer facing side of the business.

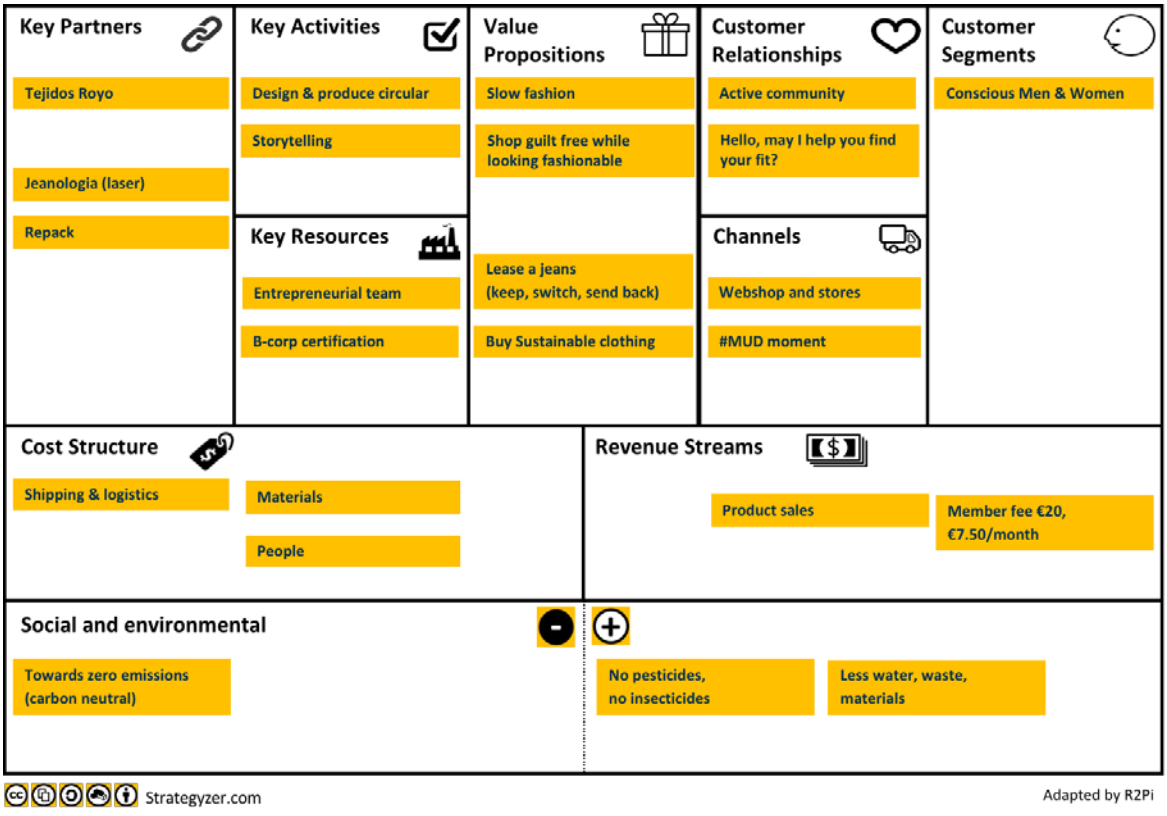

FIGURE 4 HIGH-LEVEL BUSINESS MODEL OF MUD JEANS

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MUD Jeans **Customer Segment** is conscious men and women. Their **Value Proposition** is guiltfree shopping while looking fashionable. Customers always wear new and up to date clothing, shop guilt free and have perfect fitted jeans. The **Revenue Streams** come from customers paying a monthly subscription (€7.50) and a membership fee (€20,-) or they buy the product for €98,- per jeans. The positive socio-environmental effect generated by the business is lower resource consumption in terms of water, waste, and materials. MUD Jeans distributes their products through two different **Channels**: retail stores and their webshop. Marketing is done through storytelling and customers reviews using the hashtag #MUDJeans. The **Customer Relationships** is collaborative and long-term, with an opportunity for frequent personalized interaction through the lease-a-jeans service.

We now move over to the left-hand side of the business model canvas, which shows how MUD Jeans organizes value creation for customers.

One of their **Key Activities** is to spend quite some time on storytelling towards potential and existing customers as well as the media. Circular design and production are obviously a crucial and essential activity. **Key Resources** are an entrepreneurial team, and the collaboration with the factories. Repack is one of many **Key Partners** and takes care of part of the logistics process, including taking back used jeans from customers. Other partners are discussed in more detail in Section 3.1.1 in paragraph 'Key Partners'. Their **Cost Structure** has items related to shipping and logistics, materials, and people.

3.1.1 Depicting the Business Model Canvas

In this part, a more detailed analysis of the business model just shown in Figure 3 is carried out, by describing each of the nine building blocks in more detail. Figure 4 gives a more detailed view of all the nine building blocks. Each building block is described in the next sections.

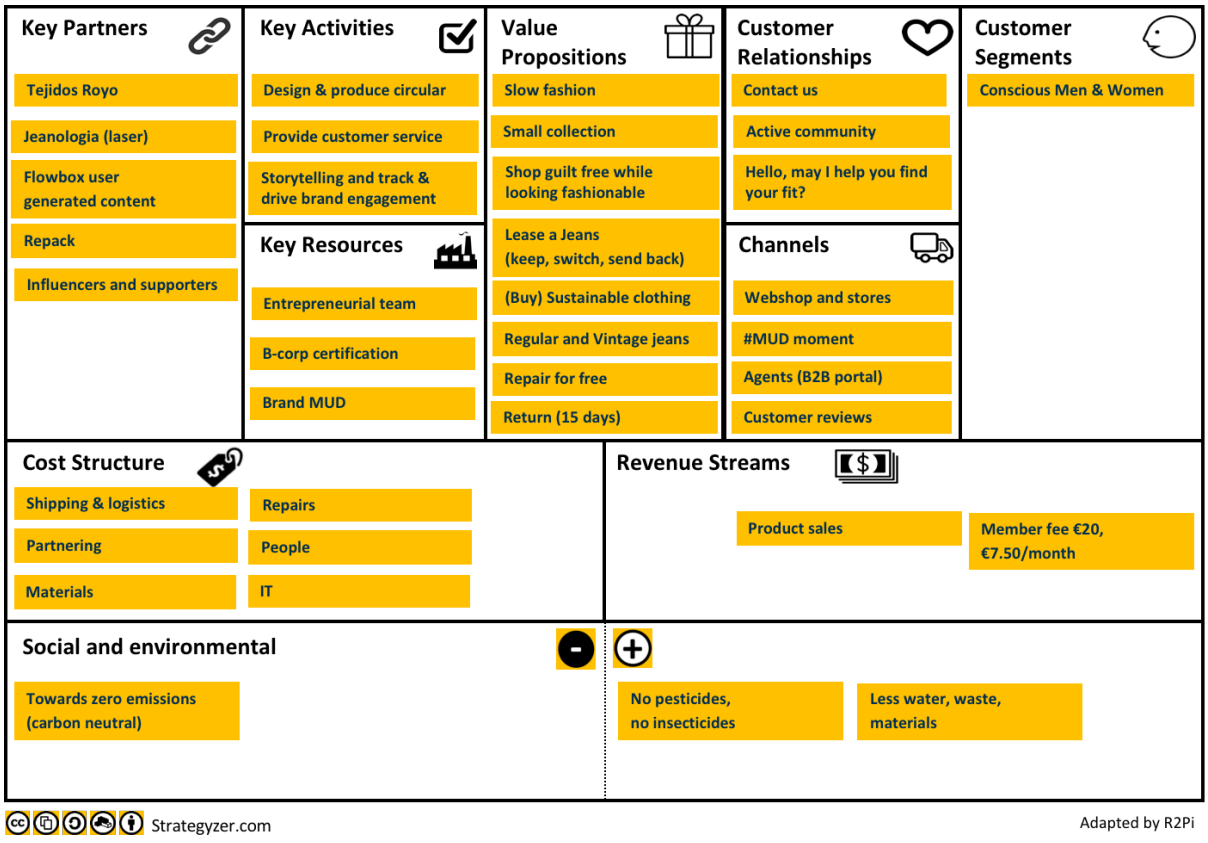

FIGURE 5 DETAILED VIEW OF THE BUSINESS MODEL

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Customer Segments

The customer segment is men and women, who are environmentally conscious and willing to give back their jeans. The early adaptors of MUD Jeans are conscious, vegan people. People who have a sustainable lifestyle and are actively seeking conscious fashion. The early majority are travellers and explorers. Recently, they have further segmented their target group, adding two subgroups:

1. Hip & healthy: young people who want to travel the world and are doing well economically
2. Intellectuals: people beyond the thirties, who are drawn to story of changing an industry

According to analysis by MUD Jeans, these groups represent about 11-12% of the market in Europe, which amounts to about 30 million customers. It is predicted that this group continuous to grow in the years to come.

> " I always choose products that are vegan and cruelty free, which was one the factors that drew me to MUD Jeans"
>
> - *@heywildfloret*

Value Propositions

MUD Jeans value proposition is: 'Shop guilt free while looking fashionable'. Their offering enables customers to always wear new and up to date clothing, shop sustainable and have perfect fitted jeans. Customers pay a fee per month and after 12 months they can switch to a new pair of jeans. MUD Jeans also offers free repairs. If jeans are torn, the customer can return the jeans easily and the company will take care of it.

Channels

Retail stores via agents, also international stores, are used to distribute and sell the jeans. MUD Jeans focuses on high- end stores with a clear proposition. MUD Jeans has much to tell about the future of the fashion industry and the way the company is running their business. This is interesting for media (e.g. TV, magazines). This is the reason why the founders are seeking opportunities to share their story on stage. The website is a sales channel, including a visual and well-designed web shop. Customers are asked to share their stories mentioning #MUDJeans. And the company organizes production and partner tours.

Customer Relationships

MUD Jeans is valued for its high quality and the way of doing business. The company has several touchpoints with customers. They provide a live chat function, where employees help customers to find their perfect fitted jeans. They have a 'contact us' page where customers can reach out to MUD Jeans by telephone, email, chat or even go to the office. There is also the MUD Jeans community where customers share stories about the adventures they have wearing their MUD Jeans.

Reaching out to customers after their purchase is built in to the lease-a-jeans product. Customers are called after one year to ask them what they want to do with their jeans: keep, switch, or send back. MUD Jeans gives vouchers and discount codes to customers as extra motivation to purchase more sustainable fashion.

Revenue streams

MUD Jeans has three revenue streams: (1) product sales from €29,- to €119,-; (2) a monthly fee for leasing jeans for €7,50 and a €29,- start fee; and of course (3) the social impact and environmental positive outcomes.

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Key Resources

The key resource is the ability to work with partners. They also have multiple certifications from large foundations, such as: B-corp, Max Havelaar. The MUD Jeans team is ten people strong, working hard to make a difference with an entrepreneurial mindset. They have a huge network from where they gain information, solutions and other benefits. Besides these resources, the brand MUD Jeans is also a key resource.

Key activities

MUD Jeans has the following key activities, strongly tied to their value propositions:

1. Design jeans and other clothing;
2. Produce in a circular way, recycle and upcycle, as explained later in Section 3.1.2 'Material flows'.
3. Build their brand by doing marketing and sales and track and drive engagement of their customers within their community.
4. Shipping and customer service from their own office in Aalsmeer.

> "We are on a journey to make the most stylish jeans – made under the best conditions – leaving no footprint. Our jeans are transseasonal, meaning we don't have seasonal collections. Also we are continually reducing the use of water and chemicals in the finishing and laundry department." (MUD Jeans)

Key Partners

MUD Jeans has several partners, as will be described in Section 3.1.2. '*Value network*'. Recover, near Valencia, play a role in the production. They blend virgin cotton with the shredded jeans and spun into new yarns. Tejidos Royo dyes the yarns. Repack is a reusable and returnable packaging service. MUD Jeans is certified by B Corp, which means MUD Jeans, is part of that community which use business as a force for good. Another partner is Circle Economy, of which they are member, providing a powerful network, proper tools and experience. Stichting Doen, Fairtrade Max Havelaar, MVO Nederland and Social enterprise.nl are providing certifications.

Cost structure

MUD Jeans has costs related to production (facilities and operations), processing and refinement. For example, they spend money on materials, repairs, shipping and logistics. Other costs are the salaries of the team.

3.1.2 The Value Network

MUD Jeans started as an idealistic start-up.

> 'With the support of rule breaking customers and the help of amazing partners, we've come this far' (MUD Jeans).

Together with their partners, they work on their mission to create a world without waste by challenging each other to always improve the status quo. The value network provides a completely different production system, which extends towards the customer side of the business. The value network enables MUD Jeans to offer additional value to customers such as Vintage Jeans, guilt free shopping, no ownership and a lifestyle that has positive social and environmental effects. As far as we know, MUD Jeans is the only fashion brand that works completely according to the principles of the circular economy. They are very experienced in leveraging partners in their value network to make their business model work.

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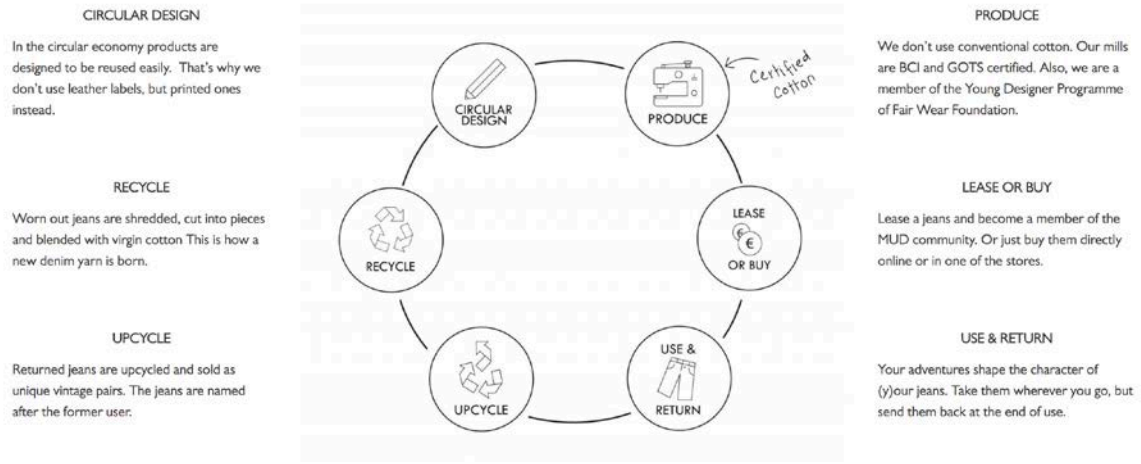

FIGURE 6: CIRCULAR DESIGN APPROACH

MUD Jeans has several strong partnerships, creating a value network of companies sharing a vision. Each of their partners has a specific role in their circular design approach, as shown in Figure 6:

Circular design	*MUD Jeans* designs products for easy reuse. That is why no leather labels are used. This step is taken care of by designers at MUD Jeans.
Recycle	*Recover* for recycling of returned jeans.
Upcycle	*Yousstex International* (stitching and laundry), *G.R.G. Oficina* (knitting jumpers) *Pinori* (producing recycled yarns for jumpers).
Produce	*Teijdin Royo* and *Orta Anadolu* (GOTS certified) for producing the fabrics (weaving and dying).
Lease or buy	*Retailers* who provide offline sales channels
Use & return	*Customers* who use jeans, take them on adventures and share those adventures. They share the MUD story and spread the mission of MUD Jeans. *Repack* for return of jeans or receiving jeans that are no longer used by customers.

Material Flows

The Circular Economy is a system in which everything is reused, and waste does not exist. It is an ecosystem that is in perfect harmony with the environment. Functioning within a natural balance, without pushing the boundaries of the planet. A circular economy is about recycling and upcycling products and resources to make sure no precious materials will be wasted. Instead, waste from factories turns into valuable raw material that can be used to repair, reuse or upgrade products.

MUD Jeans want to create this world without waste. A world where everyone is responsible for cleaning up his or her own mess. With their circular design approach (see also Figure 5), they design products in a way that they can be reused, recycled and upcycled easily. The material flows within and from and to MUD Jeans are mapped on the general system diagram as shown in Figure 6.

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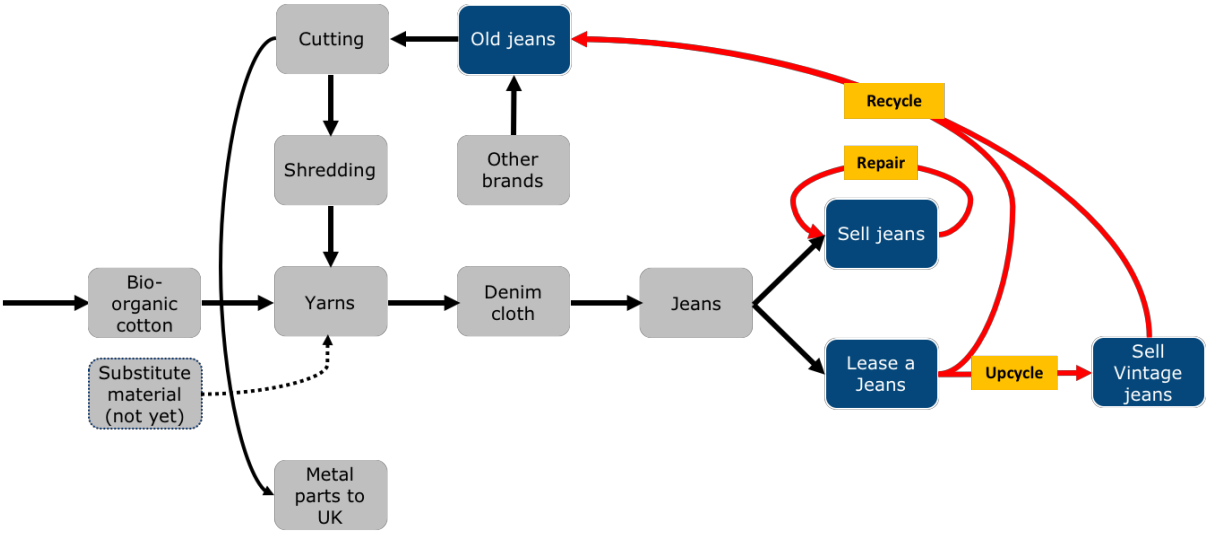

FIGURE 7 MATERIAL FLOWS

MUD Jeans uses 60% of organic cotton as the **virgin raw material** to make new yarns (at Recover, near Valencia). This is blended with 40% of material from old jeans. Old jeans are MUD jeans returned by customers or jeans from other brands send by customers (or obtained in other ways). Old jeans are thereto first cut to remove the metal parts that go to a circular manufacturing company in the UK (**secondary materials market**). After that they are shredded into small pieces and processed back to cotton fibres. The yarns are dyed using Indigo colour and water (by Tejidos Rojo). After the process, the water is cleaned. The yarns are then woven into one denim cloth, which is inspected for visual defects and hazardous materials. This finalizes the **components manufacture** step. At the moment there is no **substitute renewable material** as input for component manufacture. There could be in the future when new technologies become available. There is no link from component manufacturing to **different value chains**, because this could lead to shabby (i.e. not sustainable) practices. The cloths are used in the **product manufacture** step. The waste from cutting clothes (pre-consumer waste) is fed back into the component manufacture step. The jeans are then sold or leased to customers. Jeans that are returned by customers are upcycled when possible to turn them into Vintage Jeans that are sold again (**re-use**). If jeans are torn by wearing them, MUD Jeans repairs them for free.

3.2 CEBM within the business context

Chapter 2 showed and described the trends and developments in the business context. Some of these trends and developments are more important than others. Based on our analysis and judgment of the context and the business model, we see three contextual elements that are particularly important for MUD Jeans. These are briefly touched upon in the next paragraphs, followed by how these are linked to how MUD Jeans creates, delivers, and captures value.

3.2.1 Exploding Production

The production of fast fashion has led to an explosion of production of apparel. In fact, consumption is 400 percent more clothing this year than 30 years ago. That shift from mid-market to fast fashion has also tracked a shift from domestic production to cheaper and cheaper and cheaper overseas

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locations, for example from Hong Kong to mainland China and now even to lower cost countries like Vietnam and Bangladesh.

3.2.2 Consumer awareness

Fashion is the second most polluting industry in the world. The global production of all textile fibres consumes 1 trillion gallons of water. Consumers are increasingly aware that fast fashion is having a detrimental impact on the environment and communities.

3.2.3 Personalization and customization

All of your offerings should be customized and, in many ways, digitalised to some extent, for both direct customers as well as channel partners. That means highly personalized environments, use of data, traceability and a personal touch to everything you do. Using digital marketing tools turns data into actionable insights and can keep interactions with customers personal and relevant while growing the numbers of customers served.

3.2.4 Link to circular value creation

MUD Jeans is connected to these contextual trends and developments as follows:

- MUD Jeans developed their business model as a means of tackling the problems that are created by the fashion industry. They believe that fast fashion can and should be replaced with sustainable and circular fashion. This vision directly translates into the promise of their value proposition, i.e. jeans made-to-last. MUD Jeans has a clear vision and mission and uses this to guide strategic and operational decision making. Hence, the solution to the problem they are tackling clearly shows up as the (big) promise of their value proposition.
- The timing is right. People are willing to buy or even lease sustainable fashion. It is not even limited anymore to small niches. Although the early adopters of MUD Jeans were vegans, their customers are getting more diverse. What all their customers share though is their desire to help tackle industry problems through their consumer behaviour. These customers even help create greater awareness by telling their friends and social media circles about what and why they buy or lease from MUD Jeans. This is quite powerful. MUD Jeans does not need to run big awareness campaigns. Their customers do this for them.
- MUD Jeans customers help create awareness, support the mission, and spread the story. Although changing the fashion industry is their reason to exist, it is not enough for a successful fashion business. Customers and partners these days expect a personalized and customized experience. MUD Jeans is working on this as well. They use marketing and sales systems that offer such an experience to their customers and partners and keep them engaged for many years to come.

3.3 Business model circularity assessment

This section provides an assessment of the case organisation's circular business model. The purpose of this section is to present an overall assessment of the business model 'state of play'. First, the circularity assessment, based on a specific tool and discussion with MUD Jeans respondents is presented. Second, financial and non-financial outcomes of the business model are analysed, based on the case, literature and discussions with MUD Jeans respondents. Third, the results from a SWOT assessment are presented. This section is concluded by a summary of the strategic choices that underpin MUD Jeans circular value creation and a brief overview of future business model options.

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3.3.1 Circularity assessment

The MUD Jeans business model is circular-by-design, yet the team is always looking for ways to make the business even more circular. MUD Jeans strives to do better all the time and have three dreams not yet fulfilled: (1) use no chemicals at all if water is required, (2) ensure a closed circuit for 100% recycling and (3) produce the first carbon neutral pair of jeans.

At the moment, MUD Jeans are 40 percent recycled cotton and 60 percent organic cotton. No genetically modified seeds are used to grow organic cotton. Rather than using artificial irrigation techniques, rainwater covers 70 percent – 80 percent of the water requirement for cultivation. Recycled cotton reduces water consumption by 40 percent and contains no pesticides or insecticides, all the while cutting down the volume of clothes which simply end up by thrown away. Their dream is to produce jeans from 100 percent recycled fibres. However, for now, the technological basis is not yet advanced enough to make this dream a reality. They are however doing a good job in achieving these dreams.

Figure 8 shows how MUD Jeans applies the 7 Circular Economy Business Model (CEBM) Patterns identified by the R2Pi project.

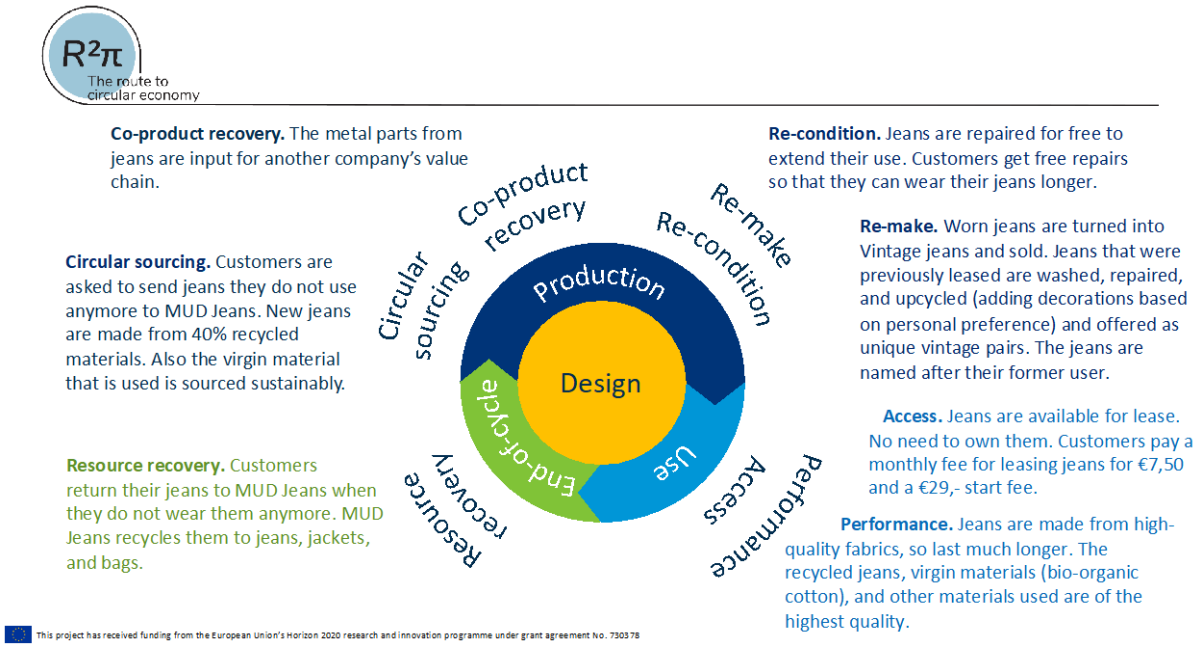

FIGURE 8 CIRCULAR ECONOMY BUSINESS MODEL PATTERNS

All seven CEBM business patterns are applicable to this case.

Re-condition. Jeans are repaired for free to extend their use. Customers get free repairs so that they can wear their jeans longer.
Remake. Worn jeans are turned into Vintage jeans and sold. Jeans that were previously leased are washed, repaired, and upcycled (adding decorations based on personal preference) and offered as unique vintage pairs. The jeans are named after their former user.
Access. Jeans are available for lease. No need to own them. Customers pay a monthly fee for leasing jeans for €7,50 and a €29,- start fee.
Performance. Jeans are made from high-quality fabrics, so last much longer. The recycled jeans, virgin materials (bio-organic cotton), and other materials used are of the highest

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quality.

Co-product recovery. The metal parts from jeans are input for another company's value chain.

Circular sourcing. Customers are asked to send jeans they do not use anymore to MUD Jeans. New jeans are made from 40% recycled materials. Also, the virgin material that is used is sourced sustainably.

Resource recovery. Customers return their jeans to MUD Jeans when they do not wear them anymore. MUD Jeans recycles them to jeans, jackets, and bags.

Given the philosophy and vision of MUD Jeans, it is obvious that they apply all CEBM patterns in their business.

3.3.2 Financial and non-financial outcomes assessment

MUD Jeans is a startup that is not profitable yet. In the beginning they had to do their own investments. Now they are depending on subsidies and investments. In 2015 MUD Jeans was chosen by their peers as the winner of the Investment Ready Program and has won an investment of 50,000 euros. The Investment Ready Program, initiated by Hivos, DOEN Foundation and Impact Hub Amsterdam, is a unique four-month peer learning programme. They give entrepreneurs support to create the impact that they are aiming for. Besides this investment, MUD Jeans receives (innovation) subsidies from the government.

Sustainability is at the core of MUD Jeans. They want the world to be a better place. That means that they need to have a deeper understanding of the topic sustainability and act on it.

Cotton growth. 2.4% of the world cultivated land is planted with cotton, yet it accounts for 24% of the world's insecticide market and 11% of sales of global pesticide. Therefore, it is the most pesticide-intensive crop grown on the planet. Around 70 to 80 % of organic cotton production is rain-fed rather than irrigated. That results in a lower water footprint in comparison to conventional cotton. Recycled cotton typically saves 40% of water, also uses no pesticide or insecticides and eliminates landfill by disposed garments. MUD Jeans its goal is to use the cotton that has the least impact on the environment and allows farmers to have a living wage.

Water. The global production of all textile fibres consumes 1 trillion gallons of water. Generally, the figure is between 7.000 and 8.000 litres per pair of jeans. In terms of greenhouse gasses the figure is typically 23,5 KG of C02 per pair of jeans. Together with BlueDot they created a new production process which lead to great results. These results are achieved through mill partners who recycle 85% of their water and produce zero wastewater. Yousstex International largely contributes by recycling up to 90% of the water consumed. This in combination with latest washing techniques such as laser, Ozone and Jeanologia's E-flow.

Washing techniques. By using different technologies as laser and applying Ozone to it, they eliminate though manual labour and the use of harmful substances. For example, Ozone finishing reduces energy consumption. Because it reduces the amount of water that must be heated for wet finishing and the temperature required. Ozone bleaches more quickly than chemicals and stonewashing. Ozone can clean black stains in three second. At optimum concentrations it bleaches denim in 15 minutes to the desired level by fashion today, versus 30 to 45 minutes with traditional methods.

Fair factories. Traditionally sourcing strategies are subject to search of the lowest possible manufacturing costs. This means: bad working conditions and low wages. MUD Jeans consciously source goods in nearby factories, so they are able to visit the factory frequently. And factories with the same mindset: transparency, fair wages, good working conditions. MUD Jeans is part of the

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Young Designer Program of Fairwear Foundation. This foundation helps in assessing and improving standards at the partner factories. MUD Jeans works toward a situation where they can guarantee above average living wages for the workers in the factories.

Waste. Fast fashion encourages consumers to purchase un-needed clothes at rapid rate. Around 30% of garments in wardrobes is not worn for a year. The average person throws away 32 kg of clothing per year. That adds up to 1,7 billion kg of unnecessary waste added to our landfills. 5.2% of the waste in land falls is of clothing and household textiles. By reusing and recycling the fabrics are useful again. This results in less waste. A new spun yarn containing recycled denim is born out of which new products are manufactured.

Better service. Customers only pay for the service they use and often receive a better service as the manufacturer has a greater interest in providing a product that lasts.

Durable design: In the circular economy, products are designed to be made again. MUD Jeans create products that are highly efficient and durable.

Trash-free packaging. Another non-financial outcome is trash-free packaging. MUD Jeans is sending out its products only with RePack. Repack is a returnable and reusable packaging that rewards you for every order. It is a sustainable alternative for packaging trash and throw-away consumerism. RePack can be reused up to 20 times.

3.3.3 SWOT assessment

This section contains an analysis of the Strengths, Weaknesses, Opportunities and Threats (SWOT) associated with the circular business model. It is important to note that this is primarily an assessment of the attributes of the business model itself and only secondarily of the specific attributes of the individual company. As is customary in SWOT analyses, the Strengths and Weaknesses are *internal* to the case organization's business model. Whereas, the Opportunities and Threats are *external* to the case organization's business model, coming from the context in which they operate. Below, the strengths and weaknesses of each of the nine building blocks are assessed.

Customer segments

The strengths are:

- Customers are believers and fully support the MUD Jeans mission.
- Keeping focused on conscious people.
- Leveraging early adopters to reach the early majority.

The weaknesses are:

- This business model requires conscious, knowledgeable customers that are aware of the importance of buying sustainable clothing.

Value propositions

The strengths are:

- Lease a Jeans: the trend is that people don't want to own things anymore. With this value proposition people can lease jeans without owning it.
- The jeans are fashionable and not seasonally. This means customers look fashionable during the whole year.
- Advice is given through customers by chat function and "Find my Style" online.

Weaknesses:

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- If other companies are jumping into the leasing gap in the market or are offering sustainable jeans for sale that are low in price, this could have an effect on the leasing price.

Channels

The strengths are:

- MUD Jeans encourages their customers to share their moments wearing their jeans with the world, using #MUDJEANS. MUD Jeans their story is shared and told by their customers.
- The website is very user-friendly, clear and visual.
- MUD Jeans is very specific with which stores they work and want to relate. This influences the brand.

The weaknesses are:

- Dependence on positive ratings of customers: a negative rating of an influencer could quickly damage the reputation of Mud Jeans.

Customer relationships

The strengths are:

- MUD Jeans has already a great start with building their community. Customers are willing to share their MUD stories and it is an active community.
- Multiple ways to contact them. This makes it very easy for customers to contact MUD Jeans.

Weaknesses are:

- Saving data of customers in a save way and making sure this is according to regulations. Gain data from the customers: MUD Jeans could gain more data online. They want to do more of that. With this data they could create more personalized offerings.

Revenue streams

The strengths are:

- Recurring and foreseeable revenues every month
- Customer retention is high. Once customers find their perfect MUD Jeans, they stick with it.
- New customer engagement and touch points with customer every year
- A business model with social and environmental positive outcomes

Weaknesses are:

- Product costs incurred up front
- Revenues realized much later due to the leasing model
- Extra effort needed to explain the leasing model because it is a novel model.

Key resources

The strengths are:

- MUD Jeans has a huge network that they can connect with.
- The brand is attractive and known
- The certifications that MUD Jeans achieved help in telling and sharing their story.

We don’t see weaknesses in the key resources.

Key activities

The strengths are:

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- MUD Jeans design and produce in a circular way, which leads to zero waste, which results in achieving in long term their ambition.
- MUD Jeans is very active in building the brand and in sharing the story.

Weaknesses are:

- As already mentioned, MUD Jeans could reach out in an even more personalized way using more automated marketing systems

Key partners

The strengths are:

- Multiple partners with the same ambition and/or same values, this leads to a strong partnership.
- Partners with novel technologies that help making the case as a fair production, circular company.

Weaknesses are:

- Not all their partners have the same values. Sometimes they work with suppliers who don't have the same values (e.g. a website builder).
- Dependency of fair factories. If any partner in their circular system stops, then they should redesign their value network.

Cost structure

The strengths are:

- MUD Jeans make use of sustainable materials. Jeans that are already worn out are shredded and new products are created from that. This leads to lower material costs.
- The subscription model of leasing the jeans is an important strength to forecast future sales (and can be used as a solid example to show future sales to investors)

Weaknesses are:

- Costs incurred well before the product is sold, especially with leasing model.

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SWOT assessment matrix

The matrix below summarizes the most important strengths and weaknesses of the MUD Jeans business model. It also includes opportunities and threats for the business model, identified by the analysis of the context (see Section 2.3 and Section 3.2).

Strengths	Weaknesses
• Solving a real and pressing problem within the fashion industry • Strong storytelling skills • Large social media base • High predictability of revenues because of leasing subscription model • Valuable partnerships with fair factories	• VAT regulations: pay twice when leasing • Upfront financing for lease products • Dependency on factories, run by companies that are also vision-driven
Opportunities	**Threats**
• Regulations in fashion industry about fair production • Fashion industry is a very polluting industry • Consumers developing a greater desire to learn where products are manufactured and under what conditions • Enormous under-utilization of products in the fashion market • AI predictive analytical ordering • Upcoming of modular fashion where parts of an item can be replaced when necessary	• Cheaper alternatives from fast fashion companies • Low raw material supply

FIGURE 9 SWOT ASSESSMENT MATRIX

3.3.4 Strategic choices and future options

Based on the various assessments in this section, a conclusion can be drawn about the strategic choices that are underpinning the MUD Jeans business model. These are:

1. **Winning aspiration**: The winning aspiration of MUD Jeans is to use no chemicals at all if water is required, ensure a closed circuit for 100% recycling, and produce the first carbon neutral pair of jeans.
2. **Where-to-play**: The where-to-play choice with respect to customer segments is shifting from early adopters to the early majority. The choice to build an active community relationship helps to make this shift. Customers actively help spread the story through word of mouth (channels). The price point of €119,- for a pair of jeans is a deliberate choice for the market in which they operate. Of course offering jeans for lease for €7,50 per month with a subscription fee of €29,- is a strategic choice as well.
3. **How-to-win**: MUD Jeans fully commits to a circular design approach to create, deliver, and capture value. The phases from their circular design approach (Key Activity) touch every other building block from the business model. They selectively select partners, i.e. partners that share their vision and support their mission and invest in those partnerships.
4. **Core capabilities**: MUD Jeans has a deep understanding and experience in the fashion industry, which they use to do things differently (in a circular way). They have the entrepreneurial drive and skills to try new things and keep going in the face of uncertainty. They also gained strong capabilities in circular design and building the right partnerships.
5. **Management systems**: MUD Jeans invested in systems to monitor and track engagement of (potential) customers and channel partners (retail stores and webshops). They also have systems in place to monitor the impact of their production system. They use these systems actively to measure to what extent customer and revenue growth is decoupled from socio-environmental impact.

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The strategic choices underpinning the business model are very consistent. It is clear that their vision of a world without waste drives the other strategic choices.

3.3.5 Future business model options

During the case study research, we came up three options in which to take the future business model. These options have been discussed with MUD Jeans. The three options are:

1. **Children as customer segment**: This is difficult to do because margins are low. Children clothes are priced lower, but materials required do not decrease proportionally. The age of the MUD Jeans buyer is now 25 years and older. People below 25 have a tendency to buy as much clothes as they can for the limited budget they have. MUD Jeans is however working with schools to educate the children segment and increase their awareness and consciousness.
2. **Broader collection** (Value Proposition): This is something they are looking into and they have some other items besides jeans already. An important criterion here is that these items are frequently used. Otherwise, it does not fit the business model.
3. **Different materials** (Key Resources): new materials can make it easier to recycle or upcycle jeans and might lower resource consumption (water, land, energy) in the production process. MUD Jeans is also looking into this with their partners.

MUD Jeans sees different epicentres in their business model to innovate, some a bit easier to pursue (Value Proposition, Key Resources) than the other (Customer Segments). Besides these options, they see opportunities for incremental innovation, focused on driving customer engagement and experience. The incremental innovations are being pursued at the moment.

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4 Conclusions and discussion

This report presented the circular economy business model of the fashion company MUD Jeans. MUD Jeans started five years ago with a strategy that is fully committed to the circular economy. The people behind MUD Jeans firmly believe in the goal of a circular economy and want to demonstrate that circular fashion is possible and profitable. In addition, MUD Jeans understand the resilience that circularity brings to the business (i.e. reducing the dependency on raw materials) and how this is more and more becoming a competitive advantage in the near future.

Limitations of the case study

MUD Jeans is a young company (a startup that is scaling up now) and a true pioneer in fashion. They learn and develop their business model at fairly high speed. During the case study research engagement, we asked many questions about all the aspects of their business model and partnerships. However, some subtleties might be missing in the case study because these are so obvious to them, but not for newcomers in circular fashion.

4.1 Summary and conclusions

MUD Jeans is a very vision-driven company. The thirty-year experience of the founder made him see the impact fast fashion has on the environment and factory workers. He believes there is an alternative way and is working on making it happen. Starting from a dream or vision of a world without waste, the management team made a bold set of strategic choices (see Section 3.3.4).

MUD Jeans customers are conscious men and women from different walks of life though. MUD Jeans is aware of the differences in what their (potential) customers find important and communicate with them accordingly. Customers shop guilt-free and do good for the environment, while looking fashionable and modern. Customers can buy or lease jeans-made-to-last. Their customers are part of the MUD community and actively support MUD Jeans in spreading the story. They carefully select countries and retailers when expanding the business. Revenues are from both product sales and leasing. They constantly invest in lowering resource consumption and waste, making sure their business generates an ever-growing positive socio-environmental impact. The entire organisation of value creation (activities, resources, and partners) is based on their circular design process. Working with like-minded partners and storytelling to achieve their vision is a firm choice.

MUD Jeans applies all CEBM patterns in their business model, which is not surprising since their business model has been designed as a circular business model from the start. Companies that are making a shift from take-make-dispose towards a circular business model, ask themselves the question: “how can we change this aspect of our business towards (a bit more) circular value creation?” Since MUD Jeans is leading in circular fashion, they have a natural tendency to ask themselves: “how can we bring our circular value creation to the next level?” At the same time, they also just a retail company, which means they have to make sure they meet customer expectations in customer service, easy ordering, and handling returns.

Based on the analysis and assessment of the MUD Jeans business model, we conclude the following:

1. Consumers these days are willing to contribute to a world of no waste through what they wear. Apparently, they see the need for change and want to be the change. They share the MUD Jeans vision.
2. MUD Jeans is successful in attracting a loyal following: customers that love MUD jeans and the statement they make by wearing them. This supports the mission and the growth of the company at the same time. A genuine and original story is a good way of developing the

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business, because it drives growth and attracts the right partners on the production and market (channels) side of the business.

3. The business model is pretty consistent, i.e. we don't see any underpinning strategic choices that don't make sense. A pure circular economy mindset and implementing a circular design approach from scratch contributes to the consistency of the model. Their circular philosophy is driving their actions and choices. For example: they are not interested in quickly adding retailers in their channel just to raise revenues. A new retailer has to really fit in.
4. The network of partners is broad, very supportive to the MUD Jeans mission, shares the vision to change the industry, and is committed to bring MUD Jeans to the next level. There is a lot of goodwill in the partnerships.

The next section presents enablers and barriers to further develop the MUD Jeans business model specifically, and circular fashion models generally.

4.2 Discussion and recommendations

This section elaborates on the enablers and barriers we identified. Based on the analysis and assessment, enablers that we have identified are:

- Currently there is clearly a market for sustainable and circular fashion. Consumers like to talk about what they wear and why they wear it. These arguments spread fast and far through social media.
- Everybody in the company as well as partners are fully committed to realize the vision.
- The compelling story makes recruiting easy. Potential employees make themselves known to the company (instead of having to search for people).
- Partners that support the mission and willing to provide favourable (payment) conditions.
- The media is hungry for business stories like that of MUD Jeans. They love to write about entrepreneurs who are changing the world for the better.

There are also some obstacles that prevent MUD Jeans from growing:

- Value Added Tax (VAT) is also charged for the upcycled product. This means that MUD Jeans is paying taxes twice for the same product.
- Value Added Tax (VAT) is charged to new MUD Jeans, although 40% of the jeans consists of recycled jeans for which VAT has already been paid.
- All jeans that are leased stay on the balance sheet of the company. The preferable circular solution is to lease all jeans, resulting in a balance sheet that is heavy on fixed assets and thus very different than that of other fashion companies. MUD Jeans is fulfilling the same need as other fashion companies, in a more sustainable way. Yet, financially they will be evaluated differently, which is hampering them to raise funds to grow.
- MUD Jeans has achieved product-market fit and now wants to scale. There is a lack of investors to double down on growth. Management also said that they are very critical towards investors. An investor really has to fit in as well.

Given these enablers and barriers, we have a number of recommendations for advancing circular fashion business models. First, we mention a few guidelines for running and growing such a business, followed by policy recommendations that support entrepreneurs to start and develop these circular business models.

It is important to mention that these are just guidelines and recommendations, not to be followed by the letter. With respect to replicability and transferability of how MUD Jeans creates, delivers, and captures value it is the same. It is not possible to simply 'copy and paste' business models. Value

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is created, delivered, and captured through an interplay of many different moving parts, evolving over time, influenced by contextual factors, and driven by an entrepreneurial vision. Every entrepreneur and business leader has to figure out and make their own strategic choices that drive value creation in their business and industry. Having said this, look at other business models with a learning mindset and ask yourself 'what is powerful and interesting about other models?'. Then figure out how to apply those learnings to your own business model.

4.2.1 Business guidelines

The following guidelines are for entrepreneurial teams (at startups or corporates) working on circular business models:

1. Make your vision explicit and clear for everyone in the company and your stakeholders. What is the difference you will make in the industry? What is the big change? Why does it matter? Having these questions answered makes it much easier for people inside and outside your company to join your mission to turn circular fashion into reality.
2. Visualize your circular design philosophy and approach, even if it is yet to be implemented. A circular business model should touch customers, besides the more obvious changes that can be made to production systems. Circular value creation is about changing human behaviour (no more dispose) as much as it is about changing production systems (take, make). Make sure you see the big picture of the ultimate circular value creation that you are working on.
3. Bring the right partners on board early. The right partners are those that share your vision and can contribute meaningfully to your business model development. A circular economy is a collaborative economy that increases the pie for all players involved (the zero-sum game does not exist in such an economy). Working with the right partners from the start is beneficial for you and your partner. Both of you will achieve your business goals easier and/or faster.
4. Tell stories about what you want to achieve (vision) and what you are working on (business model). The media is looking for real stories that show what the circular economy is all about and what the value creation looks like in reality. Work with the media to spread your story and grow your business. Make explicit what positive social, economic, and environmental effects your business generates.

4.2.2 Policy recommendations

The following recommendations are for policy makers that want to accelerate the circular economy:

1. Be clear about your vision for transitioning to a circular economy. Why is a circular economy serving public interests better? What is the role of policy and policy makers? What are the big hairy goals from a policy making view?
2. Create an action plan to achieve your big hairy (policy) goals. Make the appropriate changes to the policy making and implementation process. Allow for experimentation and learning.
3. Be pro-active and adaptive in the policy making process. Work together with businesses to design and re-design policies.
4. Leasing models are a logical choice in a circular economy. The company stays owner of the product and thus the materials the product is made of. However, these new business models are financially assessed with traditional methods and criteria. Design a taxing and regulatory system that favours leasing models and accounts for externalities. Think about a reward system that supports the growth of circular business models that show that they generate specific positive social, economic, and environmental effects.

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5. Invest in R&D that potentially drives circular value creation. Look at the industries (like fashion) that are most polluting and define the change that needs to be set in motion. Work with leading circular businesses to draft an innovation agenda that accelerates the change.

These guidelines for entrepreneurs and policymakers conclude this case study report.

4.3 Visual summary

To wrap up, a visual summary of this case study is presented in Figure 9. This visual presents the big picture of the case study, connecting all the different elements (context, business model, vision, circularity, enablers, and barriers, future value creation). Throughout this document each of those elements have been marked with icons. This visual is available as large poster to be used in circular design workshops.

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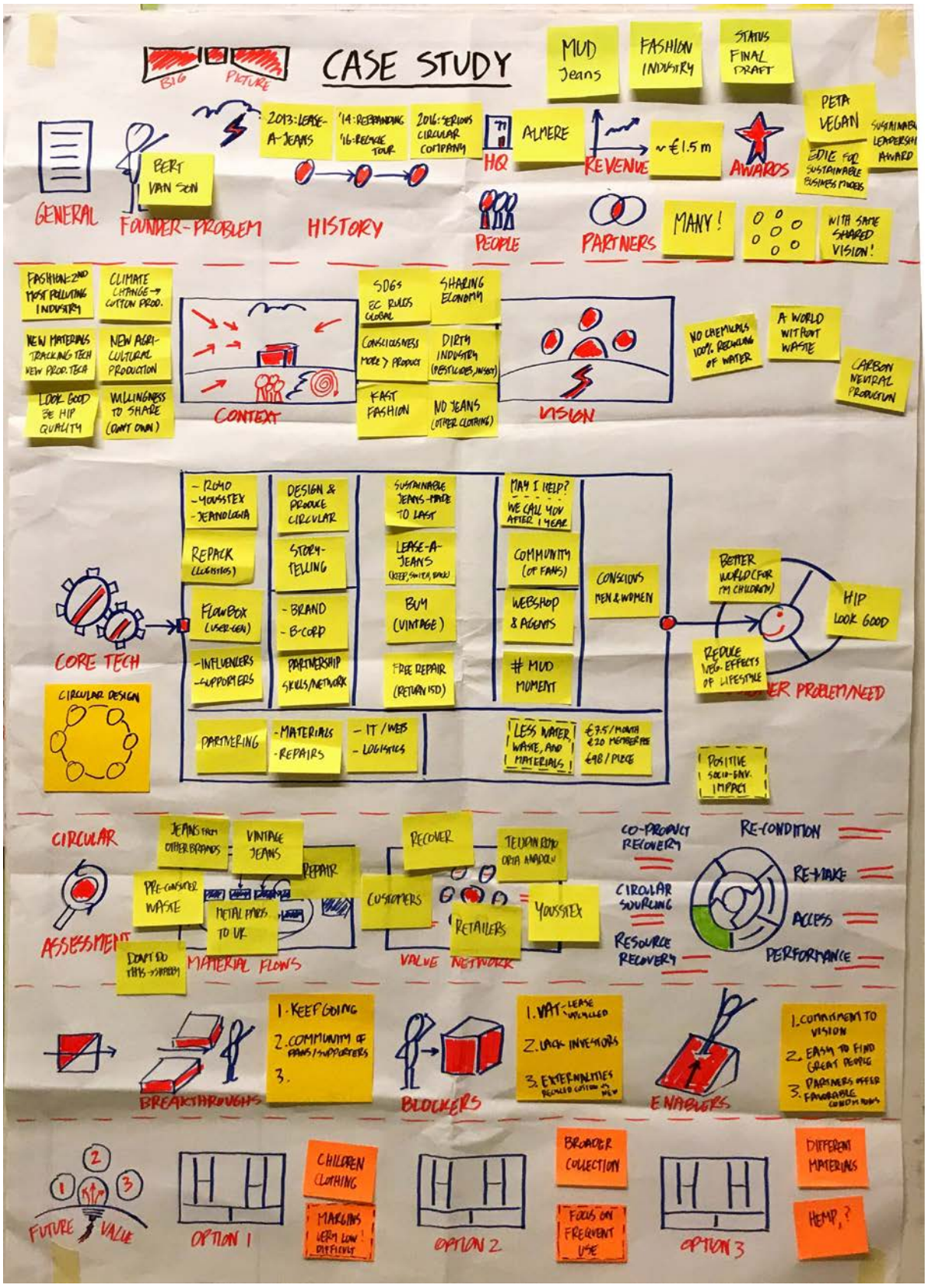

FIGURE 10: BIG PICTURE OF THE CASE STUDY

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Appendix: circular assessment

Circular economy status and objectives

				S = Status today O = Objective within 3 yrs					
		Tending towards LINEAR model	N/A	1	2	3	4	5	Tending towards CIRCULAR model
PRODUCT	1	We have not characterised the identity of our products in terms of generic materials (e.g., aluminum, polyethylene, steel etc.)						S	The product is 100% characterized by its generic materials (e.g., aluminum, polyethylene, steel etc.) and/or product categories and names (e.g., coatings, paints, detergents, seating furniture).
	2	We have not assessed the chemical composition of materials (recycled materials included) used within our product.						S	We have fully assessed the chemical composition of all materials (recycled materials included) used within our product.
	3	We do not seek to use recycled materials in our product						S	We maximise the use of recycled materials from pre- or post consumer waste in our product and source these from outside of the manufacturer's facility.
	4	We do not seek to use third party co-product or waste streams as an input to our own production	x						We maximise the use of third party co-product or waste streams as an input to our own production
	5	We do not seek to use remanufactured, refurbished, or repaired parts and components within our products	x						We maximise the use of remanufactured, refurbished, or repaired parts and components within our products
	6	We do not not seek to use rapidly renewable materials in our product						S	We maximise use of rapidly renewable* materials in our product
	7	We do not not seek to use compostable/biodegradable materials in our product						S	We maximise use of materials in our product that are commonly known to biodegrade or are able to undergo biological decomposition
	8	We do not consider the 'recyclability' of materials used in our products						S	We only use materials in our products that are proven to be technically and economically recyclable (e.g. non-toxic, separatable into material streams, etc.)
	9	Planned obsolescence is built into product design						S	Product is designed for durability
	10	Product technical lifetime is below industry average						S	Product technical lifetime is above industry average
	11	Product functional lifetime is below industry average						S	Product functional lifetime is above industry average
	12	Product warranty period is below industry average	x						Product warranty period is above industry average
	13	Product is not designed for disassembly to enable component/material recovery or reuse; nor is it biodegradable						S	Product is designed to be economically disassembled enabling component/material recovery or reuse; OR is biodegradable with no further intervention needed to reclaim the nutrients
	14	Product is not designed with the intention to return to a 'technical' or 'biological' cycle, nor is there a defined plan for product recovery and reutilization.						S	Product designed to return to a 'technical' or 'biological' cycle, and a plan for product recovery and reutilization is defined.
	15	Product is not designed to be repairable						S	Product designed to be economically repairable (by user or third party)
	16	Product not designed to be upgradable						S	Product designed to be upgradeable, adapting to changing customer needs (e.g. by being modular, via software upgrades, etc.)
	17	Re-manufacturing is not taken into account in product design						S	Product is designed to be economically re-manufactured
BUSINESS MODEL	18	Revenue driven mainly by asset sale				S			Revenue driven mainly by monetizing usage and/or performance of asset
	19	Value exchange mainly focused on driving a product sale transaction (e.g. competitive price)						S	Value exchange focuses on customer lifetime benefit (including reducing/controlling cost of ownership; asset performance)
	20	Value proposition focuses on the product				S			Value proposition is positioned as a service (including product/service bundle)
	21	Value proposition does not include maintenance or other value-added services				S			Value proposition includes bundled maintenance or other value-added services
	22	We do not seek to reuse and put back into our production the co-products or waste streams from our operations.						S	We maximise the reuse of co-products or waste streams from our operations, putting them back into our production.
SYSTEM	23	Repair services and availability of spare parts are not actively established						S	Repair service network and spare parts are actively established in the market
	24	Re-manufacturing services not actively established in market	x						Re-manufacturing services actively established in market (own, or third party)
	25	We do not seek to reuse co-products or waste streams from our operations as an input to third party production (e.g. through direct or indirect supply relationships)						S	We maximise the reuse of co-products or waste streams from our operations by supplying them to third parties as an input into their production (e.g. through direct or indirect supply relationships)
	26	We do not have in place a take-back or recovery scheme for our products at end-of-life (own or via a third party)						S	We have in place a take-back or recovery scheme that fully covers all our products at end-of-life (own or via a third party, e.g. EPR arrangement)
	27	We do not have in place a take-back or recovery scheme for components our products at end-of-life (own or via a third party)						S	We have in place a take-back or recovery scheme that fully covers all components from our products at end-of-life (own or via a third party)
	28	We do not have in place a recycling arrangement for materials within our products at end-of-life (own or via a third party)		S					A recycling infrastructure is widely available for this type of product, and the material is already commonly recycled in practice with no special disassembly required
	29	We do not provide incentives to return our product at end-of-life						S	We provides incentives to return our product at end-of-life (e.g. deposit, exchange, cash)
	30	We have no visibility on the actual effectiveness of our product take-back at end-of-life				S			We have full visibility on the actual effectiveness of our product take-back at end-of-life
	31	We have no visibility on the destination of our products taken back at end-of-life						S	We have full visibility on the destination of our products taken back at end-of-life
	32	We have no visibility on the actual effectiveness of material recycling from our products recovered at end-of-life						S	We have full visibility on the actual effectiveness of material recycling from our products recovered at end-of-life
	33	We have no visibility on the destination of materials recycled from our products at end-of-life						S	We have full visibility on the destination of materials recycled from our products at end-of-life

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