



Università  
Ca' Foscari  
Venezia

Master's Degree  
in Marketing and  
Communication

Final Thesis

## **Circular Innovation in the Textile and Clothing Industry**

Business Activities Redefinition for a  
Responsible Value Chain

**Supervisor**  
Stefano Micelli

**Graduand**  
Elena Masi  
871321

**Academic Year**  
2020 / 2021



**INTRODUCTION 5**

**CHAPTER 1: Beyond the linear system , introduction to circularity .....8**

- Responsibility issues in a fragmented industry ..... 8
- Unsustainable trends: overconsumption and underutilization ..... 9
- The ‘take-make-dispose’ linear model ..... 11
- The hidden environmental cost ..... 11
- Combining industry’s needs with arising water scarcity ..... 12
- The contribution of textiles on air pollution. .... 13
- Chemical hazards in textiles production and consumption ..... 15
- The downside of synthetic fibers: Micro-Plastics pollution ..... 16
- Waste creation and the compelling need for recyclability ..... 18
- Predicted risks of the linear model ..... 20
- The economic benefit of environmental sustainability ..... 21
- Transitioning from a linear to a circular industry ..... 23
- The European Green Deal fostering sustainable and circular textiles ..... 25

**CHAPTER 2: Innovations fostering circular transition. ....27**

- The environmental responsible value chain: incremental innovations and hurdles to reach it..... 27
- New materials to move away from nature exploitation and contamination ..... 28
  - Assessing materials’ footprint ..... 30
  - Natural alternatives for greater sustainability ..... 32
  - Replacing conventional synthetic materials..... 35
- Optimizing resources and processes ..... 37
  - Improving water, chemicals and energy management..... 37
  - Efficient recycling needs a suitable environment ..... 40
- Transforming user relationship with clothing ..... 45
  - From a “buy and own” to a “pay for use” model ..... 45
  - Collaborative consumption a way to combine customer needs with sustainability ..... 47
  - The Rental model (Date-to-date) ..... 48
  - The Subscription – rental model ..... 50
  - Re-commerce: a fast growing market ..... 52
  - Matching business models to product category ..... 54
- Designing circular products ..... 56
- The future responsible Value Chain ..... 59

**CHAPTER 3 : New Business Models: Rental and Re-commerce schemes .....61**

The analysis in brief.....	61
Rental Cases .....	64
Cultural ties are key to business success.....	68
Promising rental models: from a fully sustainable offering to circularity guarantee .....	71
Renting as a responsibility act.....	74
Resale Cases .....	76
A sustainable alternative to fast fashion.....	76
From independent platforms to resale channels owned by brands .....	79
The underexplored potential of Italian resale market .....	82
The relevance of Collaborative Consumption Models today according to industry’s players.....	84
<b>CONCLUSIONS</b>	<b>88</b>
<b>List of Tables, Figures and Boxes .....</b>	<b>92</b>
<b>References</b>	<b>94</b>
<b>Websites</b>	<b>96</b>
<b>Appendix : Interviews</b>	<b>98</b>
1- Sara Francesca Lisot founder of VIC (Very Important Choice) (May 22 <sup>nd</sup> ,2020).....	98
2- Tanguy Frécon , Lizee CEO (June 24 <sup>th</sup> ,2020) .....	101
3- Caterina Maestro , DressYouCan founder (July 9 <sup>th</sup> ,2020) .....	106

## INTRODUCTION

For years the textile and clothing industry has underestimated the environmental impact of its fast and global operating, its linear “take-make-use-dispose” model makes it one of the most polluting of current times. To safeguard profitability and reputation, the industry needs to integrate respect, responsibility, and sustainability in its design, operations, and distribution activities.

Prioritizing profit over vital social and environmental concerns is no longer an option for the industry, which should adopt models that allow economic, social, and environmental sustainability together. If consumption and production continue at the current rate there will be three times as many natural resources needed by 2050 (compared to what was used in 2000) and pressures on developing countries will not be tolerated anymore. Resources are finite, the negative impact on the environment and workers in eastern countries needs to be drastically reduced. A change is imperative to allow a redefinition of the industry as a bearer of positive values and to trigger a mechanism of responsibility in the value chain.

As a matter of fact, the textile and clothing industry has significant relevance in the achievement of UN sustainable development goals (SDGs), which are the blueprint created by the United Nations to achieve a better and more sustainable future for all. The industry is directly related to many of the goals, but mainly to goal number 12 “Responsible Consumption and Production”. This goal is structured in over eight targets addressing the use of natural resources, chemical waste, the integration of sustainable practices into production cycles, and customers' right to be informed to be better aware of sustainable development issues. Potentially, the textile and clothing industry can have a positive impact on other SDGs, both in the social and in the environmental sphere; among which concerning labor “No poverty” (SDG 1), “Good health and well being” (SDG 3), “Decent Work and Economic Growth” (SDG 8), and on the environmental side “Clean water and Sanitation” (SDG 6), “Climate Action” (SDG 13) and “Life below water” (SDG 14).

Figure 1 The UN Sustainable Development Goals



Source: <https://sustainabledevelopment.un.org/>

Acting sustainably, by definition, means integrating ethics, aesthetics and profitability to create shared value for the society, to address its needs and challenges. The result is a system where the increase in value for shareholders is a direct consequence of an increased value of all stakeholders. Sustainability implies responsible behaviour and requires the implementation of responsible innovation. As stated in the recently published book “Fashion Industry 2030”<sup>1</sup>, the big potential for the industry is to integrate ethics, aesthetics and innovation across all activities of the value chain.

A responsible innovation, according to the book, is considered as an innovation related to the product, service or business model that can reduce the impact on the environment across the firm processes, and build a better balance with the people involved in the economic and non-economic activities of the company. In this thesis the research focused on environmental complexities and incremental innovations to face them, keeping in mind that all environmental issues are strictly connected to social and ethical ones. Responsible innovation should have as final aim the shift from a linear system to a circular one.

Circularity should be considered as a new mindset influencing all business activities, which has as final aims keeping materials in use, allowing multiple product lifecycles, and minimizing waste production. The textile industry needs the implementation of

---

<sup>1</sup> Rinaldi, 2019

innovations to enable the minimization of virgin materials, non-renewable resources, and damaging pressures on the environment and society.

This circular mindset requires a responsibility shift. Brands and independent platform, operating in retail, must be held accountable for products and materials beyond customer purchase. Extended brand responsibility on garments incentivizes them to invest in recyclable textiles, biodegradable fabrics, non-toxic dyes, and recycled raw materials. Some innovations, such as the ones fostering full circularity of garments, require on one side technological advances, currently being studied, and on the other, collaborations with local governments and active involvement of users, that have to be further improved.

To enable an effective shift from linear to circular industry, a radical redefinition of every step of the value-creating process must happen, from design and product ideation to customer-product relation. Concerning the latter, in recent years we have seen the rise of collaborative consumption models as rental and resale, whose spread has been accelerated by the recent Covid-19 pandemic. Part of the research conducted for this thesis consisted in the analysis of innovative business models to understand the potential of feasible innovations to generate economic value, needed in this fast-changing and unpredictable times. Adopting models that foster the shift from clothes ownership to clothes access is an interesting way to combine modern customer needs, like reduced spending power and frequent outfit swipes, with a reduced environmental impact.

A set of interviews to current innovators supported the qualitative and quantitative research to converge to the idea that “Responsibility” “Sustainability” and “Circularity” are key concepts for the textile and clothing industry of today and tomorrow, and can be used as an opportunity to emerge from these times of crisis in a more resilient and competitive way.

This thesis is structured in three main chapters where the first one serves as an outline of different impact areas, which make the textile and clothing industry detrimental for the environment; to understand the main reasons why brands, consumers and governments should collaborate to make the transition from linear to circular happen. The second chapter is focused on innovation that can foster this transition: from the research on alternative materials, to new technologies for energy optimization and waste recycling. Innovations on business models are introduced in the final part of

chapter 2, and in chapter 3 a comparative analysis of rental platforms and resale channels, is presented, with the aim of understanding their rationale, peculiarities and future potential.

## **CHAPTER 1: Beyond the linear system, introduction to circularity**

### **Responsibility issues in a fragmented industry**

The textile and clothing industry is wide and very complex in its structures, it employs millions of people and resources, and its impact on society and environment is of primary importance. The production of textiles and clothing has one of the most complex global value chains, fragmented, usually hard to control, monitor and modify at need. The manufacture of products sold in western countries, is often outsourced in countries with cheaper labour force and lower environmental standards where transparency of practices is difficult to guarantee. For many years companies were able to hide the social and environmental costs of products, leaving final customers totally unaware of the cheap labour and polluting practices employed to produce garments. It often happens that a low priced t-shirt bought in a western retail store has been produced in an underdeveloped country in south East Asia where people are underpaid and resources are not sustainably sourced and disposed of. Social and environmental costs were ignored by customers for a long time, until some major events happened and global media coverage and resonance helped disclosing the hidden side of cheap mass production of clothing. In particular it's with the Rana Plaza collapse in 2013, in Bangladesh, that serious public and private initiatives are launched in order to bring up the real cost of low priced clothing and introduce responsible and sustainable management in the industry.

The employment of cheap labour force and the scarce attention paid to polluting production practices in Asian countries are “justified” by informal subcontracting networks that make allocation of responsibilities blurred and difficult to access. A survey conducted in Bangladesh finds that 32% of the 479 garment factories surveyed were informal subcontractors, and 91% of informal factories produced at least



partially for export<sup>2</sup>. The results are lack of employees protection, absence of regulatory frameworks, difficult tracing of garments' origins, unsustainable processing practices and poor water, energy and waste management.

Today customer awareness, governments and NGOs pressures began to create a context where companies are asked to increase responsible and sustainable actions disclosing information about sourcing, production and processing phases.

Moreover during Covid-19 pandemic outbreak, social and ethical issues concerning garments supply chain gained international media attention. Well established western brands due to financial shortages, caused by forced store closures, refused to pay for already placed orders to eastern manufacturers. These brands initially refused to pay for finished products and raw materials used to produce them, for a total of \$ 1.4 billion leading to an estimated 4 million (already underpaid) workers without a job<sup>3</sup>. Even if some brands tried to make up for their initial choices, paying for their orders and therefore respecting their responsibilities, towards weakest actors of garments supply chain, these facts put a spotlight on already existing issues. In global supply chains manufacturers in developing countries are not always respected as they should, leaving them extremely vulnerable and the first to be negatively affected when financial difficulties arise. Covid-19 pandemic highlighted the importance of protecting the whole supply chain, and accelerated a collective rethinking of responsibility allocation along it.

### **Unsustainable trends: overconsumption and underutilization**

In the past few decades consumption in the industry increased substantially, and the reason is twofold. First reason being the clothing price fall, registered between 1996 and 2012, according to the European commission the price of clothing fell by 36% while the share of clothing in household consumption stayed largely the same: 5% in 1995 to 4% in 2017<sup>4</sup>. The second reason is the escalation of fast fashion which is a business model based on mass production, often owned by multinational retail chains.

---

<sup>2</sup> European Commission, 2017

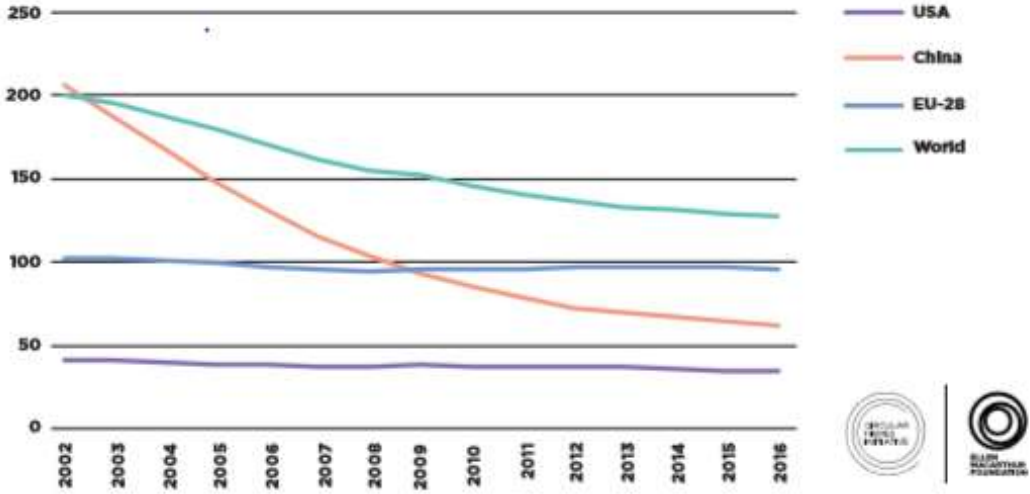
<sup>3</sup> Anner Mark, 2020

<sup>4</sup> European Commission, 2017

It is associated with low quality of materials, cheap product prices and large volumes of sales. This model is characterized by a constantly changing offering: styles taken from fashion shows are reproduced with lower quality materials and sold at cheap prices. The average number of collections per year with fast fashion went from 2 in year 2000 to 5 in 2011, Zara has 24 collections per year, H&M has 12 to 16<sup>5</sup>; this trend affected also brands outside fast fashion sector, even luxury brands today release many collections during a season.

The increased speed at which products are delivered to consumers and the constant availability of new collections in store has led to a change in consumer perception of apparel. Garments are seen as perishable goods, nearly disposable, thrown away after seven or eight wears<sup>6</sup>. In fact a primary consequence of fast fashion pace is the decrease in utilization of garments. Worldwide, clothing utilization (the number of times a garment is used before it ceases to be used), has decreased by 36% compared to 15 years ago<sup>7</sup>. In particular the utilization rate has dropped in mature markets, in the US clothes are worn around a quarter as long as the global average and in China clothing utilization decreased by 70% over the last 15 years.

Figure 2 Average number of times a new garment is worn (including reuse)



Source: Ellen MacArthur Foundation, 2017. p. 77

<sup>5</sup> European Commission, 2017  
<sup>6</sup> European Parliamentary Research Service EPRS, 2019  
<sup>7</sup> Ellen MacArthur Foundation, 2017. p. 77

## **The 'take-make-dispose' linear model**

The model followed up to now in textiles and clothing production and consumption, has been defined as linear: garments are produced, used and disposed of, therefore lost to landfill or incineration. This linear way of operating puts pressures on resources, pollutes and degrades the natural environment at every step of products life cycle. During production mainly non-renewable resources are employed together with raw materials coming from finite sources; alternatives must be found and implemented in order to avoid raw material excessive prices and shortages. During the use phase, problems arise because garments utilization is often too short, and associated with a waste of energy and natural resources, due to consumer laundering. At the end of clothing life cycle products are thrown away without following recycling schemes but simply end up in landfill or are incinerated. The post-customer-use waste is added to the large amount of items that remain unsold due to overproduction. In order to solve these issues responsible behaviour, recyclable materials and recycling schemes must be investigated and adopted.

## **The hidden environmental cost**

The textile and Clothing industry has a significant environmental footprint that can no longer be ignored. A large amount of resources, mainly non-renewable, is employed during garments life cycle, at the end of which, garments are sent to landfill. Water consumption, Energy emissions, Chemical consumption, Waste creation and Micro-plastic release are the areas where the textile and clothing industry needs to address changes.

## **Combining industry's needs with arising water scarcity**

In the production of textiles, including cotton farming, 93 billion cubic metres of water are consumed annually, 4% of global freshwater withdrawal and clothing accounts for two thirds of this use<sup>8</sup>. According to the Global Fashion Agenda (GFA) and the Boston Consulting Group (BCG) the fashion industry consumes a volume of nearly 79 billion cubic meters of water, enough to fill nearly 32 million Olympic-size swimming pools<sup>9</sup>.

The main concern regarding water is that, given that freshwater access is unevenly distributed across the planet, often the countries that are suffering from medium to high water stress, related to the textile production, are the ones in which freshwater access is already limited by other factors. In China 80% to 90% of fabric, yarn, and plastic based fibres are made in water-scarce or water-stressed regions<sup>10</sup>.

GFA and BCG anticipate that water use will increase by 50% by 2030, and the World Bank predicts that the shortfall between demand and supply of water is projected to reach 40% by 2030<sup>11</sup>. Water consumption is estimated to grow rapidly in the near future and water scarcity will be an extreme problem, cotton-growing nations will have to choose between cotton production and securing clean drinking water.

Beyond water used in raw material, fabrics and textiles production and processing, the clothing industry uses a high amount of water in the consumer use phase of garment life cycle. Washing clothing, using washing machines, is estimated to require an additional 20 billion<sup>12</sup> cubic metres of water per year globally.

The materials, whose production and consumption mainly impact water scarcity are respectively cotton, cow leather and silk.<sup>13</sup>

---

<sup>8</sup> Ellen MacArthur Foundation, 2017. p.38

<sup>9</sup> Global Fashion Agenda and BCG, 2017, p. 11

<sup>10</sup> Maxwell, D., et al, (2015), p.43

<sup>11</sup> World Bank, 2016

<sup>12</sup> Ellen MacArthur Foundation, 2017. p.38

<sup>13</sup> Global Fashion Agenda and BCG, 2017, p.42

**Table 1 Water consumption along the clothing value chain**

<b>Phase</b>	<b>Magnitude impact</b>	<b>Biggest Drivers</b>
Design and Development	Very High	Choice of materials e.g., high water consumption of cotton, Choice of colors (dyeing), finishing
Raw materials	High	Irrigation methods, e.g., choice between conventional cotton versus more sustainably sourced cotton
Processing	High	Water use in dyeing Water used in cleaning, rinsing of fibers
Manufacturing	Low	Water use in garment finishing
Transportation	Very low	
Retail	Very low	
Consumer use	Medium	Water use of washing by consumers
End of Use	Medium	Premature disposal leading to unnecessary resource waste

Source: Global Fashion Agenda and BCG, 2017, Chapter 2

### **The contribution of textiles on air pollution.**

The production of textile is characterized by very high greenhouse gas (GHG) emissions. Compared to other materials, producing textiles has a higher release of emissions: producing 1 tonne of textiles generates 17 tonnes of CO<sub>2</sub> equivalent; producing the same amount of plastic generates 3.5 tonnes of CO<sub>2</sub> equivalent while producing paper generates 1 tonne of CO<sub>2</sub> equivalent.

In 2015 the impact from textiles productions totalled 1.2 billion tonnes of CO<sub>2</sub> equivalent which is more than international flights and maritime shipping combined.<sup>14</sup> The greatest impact on climate occurs during the processing phase followed by the

<sup>14</sup> Ellen MacArthur Foundation, 2017. p. 38

consumer use of apparel (washing and drying are estimated to account for 120 million tonnes of CO2 equivalent<sup>15</sup>) and the production of raw materials.

Today’s level of atmospheric CO2 exceeds by about 20 % what is considered safe, but the textile industry’s CO2 emissions are projected to increase by more than 60% to nearly 2.8 billion tons per year by 2030<sup>16</sup>.

The materials that have the highest impact on global warming due to the emission of GHG, released mainly during processing and manufacturing phases, are Silk, Wool and Cow leather<sup>17</sup>.

**Table 2 Energy emission along the clothing value chain**

<b>Phase</b>	<b>Magnitude impact</b>	<b>Biggest Drivers</b>
Design and Development	Medium	Choice of Fabrics e.g. oil as input for polyester
Raw materials	High	Using recycled plastics/fibers e.g., replacing virgin polyester
Processing	Very High	Share of renewable energy use Energy efficiency of equipment
Manufacturing	Medium	Share of renewable energy use Energy efficiency of equipment
Transportation	Medium	Excessive use of energy in transport modes (airplanes)
Retail	Medium	Energy efficiency in store e.g. lighting
Consumer use	High	Energy consumption in washing, drying, ironing
End of Use	Medium	Premature disposal leading to unnecessary resource waste

Source: Global Fashion Agenda and BCG, 2017, Chapter 2

<sup>15</sup> Ellen MacArthur Foundation, 2017. p. 38  
<sup>16</sup> Global Fashion Agenda and BCG, 2017, p. 11  
<sup>17</sup> Global Fashion Agenda and BCG, 2017, p. 42

## **Chemical hazards in textiles production and consumption**

The textile and clothing industry employs several chemical substances such as fertilizers and pesticides during “raw material production and processing” phase, and dyeing chemicals in the processing phase. These substances usage is often mismanaged and under regulated creating hazards for the environment and consumers’ health. Concerning the environment a common negative impact is caused by the excessive use of fertilizers that in many cases leads to runoff from the land into waterways causing algal blooms, depleting oxygen in the water<sup>18</sup>. Another negative effect on the environment is the discharge of organic and inorganic toxic substances (like mercury and arsenic) from the processing plants into waterways, constituting dangers for human health. Moreover during washing and End-of -use phases environmental concerns related to chemical substances can arise.

Today’s use of chemicals is seriously impacting our soil, according to the study on planetary boundaries<sup>19</sup>, today’s level of biochemical flows (flow of phosphorus from fertilizers to erodible soils) already exceeds the safe operating space by more than 220%. The textile industry has a high responsibility in this, since only cotton production alone uses 2.5 % of arable lands and 16% of all pesticides used in the world<sup>20</sup>. Moreover approximately 25% of chemicals manufactured globally are applied in the textile industry. Workers in the textile industry are exposed to chemicals that are linked to several kinds of cancers, including brain cancer, lung cancer and stomach cancer, and chemical contact with skin or inhalation can lead to other serious health effects.<sup>21</sup>

Chemicals used in the production may be retained by finished textiles, causing concerns about their impact on the wearer.

There are two additional problems related to this environmental issue. The first being the lack of transparency and disclosure on chemicals usage and secondly the difficulty in measuring the effects of chemical pollution of wastewater due to large variety of hazardous substances used today.

---

<sup>18</sup> Global Fashion Agenda and BCG, 2017, p. 11

<sup>19</sup> Ibid

<sup>20</sup> Ellen MacArthur Foundation, 2017. p.38

<sup>21</sup> Rinaldi, 2019, p.8

**Table 3 Chemical consumption along the clothing value chain**

<b>Phase</b>	<b>Magnitude impact</b>	<b>Biggest Drivers</b>
Design and Development	High	Choice of materials e.g., softening of fabrics Choice of colors (dyeing)
Raw materials	High	Amount and frequency of fertilizers and pesticide use
Processing	Very High	Lack of waste water treatment in dyeing Chemicals for fiber treatment
Manufacturing	Low	Toxicity of materials used for prints
Transportation	Very low	
Retail	Very low	
Consumer use	Medium	Toxicity of detergent Pollution of waste water e.g., chemical processing residues, micro-plastics
End of Use	Very low	

Source: Global Fashion Agenda and BCG, 2017, Chapter 2

### **The downside of synthetic fibers: Micro-Plastics pollution**

Today a wide spread environmental problem is plastic pollution which is damaging oceans water, marine ecosystems and human health. Although the amount of visible plastic pollution is large there is an equally spread amount of invisible or nearly visible micro-plastic and plastic micro-fibres. Micro-plastic are defined as tiny pieces of plastic with a size of 5 millimetres or smaller and originate in different ways and can be classified in two types: primary and secondary. Micro-plastic are considered as primary if they are released in the environment at micro-plastic size, they come from toiletries, scrubbing agents and cosmetics usage, tyres erosion or synthetic textiles abrasion. Secondary micro-plastics instead originates from larger plastic objects, which with time degrade into smaller plastic fragments, the main cause for this is plastic waste mismanagement. Micro-fabrics released into the environment from synthetic textiles,



used in clothing, belong to primary micro-plastic and usually are released during washing.

Today it's estimated that the 35% of primary micro-plastic entering the ocean come from plastic-based textile washing<sup>22</sup>. The most common plastic based textiles, often called synthetic fibres are polyester, nylon, acrylic and elastane. Due to their versatility and peculiarities these materials are widely used in the textile industry especially in the production of sportswear, outdoor gears and swimwear, despite the fact that there are no effective ways to limit their negative impact on the environment.

Annually it is estimated that a micro-plastic amount equivalent to 50 billion plastic bottles enter the ocean due to textiles washing<sup>23</sup>, and by 2050 there could be more plastic than fish in the ocean (by weight)<sup>24</sup>. Micro-plastics are dangerous both for marine wildlife and for humans, in fact when digested by fish and birds can cause their starvation and enter human food chain. Micro-plastics enter human diets also from products that are not directly sourced from marine environment. Micro-plastics have been found in beer, honey, salt and sugar. It needs to be said that the textile industry is not the only contributor to ocean micro-plastics pollution but the impact is large and needs to be addressed, yet no significant changes in material choices or garment production are being seen at scale. Due to the rising awareness on ocean and water streams plastic invasion, microfiber pollution can potentially constitute a reputational risk for retailers in a near future.

---

<sup>22</sup> Ellen MacArthur Foundation,2017. p.66

<sup>23</sup> Ellen MacArthur Foundation,2017. p. 39

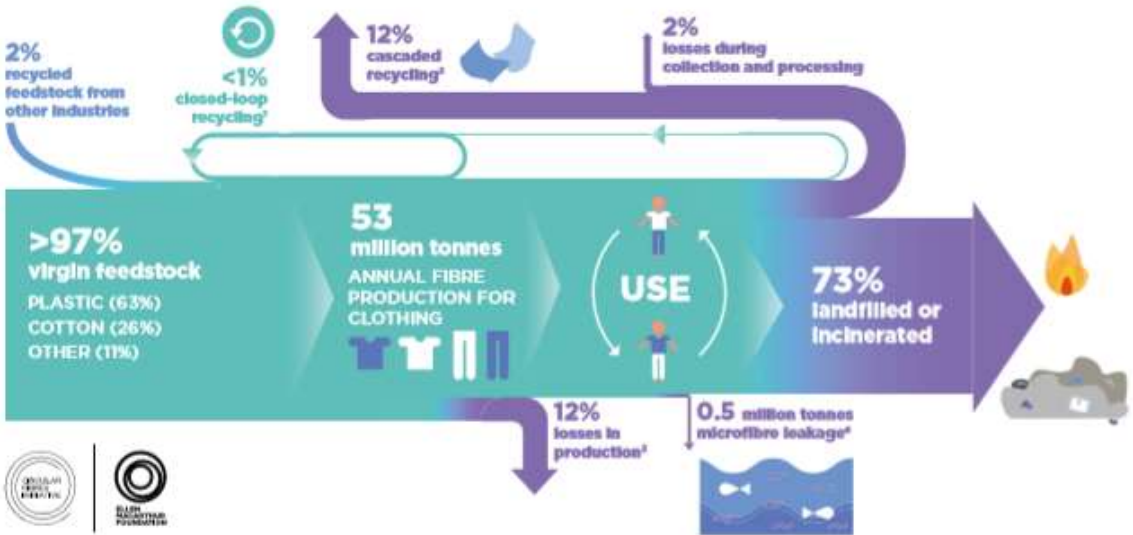
<sup>24</sup> Ellen MacArthur Foundation,2017. p.67

### Waste creation and the compelling need for recyclability

Today humankind produces 2.1 billion tons of textile waste per year. In terms of annual ecological footprint, the world’s population already produces more than 1.6 times what the earth can absorb in the same timeframe. The BCG and GFA projection estimates that, at today’s rate of waste production, by 2030 the waste industry will increase by 60% and per year waste generation will increase by 57 million tons (equivalent to 17.5 kg per capita).<sup>25</sup>

These high volumes are due to the fact that the majority of materials used in the production of garments cannot be recycled after use. 73% of materials going into the clothing system is lost after customer use, 10% is lost during garment production and 2% is sent to landfill or incineration from garments that are produced, yet never make it to market. Additionally there’s a 2% lost in the collection and sorting of discarded clothing. The Ellen MacArthur foundation estimates that one garbage truck of textiles is landfilled or incinerated every second.<sup>26</sup>

Figure 3 Global material flows for clothing in 2015



Source: Ellen MacArthur Foundation, 2017. p.37

<sup>25</sup> Global Fashion Agenda and BCG, 2017, p. 12  
<sup>26</sup> Ellen MacArthur Foundation, 2017. p.37

The excessive amount of garment wasted represents an annual lost opportunity of more than USD 100 billion but it also constitutes a high cost associated with the disposal of materials (in UK the cost of landfilling clothing and households textiles each year is approximately USD 108 million).

One of the main problems is the very low rate of recycling, less than 1% is recycled into new clothes and only 12% is cascading recycling i.e. clothing is recycled into lower value applications and products (mattress stuffing, wiping clothes, insulation materials etc.). This is due to a lack of collecting and recycling schemes (globally only 25%<sup>27</sup> of garments are collected for reuse or recycling through a variety of systems) and to the existent materials in use today, that are not designed to be recycled and recaptured.

**Table 4 Waste creation along the clothing value chain**

<b>Phase</b>	<b>Magnitude impact</b>	<b>Biggest Drivers</b>
Design and Development	High	Choice of recycled fabrics and blends Design for longevity Choice of cuts and possibility to glue
Raw materials	Very low	
Processing	Medium	Waste of fibers/fabrics e.g., roll ends, off cuts, samples
Manufacturing	Medium	Waste from cut-and-sew, samples
Transportation	Medium	Waste generated through packaging, pallet use
Retail	Medium	Waste generated through packaging, tags, hangers, bags
Consumer use	Medium	Prolonging product use avoiding resource waste Using second hand sources for products saving resources
End of Use	Very high	Disposing end-of-use products generating waste and connected negative externalities e.g., leachate emissions from landfills

Source: Global Fashion Agenda and BCG, 2017, Chapter 2

<sup>27</sup> 75% in Germany , US and China less than 15% , no collections in many countries of Asia and Africa. Ellen MacArthur Foundation,2017. p.37

### Predicted risks of the linear model

The textile and clothing industry cannot keep following linear models, a systemic shift towards different patterns of consumption, production planning, material sourcing and design is needed.

Figure 4 Projected global fashion consumption (million tons)



Source: Global Fashion Agenda and BCG, 2017, p.10

Consumption of clothing and textiles is predicted to grow in the future due to emerging markets in Asia and South America that will adopt western consumption habits; the Ellen Mac Arthur foundation predicts that in 2050 clothing sales could reach 175 million tonnes, that is three times today’s amount. The impact on the environment described above would be amplified and the profitability and reputation of the industry would be at risk.

Carbon emission in textile production will amount to 25% of the carbon budget that the IEA (international energy agency) has set in order to keep the target of a 2°C average global warming limit within reach. Micro-plastic release into the oceans are estimated to grow to 0.7 million tonnes (the material equivalent of 4 billion polyester tops) per year by 2050 and the accumulated amount entering the ocean between 2015 and 2050 would exceed 22 million tonnes of plastic. The inputs of non-renewable resources needed will increase as well as the need of clean water in water scarce regions, where textiles are nowadays produced. The industry relies on water amounts that will no longer be available in the future and this represents one of the major risks that the textile sector

will face if it doesn't shift away from the current linear system. Moreover the management of textile waste will represent a major challenge for the industry, predictions state that 150 million tonnes of clothing will be landfilled or burned by 2050.

The linear business model makes the industry one of the main contributors to the stress on natural resources and without taking actions to reduce consumption and improve production processes the industry will not only be continuing to contribute to the negative impact on the planet but its profitability will be at risk, it will face a decrease in profit of approximately EUR 45 billion by 2030<sup>28</sup>.

**The economic benefit of environmental sustainability<sup>29</sup>**

Negative externalities are difficult to quantify and value but the economic opportunities associated with a shift away from the current linear system exist and are estimated to be about EUR 160<sup>30</sup> billion (environmental benefit EUR 110 billion and social benefit EUR 51 billion).

Figure 5 The value opportunity of sustainable fashion in the world economy

	Impact	Value at stake	Until 2030
Environmental	 Water consumption	1 Reduced water consumption →	€32 billion
	 Energy emissions	2 Reduced energy emissions →	€67 billion
	 Chemical usage	3 Reduced occupational illnesses →	€7 billion
	 Waste creation	4 Reduced amount of waste →	€4 billion

Source: Global Fashion Agenda and BCG, 2017, p.20

<sup>28</sup> Global Fashion Agenda and BCG, 2017, p.23  
<sup>29</sup> Paragraph data retrieved from Global Fashion Agenda and BCG, 2017, p.11, 12 and 21  
<sup>30</sup> Global Fashion Agenda and BCG, 2017, p..20

As showed in the above figure a reduced environmental impact can lead to economic benefits across the industry, but polluting practices and dangerous materials must be eliminated while looking for better and circular alternatives. In particular predictions state that 39 billion additional cubic metres of water will be consumed annually by 2030, this results in EUR 32 billion of potential benefit to the world economy if the industry can manage to consume no more water than it does today.

Improved energy management in the industry would bring large benefit including a monetary opportunity of EUR 67 billion per year reachable if the industry avoids all additional emissions through energy use projected to 2030 compared to today. This would have effects on shifting climate patterns, sea levels rise and extreme weather events reduction. Since many manufacturing plants are located in vulnerable areas, there are potential benefits for both the world economy at large and for the industry resilience.

Concerning chemical consumption the benefit that would arise from a reduced use of these substances would be related to human health. By eliminating carcinogens and airborne particulates which cause occupational illnesses due to poor chemical management, an annual value of EUR 7 billion can be gained.

Textile waste management could see a positive change if economically viable technologies to convert waste into raw material, were available. Reducing the amount of pure waste along the textile value chain would result in an economic benefit of EUR 4 billion per year by 2030. This would result from a decrease in emission from waste decoupling and incineration, together with other effects of landfills and incineration sites. The benefit would be manifold higher if circular model of production and consumption could be implemented.

## **Transitioning from a linear to a circular industry**

Actions for a circular economy on one side are oriented towards reducing and phasing out negative externalities, that characterize linear behaviours, and on the other side look for disruptive and innovative behaviours to shape a better future.

Given the necessity of a shift from the linear 'take-make-dispose' business model, which is threatening the reputation and profitability of the industry, textiles and clothing companies have today several options to implement changes.

Circular actions have various interconnected objectives concerning every phase of the value chain: from choosing the material mix and optimizing processes, to consumer use and disposal of garments. For instance choosing a sustainable material mix when designing new collections, optimize chemicals and water consumption during textile processing, having a demand-driven production in order to reduce overproduction. Energy consumption can be optimized from production plants to retail stores and during consumer use; moreover closed loop recycling processes can be implemented to increase the clothing-to-clothing recycling from today's 1%<sup>31</sup>.

Research and development for circularity together with circular innovations adoption should be of primary interest for industry players and can be accelerated due to Covid-19 related issue of unsold inventory. This short term issue caused by lockdown can serve as an alarm to see the result of overproduction and it can serve as an incentive to invest on circularity related innovation from which brand will benefit even in the long run.

Innovations to foster sustainability and circular economy tackle different aspects of the industry and are analysed in detail in chapter 2.

For instance innovations on materials, to reduce plastic based textiles, allow decoupling garment production from non-renewables resources, like oil, and decreasing the micro-plastic release in the environment. Product design innovations, like modularity, can contribute to a clothing production designed for multiple life cycles, to maximize consumer utilization. Innovations on service include repair and restyle options from retailers together with label system and platforms to inform

---

<sup>31</sup> Ellen MacArthur Foundation, 2017. p.37

customers about material sourcing and manufacturers' origin. Innovations on production processes can be adopted in order to minimize the use of natural resources and chemicals, as well as waste sorting technologies to create an efficient textile collection system easing clothing-to-clothing recycling.

Innovation on business models are key for a more circular future and are discussed in detail in chapter 3. New business models are thought to make fashion shift from an ownership model to an accessing service, as rental or subscription-rental schemes. Additional changes in how business is conducted include applying prices that reflect the true cost of a garment including environmental costs and a fair wage to manufacturers, and applying labels that ease their disclosure to final costumers.

A real shift towards a circular business model requires more than just investments on innovations from the supply side. A shift in the mind-set of the consumer is necessary, on the demand side players must behave responsibly and purchase accordingly. Consumer use phase includes actions with a high impact on the environment, like washing and drying clothes as well as end of use disposing and recycling.

Government support is also key to accelerate the adoption of circular practices in the industry. Policies and public funding can have a strong impact on business conduct and producers' choices, examples are national wide restrictions on use of chemicals or textile collection schemes, and investments in new machineries to separate and sort textile components at municipality level.

Industry wide commitment and coordination are elements able to foster this transition; traceability of actions and transparency along the supply chain are necessary to create a more responsible and respectful value chains. Actions towards a more sustainable industry must be understood by all actors, not as a competitive advantage, limiting findings and corporate practice disclosure, but as part of collaborative effort that the joint industry is undertaking to reduce its environmental impact. According to Ellen Mac Arthur:

*“Transitioning to a circular economy does not only amount to adjustments aimed at reducing the negative impacts of a linear economy, rather it represents a systemic shift that builds long-term resilience, generates business and economic opportunities, and provides environmental and societal benefits.”*



## **The European Green Deal fostering sustainable and circular textiles**

The European Commission in March 2020 published “A circular economy action plan” also defined as the “EU Green Deal”, where it outlines its intentions to foster responsible and circular actions. The document anticipates that the Commission will propose a sustainable product policy legislative initiative. The Commission will consider establishing sustainability principles to regulate several aspects, among which<sup>32</sup>:

- Improving product durability, reusability, upgradability and reparability, addressing the presence of chemicals in products and increasing their energy and resource efficiency.
- Increasing recycled content in products, while ensuring their performance and safety
- Enabling remanufacturing and high quality recycling
- Reducing carbon and environmental footprints
- Introducing a ban on the destruction of unsold durable goods
- Incentivizing product-as-a-service or other models where producers keep the ownership of the product or the responsibility for its performance throughout its lifecycle
- Rewarding products based on their different sustainability performance, including by linking high performance levels to incentives.

The focus is on five key value chains and textile is one of them, as in Europe it's the fourth highest-pressure category for the use of primary resources and water (after food, housing and transport) and the fifth for GHG emissions. With a comprehensive EU strategy for Textiles, the Commission will release a strategy aiming at strengthening industrial competitiveness and innovation in the sector, boosting the EU market for sustainable and circular textiles, including the market for textile reuse, addressing fast fashion and driving new business models. The Commission plans to achieve that by releasing a comprehensive set of measures as for example developing eco-design measures, empowering business and private consumers to choose sustainable textiles and have easy access to reuse and repair services. It will provide incentives to support product-as-a-service models, circular materials and production processes. Its intention includes increasing transparency through international cooperation and tackle the

---

<sup>32</sup> European Commission. (2020). p.6

complex issue of textile waste. The European Union can do that by providing guidance to achieve high levels of separate collection, boosting sorting and recycling of textiles, encouraging industrial applications and regulatory measures such as extended producers' responsibility<sup>33</sup>. As an example, following the European Green Deal, Euratex, the European Apparel and Textile Confederation, presented a recovery plan fostering the renewal of textile value chain for a greener and more competitive future. Euratex wants to establish five recycling hubs in Europe near textile and apparel districts and therefore make raw materials by collecting, sorting, processing and recycling post-production and post-consumption textile wastes.

The European Green Deal was published during Covid-19 outbreak highlighting the centrality of these issues, which should be a priority of government. In a post-pandemic scenario, notwithstanding financial difficulties and economic tensions, environmental challenges cannot be left aside. Resource intensive production and consumption, climate change, biodiversity and pollution are global challenges that will persist after the pandemic and will still require coordinated efforts to face them.

---

<sup>33</sup> European Commission. (2020). p.13

## **CHAPTER 2: Innovations fostering circular transition.**

### **The environmental responsible value chain: incremental innovations and hurdles to reach it.**

Innovations for circularity include a wide variety of actions that can be implemented along the value chain of textile and clothing. The final aim of these innovations is to increase garment life cycle while reducing resources consumption and waste creation. Full circularity and closed loop recycling are hard to achieve and need collaborative efforts by many industry players. Producers, manufacturers, designers, costumers and government need to consider sustainability as a priority in their choices, in order for a shift toward circular economy to happen. An analysis of relevant innovations for circularity is presented in this chapter. Changes can be applied from the beginning of value chain by choosing materials and processes with reduced environmental footprint, to the end of it by implementing recycling techniques that can lead to the creation of virgin material substitutes. Long term innovations investigate new business models combining environmental needs and market demand requirements.

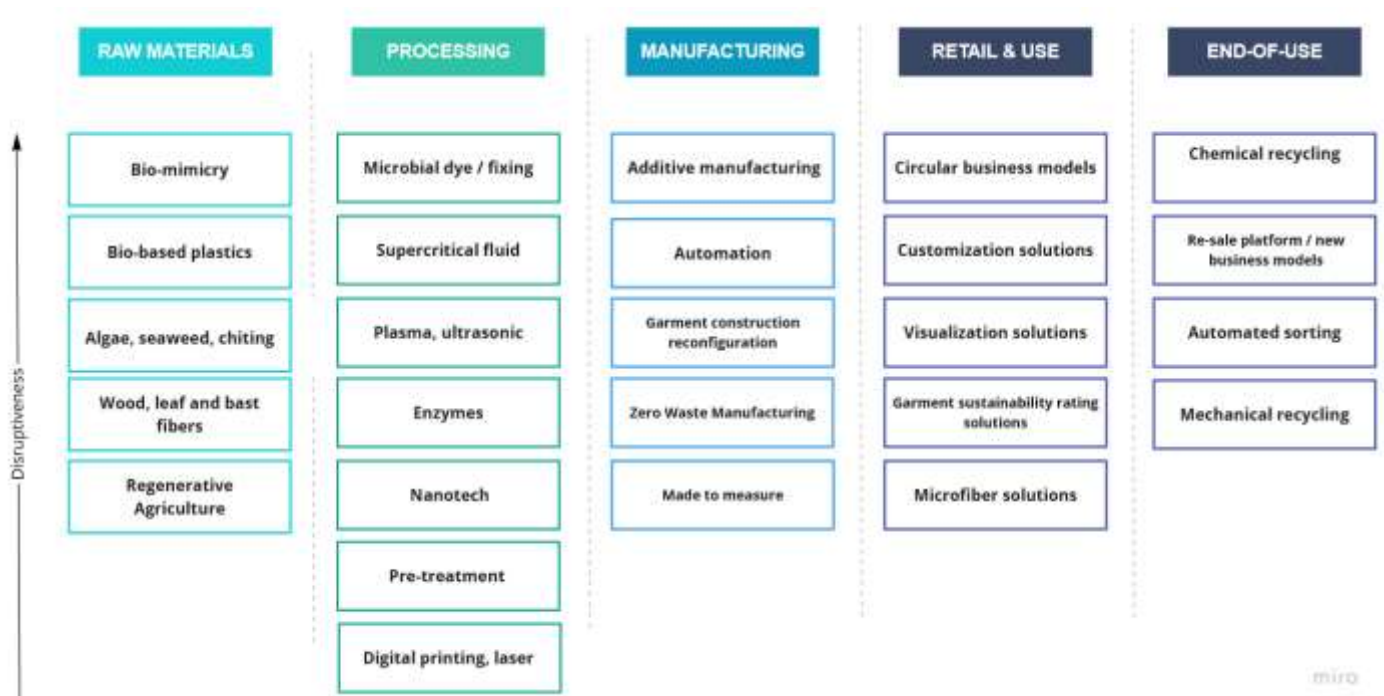
Many challenges are faced by innovators at all stages: the development of new materials easily gets adjacent to other industries: new fibers from virgin crops might interfere with feedstock usage and land-use of agriculture, or cause deforestation.<sup>34</sup> In the production and processing phase high amounts of limited sources, such as water and energy, are employed and high investments are needed to adopt efficient processes that would have a high positive impact on the environmental footprint of the industry.

At the end of the chapter innovations on business models and collaborative fashion consumption schemes are analysed together with innovations on product design, the former can have a high impact but require a shift in consumption culture. Consumer's perception and attitude towards clothing must change, garment can no longer be considered as disposable, suitable only for few occasions, dictated by fast fashion trends. Consumers should collectively embrace the "Less is more" or "Quality over quantity" philosophy, valuing sustainable brands products with reduced environmental footprint over low priced items with blurry origin and material composition.

---

<sup>34</sup> Global Fashion Agenda and BCG, 2018, p.78

Table 5 Good Fashion innovation overview



Source: Adaptation of Global Fashion Agenda and BCG, 2018, p. 76

## New materials to move away from nature exploitation and contamination

The textile and clothing industry employs today a variety of different materials that are characterized by specific advantages and disadvantages. It's important that brands and customers develop an understanding of materials' peculiarities in order to make thoughtful choices in producing and purchasing.

From an in-depth analysis of materials in use today in the clothing industry it's easy to detect the need for innovations. For example innovations to improve the existing fibers, so to reduce negative environmental impacts and to design materials suitable for circular systems (100% recyclability), if possible, with no negative impacts at all.

The main types of fibers in use today are plastic-based, cellulose-based and protein-based.

Plastic-based or synthetic fibres are generally produced from oil and account for two thirds of the material input for textile production.<sup>35</sup> The main advantages of these materials are the absence of agricultural land usage and the low requirement of water in their production and processing together with their versatility. Disadvantages are the large use of non-renewable feedstock (oil) and an energy-intensive production. Moreover these materials shed micro-plastics during washing and are not biodegradable, therefore they remain in the environment for a long time. The main plastic-based fibres in use today are Polyester, Nylon, Acrylic and Elastane.

Cellulose-based fibres refer to those obtained from plant-based material. The material is either directly captured from plants or treated chemically to extract and process cellulose. This kind of fibers account for one third of all fibres used for textiles.<sup>36</sup> Cellulose based fibres are usually biodegradable if not treated with other substances but are quite resource-intensive in their production and require chemicals during processing phase. The most common cellulose-based fiber used today is cotton, followed by Viscose (or Ryon), Lyocell and bast fibres: linen, hemp and jute. Cotton in its production requires a high amount of water, pesticides and fertilizers at early stages and chemicals in the dyeing process, in order to facilitate the dyes absorption. Since it's mainly produced and processed in developing countries, that often are suffering of water shortage and pollution, alternative solutions must be adopted, in order to decrease the requirement of conventional cotton. Examples are offered by initiatives such as Better Cotton (BCI) and Preferred cotton.

**Box 1 Better Cotton Initiative (BCI)**

Better Cotton Initiative	<p>The Better Cotton Initiative (BCI) is a global NGO and a cotton sustainability program that was originally conceived by the World Wildlife Fund and launched in 2009. The Better Cotton Initiative supports continuous improvement in the cotton farming sector by setting standards to ensure that cotton is grown with methods that minimize water use and chemicals and support regenerative agriculture.</p> <p>The BCI program includes a set of standards and requirements for cotton producers, following seven principles:</p> <p>1- minimize harmful impacts of crop protection practices</p>
--------------------------	---

<sup>35</sup> Ellen MacArthur Foundation,2017. p.119  
<sup>36</sup> Ellen MacArthur Foundation,2017. p.120

	<p>2- promote water stewardship</p> <p>3- care for health of the soil</p> <p>4- enhance biodiversity and use land responsibly</p> <p>5- care for and preserve fiber quality</p> <p>6- promote decent work standards</p> <p>7- operate an effective management system</p> <p>According to the BCI data, 2 million farmers in 21 countries are currently licensed under the initiative and in the 2017-18 seasons BCI cotton accounted for 19% of global cotton production.</p>
--	---

Source: Condé Nast. (2020).

Bast fibres' importance is increasing as brands are starting to use them in their material mix, they require small amounts of water and fertilizers and they can grow in lands unsuitable for food production.<sup>37</sup> However today they are still relatively costly and their spinning is energy intensive.

Protein-based fibres are sourced from animals, the most common are wool and silk. Advantages of these fibers are extended durability, reduced need of washing during the use phase and suitability for recycling. Disadvantages are that they are labour-intensive in their production processes and that they require a significant amount of chemicals (such as bleaching agents) in treatment processes.

### **Assessing materials' footprint**

Fashion companies have a range of tools to estimate fibers' environmental impact. The cradle-to-gate Higg Materials Sustainability Index (Higg MSI) is an available tool to evaluate a material's environmental footprint. Higg MSI score shows the materials' impact on global warming, water supplies, fossil fuels, chemical usage, and eutrophication. Companies can use the tool to make more informed decisions on their selected materials and adapt design and sourcing plans accordingly.<sup>38</sup> However the Higg Index has received criticism for not making its data publicly available, not permitting brands to release their own Higg Index data and barring external entities from authenticating the data.<sup>39</sup> Some brands have developed their own methods to assess material footprint, for example Kering has developed EP&L (environmental profit & loss)

<sup>37</sup>Ellen MacArthur Foundation,2017. p.121

<sup>38</sup> Global Fashion Agenda and BCG, 2018, p.37

<sup>39</sup> Vogue Business, 2020.

online platform and mobile app, where customers can see the material components of their garments, understand where they come from and access their environmental footprint. These methods are a way to map a brand's raw material mix impact (land usage, water and energy consumption, waste creation and chemical usage) they should be communicated to customers in an efficient way, perhaps through interactive labelling and easy to understand contents. Right now customers' effort, required to understand the impact of garments is still very high, and labels reach only those consumers who actively search for information. Standards and common rating should be applied industry wide and external audit should work to assess and verify brands actions along the supply chain. Today the majority of voluntary initiatives helping brands improving supply chains don't audit factories but approve brands' approach to auditing, which is carried out by brands themselves, through internal staff or by contracting them out.<sup>40</sup>

Moreover building an evidence base on commonly used materials and their recycling options would enable the development of guidelines to support convergence towards a smaller range of materials, and focus efforts on recycling technology innovation. The pulse of the fashion industry 2018 report uses the term "bill of material" to indicate a labelling scheme (including material codes, description of where in the garment the material is used and in which quantities, and explaining type of processing and the identity of the vendor<sup>41</sup>) that brands should adopt in order to understand and communicate the impact of materials used in their products. Understanding and analysing the current "bill of materials" is a first step to improve the material mix for a lower environmental footprint.

The next section is dedicated to innovations on materials, which can be classified in two major groups: on one side brands can invest to create better materials through bio-materials and biomimicry techniques and on the other, research can be oriented to improve and recycle synthetic materials to reduce their impact on the environment. Both paths lead to innovative materials that brands can include in the material mix of their garments. The reason why brands should invest in material innovation is twofold. First, following linear business model producers will face a scarcity in the supply of raw materials in use today. Secondly it's a way to meet the increasing demand of consumers

---

<sup>40</sup> Vogue Business, 2020.

<sup>41</sup> Global Fashion Agenda and BCG, 2018, p.37

that are paying more attention to the composition of material mix, preferring sustainable fabrics, as bio-based and recycled materials. Fashion brands will increasingly need to carefully think at fiber choices and recycled fiber percentages to build up a responsible material mix.

### **Natural alternatives for greater sustainability**

The first group of innovations concerns natural fibers, research and investments on fabrics that come either from agricultural by-product (orange peel, coffee beans and kelp) or from regenerative agriculture (apply farming improvements to increase yield and decrease footprint, regenerative methods of sourcing cellulose include seeking out fast-growing plant species that do not need prime agricultural land<sup>42</sup>) like hemp and bamboo. These fibers bring significant benefits, as they have a smaller environmental footprint than conventional plant-based fibers. For example compared to cotton, hemp uses less than a third of water in production and yields 220% more fiber, on the same surface acreage. These materials do not represent a perfect solution today as their quality is still comparatively low and suitable finishing technologies are still not wide spread.<sup>43</sup>

Innovative bio-based materials in their being derived by agricultural and food waste, like apple, pineapple , orange peel or kelp, have several beneficial effect on the environment: reducing incinerated waste, increase recycling rates and decrease the number of virgin materials as input materials. Adopting these kinds of material, through collaborations with producers can be a starting point for brands that are shifting toward a more sustainable conduct, but so far the availability of bio-based materials is not wide enough to cover a manufacturer's whole production.

Some of these innovative materials are new to the market and were launched by small start-ups, in many cases they gained attention and had the chance to scale up in size thanks to collaborations with established brands. It's common for larger producers to try out innovative materials, on few selected items or collections, by partnering with

---

<sup>42</sup> Ellen MacArthur Foundation,2017, p.113

<sup>43</sup> Global Fashion Agenda and BCG, 2018, p.81



smaller and more flexible realities. An example is Sicilian OrangeFiber partnership with Salvatore Ferragamo. Challenges in material innovation are met in the initial phase where it's difficult to access technologies needed for try outs and in the scaling up of new materials adoption.

**Box 2- Orange Fiber, Vegea, Algiknit and Desserto**

Orange Fiber <sup>44</sup>	Italian green innovation, it's a sustainable fabric developed by a Sicilian fashion designer. Silk-like fabric made using citrus juice by-products that would otherwise be disposed of. Just in Italy 700,000 tons of orange juice by-products must be disposed through expensive processes. OF patented the process in Italy in 2013 and has expanded IP in USA, while pending in EU, India, Brazil and Mexico. OF was used in a Salvatore Ferragamo collection in 2015 and in one item of H&M conscious exclusive 2019 but to meet the demand of fashion brands a need in production capacity is needed. Raising funds for machinery investments is key to a scaling up process.
VEGEA <sup>45</sup>	Founded in 2016 in Milan it seeks to find plant-based alternatives to fully synthetic oil-derived materials for fashion, furniture, packaging, and transportation. In collaboration with Italian wineries, VEGEA has developed a process for the valorisation of wine waste: grape marc (grape skins, stalks and seeds) discarded during wine production. In 2019, VEGEA attended Copenhagen Fashion summit and the Global Change Award, organised by H&M foundation. Collaborations include H&M at prototyping stage and Bentley automotive.
AlgiKnit <sup>46</sup>	<p>American company producing durable and rapidly degradable yarns utilizing kelp one of the fastest growing, most rapidly replenishing organisms on earth. The result is a material with a significantly lower environmental footprint than conventional textiles, for footwear and apparel industries.</p> <p>Benefits of Kelp include:</p> <ul style="list-style-type: none"> <li>-grows in the ocean without harmful fertilizers and pesticides</li> <li>-does not use arable land nor fresh water for drinking or irrigation</li> <li>-efficiently sequesters carbon/CO2 while filtering surrounding water</li> <li>-farming it rebuilds economic and ecological communities affected by overfishing and pollution by providing a new income source and improving marine habitats.</li> </ul> <p>Since 2016 AlgiKnit has been awarded and recognized from important players in the industry.</p>
Desserto <sup>47</sup>	It's a Mexican business launched in 2019 which produces vegan leather, using cactus plants as raw material. Due to the high environmental impact that leather production

<sup>44</sup> Rinaldi, 2019, p.104 and Orange Fiber website: <http://orangefiber.it/en/impact/>

<sup>45</sup> <https://www.vegeacompany.com/sustainability/>

<sup>46</sup> <https://www.algiknit.com/>

<sup>47</sup> <https://desserto.com.mx/home>

	<p>and processing, this material is rapidly gaining attention of brands making garments, handbags and footwear. Growing this kind of cactus called opuntiae requires low amount of water, it doesn't need any irrigation system, it grows using only rainwater, moreover leaves are sun dried to further reduce energy consumption.</p> <p>Other benefits of Desserto vegan leather are:</p> <ul style="list-style-type: none"> <li>-toxicity free</li> <li>-plantations are fully organic</li> <li>-no herbicides or pesticides are involved</li> <li>-animal and environmental preservation</li> <li>- mature leaves are selected and cut every 6-8 months, leaving the plant undamaged to enable repeat harvesting</li> <li>-all remaining organic material is exported or sold domestically to the food industry.</li> </ul>
--	--

An innovative way to create sustainable fabric is biomimicry, practice that combines nature and technology by mirroring biological structures, processes and best design. It aims at solving human challenges towards a higher sustainability. Examples of biomimicry are spider silk to produce biodegradable garments, artificial leather made from wood<sup>48</sup> and modifying bacteria to produce fiber. Biomimicry is the most disruptive innovation in the raw material phase of the supply chain and materials produced in these ways are predicted to outperform conventional fiber in durability, strength and sustainability. Biological technology and bio-based materials can have a positive impact on different stages of fashion value chain such as sourcing of ingredients, design and manufacture and recycle and upcycle.<sup>49</sup>

**Box 3 Spider silk**

Spider silk	A new fiber with impressive elasticity, durability and softness. The artificial silk production mirrors the biological process that spider use to create their fibers. During the manufacturing process, genetic material from spider is inserted into yeast to form proteins that can be spun into fibers. However the resources required for the production are still relatively high and scalability is a hurdle yet to be taken.
-------------	--

Source: Global Fashion Agenda and BCG, 2018, p.81

<sup>48</sup>Rinaldi, 2019, p.154

<sup>49</sup>Rinaldi, 2019, p.158

**Replacing conventional synthetic materials**

A second group of innovations on materials concerns substitutes for synthetic materials, the final aims are reducing the amount of micro-plastics released in the waters and reducing the amount of virgin material (coming from oil) employed, by recycling for example nylon polymers. Due to the urgency of drastically reducing the amount of micro-plastic released in the waters, brands should support and try to scale innovation on plastic-based materials alternatives and on reduction and recycling of plastic-based textiles.

Bio-based plastic could be an alternative to conventional sources for synthetic textile materials, but current solutions rely on polymers from feedstock that serve other industries. The challenge is to create a biodegradable plastic whose production does not interfere with other industries’ needs, for example relying on waste materials or waste biogas. The development of alternative synthetic fibers could be partly or fully supported by biological feedstocks like agricultural waste, which are renewable and encourage no deforestation (for example food crops waste turned into bio-fibers as a supplement for existing cellulose-based fibers) It’s estimated that the readily accessible waste from five crops (pineapple, banana, flax, hemp, and cane) has the potential to create enough fiber to exceed the current global fiber demand.<sup>50</sup>

An attempt towards the reduction of virgin materials is the adoption of recycled polyester that compared to virgin material (1 tonne) can save 80% in toxins, 60% in energy consumption, and up to 40% of CO2 emissions<sup>51</sup>. Recycled polyester isn’t a fully sustainable solution due to the fact that it still sheds plastic micro-fibers in the environment.

**Box 4 QMilk and Mango Materials**

QMilk <sup>52</sup>	It’s a patented, specially designed spinning process producing an organic polymer free of solvents and plasticizers. It’s a water and energy-efficient, and zero waste procedure process through which fibers are made using 100% renewable raw materials and non-food milk. The QMILK fiber after a few weeks is biodegradable in compost. The milk used is not suitable for food use and is expensively disposed, as unused secondary waste.
---------------------	--

<sup>50</sup> Global Fashion Agenda and BCG, 2018, p.81

<sup>51</sup> Global Fashion Agenda and BCG, 2018, p.40

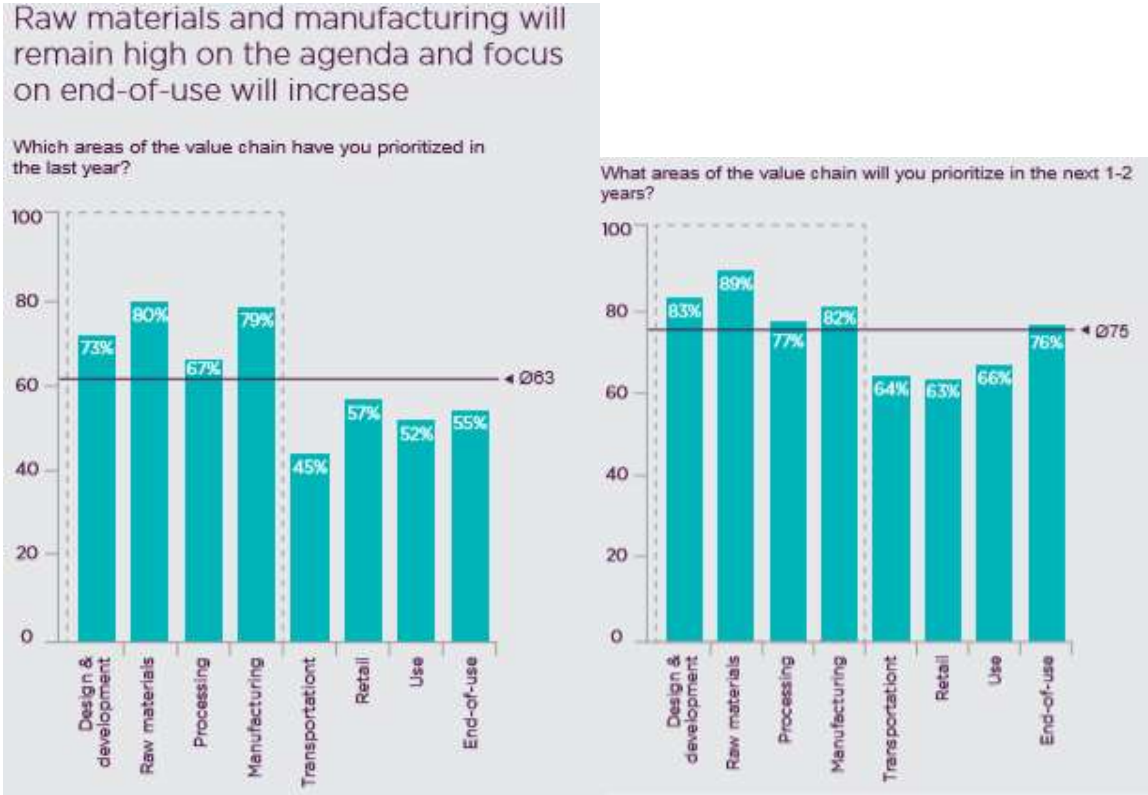
<sup>52</sup> <https://www.qmilkfiber.eu/?lang=en>

Mango Materials <sup>53</sup>	A fully biodegradable bio-polyester fiber as a sustainable alternative to petroleum-based polyester that can be used with other natural textile materials to produce a truly sustainable garment. Mango materials developed also a carbon recycling technology that enables regeneration of new apparel from used apparel, without quality reduction.
-------------------------------	---

Many manufacturers have already started innovating on materials and including fibers with a reduced footprint, in their material mix. Often material innovations are born in smaller realities that find difficulties at entry level and scaling up level. One of the founders of OrangeFiber said that the difficulty to access appropriate technologies or to know who owns technologies for initial trials were factors which slowed down the initial process.

A sharing economy of technologies would help small innovators to test and trial easily without having to invest in expensive machineries. The second main challenge is in the scaling up phase as it might be hard to supply the large global demand of fashion brands with complex sourcing processes or new technologies.

Figure 6 Priorities across the value chain



Source: Global Fashion Agenda and BCG, 2018, p.15

<sup>53</sup> <https://www.mangomaterials.com/>

## **Optimizing resources and processes**

### **Improving water, chemicals and energy management**

The processing phase of textile and clothing is the one where the combined environmental impact of water, energy and chemicals is the largest and yet many companies struggle to implement changes at this stage. High levels of resource consumption are due to many reasons: the processing phase of textiles is energy intensive and has a high global-warming footprint, this is due to spinning, weaving and pre-treatment processes as well as dyeing and finishing processes of materials. High amounts of water are employed in growing and sourcing raw materials, especially cellulose based materials like cotton. Lastly the dyeing phase is water and chemicals intensive. These resources requirements combined with the lack of transparency along the supply chain, increment water overconsumption and pollution and contribute to the risk of water scarcity in specific areas.

A critical step in textile processing is dyeing, it's characterized by high requirements of water and chemicals. Current solutions to reduce water requirements during dyeing include pre-treating raw materials, optimizing dyeing efficiency, introducing more sustainable and efficient dyestuffs, upgrading dyeing technologies and implementing closed-loop water systems. According to the Boston Consulting Group (BCG) and the Global Fashion Agenda (GFA) water savings that reduce the water intake by 90% to nearly 100% can be realized with these technologies.<sup>54</sup> For example DyeCoo is a fully waterless processing where CO<sub>2</sub> replace water and process chemicals and Ecofoot's dye takes 45% less time that conventional dye, reducing water intake by 70% and energy use by 80%.<sup>55</sup> These kinds of technology are today still expensive and limited to few materials.

Other solutions to reduce the environmental impact of dyeing include natural or recycled materials dyeing techniques but they are still limited to some textile materials and colours. For example WRAD-living has developed a dyeing process that uses

---

<sup>54</sup> Global Fashion Agenda and BCG, 2018, p..54

<sup>55</sup> Global Fashion Agenda and BCG, 2017, p. 83

recycled graphite powder following an ancient dyeing technique that also minimizes water consumption and CO2 emissions.

The BCG and GFA estimate that energy prices are going to rise with a CAGR(compound annual growth rate) of 2.33% by 2030<sup>56</sup>. Brands and suppliers need to invest in energy saving solutions that would result in economic savings both in the short and in the long run. Innovations in energy saving processes include the usage of technologies to monitor; control and limit the energy used in production, for example combined heat and power sources, high efficiencies monitor and boilers, variable frequency drivers and improved sensors. The pulse of the fashion industry report estimates that by adopting some of these technologies, which would lead to an assumed efficiency increase of 10% to 30%, the CO2 emission saving would be of 90 million tons (CO2 equivalents) globally, representing nearly €6 billion to the world economy.<sup>57</sup> According to the same report the usage of renewable energy would result in €12.5 billion in annual saving (assuming the industry can reach the target of 40% renewable energy) and 200 million tons of CO2 could be saved. Renewable-energy use would also mitigate the risk faced in some countries like Pakistan where power cuts are common and diesel generator are expensive and costly to maintain. Furthermore it would enable to cut operating costs if facilities (such as solar panels or wind turbines) could supply numerous nearby facilities at the same time.<sup>58</sup>

**Box 5 Save the Water- Kitotex**

<p>Save the Water® – Kitotex® process by Canepa <sup>59</sup></p>	<p>SAVEtheWATER® project developed by Canepa includes several patents for the reduction of water and energy consumption during production. Kitotex® is an innovative and biodegradable material, derived from the exoskeleton of crustaceans, used in the process of waving preparation of yarn. From this waste by-product of the food industry, “chitosan” is obtained, a biodegradable substance that can replace PVA and acrylic resin for both water dispersion (sizing) and reinforcing yarn. The use of chitosan results in a substantial benefit to the environment. Its use, in fact, allows a reduction in water consumption of up to 12 times and a 90% reduction in energy consumption (CNR Biella certification). Furthermore, there is a</p>
---	--

<sup>56</sup> Global Fashion Agenda and BCG, 2018, p.67  
<sup>57</sup> Global Fashion Agenda and BCG, 2017, p. 81  
<sup>58</sup> Global Fashion Agenda and BCG, 2017, p.82  
<sup>59</sup> <https://www.canepa.it/it/sostenibilita/savethewater>

	<p>reduction in the use of detergents, whiteners and other chemical agents, all to the advantage of consumer health and the environment. Comparing the SAVEtheWATER® - Kitotex® process with the known techniques, shows that the yield of silk treated in Canepa is 100% compared to 80%. Overall, this innovative process allows water and energy savings equal to 40% with a consequent 40% reduction of CO2 emissions and reduced negative effect of dyeing on the consumer's health. The Kitotex® process has been applied to jeans dyeing by Candiani Denim, reducing in this way the processing of a very impactful garment type.</p>
--	--

According to the Boston Consulting group and Global Fashion Agenda enhancing resource efficiency in water, energy and chemicals has the potential to improve a fashion company's EBIT margin up to 2-3- percentage points by 2030, as compared to 2015.<sup>60</sup> But these kinds of innovation require collaborations among multiple suppliers, for significant capital investment are required to upgrade facilities. Investments for process innovation often require long payback period and many suppliers work with order contracts limited to one year therefore payback periods beyond this timeframe are hard to sell. The uncertainty related to orders predictions, for upcoming years, often hinders suppliers' long term commitments, especially in high-investment efficiency initiatives. Some brands and retailers encourage suppliers' participation by giving them multi-year commitments.<sup>61</sup>

**Box 6 Sustainable Action and Vision for a better environment and Clean by Design**

<p>SAVE: Sustainable Action and Vision for a better Environment<sup>62</sup></p>	<p>A program born from a public-private partnership aimed at raising energy efficiency and lowering consumption of water and waste creation. 35 suppliers in Bangladesh, Cambodia, China and Indonesia participated in the program. The majority of factories implemented predominantly short-term measures that could be realized without larger capital investments as well as energy saving measures which showed the largest direct financial benefits. The top five implemented measures included detecting and repairing compressed air leakages, replacing lights, improving the maintenance of motors, upgrading to servo motors on sewing machines and upgrading from traditional to low flow faucets.</p>
--	---

<sup>60</sup> Global Fashion Agenda and BCG, 2018, p.55

<sup>61</sup> Global Fashion Agenda and BCG, 2018, p.46

<sup>62</sup> Global Fashion Agenda and BCG, 2018, p.43

<p>NRDC's Clean by Design<sup>63</sup></p>	<p>Clean by Design, a partnership between the International Finance Corporation, the Sustainable Apparel Coalition and the Apparel Impact Institute, is a supply chain efficiency program developed by the Natural Resources Defense Council (NRDC) tackling water, energy and chemical consumption in textile mills. Since its establishment in 2007, the program has been rolled out to more than 200 mills of all ages and sizes globally.</p> <p>The core of the program is based on ten best practices which are inexpensive, easily implementable and demonstrate a quick return on investment, usually within just one year. The ten practices include e.g. installing energy, water and steam meters as well as measurement software, reusing cooling and grey water, collecting and recovering condensate water, improving insulation, recovering heat from exhaust gas or optimizing compressed air. Further improvements in safety, comfort and health within the work environment have been realized.</p>
--	---

### **Efficient recycling needs a suitable environment**

In manufacturing and processing, producers can lower their environmental footprint by reducing the amount of water and energy needed and of chemicals involved. At the end-of-use stage producers and costumers can help reducing textile and clothing waste by investing time and resources in garments recycling processes. As mentioned in the first chapter clothes-to-clothes recycling rate is very low, discarded garments are mainly destined to landfill or incinerators with a low percentage of downscaling (recycle clothing fibers into lower value items such as cleaning clothes).

In order for the textile and clothing industry to reduce the amount of waste produced, collaborative effort and actions must be taken by different actors. The enforcement of initiatives to minimize waste generated during production must be combined with the creation of pre-costumer-use textile waste collection schemes and platforms to efficiently match the supply and the demand for it. The same can be said for the post-costumer-use textile waste, in order to achieve significant improvements in the clothing-to-clothing recycling rate, brands, producers, customers and regulators must collaborate to build a suitable environment that provides effective infrastructure for collection, tracking, tracing, sorting and recycling of used garments.

---

<sup>63</sup> Global Fashion Agenda and BCG, 2018, p.42



Brands and producers should work in order to choose recyclable materials and garments easy to disassembly, whose materials can be separated to favour recyclability. They should be clear on the material composition of garments to guarantee a correct identification of them. Brands might be incentivized in working in this direction by the high amount of unsold inventory resulted from Covid-19 lockdown; unsold items might be disassembled and used to create future collections. Investing in circular practices to solve a short term issue (lost value in unsold merchandise) will benefit brands also in the long run when circularity will be required, in fact as stated in the State of Fashion 2020, circularity will increasingly be a priority.

Customers also play an important role, in that they have the choice at the end of a garment life, to whether discard it as general waste, recycle it separating its component materials, or reuse it for a different purpose. In order to favour the second option customers must be informed on the composition of clothes and the consequent disposable guidelines for recycle, they must easily have the possibility to access a recycling facility or collection centre, and initially be provided with an incentive to act in this direction. Local governments and regulators should work to create these incentives and should think at efficient collection schemes and sorting techniques for textiles. Customers must understand the importance of purchasing responsibly and of increasing the durability of clothing. A collective communication strategy on recycling must be implemented for a massive shift away from fast, disposable fashion to occur.

Innovations towards recycling involve many actions at different stages of the value chain. Innovations on processes include adoption of new sorting technologies able to provide high quality feedstock for recyclers.

The quality of existing materials needs to be improved to capture the full value of materials in recovered clothing.

In the recycling process there are several opportunities to innovate in favour of improvement. Nowadays a used technique for textile waste is fabric recycling (taking pieces of complete fabrics, like production leftovers and re-saw them to create new garments or parts of them) but its application is limited as post-customer use fabrics cannot guarantee a consistent supply needed for large production runs. To facilitate

fabric recycling innovations should focus on disassembly technologies and be supported by efficient take-back schemes.

In “A new textile economy” report the Ellen Mac Arthur foundation highlights the potential of research and innovations in two, yet unexplored, recycling processes. On one side yarn recycling, which refers to the unravelling of the yarns used to make a knitted garment, is not found at scale in the industry today. Research and innovation should aim at developing relevant technologies to facilitate yarn recycling. The second recycling process with high potential and not yet applied at scale is mechanical polymer recycling, a technique that works only for single-variety or mono-material plastic-based fibres such as polyester, by melting and extruding materials. Companies that have control over their materials have a significant opportunity to capture value through this type of recycling<sup>64</sup> because it’s already technologically feasible and by scaling it up producers could benefit from a material that is price competitive with virgin polyester but not subject to the same price volatility as the virgin material. Finally through chemical monomer recycling, efficient contaminants can be removed but the resulting materials are not cost competitive (recycled polyester is today 10%<sup>65</sup> more expensive than virgin) and this explains why this materials have not yet been widely adopted for clothing.

**Box 7 Econyl, Prato district for wool recycling**

<p>Aquafil- ECONYL®</p>	<p>ECONYL is a nylon fiber derived from recycled waste materials, such as fishing nets that can no longer be used, or textile production scraps normally destined for disposal. Aquafil, an Italian firm producing and selling synthetic fibers worldwide, recovers these materials and transforms them into a new yarn, having the same characteristics as nylon made of virgin raw material.</p> <p>This transformation involves chemical processes that are used to break down existing nylon polymer into a monomer state before it is reconstituted into a polymer.</p> <p>As well as being a partial solution on waste, ECONYL regenerated nylon is also better when it comes to climate change: it reduces the global warming impact of nylon by up to 80% compared with the material from oil.<sup>66</sup></p> <p>Econyl helps decoupling nylon production from fossil fuel extraction. Acquiring</p>
-------------------------	--

<sup>64</sup> Ellen MacArthur Foundation,2017. p.98  
<sup>65</sup> Ellen MacArthur Foundation,2017. p.99  
<sup>66</sup> <https://www.econyl.com/the-process/>

	<p>crude oil and coal is harmful to local ecosystems, and the refinement of fossil fuels introduces various toxic substances into the environment. Additionally, the processes used in nylon production produce further toxic substances that are rarely disposed of effectively. By using recycled materials, Econyl production bypasses the environmentally detrimental aspects of nylon production.</p>
<p>PratoDistrict- Wool recycling<sup>67</sup></p>	<p>In Prato (Italy) the textile industry has thrived since the 12th century, today about 3,500 companies employing 40,000 workers process discarded textiles. Prato district for wool recycling receives high amounts of garment waste from all Europe. The first selection is aimed at finding items that can be destined to second hand market and separate them from the ones that can be recycled. Then in a second selection materials are sorted out to find the ones containing wool. The first steps in the wool recycling process are separating additional elements contained in materials like buttons and zips and sorting materials by colours. By doing this recycled materials don't need to be dyed, they will keep their original colors, avoiding the repetition of a polluting process. After the material is sorted by color, washed, and shredded, it's ready to be spun back into material. A carbonizer uses sulfuric acid to burn cellulose and contaminants such as cotton stitches, which could compromise the quality of the recycled wool. At the end of the process the result, that is called "mechanical wool" to be differentiated from the virgin wool, is ready to be used in new garments creation.</p>

As mentioned above by investing on technical innovation it will be possible to adopt new process technologies that will eventually lead to chemically recycle every possible fiber combination at scale and to mechanically recycle with no significant loss in quality. In order for these innovations to be impactful a rethinking of the whole system (logistics, customer mind-set, design process) around them is needed.

Nowadays collection and sorting schemes, that could efficiently lead to a, wide spread, closed loop recycling model, are absent and need to be introduced. Today the majority of end-of-use textile collected is landfilled or incinerated and a small percentage is down-cycled, which only postpones the final disposal in the environment. If the industry manages to fully close the loop between the end-of-use phase and the raw materials phase, by recycling (apparel and footwear) waste into new input materials, the

---

<sup>67</sup> Solo Moda Sostenibile ,2020 & National Geographic, 2020

environmental footprint of the entire industry will be drastically reduced.<sup>68</sup> The economic value that could be saved to the world economy, considering only the value of products not ending up in landfills is €4 billion, without considering the additional value to be realised by closing the loop, feeding products back to the value chain as raw material.

Investments should focus on new technologies to sort fibers (such as optical fiber sorting technology, that has the potential to transform the sorting process once it's scalable, but still needs further support from the industry to gain momentum<sup>69</sup>) and to recycle them (technologies to separate fiber blends). Brands and producers alone don't have the means and incentive to foster these innovations and they should be supported by regulators and government. The role of government is crucial in accelerating the shift to circular systems. Their impact includes economic incentives to support research and development, setting regulations and legal requirements, stimulating the creation of common standards and imposing taxations varying according to the degree of sustainability of business activities and materials used. As mentioned in chapter 1, the European Commission is committed to improve the textile industry toward circularity, possible ways to accelerate the shift could be economic incentives (as funding, tax reduction and economic rewards) to producers that decide to invest in circular innovations.

Brands can explore ways of integrating recycled materials into design and production processes so to reduce virgin material requirements. They should analyse efficient take back programs and sorting methods, considering whether it would be easier to internalise these processes or to collaborate with third parties for logistics and sorting activities. Initiatives to share recyclable materials and recycled material demand and availability would help brands engage in reverse design and reverse supply chain activities. Creating links between recyclers and designers would foster the integration of recycled raw material back to the suppliers' factories ultimately helping in closing the loop.

---

<sup>68</sup> Global Fashion Agenda and BCG, 2017, p.75

<sup>69</sup> Global Fashion Agenda and BCG, 2018, p.85

## **Transforming user relationship with clothing**

### **From a “buy and own” to a “pay for use” model**

While innovations discussed above are important for a circular fashion system, they only serve to treat the symptoms of the industry's inefficiency and still lack scale. The establishment of a circular fashion industry depends on the holistic transformation of products and services, alongside the creation of an enabling environment for ecosystem change<sup>70</sup>.

Together with innovations at different stages of production, innovations on business activities, that can modify clothing perception and usage, must be investigated. From small business improvements to radical changes that might initially result hard to implement but potentially lead to significant environmental benefits, these actions all require a long term vision and a shift in consumption culture. For example a relatively small change could be applied to communication by introducing a labelling system which better informs customers. Beyond market price a label could include information about the real cost of a garment, for instance environmental and social components of the price and the real cost of free return options. These actions might help customers understanding costs hidden behind low market price. In this way customers' perception would be altered and preference eventually shifted. Including additional services to retail businesses would also have an impact on increasing garment durability and customer attitude; repairing services, restyling and take back schemes for used garments would encourage and facilitate garments care and longevity.

Reducing overproduction and waste is another important objective of circular systems. Waste from overproduction is a complex subject, overproduction happens for many reasons and waste resulting from it is due to excessive stocks that remain unsold and, even after massive discounted sales, often end up in landfill or incinerator. In order to limit this issue, where possible, production to demand must be applied. Technologies such as 3D printing and co-design of products can help the transition towards this new model. Production rates should be revisited to shift from a “sell what you create” to “create what can be sold” model in order to minimize overproduction and excessive

---

<sup>70</sup> Accenture Strategy and Fashion For Good, 2019, p.6

markdowns. Technological advances allow to minimize production waste and the overall industry's environmental footprint could be reduced by a wide adoption of 3D printing at design stage and point of sale. In the sampling phase the adoption of 3D printing combined with specific software brings speed and efficiency saving energy and eliminating CO2 emissions and waste creation through a reduced sample production and transportation<sup>71</sup>. Introducing 3D printing at point of sale instant customization of products becomes possible, reducing the need of excessive stock and eventual waste, leading to a shift towards a "on demand" production. The adoption of new technologies and digital platforms has been accelerated by Covid-19 outbreak, which made the industry quickly adopt new ways to design and prototype; in-store 3D printing and production-to-demand model can be considered by retailers as a consequence of pandemic.

Changes at business model level include the introduction of collaborative consumption schemes, such as rental and second hand marketplaces. Innovations of this kind in order to be impactful need a consumer understanding and a demand shift. Clothing consumption should be decoupled from ownership obligations. Rental, resale and refurbishment models extend product lifecycle while offering the newness consumers desire.<sup>72</sup> Therefore in the future different business models will coexist and the challenge for well established players will be to understand what consumer will prefer to own rather than rent and vice versa. The gain of importance of new consumption models is unavoidable and retailers in the coming years will have to choose whether establishing a partnership with start-ups or test and eventually embrace collaborative consumption schemes directly. As a consequence of Covid-19 pandemic collaborative consumption models are likely to face an initial slowdown. Even if Rental or re-commerce platforms always guarantee sanitizing and cleaning procedures customers might be reluctant and afraid to wear pre-owned clothes for hygienic reasons. In the long run it's likely that these models will regain attention as in pre-Covid times. Moreover Rental and Re-commerce channels might be adopted as a strategy to capture value of unsold or previous season stock by conventional retailers.

---

<sup>71</sup> Global Fashion Agenda and BCG, 2018, p.87

<sup>72</sup> Business of Fashion, 2019.

## **Collaborative consumption a way to combine customer needs with sustainability**

The growing consumer desire for variety, sustainability and affordability together with requirements on raw materials management and scarcity of sources will contribute to the adoption of collaborative consumption schemes. Collaborative fashion consumption (CFC) happens when customers, instead of buying new products, have access to already existing garments either through alternative opportunities to acquire individual ownership (second hand) or through usage options for fashion products owned by others (renting or leasing).<sup>73</sup> With new opportunities offered by information and communication technologies CFC activities have the potential to expand to unprecedented levels. The existence of an online platform, in fact, adds value to collaborative initiatives carried out in the traditional way as it promotes them to a broader scale while lowering transaction cost, allowing a wide variety of products to be shared easily and conveniently. For this reason, CFC has the potential to truly disrupt the fashion industry and establish itself as new and validated consumption behaviour<sup>74</sup>.

Collaborative consumption and sharing economies have already gained popularity in other sectors such as automotive and entertainment where products ownership has been substituted by offering services. The popularity and speediness of this transaction depends on the culture and on the economic investments. According to Federica Storace from DrexCode (comment at WSM in Milan, January 2020) the reason why CFC schemes are more popular in the United States than in Italy is due to two factors. First in Italy, customers culturally have been used to own things such as cars, possibly buying it new and from an Italian brand, as it was considered as a self-expression symbol, opposed to other cultures where a car was viewed in a more instrumental way. Secondly the reason why rental platform 'Rent The Runway' in the United States is so popular is because a high investment has been done at the beginning, while in Italy this kind of activity, like DrexCode, still hasn't benefitted from relevant economic support.

---

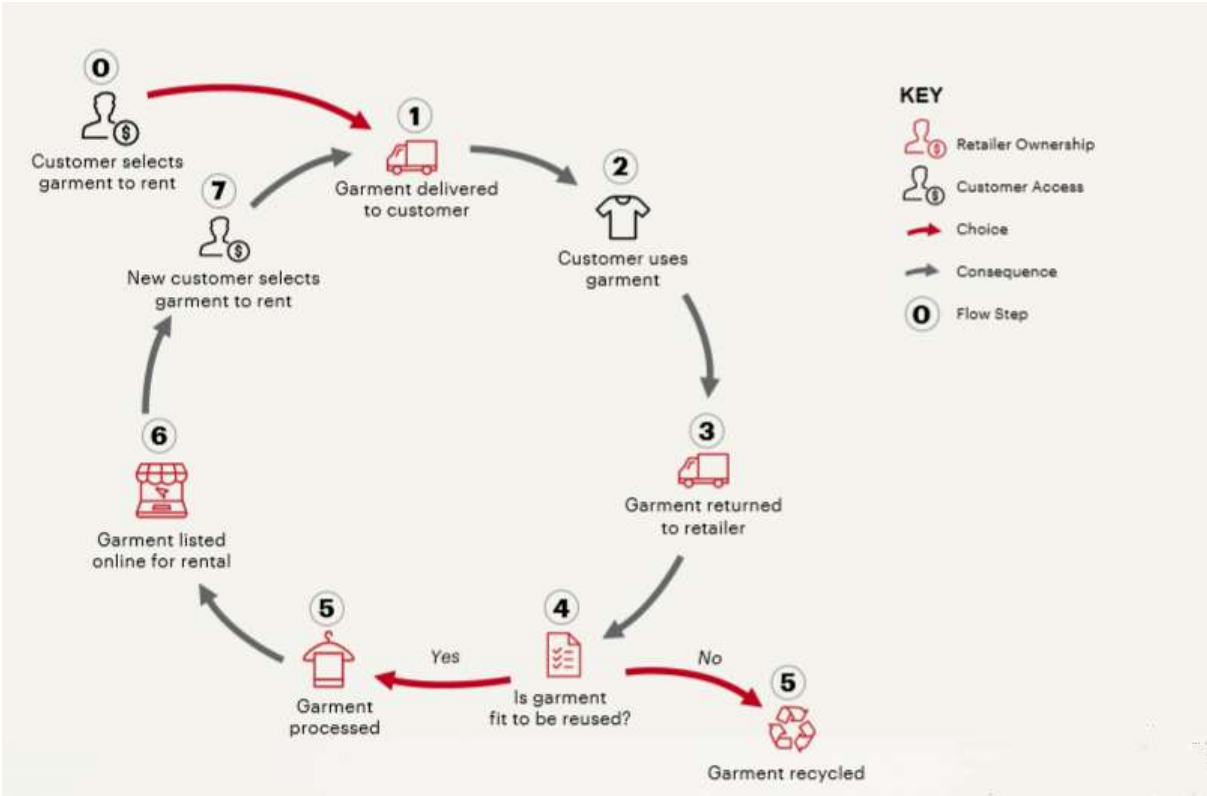
<sup>73</sup> Rinaldi, 2019, p.116

<sup>74</sup> Ibid

### The Rental model (Date-to-date)

In a rental scheme the customer selects a specific garment to rent and upon a one-off fee he can access it for a set time, with no option for outright purchase. Accenture estimates that a rental service would be profitable from a mid-market<sup>75</sup> segment, because there are variable costs that would make it unprofitable in the value market (postage, packaging and processing, cleaning, feasible number of rentals). As for pricing the report estimates that in the mid-market segment charging 25% of the retail price for rental would result in profitable operating margin (circa 20€ to rent a garment whose retail price is 75€ ) after at least 15 rentals<sup>76</sup>.

Figure 7 The Rental business model



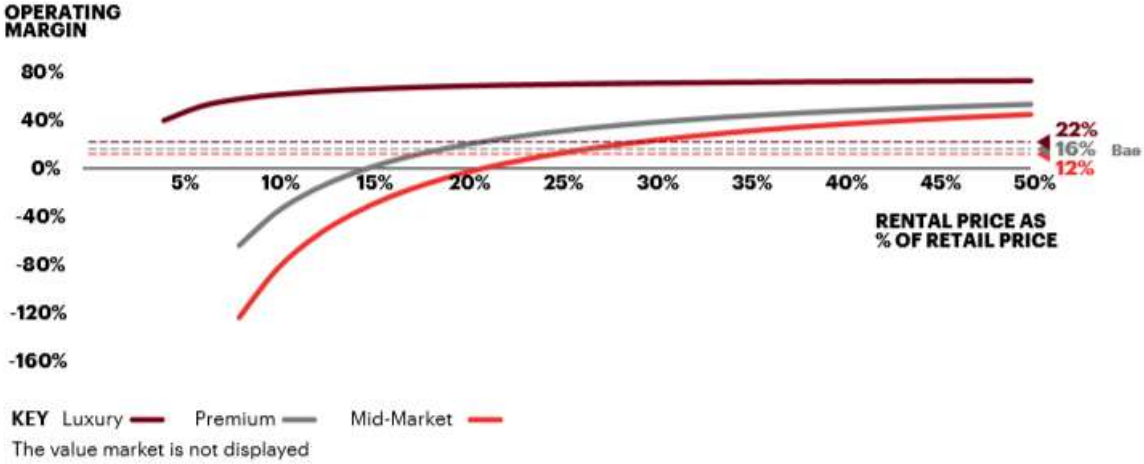
Source: Accenture Strategy and Fashion For Good, 2019, p.16

<sup>75</sup> Mid-Market-75€ garment, Premium-130€ garment  
<sup>76</sup> Rinaldi, 2019, p.120



Figure 8 Operating Margin % as a function of rental price

(Base case assumption: Value: 20% Mid-Market: 18%, Premium 15%, Luxury 10%)



Source: Accenture Strategy and Fashion For Good, 2019, p.18

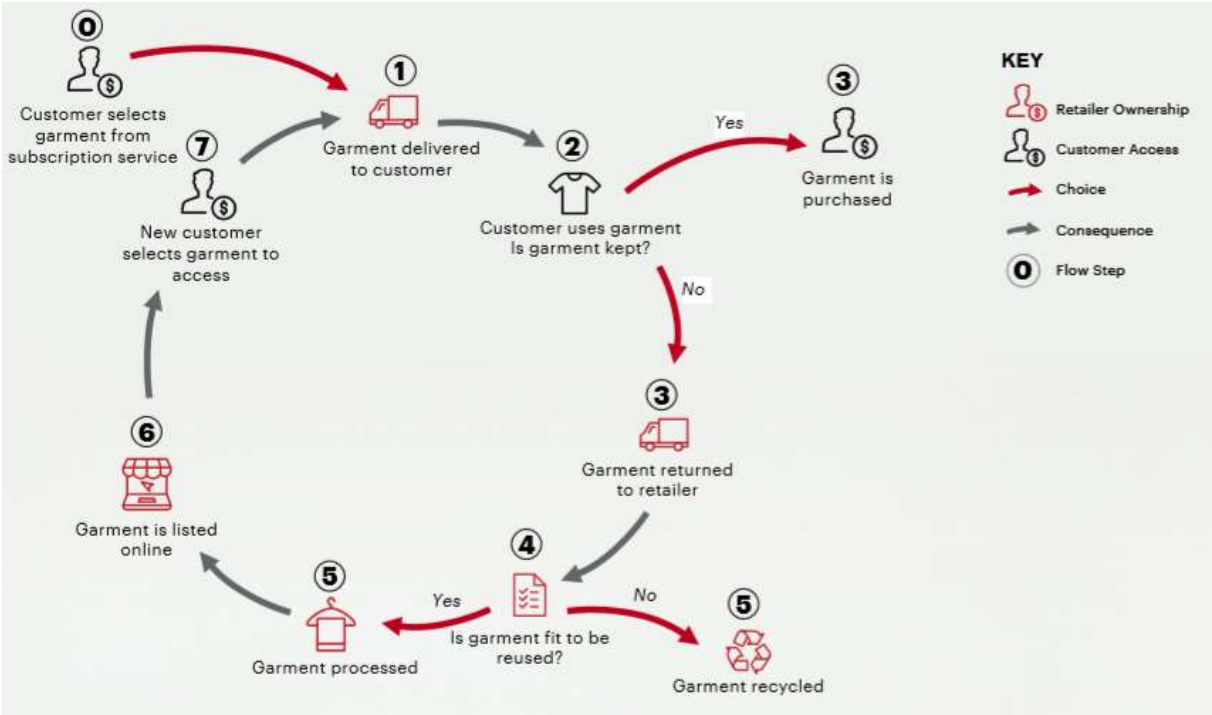
Rental schemes are gaining popularity and their acceptance has been accelerated by different factors. Firstly the recognition of wasted capacity which is due to the increasing awareness on the percentage of unworn items in a customer’s own wardrobe. The increasing demand for newness, variety and access combined with sustainability principles required by customers. Brands aligning proactively with responsible behaviour, adopting innovative business models have the potential to capture market share. With rental services customers have access to previously unaffordable garments, they have the possibility to wear unattainable brands for special occasion. One of the benefits for brands is that rental customers might eventually become potential buyers and will have a preference towards that specific brand as it is familiar. Rental could play a transformative role in moving the industry toward a less resource-intensive model by incentivizing higher production standards and greater garment longevity. The purchase displacement rate must be considered a key metric when assessing potential environmental benefits.<sup>77</sup>

<sup>77</sup> Rinaldi, 2019, p.121

### The Subscription - rental model

In a subscription-rental service a customer, after paying a subscription fee, has the possibility to access a limited number of garments (ex. 4) with unlimited exchanges, for a set amount of time. The customer can be given the possibility to purchase the rented item (Subscription-Rental) or not (Closed loop Subscription). Both models have the aim of putting the focus on durability and longevity of textile and clothing, while the former model is already gaining popularity the latter is limited to specific product categories such as baby clothing.

Figure 9 The Subscription- rental business model



Source: Accenture Strategy and Fashion for Good, 2019, p.23

With rental-submission model a customer has the possibility to augment own wardrobe with garments of high value, for a fraction of the retail price, this business model allows the customer to experiment different styles in a flexible and low risk way. Through subscription models retailers can collect information about consumption habits and preferences and would have a deeper knowledge of demand. This would lead to a more efficient manufacture and design, giving the possibility to optimize production. For this model to be successful in lowering the industry footprint, for instance reducing waste

generation it's important that the market understands it as substitute of purchasing from traditional retail and not supplementary to it, otherwise, volume of production, consumption and waste would increase.<sup>78</sup> There is still relative uncertainty about the usage of these services given their very recent emergence, but customer's attitudes towards this kind of service is a key factor for its success. The viability of submission-rental model depends on the number of times a customer chooses to exchange the items selected (above 25 exchanges for mid-market segment the model would generate negative margin, 28 for premium market). In striving to balance value with cost, successful retailers will seek to encourage low refresh rates whilst retaining the impression of generous flexibility.<sup>79</sup>

---

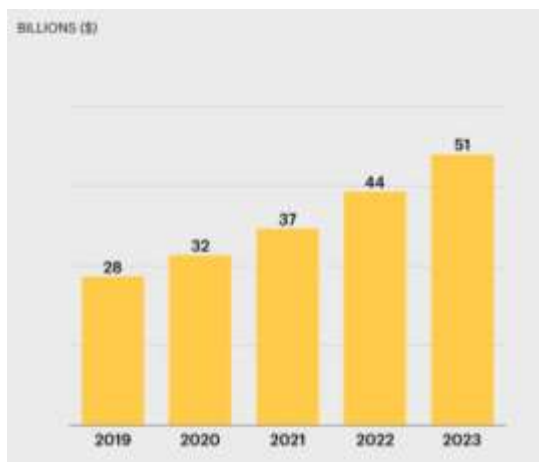
<sup>78</sup> Accenture Strategy and Fashion For Good, 2019, p.28

<sup>79</sup> Rinaldi, 2019, p.122

## Re-commerce: a fast growing market

In recent years the perception of “used” in clothing market has changed, it’s no longer perceived as dirty or outdated but valued as second hand or vintage items. Customers understand the benefits in returning garments they no longer use (economic incentive like cash or voucher, reduction of waste, increase in garment life) and of purchasing previously owned items (access to higher quality item from a previously out of budget brand or retailer). This mind-set shift and improved access to marketplace (marketplaces for specific customer targets: Depop for millennials and product segment: the Real Real in luxury) for these items, have led to a fast growth of re-commerce making it the most mature circular business model (growth annual rate of 16%). Resale is a tiny fraction of the overall apparel market, but is growing 21 times faster than sales of new clothes. GlobalData, an analytics firm, predicts the market, including resale sites, thrift shops and other venues, will reach \$50 billion by 2023<sup>80</sup>.

Figure 10 Size of the global second hand apparel market



Source: Business of Fashion, 2020

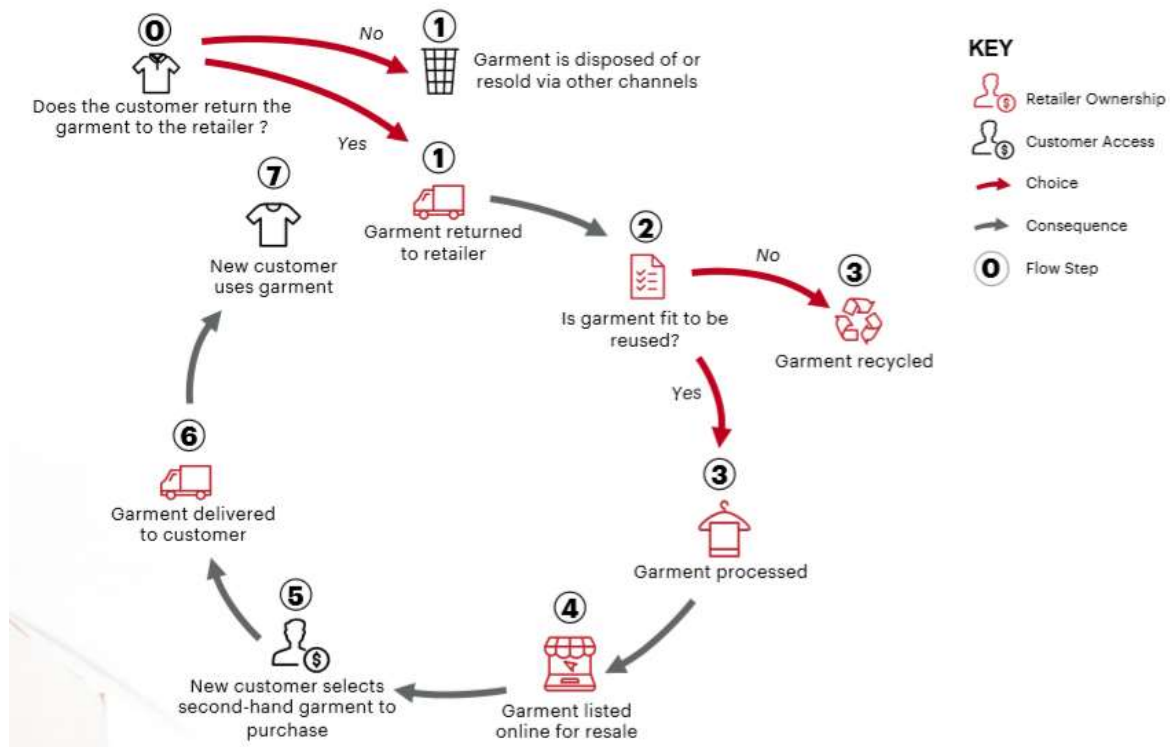
According to Accenture research retailers are missing out on the potential benefits of owning these channels like additional revenue streams, deeper customer relationship and new customer touchpoints.<sup>81</sup> Only some innovative retail leaders have incorporated re-commerce in their existing business, often by collaborating with start-ups.

<sup>80</sup> Business of Fashion, 2020

<sup>81</sup> Accenture Strategy and Fashion For Good, 2019, p.30

In a re-commerce scheme a customer pays a one-off fee to the retailer to purchase a previously owned garment (where the retailer has acquired the garment back from the original owner).

Figure 11 The resale business model



Source: Accenture Strategy and Fashion For Good, 2019, p.31

Re-commerce is generally a very viable model, however a major challenge for incumbent retailers is how to get the garments back from existing customers to build up inventory and financial incentives (ex. Discount voucher) are still critical. Economic incentives erode margins, need to be high at premium and luxury level, may not be enough for a customer to choose to bring it back to original retailer rather than to an independent platform and constitute a risk in that, they might be used to increase consumption amount.

*“Reselling, it still encourages this guilt free ‘I can buy something new because, provided I could put it onto a resale platform, that’s OK.’ That’s not Ok. We need to resell clothing, but they need to be made in dignity and in a quantity that isn’t 150 billion garments a year.”*

Said Orsola de Castro, co-founder and creative director at non-profit Fashion Revolution.<sup>82</sup>

Profitability of re-commerce models is relevant in the higher value segments, Accenture estimates that in order to be profitable a mid-market product should be priced for resale at above 35% of original price. Premium market is profitable with garment prices below 30% of original retail price and luxury show positive margins at resale prices below 10% of original. However there are many other factors to be considered in resale pricing such as quality, authenticity and durability. Overall re-commerce can create a clear margin opportunity, assuming a level of maturity and scale of implementation, with established customer channels, sufficient stock and economies of scale on logistics and processes.<sup>83</sup>

### **Matching business models to product category**

These innovative business models should be tailored and applied according to the product. Date-to-date Rental schemes are suggested for products used infrequently, for one-off events or used for specific activities. Subscription-rental schemes are suitable for products that customers purchase regularly, while re-commerce schemes should be applied for products with high quality and durability. These models require a shift in customer behaviours to achieve scale and it's important that all new activities required to make these models work are designed to optimize sustainability (ex. Chemical-free cleaning for laundry service or electric vehicles for last mile delivery in logistics).

Professor Rinaldi in her book Fashion industry 2030 highlights the importance of a **critical mass** defined as 'the existence of enough momentum in a system to make it become self-sustaining' vital for collaborative consumption schemes. In order to be competitive with traditional shopping they should offer enough choices to be able to satisfy consumers<sup>84</sup>. A critical mass is necessary because it has the function of 'social proof' a certain number of early adopters are needed so that others will be convinced

---

<sup>82</sup> Business of Fashion, 2020

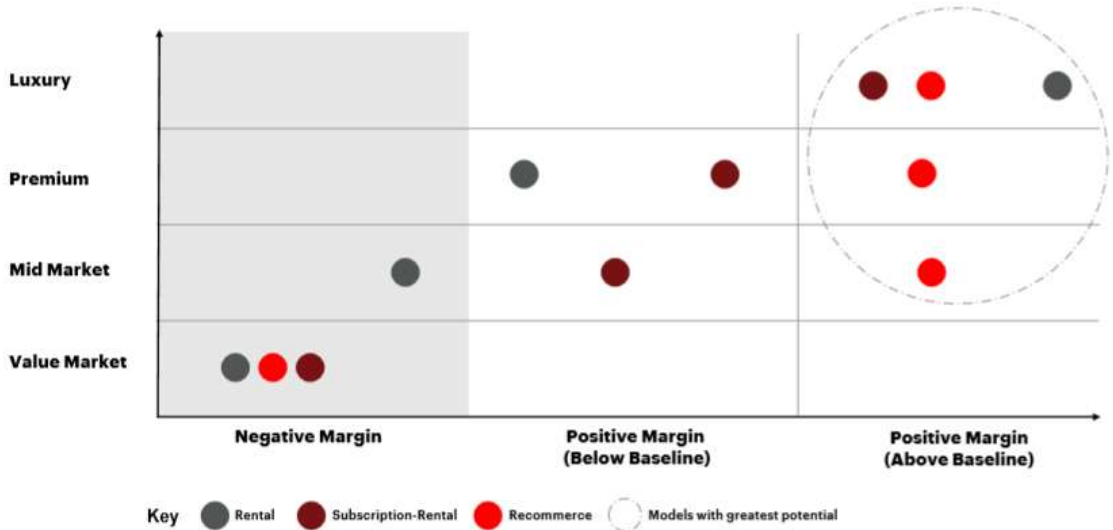
<sup>83</sup> Accenture Strategy and Fashion For Good, 2019, p.32

<sup>84</sup> Rinaldi. 2019. P.132

that collaborative consumption initiatives are something worth of trying. Often most individuals decide what to do based on what others are doing, and therefore need to see a critical mass of consumers implement certain behaviour before adopting it themselves.

Moreover collaborative consumption models encounter other barriers related to culture and habits. Giving up ownership of clothing might result more difficult compared to other sectors like car and accommodation because owned garments often are a tool of self-representation and a way to identify people. An important behavioural shift in consumption must happen in order to overcome other barriers imposed by hygiene concerns (cleanliness/ fear of previous owner bacteria) and reduced emotional high of renting against purchasing clothes.

Figure 12 Financial viability of collaborative consumption models for different product segments



Source: Accenture Strategy and Fashion For Good, 2019, p.4

## **Designing circular products**

Product design and development has the power to determine a garment environmental and social performance, beyond the selection of materials, that affect the footprint within dyeing and processing and the end-of-use phase. Product design is a phase with high importance and unexplored potential. At this early stage it's extremely important that producers consider sustainability principles and integrate them in the process.

Designing for circularity aims at maximizing product utilization, this can be achieved by ensuring garment versatility, emotional attachment, materials durability and recyclability.

Modular design is a way to increase product versatility and utilization, as the components might be suitable for more than one occasion, weather condition or age. Modular design makes the final product more customized as in a sense it's the customer that chooses which components to buy and how to combine them, even with pre-owned items.

Collaborations with customers, in the design phase, provides an additional value, for example by Co-Designing a garment or parts of it, the emotional attachment of consumers increases and probability of early disposal can be reduced. Designing for durability includes designs that are more tailored to customers' preference, encouraging product care and facilitating its reparability so to increase garment longevity. New technologies such as 3D printing can help customisation.

Moreover in designing for circularity the material choice is crucial. Beyond the selection of sustainable options, durability should be of primary importance. Garment should be thought for multiple owners and multiple life cycles. In the renting business model for example a garment is washed for hygiene reasons every time it passes on to a new customer, even items that private owners would not generally wash after a single use, such as coats and wool sweaters. Accenture's research estimated that a garment needs to be durable enough to be worn 20+ times to be suitable for re-commerce. This number should be identified as a target for retailers to aim for, either designing products with



this as a minimum threshold, or prioritising existing garments that meet this threshold for Re-commerce inventory.<sup>85</sup>

Concerning recyclability of materials building links between designers and recyclers, involving material scientist at early stage of design is a way to ensure the usability of recycled materials<sup>86</sup> at the end of product life cycle. Designers should take into consideration possible scenarios for the after customer-use phase of the garment they are designing, thinking to multiple life cycles. An efficient design for circularity eases the recyclability of used items, for example by reducing the number of different materials involved in one garment and avoiding material blends that can be challenging to separate at recycling stage. An interesting method is making an entire garment with the same material like jackets or backpacks made entirely from polyester, zippers and buttons included. (Napapijiri Infinity jacket made 100% from regenerated nylon, Paul&Shark 100% recycled polyester jacket).

The Pulse of the fashion Industry report<sup>87</sup> assigned highest priority to design and development within their sustainability efforts. This is due to their crucial responsibility of incorporating sustainability targets into the final product. Overall a convergence towards a reduced palette of materials, and cross-industry alignment on systems for labelling, tracking, and tracing are needed.

A brand that has integrated circularity in the design process is Puma that thanks to a partnership with cradle-to-cradle co-founder Michael Braungart used a three-step process to increase its design for circularity. The first step eliminated all materials that led to the build up of harmful chemicals in later materials cycles. Then they accepted only materials that were either biodegradable or technically recyclable. Finally, for those technically recyclable materials, they avoided any with mixed fibers that were difficult to disassemble.<sup>88</sup>

---

<sup>85</sup> Accenture Strategy and Fashion For Good, 2019, p.34


<sup>86</sup> Ellen MacArthur Foundation, 2017. p.93

<sup>87</sup> Global Fashion Agenda and BCG, 2018, p.18

<sup>88</sup> Global Fashion Agenda and BCG, 2018, p.59

In the following box two examples of modular products that were part of WSM-White Fashion Reboot event held in Milan in January 2020.

**Box 8 ACBC and Agogic**

<p>ACBC<sup>89</sup></p>	 <p>It's a shoes brand which that foster waste reduction and maximum utilization of materials. The ACBC shoe is modular in that it has two components: the sole and the skin. Skins are interchangeable and come in many different styles, the idea is that for each sole a customer can have many different shoes styles, reducing the amount of soles produced, energy consumption and waste generation. ACBC offers subscription plans for customers who wish to update shoe skin style frequently. ACBC won many awards among which the first sustainable fashion contest at WSM-White in Milan<sup>90</sup> and it's selling worldwide.</p>
<p>AGOGIC<sup>91</sup></p>	<p>Agogic is a brand for outwear clothing currently working on the design of a modular jacket thought to be worn throughout the seasons. The Agogic modular coat will be constituted by four layers among which a light jacket and a waterproof trench, to be worn according to the season and necessity. The four components are thought to be worn either together or separately, combining them with other items in customer's wardrobe. Modularity maximises versatility, usability and garment life cycle. The founder Salome Wilson is a designer and in an interview stated that difficulties arise very early because there is a lack of sustainability education and communication, it's hard to understand what is really sustainable, in that there's a lack of proper information system. Salome Wilson said that even when a sustainable material was found was then difficult to understand how to integrate it at process and logistics level. It takes a lot of effort to build a sustainable and responsible product and a high level of activities coordination is required.</p>

<sup>89</sup> <https://acbc.com/>

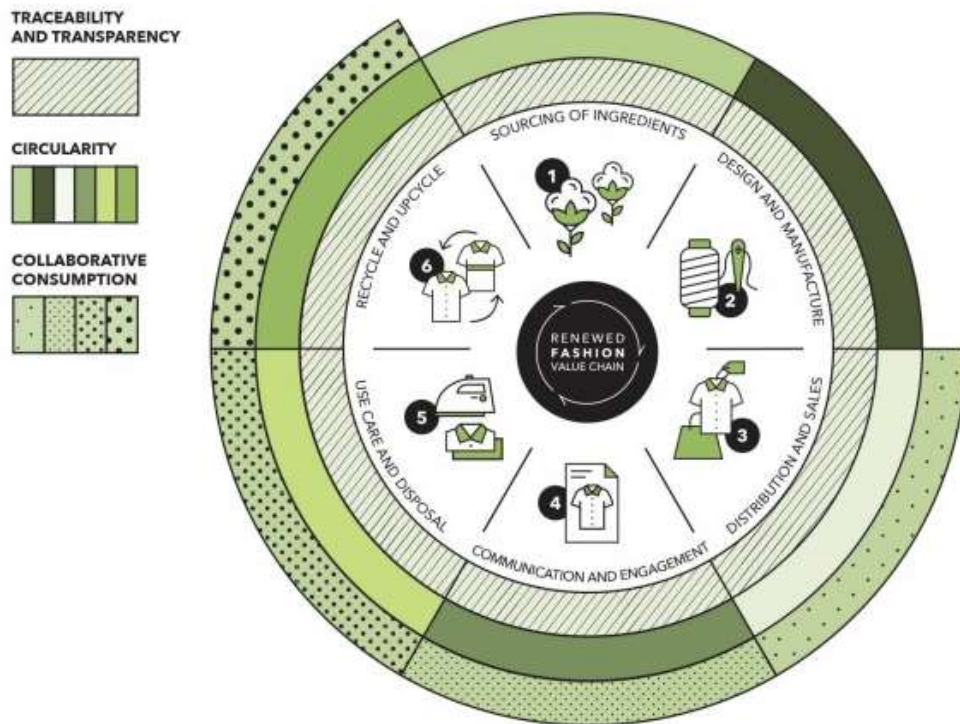
<sup>90</sup> <https://www.wsm-white.com>

<sup>91</sup> <https://www.agogic.it/> & short Interview at WSM Milan 2020

## The future responsible Value Chain

In the book “Fashion Industry 2030” the author uses figure 13 to show the renewed value chain and deriving benefits (Box 9) along its activities. Implementing innovations analysed throughout this chapter, should aim at the achievement of a similar model.

Figure 13 Renewed Fashion Value Chain



	TRACEABILITY AND TRANSPARENCY	CIRCULARITY	COLLABORATIVE CONSUMPTION
1	Track and trace of value chain	<ul style="list-style-type: none"> <li>• Sourcing of renewable and circular raw materials</li> </ul>	
2		<ul style="list-style-type: none"> <li>• Circular design</li> <li>• Zero waste</li> <li>• Automation</li> <li>• On demand</li> </ul>	
3		<ul style="list-style-type: none"> <li>• Circular packaging</li> <li>• Green logistics</li> <li>• On demand</li> </ul>	<ul style="list-style-type: none"> <li>• BUY (swapping, second hand)</li> <li>• USE (renting, leasing)</li> </ul>
4		<ul style="list-style-type: none"> <li>• Full transparency</li> </ul>	<ul style="list-style-type: none"> <li>• Full transparency</li> </ul>
5		<ul style="list-style-type: none"> <li>• Full care information</li> <li>• Consumer guidance on disposal</li> <li>• Repairing</li> </ul>	<ul style="list-style-type: none"> <li>• USE &amp; RETURN (renting, leasing)</li> </ul>
6		<ul style="list-style-type: none"> <li>• Take-back schemes</li> <li>• Recycling</li> <li>• Upcycling</li> </ul>	<ul style="list-style-type: none"> <li>• Take-back schemes</li> </ul>

Source: Rinaldi 2019, p.50

**Box 9 Benefits along the value chain**

	<p><b>Sourcing of Ingredients:</b> companies will be able to manage the issue of scarcity of resources; consumers will have full visibility of raw materials</p>
	<p><b>Design and Manufacture:</b> companies will optimize production, reducing unsold stocks; consumers will have a more tailored offer</p>
	<p><b>Distribution and Sales:</b> companies will optimize logistics; consumers will have many more options than in the past (buy new or second-hand, swap, rent, lease)</p>
	<p><b>Communication and engagement:</b> companies will be able to implement a one-to-one communication; consumers will be more informed, engaged and rewarded by incentives</p>
	<p><b>Use, Care and Disposal:</b> companies will avoid the scarcity of resources and make consumers more loyal; consumers will have many options to extend the life of the products (repair, rent, lease)</p>
	<p><b>Recycle and Upcycle:</b> companies will make consumers feel more loyal; consumers will enjoy the prolonged life of their products.</p>

Source: Rinaldi 2019, p.164

## **CHAPTER 3 : New Business Models: Rental and Re-commerce schemes**

### **The analysis in brief**

This chapter presents an analysis of two business models that foster the collaborative consumption concept introduced in chapter 2. In the first half of the chapter the analysis focus is on 12 cases of Rental platforms while the second half is dedicated to the analysis of 10 Resale platforms. Cases are taken from different categories of offering, countries and typologies, and are summarized in the following charts. Later in the chapter specific cases are taken into consideration and the analysis aims at detecting similarities and differences among models to understand current and future trends. The most innovative forms are highlighted to study future possibilities and development. A particular focus on Italian cases shows that, although partially unexplored, the Italian market hides an interesting potential especially in the Resale market.

### **In the following pages:**

**Page 63- Table 6 Overview of Rental Cases**

**Page 64- Table 7 Overview of Resale Cases**

RENTAL	COUNTRY	SERVICE	CATEGORY	TIES TO CULTURE	BUYING OPTION	TARGET
Y-CLOSET	China	Rental Rental- Subscription	Casualwear, party and office friendly clothing	Medium- high	yes	Women 25-30
AOKi-Suit	Japan	Rental- Subscription	Business suit	high	yes	White collar workers "Salarymen"
LAXUS	Japan	Rental- Subscription	Luxury bags and accessories	medium	yes	young women
BAG BORROW OR STEAL	USA	Rental- Subscription	Luxury bag and shoes	low	No, separate sales section	Women who want to refresh styles without burden of ownership, reduced economic means
GWINNIE BEE	USA	Rental- Subscription	Casual clothes, up to plus-size	high	yes	American Women plus- sized who do not want to purchase items in a size that might change later
RENT THE RUNWAY	USA	Rental Rental- Subscription	Luxury and casual Clothing, accessories, maternity and kids wear	medium	yes	High school and college Students, adult women
MUD JEANS	The Netherlands	Rental Leasing	Jeans apparel	low	yes	Conscious customers, millennials, GenZ
FOR DAYS	USA	Swapping	Organic cotton clothing, mainly t-shirts	low	yes	Conscious customers, millennials, GenZ
HOUDINI	Sweden	Rental Rental- Subscription (pilot)	sportswear	medium	yes	Sportive people
DREXCODE	Italy	Rental	luxury and high end clothing, special events accessories, bridal	medium	Not directly, only during seasonal sales	managers, events attending women
DRESS YOU CAN	Italy	Rental	high end clothing and accessories, bridal	medium	Not directly, only during seasonal sales	Women who want to refresh styles without burden of ownership, events attending women
VERY IMPORTANT CHOICE (VIC )	Italy	Rental- Subscription	Clothing and accessories from responsible brands	low	yes	Conscious customers, sustainable consumption

Resale platforms are divided into Independent platforms and official retailer resale channels (RRC). In the former case platforms are independent from brands of the product sold, they are fully responsible for collecting, processing, authenticity testing and sales of the items. In the latter case the brand is responsible for used products collection, management and resale, and the resale channel is exclusively selling products of the specific brand.

<b>Independent Platforms:</b>	COUNTRY	CATEGORY	OFFLINE PRESENCE	SELLER REWARD
VESTIAIRE COLLECTIVE	France	Clothing, Accessories, Jewellery, lifestyle	yes	Cash back up to 75%
THREDUP	USA	Thrift shop, old styles	Yes in the USA	Cash or credit
DEPOP	UK - Italy	Resale community for clothing, accessories	Yes in the USA	Cash to seller
FARFETCH "Pre-Owned"	USA	High end clothing, used, following current trends	No	Credits
BIVIO	Italy	Seasonal clothes, following fashion trends	Yes only	50% of value in store credits or 30% of value in cash
IL GIROTONDO	Italy	Kids wear, luxury and other high end brands following current season	Yes	Cash back only if the item is sold within 3 months otherwise sent to charity
ARMADIO VERDE	Italy	Kids clothes and shoes, casualwear, unbranded items and accessories	no	Credits to use on the website, needed to buy
<b>Retailer Resale Channels:</b>	COUNTRY	CATEGORY	OFFLINE PRESENCE	SELLER REWARD
NORDSTROM "See you tomorrow"	USA	Clothes and accessories, almost new, perfect conditions	Yes in NYC	Gift card to spend at Nordstrom
EILEEN FISHER "Renew"	USA	Eileen fisher clothes	Yes in the USA	Get \$5 credit per item, to spend only on new items
PATAGONIA "Wornwear"	USA	Patagonia used items	Yes, 1 in Colorado	Credit to spend on any Patagonia product

# Rental Cases

Sharing economy and rental models exist and are very successful in several industries such as transportation (car sharing) and hospitality (house sharing). In some countries the adoption of these models has been faster and smoother due to cultural reasons, the willingness to give up ownership is subject to constraints tied to national customs and history. The first examples of sharing economy were born in the United States and today, in this country, due to cultural acceptance and important investments, there are several **well established players** and successful realities even in the clothing sector. One of the pioneers of sharing economy in the clothing industry is Rent The Runway, today a key player in the market. It originally responded to the need of American women to wear fancy dresses for special events. In the US women from an early age have many events (school dances) where they are required to wear a certain type of dress that cannot be used for different occasions or reused later for a similar event. As a matter of fact many high school girls used to sell Prom dresses on Facebook or similar online platforms and because it was something to be worn only once it was ok to buy it from a friend. When Rent The Runway started its business in 2009, notwithstanding the scepticism of investors, in only 1 week it collected 100 000 subscription from American women. The demand was already there and the RTR founder was able to understand that a wide percentage of women closet is static, made up of items worn only few times. From this very innovative idea of a wardrobe living on the cloud, dynamic and adaptable to specific occasions today Rent the Runway became the market leader with over 5 million users and a very wide offering.

**Box 10 Rent The Runway**

<p><b>Rent The Runway</b><sup>92</sup></p>	<p>It's the American leader in clothing rental business, it offers date-to-date rental and rental-subscription services. The business model includes partnerships with designers , who increase the exposure of their products and have the possibility to monitor them. RTR has an internal team monitoring Data about demand and durability of items, designers are receiving data on what styles, colours and fabrics are most popular and getting feedbacks on how their pieces fit. In return RTR gets wholesale pricing, quantity discounts and full-size runs of season's newest dresses. RTR also showcases collections that are exclusively created for RTR.</p> <p><b>-Bricks-and-mortar presence:</b> Yes in Manhattan with 50000 unique inventory</p>
--	---

<sup>92</sup> <https://www.renttherunway.com/>



	<p>items.</p> <p><b>-Offering:</b> very wide variety of items: any type of clothes from designer to everyday wear, accessories, kids wear and maternity wear.</p> <p><b>-Price:</b></p> <ul style="list-style-type: none"> <li>• One-Time Rental: 1/3 - 1/4 of retail price starting from \$30 (€27), 4 to 8 days (including back up size to guarantee perfect fit)</li> <li>• Rental-subscription memberships : <ul style="list-style-type: none"> <li>-<u>Update plan \$89 (€81)</u>: Rent 4 items at the time, 1 swap per month , choose items with a retail price up to \$350 and monthly retail value up to \$1400</li> <li>-<u>Unlimited plan \$159 (€144)</u>: Rent 4 items at the time, unlimited swaps, choose items with retail value up to \$3000 and monthly retail value of \$10000+</li> </ul> </li> </ul> <p><b>-Buying option:</b> yes at a members-only discount</p> <p><b>-Logistics:</b> free shipping and returns, dry-cleaning and insurance included in memberships</p> <p><b>-Additional options:</b> maternity plan, college discounts</p>
--	--

The cultural predisposition of American people towards sharing economy and rental models led to the emergence of many successful cases that today are leading the market. Gwynnie Bee is an interesting platform founded in 2011 to meet the high demand of plus-size clothing (USA 10-32 corresponding to IT 46 and over) which traditional retailer often didn't sell. In this market segment customer demand is subject to changes that might end up in amounts of unused oversized or undersized clothing items sitting in American wardrobes. Today Gwynnie Bee is a well-established player offering subscription-rental plans for casualwear in all sizes.

**Box 11 Gwynnie Bee**

<b>Gwynnie Bee</b> <sup>93</sup>	<p>American well established platform for casual wear. The initial aim was to increase the offering of plus-sized clothes removing the ownership burden, through subscription-renting plans, on something that might not fit later.</p> <p><b>-Offering:</b> regular and plus sized casual women's wear, no designers/luxury clothing</p> <p><b>-Price:</b> \$69 per month , unlimited exchanges, over 150 brands and thousands of style to choose from</p> <p><b>-Buying option:</b> yes possibility to convert an item among the ones rented into a purchase but no return option after "buy item" selection</p> <p><b>-Logistics:</b> free priority shipping and return, free dry cleaning</p>
----------------------------------	---

<sup>93</sup> <https://closet.gwynniebee.com/>

These well-established platforms benefit from a consolidated reputation, especially in the case of luxury items, they have authenticity processes that ensure product originality. Outside the range of few big players there are **emerging and consolidated rental platforms for niche markets or specific needs items**: sportswear, maternity and kids wear, workwear. An example is the sportswear which often is used sporadically and for a limited number of times due to size changes or limited occasions. In case of a winter sport like skiing, for years customers have been able to rent some parts of the gear, often the most expensive items, such as skis and boots, but many customers could benefit even from ski suits rental. Swedish brand Houdini has launched a rental program and a pilot rental-subscription program to rent sports gear mainly for skiing, mountaineering, kayaking, and hiking.

Another example of rental in a narrow market is the Japanese retailer Aoki, that has introduced a rental service for business suits. Formality is key in Japanese business and the dress code is highly standardized. Japanese office workers, the so defined “Salarymen”, all need to wear the same style of suit and might benefit from subscription-rental service in several circumstances. This service can benefit workers that often travel to different cities, eliminating the need to carry business suits around, it can be appreciated by people that either like to switch suits often or simply want to benefit from free dry cleaning service together with the possibility of always replacing the worn suit.

**Box 12 Houdini and Aoki**

<p><b>Houdini</b><sup>94</sup></p>	<p>Houdini is a Swedish brand specialized in high quality sportswear particularly involved in sustainable initiatives, it offers smart alternative to normal sportswear consumption through products-access services. In 2012 Houdini has launches rental option and since summer 2018 has been testing a subscription program (today still at pilot level).</p> <p><b>-Bricks-and-mortar presence:</b> Yes still operating mainly off-line, rental program available at certain Houdini stores.</p> <p><b>-Offering:</b> technical sportswear, high quality mountain sports gear</p> <p><b>-Price:</b> varying on the number of pieces rented and days:</p> <table border="1" data-bbox="470 1729 1120 1953"> <thead> <tr> <th>#of items</th> <th>1-4 Days</th> <th>5-8 Days</th> </tr> </thead> <tbody> <tr> <td>1piece</td> <td>400kr(circa €38)</td> <td>700kr(circa €66)</td> </tr> <tr> <td>2pieces</td> <td>700kr(circa €66)</td> <td>1000kr(circa €94)</td> </tr> <tr> <td>3pieces</td> <td>900kr(circa €85)</td> <td>1200kr(circa €113)</td> </tr> <tr> <td>4pieces</td> <td>1200kr(circa €113)</td> <td>1600kr(circa €151)</td> </tr> </tbody> </table>		#of items	1-4 Days	5-8 Days	1piece	400kr(circa €38)	700kr(circa €66)	2pieces	700kr(circa €66)	1000kr(circa €94)	3pieces	900kr(circa €85)	1200kr(circa €113)	4pieces	1200kr(circa €113)	1600kr(circa €151)
#of items	1-4 Days	5-8 Days															
1piece	400kr(circa €38)	700kr(circa €66)															
2pieces	700kr(circa €66)	1000kr(circa €94)															
3pieces	900kr(circa €85)	1200kr(circa €113)															
4pieces	1200kr(circa €113)	1600kr(circa €151)															

<sup>94</sup> <https://houdinisportswear.com/de-de/explore/houdini-rental>

	<p><b>-Buying option:</b> Yes, in case of purchase after rental service the rental price is deducted from retail price</p> <p><b>-Logistics:</b> Book rental service by call/email, pick up gear at selected store, return at the same place. Cleaning and washing included in rental price</p>
<b>AOKI<sup>95</sup></b>	<p>It's a Japanese well established retailer selling high quality business suits at low prices, recently it has introduced a rental-subscription model.</p> <p><b>Bricks-and-mortar presence:</b> yes, it mainly operates through its retail stores and rental service is offered from physical stores.</p> <p><b>-Offering:</b> business suits</p> <p><b>-Price:</b> monthly subscription plans:</p> <ul style="list-style-type: none"> <li>• ¥7800 (circa €63) for 1 suit, 1 shirt and 1 tie</li> <li>• ¥24800 (circa €205) for 3 suits, 4 shirts and 2 neckties</li> </ul> <p><b>-Buying option:</b> yes customer can decide to buy the rented item</p> <p><b>-Logistics:</b> cleaning fee included</p>

**Accessories rental** is also gaining importance: luxury handbags, designer shoes and jewellery for special occasions due to high retail prices, low frequency of utilization and high variety of styles constitute a sector particularly suitable for rental schemes. Reasons like limited budgets and the need of frequent outfit swipes, imposed by current social attitudes, led to the increase of profitability in the accessories rental and a further increase is forecasted in the upcoming years due to new generations' consumption culture. In this market there are consolidated players, well organized platforms with a wide supply of items that follow latest trends, and it seems that there's not much market space left for new and smaller entrants. The reason behind is that in this sector the need of well established reputation is key for customers to trust and believe in the authenticity of the items.

**Box 13 Bag Borrow or Steal and Laxus**

<b>Bag Borrow or Steal<sup>96</sup></b>	<p>American well-established high end accessories rental platform, established in 2004 is today market leader offering 1-month period subscription-rental plans.</p> <p><b>-Offering:</b> Luxury and designers handbags and accessories.</p> <p><b>-Price:</b> ¼ of retail price for 1 month rental</p> <p><b>-Buying option:</b> No, borrow handbags are not eligible for purchase, there is a separate section for items for sale</p> <p><b>-Logistics:</b> free standards shipping and returns no insurance, if an item is damaged customer is responsible for retail price. Professional cleaning is included in rental price.</p>
---	--

<sup>95</sup> <https://www.aoki-hd.co.jp/en/enterprise/fashion.html>

<sup>96</sup> <https://www.bagborroworsteal.com/>

<b>Laxus<sup>97</sup></b>	<p>Laxus is a Japanese platform offering accessories subscription-rental founded in 2006 in Tokyo. From a mobile app customers can rent luxury handbags and accessories from international brands, choosing among over 32000 items in stock.</p> <ul style="list-style-type: none"> <li>-<b>Bricks-and-mortar presence:</b> no</li> <li>-<b>Offering:</b> luxury handbags and accessories</li> <li>-<b>Price:</b> ¥6800 (circa €56) for unlimited items</li> <li>-<b>Buying option:</b> yes</li> <li>-<b>Logistics:</b> unlimited exchanges, free shipping, warranty, maintenance and repair</li> <li>-<b>Additional options:</b> customers can deposit their own unutilized accessories, and if they are rented through the platform the owner earns money.</li> </ul>
---------------------------	---

### **Cultural ties are key to business success**

As it emerged in previous paragraphs rental models are strongly tied to cultural peculiarities of a country. Cultural characteristics are important in defining tastes, needs, consumption trends that affect rental models and consumers' aptitude towards them. Data-to-date rental and rental-subscription models need to have a local or country specific market dimension in the majority of cases, only for some products such as luxury items they can work on a global level. In the case of clothing, one-time occasion rental of a dress for a special event varies with local tastes, for instance some countries might have a consumption oriented towards well-known fashion brands, rather than niche designers.

There are global trends to be considered when studying potential rental models' demand, for example social media influence on frequent outfit updates, causing a shift in clothing perception towards something disposable, or future interest of new generations in sustainability . Rental models that can substitute the clothing bulimia caused by fast fashion are now being studied. An important fast fashion chain, H&M has launched in Stockholm a rental program and there are emerging rental platforms for fast fashion, Y-closet in China is a successful example. Rental models should be established considering other country-specific characteristics such as logistics and managing costs. In the example of fast growing Chinese rental platform Y-Closet, which offers rental and subscription plans for fast fashion, casual and everyday wear it's important to consider

---

<sup>97</sup> <https://www.laxus.co/en>

the cost of logistics, that in China, is significantly lower than in other countries, where rental of low to medium priced items might not be profitable or worthwhile.<sup>98</sup>

**Box 14 Y-Closet**

<b>Y-Closet<sup>99</sup></b>	<p>It's a Chinese fast growing online platform founded in 2015 in Beijing, its business model is very similar to Rent the Runway but the offering is adapted to young Chinese consumers' shopping habits. It operates through the app, where customers can subscribe to different plans and choose clothes and accessories from a wide variety. Many players have invested in Y-Closet, Alibaba in 2017 invested US\$50 million. The main target is women aged 25 to 30, who can choose among different rental and subscription-rental plans. Fast changes of outfits, that in China reach the highest levels, make clothing something people don't need to own. From casualwear Y-closet is expanding into luxury partnering with brands like Kenzo and Acne Studios.</p> <p><b>Bricks-and-mortar presence:</b> no</p> <p><b>-Offering:</b> Casualwear, office friendly clothing, party outfits. Orders are 3 items packages that cannot be separate, all items must be sent back at the same time</p> <p><b>-Price:</b> varying with period length</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">1 month, 3 items, unlimited swipes</td> <td style="padding: 2px;">Rmb 499 (circa €65)</td> </tr> <tr> <td style="padding: 2px;">Seasonal membership 90 days</td> <td style="padding: 2px;">Rmb 1257 (circa €163)</td> </tr> <tr> <td style="padding: 2px;">Half year membership</td> <td style="padding: 2px;">Rmb 2094 (circa €270)</td> </tr> <tr> <td style="padding: 2px;">Yearly membership</td> <td style="padding: 2px;">Rmb 3588 (circa €464)</td> </tr> </table> <p><b>-Buying option:</b> yes, Y-closet offers discounts to members that buy clothes instead of renting</p> <p><b>-Logistics:</b> unlimited exchanges, free laundry and delivery, a deposit of rmb300 (€39) is asked as insurance</p>	1 month, 3 items, unlimited swipes	Rmb 499 (circa €65)	Seasonal membership 90 days	Rmb 1257 (circa €163)	Half year membership	Rmb 2094 (circa €270)	Yearly membership	Rmb 3588 (circa €464)
1 month, 3 items, unlimited swipes	Rmb 499 (circa €65)								
Seasonal membership 90 days	Rmb 1257 (circa €163)								
Half year membership	Rmb 2094 (circa €270)								
Yearly membership	Rmb 3588 (circa €464)								

The Italian market is still behind in the acceptance of rental platforms compared to other markets, but there are few interesting players that are trying to spread the awareness about this new consumption formula. DrexCode was the pioneer in Italy and the founder said<sup>100</sup> that at the very beginning they had to work to create the demand for rental service, trying to change the mind-set of Italian women, which was still very supportive of ownership. Nowadays with increasing need of outfit updates and consciousness in purchasing rental service is gaining importance even in Italy. The most popular formula is the date-to-date rental (lasting 4 to 8 days) for high end to luxury clothing and accessories. Italian customers rent for special events (gala dinner) and

<sup>98</sup> Copenhagen Fashion Summit interview to Y-Closet founder  
<sup>99</sup> South China Morning Post, 2017.  
<sup>100</sup> Speech at WSM January 2020

ceremonies (wedding). What emerges from the two cases selected is that in Italy it seems to be very important the bricks-and-mortar presence, key for the majority of transactions. These two aspects emerged also in the interview to Dress You Can (p. 106), concerning the former they are trying to diversify their offer, in order to detach rental services from special events, adding sportswear for example. The physical store presence is important for fitting reasons and the live experience with the specialized fashion and fitting consultant, moreover they use their showroom for private events, where people can have fun trying on different dresses while building awareness towards a new consumption form.

**Box 15 Dress You Can and Drexcode**

<p><b>Dress You Can</b><sup>101</sup> (Interview p.106)</p>	<p>Founded in 2014 NYC is working to bring fashion rental on a large scale even in Italy. They manage items provided by private renters and brands through a rental consignment contract: NYC rents their garments in exchange of a varying fee. At the end of the contract (usually after 5-8 rents) NYC gives items back to original owners. At the end of the contract some owners agree upon donating garments to charity programs and NYC is planning on implementing a recycling program for fabric leftovers. Dress You Can has been working on increasing the awareness on the benefits of rental over ownership, to reduce textile waste, according to their data people get rid of garments because they don't like them anymore (60%), are old-fashioned (40%), need wardrobe space for new items (31%), they have been bought to wear only once (10%) or are very used and don't fit anymore (21%).</p> <p>The idea won in 2018 the IT4Fashion Innovation award and it's gaining popularity thanks to its physical store (85% prefers to see the item in person before renting). It operates also through its website and it's possible to order and try the selected item before renting it, for a €20 fee. 50% of their offer comes from emerging designers and sustainable producers, for which NYC represent an alternative marketing window and a responsive channel to test new products and collections.</p> <p><b>-Bricks-and-mortar presence:</b> yes one store/showroom in Milan  <b>-Offering:</b> high end clothing and accessories, bridal  <b>-Price:</b> circa 15% of retail price (4 days rental), 1 year package (4 rentals in 12 months) €299  <b>-Buying option:</b> not directly but through end of season sales  <b>-Logistics:</b> shipping in Italy, dry cleaning is included in shipping fee, €5 insurance. Transportation is done in an eco-friendly way, allowing them to minimize CO2 emissions. (partnership with TakeMyThing)  <b>-Additional options:</b> Customers can deposit their own clothes and if they are rented through NYC, they'll receive 40% of rental price (cleaning and logistics is entirely managed by NYC)</p>
---	---

<sup>101</sup> <https://www.dressyoucan.com> & confidential material provided before the interview

<b>DrexCode</b> <sup>102</sup>	<p>It's an online rental platform with the aim of bringing high end clothing rental all around Europe. It was founded as a start-up in 2014 and due to the importance of fashion in Italy and the absence of rental services in this sector, DrexCode received several investments and it's today among the most important players in the market. It offers one time rental service on a wide selection of items, among popular users there are managers and show business women. It's possible to try the selected item before renting it paying €20 fee.</p> <p><b>-Bricks-and-mortar presence:</b> yes, showroom in Milan  <b>-Offering:</b> luxury and high end clothing, special events accessories, bridal  <b>-Price:</b> 10%-20% of retail price (4 days rental)  Ex. Party Dress retail price €1890  2 Days trial: €20  4 Days Rental: €200  8 Days Rental: €258  <b>-Buying option:</b> not directly but through end of season sales  <b>-Logistics:</b> Shipping in Europe, in Milan in 48 hours, insurance included, possibility to order a different size for free</p>
--------------------------------	---

### **Promising rental models: from a fully sustainable offering to circularity guarantee**

Beyond luxury products and specific occasion items, rental models have expanded into fields where their impact on sustainable consumption can be very significant. Nowadays there are some emerging retail platforms selling exclusively sustainable brands and products, one example is “Staiy<sup>103</sup>”. This kind of online retail works to spread awareness about responsible brands, giving conscious customers the option to buy products made respecting people and the environment. These products are often more expensive than others present on the market, and customers, even if curious and willing to try a “better” product, might be hesitant at moment of purchase. Renting platforms can serve this purpose in that a customer might be more willing to rent and try a new brand rather than directly buying from it. Rental platforms focused on sustainable brands can have, in this sense, an important role in shifting consumer choice from mainstream to responsibly-made product.

<sup>102</sup> <https://drexcode.com/it/>

<sup>103</sup> <https://staiy.com/women>

It's the example of Italian VIC "Very Important Choice" platform that selects only responsible brands. Through this platform customers can get to know sustainable brands and try their products. Often a problem met by customers, that try to adopt responsible consumption behaviours, is the lack of sustainable brands knowledge, scarce information about their offerings and the low predisposition of customers to buy something unknown. A platform can work as guarantor of validity of brands selected and rental services might ease customer's new items trial. Platforms like VIC help spreading awareness about responsible brands offerings, while easing access to items with a reduced environmental impact. As Sara Lisot, VIC founder, has stated in the interview (page 98) the reduced environmental impact derives from the lower amount of produced items, needed if items are rented rather than bought. The environmental impact of producing new items is very high, and rental businesses mitigate it, even if items might require increased laundering and transportation services, if compared to product ownership.

**Box 16 VIC: Very Important Choice**

<p><b>VIC (Very Important Choice)<sup>104</sup></b> (interview pg. 98)</p>	<p>It's an online rental platform founded in 2017 with the aim of creating a marketplace offering exclusively conscious and sustainable brands. It's a selector and collector of garments coming from responsible brand made in Italy. As it's still relatively new the variety of items is limited, but it's the first Italian rental service of this kind. It offers different rental plans, varying the subscription period length and the amount of items rented per month. As an additional service included in subscription-plan VIC offers to its clients an initial consulting session with a personal stylist. VIC takes care of "end-of-use" stage through take-back schemes and recycling and upcycling projects.</p> <p><b>-Bricks-and-mortar presence:</b> not permanent but temporary pop-up stores  <b>-Offering:</b> clothing and accessories from responsible brands, 4 different plans  <b>-Price:</b></p> <table border="1" data-bbox="470 1529 1398 1753"> <tr> <td>SIMPLE: 1-3 items, for 1 week period</td> <td>€49</td> </tr> <tr> <td>SMART: 1-3 items, for 3 weeks period with one swipe possibility included</td> <td>€89</td> </tr> <tr> <td>STYLE: 3-5 items, for 6 weeks with the possibility to swipe all items after 3 weeks</td> <td>€179</td> </tr> <tr> <td>SEASON: up to 5 itmes, for 9 weeks perios with the possibility to swipe every 3 weeks</td> <td>€239</td> </tr> </table> <p><b>-Buying option:</b> yes, after renting an item customers can decide to purchase it at a discounted price  <b>-Logistics:</b> free shipping, recollection and cleaning service following certified responsible practices for a reduced environmental impact as Eco-friendly laundry,100% natural and safe sanitizing process</p>	SIMPLE: 1-3 items, for 1 week period	€49	SMART: 1-3 items, for 3 weeks period with one swipe possibility included	€89	STYLE: 3-5 items, for 6 weeks with the possibility to swipe all items after 3 weeks	€179	SEASON: up to 5 itmes, for 9 weeks perios with the possibility to swipe every 3 weeks	€239
SIMPLE: 1-3 items, for 1 week period	€49								
SMART: 1-3 items, for 3 weeks period with one swipe possibility included	€89								
STYLE: 3-5 items, for 6 weeks with the possibility to swipe all items after 3 weeks	€179								
SEASON: up to 5 itmes, for 9 weeks perios with the possibility to swipe every 3 weeks	€239								

<sup>104</sup> <https://veryimportantchoice.com/>



A second group of promising rental platforms includes swapping and leasing schemes thought to retain ownership on raw materials in order to facilitate their recycling. In this case rental periods might be longer, resulting in a sort of leasing, and when the consumer returns the item this is either rented out again or used as raw material to create new products. During leasing customers are given the possibility to swipe items, resulting in a sort of dynamic wardrobe in the cloud.

Two interesting examples of this kind are For Days and MUD jeans. The former is an American swapping service for mainly organic cotton garments, in this case all purchased items are new and once returned they are turned into new fabrics for new products. A similar service is provided by MUD jeans a leasing program for jeans items offering customers the possibility to use up to 3 jeans for a 12 months period, after which they are given the choice to either send them back for reuse or recycling, or swipe with different pieces or buy them. Adopting these models brands can retain 100% control of the materials ensuring minimization of waste and making the process of recycling a given. These rental-leasing and swapping models can represent a relevant step forward towards circularity, as they foster the idea of increased responsibility of brands on materials they use in production. Brands will have the latter as a key priority in upcoming years, therefore these schemes should be investigated in depth.

**Box 17 ForDays and MUD Jeans**

<p><b>ForDays</b><sup>105</sup></p>	<p>It's an American rental platform born with the aim of fostering circularity and closing the loop through 100% recyclability of clothing. ForDays offers swapping service on brand new items. Customers purchase items and can at any time decide to swipe for different items on the website paying the swipe price (which is lower than purchase price). Once the garment is returned, ForDays recycles it into new fabrics. To make sure that all returned materials go into new product ForDays works with post customers recycling partners. ForDays is currently working on a Re-use program.</p> <p><b>-Bricks-and-mortar presence:</b> no  <b>-Offering:</b> Organic cotton clothing, mainly t-shirts  <b>-Price:</b> \$38 is the trial price to rent 5 items, then each item has own price, which is reduced if an item is swiped in exchange of a new one.  <b>-Buying option:</b> yes  <b>-Logistics:</b> free shipping, unlimited swaps</p>

<sup>105</sup> <https://www.fordays.com/>

<b>MUD JEANS<sup>106</sup></b>	<p>Founded in 2013 in the Netherlands, MUD jeans is a brand with the goal of reducing waste from the jeans industry fostering sustainability and circularity. As the Jeans industry has a really high footprint MUD thought at creating an alternative to conventional consumption: Leasing. Customers, beyond traditional purchasing, can lease up to 3 jeans and every 12 months they are given the choice to 1.buying it at a discounted price 2. Swipe with different style 3.return it. MUD then evaluates the state and quality of returned items and decides whether to sell them as vintage clothes or recycle the fabrics into new products.</p> <ul style="list-style-type: none"> <li>-<b>Bricks-and-mortar presence:</b> yes</li> <li>-<b>Offering:</b> jeans, jeans jackets and apparel</li> <li>-<b>Price:</b> leasing plan: €29 member fee+ €7,50/month</li> <li>-<b>Buying option:</b> yes</li> <li>-<b>Logistics:</b> swipe every 12 months</li> </ul>
--------------------------------	---

## Renting as a responsibility act

Rental models in order to be effective in fostering production rates and waste reduction, need a true shift in consumer mind set. Consumer need to make a distinction between clothes that are worth buying and owning, versus clothes that might be used less than 10 times which could be rented. An attitude of responsibility towards the environment in clothing consumption must be embraced on the demand side, together with sustainable efforts on the supply side. The wardrobe perception shifts, with rental models, from a static ownership of many items to dynamic interchange of many garments from a wardrobe living in the cloud. For this to happen customers must understand both the environmental impact of the clothing industry and the significant benefits and reduction of the footprint associated with rental schemes.

Rental platforms contribute in many ways to circularity and sustainable demand creation. First of all rental platform, with a sustainable offering, can serve as a tool to incentivize customers to try and eventually buy responsible products. Moreover, as anticipated in the previous paragraphs rental models foster brand control and responsibility on materials. Given the predicted pressures that brands will face in upcoming years to increase responsibilities on own materials and on their after-use

---

<sup>106</sup> <https://mudjeans.eu/>

management, rental, leasing and swapping should be studied and considered for implementation. It must be mentioned that there's still a lack in technologies able to support 100% recyclability of garments to ensure full circularity of clothing, but initial investments in rental, leasing and swapping schemes would contribute to the creation of a working system able to support 100% recyclability when technologies will be ready.

Introducing this kind of service or business model can be difficult for brands working in traditional retail, this is why collaboration with start-ups might be an interesting solution. Start-ups as Lizee rental lab offer a test and learn approach to brands that want to introduce a rental service, they provide technologies and software to help brands overcome frictions faced in the adoption of circular business models. As highlighted in the interview to Lizee CEO Tanguy Frécon (page 101) brands might not be equipped to do reverse logistics and are often focused on selling products, but introducing a rental channel requires a focus shift towards service (including a series of actions as refurbishing for example, that are totally new to brands operating in traditional retail). According to Lizee CEO, brands should take advantage of their established reputation and their customers trust to establish rental or resale channels, to foster a more responsible consumption and be ambassadors of circular production and consumption models.

**Box 18 Lizee**

<p>Lizee<sup>107</sup> (interview pg. 101)</p>	<p>Lizee has developed a test and learn, 4-steps program, to build a rental model that works for each business. It's thought for brands aiming to test the rental business model, Lizee through a rental lab helps them launch and find their best offering in a 9 months period. This helps businesses growing with a better environmental impact by allowing multiple uses of the same product. Implementing a rental channel carries many other advantages for brands like:</p> <ul style="list-style-type: none"> <li>-Increase revenue and profitability by increasing brand margins by 3 (+30%)</li> <li>-Get new predictable recurring revenue from subscribers and reduce your CAC</li> <li>-Get product quality data to improve production</li> <li>-Attract new customer segments and engage them in the long run</li> <li>-Get constant feedbacks from "renters", collect customer preference data</li> <li>-Improve brand image, putting sustainability at the core of business activity.</li> </ul>
--	--

---

<sup>107</sup> <https://www.lizee.co>

# Resale Cases

## A sustainable alternative to fast fashion<sup>108</sup>

The resale market is rapidly gaining importance, the demand for second hand items is growing (64% of women would buy second hand in 2018 against 46% in 2016) and it's predicted to grow at a fast rate. As the line between new and used apparel blurs for customers, a powerful transformation in retail will unfold in upcoming years. Across the globe there are more and more players that started adding a re-commerce channel to traditional retail activity.

Figure 14 Secondhand Apparel Market expected growth 2012-2023

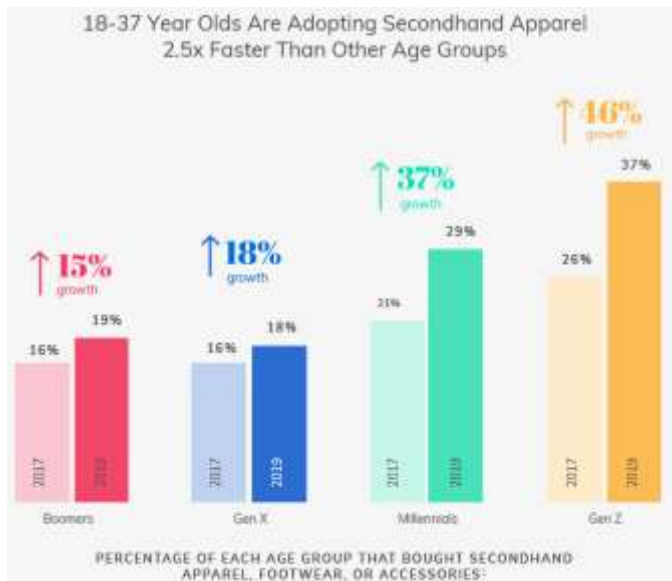


Source: ThredUP, 2019

On the demand side in young generations the attitude towards ownership is changing, shifting from clothes accumulation to clothes rotation (the average number of items in the closet has decreased from 164 in 2017 to 136 in 2019), as a consequence millennials and Gen Z are driving the resale market growth.

<sup>108</sup> ThredUP, 2019

Figure 15 How are different generations adopting secondhand model

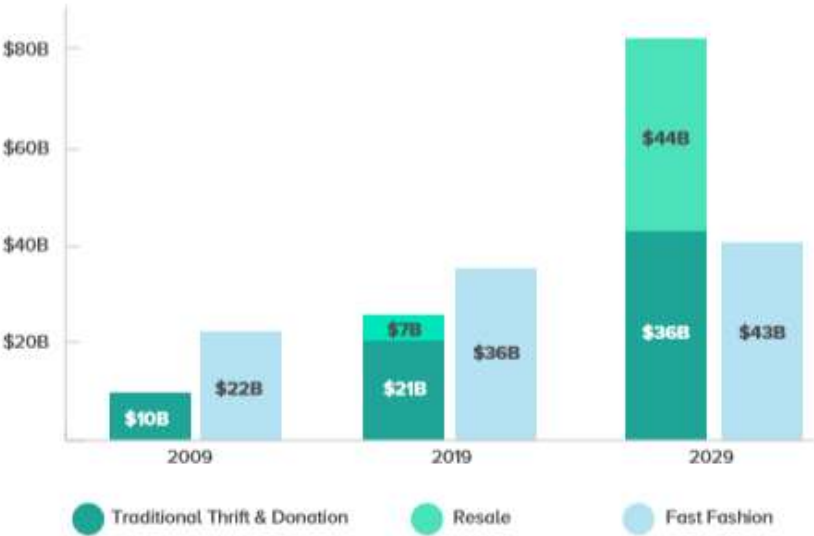


Source: ThredUP, 2019

According to TredUP 2019 Resale report, among driving interests of Gen Z we find “being seen in a new style constantly” and “being sustainable and conscious customers”, re-commerce has the potential to satisfy the need of frequent outfit updates, without requiring a heavy production of new items therefore limiting environmental footprint. Young generations are becoming more aware of environmental and social costs of fast fashion production and the second hand market is expected to exceed fast fashion revenue by 2028. As shown in figure 15 in 2029 the second hand market will exceed fast fashion by \$37 billion, a picture that turned upside down from only 20 years before: in 2008 resale market was worth \$9 billion against \$21 billion of fast fashion.<sup>109</sup>

<sup>109</sup> Il Sole 24 ore, 2019

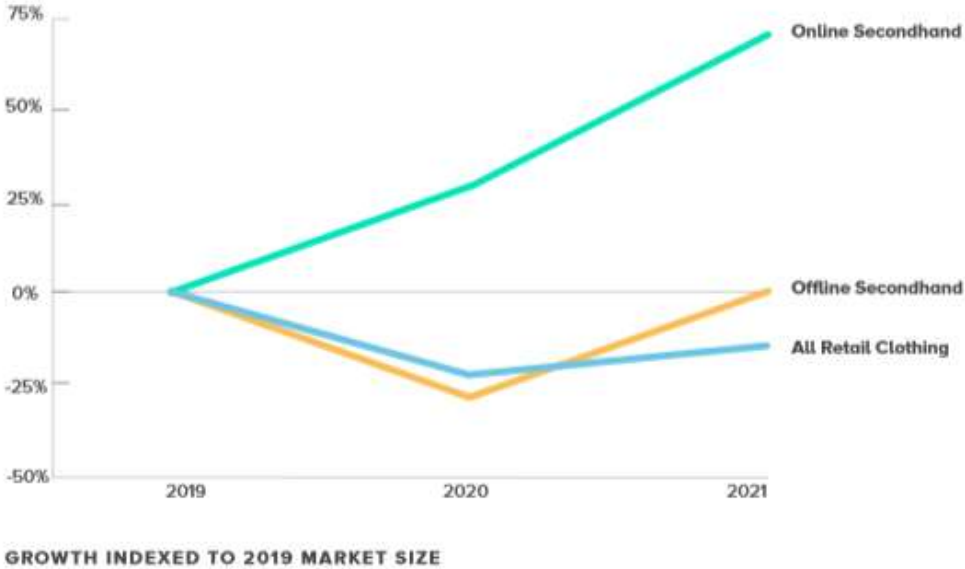
Figure 16 Seconhand market projected to grow to almost twice the size of fast fashion by 2029



Source: ThredUP, 2020

Figure 17 Online Secondhand is a bright spot in broader Covid retail slump

With consumers seeking bargains from home, online secondhand is set to grow 69% between 2019 and 2021, while the broader retail sector is projected to shrink 15%.



Source: ThredUp, 2020

**From independent platforms to resale channels owned by brands**

In the resale market there are some important and well-established independent players, operating mainly online, that started primary selling luxury items and then, eventually, expanded to other segments. Among these independent platforms that are very successful nowadays we find, Vestiaire collective, ThreadUP and Depop. While the first two operate through a website offering a traditional marketplace, Depop can be considered an innovative form of peer-to-peer resale channel, as it's structured like a social network where users are directly posting and selling own items.

**Box 19 Vestiaire Collective, ThredUp and Depop**

<p><b>Vestiaire collective</b><sup>110</sup></p>	<p>Launched in 2009 in France, it's now a global company with an international community of over 7 million members across Europe, Asia, US and Australia. It offers a wide choice of high quality items, every week 25,000 items are submitted by VC community.</p> <p><b>-Category:</b> branded clothing, accessories, jewellery ,lifestyle  <b>-Price:</b> discounted luxury price, up to 90% off from retail price  <b>-Offline presence:</b> yes  <b>-Target:</b> fashion savvy, looking for discounted luxury items  <b>-Logistics:</b> Free pick-up service of unwanted items by VC team  <b>-Seller Reward:</b> cash back up to 75%</p>								
<p><b>ThreadUP</b><sup>111</sup></p>	<p>Founded in 2009 it started as a man t-shirt swapping company and today it's the largest fashion resale marketplace with over 35,000 brands. They offer a free Clean-out service for customers who have clothes that no longer fit or they no longer wear, in exchange they can choose either to get cash back or shopping credits. Similarly they offer a donation kit through which customer can choose to turn unwanted clothes into cash for charities.</p> <p><b>-Category:</b> clothing from general use/fast fashion brands to luxury brands  <b>-Price:</b> Up to 90% off retail price, price range very wide from very low to luxury  <b>-Offline presence:</b> Yes in the US  <b>-Target:</b> people interested in frequent closet updates, responsible or limited budget, interested in earning money from own unused clothes  <b>-Logistics:</b> Through Clean Out Kit customer can get rid of unused items, Free shipping  <b>-Seller Reward:</b> Shopping credits or cash (percentage of TU selling price) some examples:</p> <table border="1" data-bbox="469 1783 911 1935"> <thead> <tr> <th>Selling Price</th> <th>Customer pay-out</th> </tr> </thead> <tbody> <tr> <td>\$5-\$20</td> <td>5%-15%</td> </tr> <tr> <td>\$50-\$99</td> <td>30%-60%</td> </tr> <tr> <td>\$100-\$200</td> <td>60%-80%</td> </tr> </tbody> </table>	Selling Price	Customer pay-out	\$5-\$20	5%-15%	\$50-\$99	30%-60%	\$100-\$200	60%-80%
Selling Price	Customer pay-out								
\$5-\$20	5%-15%								
\$50-\$99	30%-60%								
\$100-\$200	60%-80%								

<sup>110</sup> <https://us.vestiairecollective.com/about/>  
<sup>111</sup> <https://www.thredup.com/>

<b>Depop</b> <sup>112</sup>	<p>Founded in 2011 in Italy, moved its headquarter to London in 2012 and in its first years received funding investment for over \$9 million. It's a peer-to-peer social marketplace, it's structured like a social network, each user has an account and through his/her posts he/she sells pre-worn clothing. Today it accounts a very wide community, with its most active users in US, UK and Italy. In recent years it has attracted influential people attention thanks to sponsoring activities. Quality and prices vary and it's possible to follow trends and specific accounts of interest. Terms and conditions are up to the seller, who decides shipping methods, payback (cash or swipes) and price.</p> <p><b>-Category:</b> women and male clothing and accessories (mainly shoes and handbags)  <b>-Price:</b> chosen by the seller  <b>-Offline presence:</b> Yes in the US  <b>-Target:</b> young generation, social media friendly  <b>-Logistics:</b> shipping costs paid by buyer  <b>-Seller Reward:</b> cash directly to seller</p>
-----------------------------	---

Together with independent players that collect and manage items exclusively for the Re-commerce market, there are some actors, like retailers, department stores or similar that are introducing resale as an additional service to their main activity. As an example the online luxury selling platform Farfetch has introduces a “Pre-owned” section to its offering, and some farsighted brands started building an official re-commerce channel dedicated exclusively to their own products. To make this possible retailers should invest in logistics and in management of take-back schemes and might need the support of external actor to coordinate these activities, which might result unexplored and difficult for conventional retailers. In the US, Yerdle<sup>113</sup> is a company supporting leading brands in the build-up process of re-commerce channels. Yerdle has worked with many American brands to create the so defined “Branded Resale” like Nordstrom (“See you Tomorrow” program), Eileen Fisher (“Renew” program) and Patagonia (“Wornwear” program).

**Box 20 Farfetch, Nordstrom, Eileen Fisher and Patagonia Resale channels**

<b>Farfetch “Pre-owned”</b> <sup>114</sup>	<p>It's a leading global platform for luxury sales, as part of its sustainability commitment it has introduced a section where customers can buy and sell used items they no longer want to keep. It's now working to spread this resale initiative to a higher number of regions.</p>
--	--

<sup>112</sup> <https://www.depop.com/>

<sup>113</sup> <https://www.yerdlerecommerce.com/>

<sup>114</sup> <https://www.farfetch.com/it/shopping/women/pre-owned>



	<p><b>-Category:</b> high end items following current trends</p> <p><b>-Price:</b> discounted luxury price</p> <p><b>-Offline presence:</b> No</p> <p><b>-Target:</b> fashion savvy, women looking for discounted, almost new luxury items</p> <p><b>-Logistics:</b> Free shipping and returns</p> <p><b>-Seller Reward:</b> credits to spend on future purchases</p>
<p><b>Nordstrom</b>  <b>“See you Tomorrow”<sup>115</sup></b></p>	<p>Nordstrom is a famous department store chain, selling high end and luxury products across the United States. Partnering with Yerdle it has launched the “See You Tomorrow” initiative to give a second life to gently used luxury items. It buys gently used items (from a limited list of brands) through its store in New York and sells it in NYC flagship store and through Nordstrom website in the “See you Tomorrow” section.</p> <p><b>-Category:</b> women’s shoes, handbags, men’s apparel, accessories and shoes, kids wear and a limited selection of jewellery and watches</p> <p><b>-Price:</b> ½ of retail price</p> <p><b>-Offline presence:</b> Yes only in NYC</p> <p><b>-Target:</b> fashion savvy, women looking for discounted, almost new luxury items</p> <p><b>-Logistics:</b> Shipping in and outside US</p> <p><b>-Seller Reward:</b> 55%-60% of the resale value on a gift card to spend on future purchases</p>
<p><b>Eileen Fisher</b>  <b>“Renew”<sup>116</sup></b></p>	<p>It’s an American brand for ethical clothing, in 2009 they have launched “renew” program as part of their sustainability commitment. Partnering with Yerdle their aim is to create circular system where clothes are either resold or mechanically recycled into new items through the “ReSaw” program.</p> <p><b>-Category:</b> Eileen Fisher items, minimal styles clothing and accessories</p> <p><b>-Offline presence:</b> yes in the US</p> <p><b>-Target:</b> women, minimal style ,conscious customers, EF customers or potential customers with limited budget</p> <p><b>-Logistics:</b> Items for re-sale must be taken into the retail store</p> <p><b>-Seller Reward:</b> get \$5 per item to spend only on new products</p>
<p><b>Patagonia</b>  <b>“wornwear”<sup>117</sup></b></p>	<p>Patagonia the well-known outdoor clothing brand as part of its long sustainability commitment, with the support of Yerdle has launched “Worn Wear”: a set of tools to help Patagonia customer’s partner with Patagonia to take mutual responsibility to extend the life of products. The program provides significant resources for responsible care, repair, reuse and resale, and recycling at the end of a garment’s life. The resale activity is mainly carried out online where there is a wide selection of pre-used items. It’s currently only available in the USA.</p> <p><b>-Category:</b> Patagonia Sportswear and items</p> <p><b>-Price:</b> circa 40% off retail price</p> <p><b>-Offline presence:</b> Yes in Boulder, Colorado</p> <p><b>-Target:</b> Patagonia potential customers with reduced budget, conscious customers</p> <p><b>-Logistics:</b> trade in-store or by mail</p> <p><b>-Seller Reward:</b> credit to spend on any Patagonia product</p>

<sup>115</sup> <https://www.sytnordstrom.com/about>

<sup>116</sup> <https://www.eileenfisher.com/renew>

<sup>117</sup> <https://wornwear.patagonia.com/>

These successful Retailer resale channel examples together with the fast growth of independent resale platforms show a very high potential for these market's players. Currently the majority of retailers are missing out on potential benefits of owning these channels, among which additional revenue streams, sustainability, greater control over own materials and deeper customer relationship.

### **The underexplored potential of Italian resale market**

In the analysis conducted the Italian cases highlight that in Italy re-commerce is still an underexploited market, there are only few realities gaining importance, belonging to the first group: independent resale actors.

It's the case of Milan based activities like "BIVIO" and "Il Girotondo" which highlight the importance of physical presence, both examples considered carry the majority of business activities in their bricks-and mortar facilities. They use virtual platforms as a support: "Il Girotondo" has a limited selection of items on sale on its website, and "BIVIO" uses Instagram to show newest looks, products and inform about prices. The resale business newness and the buying attitude of Italian customers, very attached to traditional retail experience, are possible explanation of the physical store requirement and of the increasing success of these pioneer re-commerce players, who satisfy it.

Armadio verde is an Italian resale platform operating through a website, the offering is still limited and it mainly includes low priced casualwear, it's probably thought for a older target who doesn't use Depop but still wants to be involved in re-commerce. Items do not follow current trend and can be bought only by active users, in that to purchase a product a user needs to use euros and "stars" (a reward coin that users earn if they sell own items).

**Box 21 Bivio, Il Girotondo, Armadio Verde**

<p>BIVIO<sup>118</sup></p>	<p>The first BIVIO store opened in 2013, with the aim of creating a store for second hand items that were following trends and seasons differently from vintage stores. Today there are 2 stores dedicated to womenswear and one for menswear, located in Milan. BIVIO is gaining importance and in 2018 it registered profit of nearly €2 million.<sup>119</sup></p> <p><b>-Category:</b> seasonal-appropriate clothes, following fashion trends  <b>-Price:</b> from low to medium average €40, showed on the Instagram account  <b>-Offline presence:</b> yes 3 stores in Milan, at the moment it's only possible to purchase from bricks-and-mortar store  <b>-Target:</b> young generation, conscious buyers, trends followers  <b>-Logistics:</b> customers can deposit own pre-used garments in the store where BIVIO buyers select and price items they are interested in  <b>-Seller Reward:</b> store credits (1/2 of the value) or cash ( 1/3 of the value)</p>
<p>Il Girotondo<sup>120</sup></p>	<p>It opens its first store in 1997 as a space dedicated to re-commerce of kids wear, today it has 3 stores, two dedicated to kids and one for womenswear, handbags, and shoes. All items sold are branded and in season. Most of the business activity is carried out in store but il Girotondo has a website where it sells selected items.</p> <p><b>-Category:</b> kids, luxury and branded garments (no general use/fast fashion items). Items following current season  <b>-Price:</b> 30%-50% of retail price  <b>-Offline presence:</b> yes 3 stores in Milan  <b>-Target:</b> fashion savvy, limited budget customers ,conscious women/mothers  <b>-Logistics:</b> At the beginning of season customers can bring their pre-used branded items, Il Girotondo selects items suitable for selling and prices them.  <b>-Seller Reward:</b> cash back if items are sold within 3 months otherwise given back to owner or donated to charity</p>
<p>Armadio Verde<sup>121</sup></p>	<p>Born in 2015 as a start-up, with the idea of fostering circularity and reducing the high amount of waste in kids wear market, it then integrated a selection of womenswear and recently menswear items. It operates through a well-organized website, the offering, at time of writing, is limited and mainly includes unbranded items.</p> <p><b>-Category:</b> kids wear, kids shoes, unbranded and general use womenswear and accessories, menswear  <b>-Price:</b> medium/low  <b>-Offline presence:</b> no  <b>-Target:</b> low budget conscious customers  <b>-Logistics:</b> free pick up service to donate unwanted items  <b>-Seller Reward:</b> credit in “star” coins to spend on future purchase on the website, “star” coins are necessary to buy items whose price is a combination of euros and “star” coins.</p>

<sup>118</sup> <https://biviomilano.it>

<sup>119</sup> Il Sole 24 Ore, 2018.

<sup>120</sup> <http://www.girotondoweb.it>

<sup>121</sup> <https://armadioverde.it/>

The Italian potential in resale market is proven by Italian customers participation in online platforms, for Depop, Italy is one of the most important markets (together with USA and UK) and on Vestiaire Collective Italian users are the ones selling the most on global scale, with an average amount of 7,5 items each for an average profit of €2000, the highest in Europe.<sup>122</sup> Today the main products sold by Italian users are luxury handbags but other sectors are predicted to gain importance in upcoming years; moreover Covid-19 might be an acceleration agent for resale market, as people might be incentivized to sell unused items and buy cheaper garments due to economic difficulties.

What is currently missing in Italy is a system of official resale channels offered by brands and retailers. By starting now to internalize re-commerce channels, investing in facilities, management and logistics retailers could benefit in the future from established and well-functioning platforms, able to generate revenues in conjunction with new products and conventional retail. Given the predicted increasing importance of second hand items, demand for new items could decrease, and retailers will have an alternative stream to make up for revenues shortages. As in American cases (Patagonia, Eileen Fisher, Nordstrom) retailers could be supported by an external figure (like Yerdle and Reflaunt) which would assist them in re-sale channels set-up and management. Building an official retail resale channel requires efforts and significant investments but could bring environmental and economic advantages compared to independent resale platforms.

### **The relevance of Collaborative Consumption Models today, according to industry's players.**

Through a set of one-to-one interviews conducted during and right after Covid-19 lockdown, it has been possible to deepen the research and collect direct evidence from different actors in the textile and clothing industry. Two interviewees are Italian and one is French, as for the latter there isn't any Italian entity offering the same service. In particular the first two examples are independent rental platforms, one is Dress You Can, founded in 2014, today is one of the main players in the Italian rental market, its offering is mainly constituted by event and party dresses but they are planning to widen their offering. The second Italian rental platform interviewed is VIC (Very Important

---

<sup>122</sup> Il Sole 24 Ore, 2019.

Choice) which is a newer reality, founded in 2017 can be considered innovative due to its offering which exclusively includes items from ethical, responsible and sustainable brands. The third interviewee is Lizee a recently born French start-up supporting brands in the implementation of private rental channels, as this is a pioneer in Europe it brought a very interesting contribution to this thesis research and it highlighted the potential of rental market in this time period.

From the interview to VIC, emerged that people, despite initial understandable hygiene concerns caused by Covid-19, trust the rental service as they know that platforms provide and guarantee high quality sanitizing procedures, the same used in today's hospitals. Therefore the rental business, in Covid-19 times, wasn't slowed down because of consumers concerns or lack of trust in cleanness or sanitizing levels. A second important point that emerged is the importance of a physical store. For VIC it's relevant not only for fitting necessities, as their offering typology doesn't require it (day-wear oriented rather than special events clothes), but for an educational impact, to deepen the relationship with the public and spread awareness about sustainable fashion and its importance. In the Italian market, where sustainable brands are not easily accessible in bricks-and-mortar retail stores, and rental services are not yet widely known, a temporary store can be relevant for community outreach. A third aspect emerged from this interview is the willingness to bear responsibility on the "end-of-use" phase, as a platform. VIC founder highlighted that a core business part is circularity, and they aim to achieve it by implementing programs to recycle and upcycle garments and fabrics when they are no longer suitable for rental. As brands are not yet ready to guarantee this service, it's VIC that takes responsibility on closing the loop, bringing circularity beyond the rental service.

The Dress You Can interview was relevant to understand the point of view of a player which has been operating in the rental market for quite some time, that has experience in the Italian market and knows its peculiarities. They know the characteristics that distinguish Italy from other markets where rental business are more successful and provided evidence on how Covid-19 can change the Italian rental scene. What emerges from the interview is that, even if in these years the rental market in Italy made significant advances, it is still strongly associated with the date-to-date rental. In an attempt to detach this service from special occasions and events, Dress You Can is

planning to introduce new product lines like menswear, kids-wear, fitness and technical clothing. It also highlighted how 2019 has been an important year for the rental market as it received significant investment and attention from international players (Alibaba, Zalando), and in Italy some brands have introduced a rental channel on part of their offering (Twinset). Moreover the NYC founder recognises in the rental market a possibility for brands to manage returns (that today constitute a problem for an increasing number of brands), and excessive amount of stock that is likely to remain unsold due to Covid-19 pandemic. As a matter of fact many brands will have to apply excessive discounts in an attempt to get value from the unsold stock accumulated during lockdown. Rental business models can be an alternative to this solution, and allows brands to profit without devaluing products by applying excessively low prices. Another interesting point from this interview is the willingness to increase the level of circularity, which today is still low. In the post customer use phase Dress You Can is supposed to give back garment to brands or private owner with whom they signed consignment contracts. Some of these “partners” agreed on donating items that cannot be rented anymore to charities, and Dress You Can would like to add collaborations with some realities in order to recycle fabrics into alternative packaging.

The interview with Lizee offered a different view point, as they directly work with brands to implement brand owned rental channels, differently from independent rental platforms. They have launched Lizee in 2019 after two years of research and experience in similar fields. First of all they have a large experience in collaborating with brands and they know the main problems and hurdles that might hinder them to adopt rental models. Brands nowadays are not used to deal with reverse logistics and don't have the software to do it and the technology to customize their e-commerce. They don't have facilities and machineries to manage the refurbishment and sanitizing processes, needed in the rental model. Moreover brands operating in retail are focused on products and they are not yet ready to move this focus to the experience and the quality of related service.

According to Lizee CEO this post-Covid time can be seen by brands as an opportunity to invest on innovative business models as rental and resale, mainly for three reasons. Brands, in these months following Covid-19 outbreak, won't be able to sell all the unsold stock, even applying discounts for an extended period of the time they will face high

amounts of unsold merchandise. In France (and hopefully even in Italy soon) destroying unsold collections is forbidden, therefore brands will have to find alternative ways to destock or reorganise garments. Rental models are a solution to this problem because, as mentioned before, they avoid excessive discounts detrimental to brand image, allowing them to create an additional revenue channel for existing and future collections. A second and a third reasons why these are interesting times to invest in rental platforms are connected with consumers' behaviour. Firstly during lockdown consumer preference shifted towards a more local and less impactful way of consumption, if this attitude persists rental will be an alternative that customers will increasingly consider. This is due also to the second behavioural change which is a reduced household spending power caused by the economic crisis, following the lockdown. Rental channels allow people to access quality products at a fraction of the price, and in times of contained spending power, this can be appealing for a large customers segment. According to Lizee data some brands are already choosing to face Covid-related difficulties implementing alternative services as rental, and the response on consumption side is positive, their conversion rate on their platforms almost doubled since the end of lockdown. From this interview emerged also another interesting aspect regarding advantages, for brands, of implementing their own rental channel rather than collaborating with independent rental platforms. Firstly brands can take advantage of their own established reputation and deriving costumers' trust in them, this might facilitate costumers' testing of a new service. Secondly it's a way for brands to collect data on products, materials, customer preference, new customers, which not always are disclosed to brands from independent rental platforms. Finally it's an alternative revenue channel and a way for brands to put circularity at the core of their business, which positively impacts brand image.

## CONCLUSIONS

This thesis investigates the environmental impact of the textile and clothing industry, and the role of innovation in limiting and reducing it. Chapter 1 analyses different components of the industry's environmental footprint, highlighting relevant problems hiding behind overproduction, that can no longer be ignored. The industry needs to find ways to reduce water consumption, greenhouse gas emissions, and micro-fabrics release while improving chemicals and waste management. All these environmental impacts are strictly connected with human health and protection. Water scarcity is a major risk that the industry will have to face as many cotton-growing nations, for example, have already restricted freshwater access and due to future production growth, they will have to choose between cotton farming and securing clean drinking water. Limiting emissions has the effect of shifting climate patterns, sea levels rise, and extreme weather event reduction; since many manufacturing plants are located in vulnerable areas there are potential benefits for the industry resilience and its workers' safety. Microfibers amount to 35% of primary microplastics released in the ocean, they enter animal and human food chain, and will soon constitute a reputational risk for retailers, due to the rising awareness on ocean and water streams plastic invasion. Chemical runoffs from production facilities into soil and waterways are highly dangerous for wildlife and people living in those areas. Moreover, the lack of transparency and low level of regulations on toxic chemicals used in clothing, represent a risk to human health. Finally, the textile waste management will represent a major challenge for the industry, 73% of materials going into the clothing system is lost after customer use, the rate of clothes-to-clothes recycling is only 1%, due to the lack of recycling schemes and to existent materials in use today, which are not designed to be recycled and recaptured.

Innovations explored in chapter 2 foster the shift from the polluting linear model in use today to a circular one, aimed at increasing the garment life cycle, reducing resource consumption and waste creation. Innovations on raw materials foster the research of, on one side natural fibers coming from other industries' by-products and regenerative agriculture, and on the other alternatives to synthetic fibers. While the former carries benefits such as reduced resource intake and incinerated waste, together with decreased virgin materials requirements, the latter allows limiting the micro-plastic



release in waters. Innovations on processes allow producers to limit the amount of water, chemicals and energy needed, resulting in economic and environmental benefits. An important point emerging from chapter 2 is that for technological innovations, like the one involved in biomimicry, optimization of resources and recycling, investments, and cross-industry collaboration are needed as widespread innovative solutions are not yet in the market. It must be mentioned that for 100% circularity to be achieved technical innovation for recycling needs to be part of a system-wide changing process, affecting every step of the value chain from the design phase to the consumers' mindset. Innovations on business models are aimed at transforming user relationships with clothing to change today's fast and polluting consumption culture. The requirements on raw materials and waste management, and scarcity of sources together with growing consumer desire for variety, sustainability and affordability, will contribute to the adoption of collaborative consumption schemes, such as rental (date-to-date and subscription-based) and re-commerce. The comparative analysis presented in chapter 3 focuses on existing rental and resale cases, to understand current trends and future potential of these models. Rental and resale platforms and brand-owned channels are chosen from multiple product segments and countries, to understand similarities and differences and highlight the most interesting cases. In the Italian market, we can notice that collaborative consumption models are potentially successful (Italian users participation on online platforms is high), yet underexplored. The cases taken into consideration and interviewed show that they are still attached to the mainstream form (luxury handbags for resale and special event dresses for rental), but they are trying to expand into new sectors (kids-wear, sportswear and menswear). The bricks-and-mortar presence seems to be a relevant asset, as it's a way to spread awareness of alternative consumption models and directly educate a community that is still very attached to the traditional retail model. An aspect on which it's important to take further steps is the circularity of garments, independent platforms and brands should guarantee take-back schemes and recycling or upcycling programs after rental or resale services. While some promising independent platforms are growing, in the Italian scenario what is currently missing is a system of brands owned resale and rental channels. As the implementation of them would bring significant benefits, it will be interesting to see if Italian brands will invest in collaborative consumption schemes to face, in the short run, difficulties caused by Covid-19 while building a more sustainable system, in the long run.

Through the research and analysis presented in this thesis together with interview findings, data and information collected through events and webinars it has been possible to collect a series of priorities that should guide the redefinition of business activity for a responsible value chain, which began before and will be continuing through and after 2020 crisis; these are Brands' responsibility on materials, Extending product lifecycle, Control on the value chain, Importance of collaboration.

Brands' responsibility and control on garments and fabrics should be extended beyond customer purchase. This is a fundamental condition for a circular industry, brands should be held accountable for the "end-of-life" phase of what they produce. The extended responsibility of brands fosters research on better design and materials (to ease recyclability, disassembly, biodegradability), investments on new technologies and processes for upcycling and recycling, and cross-industry collaborations to make all this possible. Collaborative consumption models can help brands detain control over materials. Rental and leasing models together with resale and takeback schemes support material circularity, which today can be seen as a competitive advantage, but soon it will be an industry requirement.

A second priority should be extending the garments' lifecycle, increasing their physical and emotional durability to decrease waste pollution. The physical durability can be increased by investing in research on new fabric alternatives (detaching production from finite resources, choosing regenerative and renewables raw materials, using other industries' by-products), and introducing services as repair, re-style and re-fit on a large scale. Moreover one of the main reasons for underutilization is the need of purchasing something to be worn for a one-time occasion. While this kind of need can be satisfied by a rented item, purchased garments should have an emotional aspect that hinders premature discard, such as product-service association or the addition of cultural or special meanings that can foster garment retention and multiple re-uses.

Another issue of primary importance is the lack of control over the value chain and protection of actors involved in it. Even before the Covid-19 outbreak, power imbalance and lack of protection along the supply chain were acknowledged but often neglected. Today, the sanitary and economic crisis highlighted the lack of respect and protection on

weaker players in developing countries and the deriving need of implementing traceability and transparency programs to monitor environmental and social impact. In a post-crisis scenario, this is, hopefully, supported by consumers' preference towards a transparent, respectful, ethical, and inclusive offering and by the technological and digital innovation acceleration (for example smart label systems and blockchain technology).

A final key aspect that emerged from the research is the importance of cross-industry collaboration to enable innovation. Start-ups and small innovators have a crucial role in supporting well-established brands in their journey towards circularity. As in the case of Orange Fiber for material innovation or Lizee for rental channel implementation, these young realities can help brands deal with those activities and technologies that are new for them because they have been operating in retail and standard e-commerce for years; while brands have the financial means and facilities to allow technology sharing and innovation programs. Moreover, the involvement of governments and support from institutions is essential, as they have the power to invest in the achievement of better economic, social, and environmental results.

A business activity redefinition for a responsible value chain can be achieved if all key industry players understand the urgency of a shift towards circularity, and take an active part in reshaping their practices through responsible innovation.

# List of Tables

- Table 1 Water consumption along the clothing value chain..... 13
- Table 2 Energy emission along the clothing value chain..... 14
- Table 3 Chemical consumption along the clothing value chain ..... 16
- Table 4 Waste creation along the clothing value chain ..... 19
- Table 5 Good Fashion innovation overview ..... 28
- Table 6 Overview of Rental Cases ..... 612
- Table 7 Overview of Resale Cases ..... 61

# List of Figures

- Figure 1 The UN Sustainable Development Goals..... 6
- Figure 2 Average number of times a new garment is worn (including reuse)..... 10
- Figure 3 Global material flows for clothing in 2015 ..... 18
- Figure 4 Projected global fashion consumption (million tons) ..... 20
- Figure 5 The value opportunity of sustainable fashion in the world economy ..... 21
- Figure 6 Priorities across the value chain..... 36
- Figure 7 The Rental business model..... 48
- Figure 8 Operating Margin % as a function of rental price ..... 49
- Figure 9 The Subscription- rental business model ..... 50
- Figure 10 Size of the global second hand apparel market ..... 52
- Figure 11The resale business model ..... 53
- Figure 12 Financial viability of collaborative consumption models for different product segments ... 55
- Figure 13 Renewed Fashion Value Chain ..... 59
- Figure 14 Secondhand Apparel Market expected growth 2012-2023 ..... 76
- Figure 15 How are different generations adopting secondhand model..... 77
- Figure 16 Seconhand market projected to grow to almost twice the size of fast fashion by 2029..... 78
- Figure 17 Online Secondhand is a bright spot in broader Covid retail slump..... 78

# List of Boxes

- Box 1 Better Cotton Initiative (BCI) ..... 29
- Box 2- Orange Fiber, Vegea, Algiknit and Desserto..... 33
- Box 3 Spider silk..... 34
- Box 4 QMilk and Mango Materials..... 35
- Box 5 Save the Water- Kitotex..... 38
- Box 6 Sustainable Action and Vision for a better environment and Clean by Design ..... 39
- Box 7 Econyl, Prato district for wool recycling ..... 42
- Box 8 ACBC and Agogic..... 58
- Box 9 Benefits along the value chain ..... 60

Box 10 Rent The Runway.....	64
Box 11 Gwynnie Bee.....	65
Box 12 Houdini and Aoki .....	66
Box 13 Bag Borrow or Steal and Laxus .....	67
Box 14 Y-Closet.....	69
Box 15 Dress You Can and Drexcode.....	70
Box 16 VIC: Very Important Choice .....	72
Box 17 ForDays and MUD Jeans .....	73
Box 18 Lizee .....	75
Box 19 Vestiaire Collective, ThredUp and Depop .....	79
Box 20 Farfetch, Nordstrom, Eileen Fisher and Patagonia Resale channels.....	80
Box 21 Bivio, Il Girotondo, Armadio Verde .....	83

## References

Accenture Strategy and Fashion for Good (2019), 'The future of Circular Fashion: Assessing the Viability of Circular Business Models'. Available at: [https://fashionforgood.com/our\\_news/driving-circular-business-models-in-fashion](https://fashionforgood.com/our_news/driving-circular-business-models-in-fashion)

Anner, Mark. (2020). Abandoned? The Impact of Covid-19 on Workers and Businesses at the Bottom of Global Garment Supply Chains

Business of Fashion. (2019). The Year Ahead: End of Ownership. Retrieved from <https://www.businessoffashion.com/articles/intelligence/the-year-ahead-end-of-ownership>

Condé Nast. (2020). The Sustainable Fashion Glossary.

Ellen MacArthur Foundation. (2017). *A New Textiles Economy: Redesigning Fashion's Future*, Ellen MacArthur Foundation,

European Commission. (2017) Sustainable garment value chains through EU development action.

European Commission. (2020). A new Circular Economy Action Plan for a Cleaner and More Competitive Europe.

European Parliamentary Research Service EPRS, Environmental impact of the textile and clothing industry, 2019

Global Fashion Agenda & BCG. (2017). *The Pulse of the Fashion Industry*. 2017. New York.

Global Fashion Agenda & BCG. (2018). *The Pulse of the Fashion Industry*. 2018. New York.

Il Sole 24 Ore. (2018). Moda circolare, app e boutique mettono le ali all'usato di lusso. Available at: <https://st.ilsole24ore.com/art/moda/2018-10-28/moda-circolare-app-e-boutique-mettono-ali-usato-lusso>

Il Sole 24 Ore. (2019). Moda «second hand», è boom di rivendite grazie a Instagram e sostenibilità. Available at: <https://www.ilsole24ore.com/art/moda-second-hand-e-boom-rivendite-grazie-instagram-e-sostenibilita>

Is Resale Actually Good for the Planet? (2020). *Business of Fashion*  
Retrieved from: <https://www.businessoffashion.com/articles/professional/is-resale-actually-good-for-the-planet?>

Maxwell, D., et al., State of the apparel sector report: Water, GLASA (2015).

McKinsey & Company (2019). 'The State of Fashion 2019'. Available at: <https://www.mckinsey.com/mckinsey/industries/retail/our-insights/the-state-of-fashion-2019-a-year-of-awakening/the-state-of-fashion-2019-final.ashx>

McKinsey & Company (2020). 'The State of Fashion 2020'. Available at: <https://www.mckinsey.com/industries/retail/our-insights/the-state-of-fashion-2020-navigating-uncertainty>

McKinsey & Company (2020). 'It's time to rewire the fashion system: State of Fashion coronavirus update'. Available at: <https://www.mckinsey.com/industries/retail/our-insights/its-time-to-rewire-the-fashion-system-state-of-fashion-coronavirus-update>

National Geographic. (2020). Is a world without trash possible? Available at: <https://www.nationalgeographic.com/magazine/2020/03/how-a-circular-economy-could-save-the-world-feature/>

Rinaldi, F.R.. (2019). *Fashion Industry 2030*. Milano. EGEA Bocconi University Press.

Solo Moda Sostenibile (2020). Il riciclato di Prato, un esempio virtuoso di economia circolare che ha conquistato la copertina del National Geographic Available at: <https://www.solomodasostenibile.it/2020/03/20/il-riciclato-di-prato-national-geographic/>

South China Morning Post. (2017). China clothes sharing start-up YCloset secures US\$50m in new funds. Available at: <https://www.scmp.com/business/china-business/article/2110128/china-clothes-sharing-start-ycloset-secures-us50m-new-funds>

ThredUp. (2019). ThredUp 2019 Resale Report. Available at: <https://www.thredup.com/resale/2019>

ThredUp. (2020). ThredUp 2020 Resale Report. Available at: <https://www.thredup.com/resale>

Vogue Business. (2020). The reality behind fashion's sustainability certifications and coalitions. Available at: [https://www.voguebusiness.com/sustainability/the-reality-behind-fashions-sustainability-certifications-and-coalitions?utm\\_source=Vogue+Business+Sustainability&utm\\_campaign](https://www.voguebusiness.com/sustainability/the-reality-behind-fashions-sustainability-certifications-and-coalitions?utm_source=Vogue+Business+Sustainability&utm_campaign)

World Bank. (2016). High and dry: climate change, water and the economy. Washington, DC: World Bank.

## Websites

<https://sustainabledevelopment.un.org/>

<http://orangefiber.it/en/impact/>

<https://www.vegeacompany.com/sustainability/>

<https://www.algiknit.com/>

<https://desserto.com.mx/home>

<https://www.qmilkfiber.eu/?lang=en>

<https://www.mangomaterials.com/>

<https://www.canepa.it/it/sostenibilita/savethewater>

<https://acbc.com/>

<https://www.agogic.it/>

<https://www.renttherunway.com/>

<https://closet.gwynniebee.com/>

<https://houdinisportswear.com/de-de/explore/houdini-rental>

<https://www.aoki-hd.co.jp/en/enterprise/fashion.html>

<https://www.bagborroworsteal.com/>

<https://www.laxus.co/en>

<https://drexcode.com/it/>

<https://www.dressyoucan.com/en/>

<https://www.fordays.com/>

<https://veryimportantchoice.com/>

<https://staiy.com/women>

<https://mudjeans.eu/>

<https://www.lizee.co>

<https://us.vestiairecollective.com/about/>



<https://www.thredup.com/>

<https://www.depop.com/>

<https://www.yerdlerecommerce.com/>

<https://www.farfetch.com/it/shopping/women/pre-owned>

<https://www.eileenfisher.com/renew>

<https://www.sytnordstrom.com/about>

<https://wornwear.patagonia.com/>

<https://biviomilano.it>

<http://www.girotondoweb.it>

<https://armadioverde.it/>

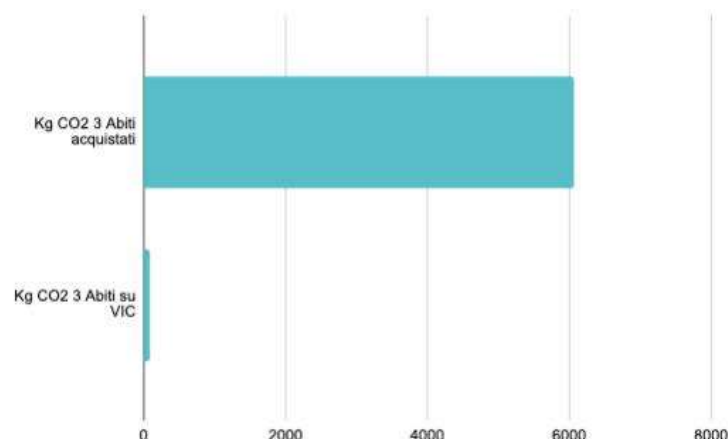
## Appendix : Interviews

### **1- Sara Francesca Lisot founder of VIC (Very Important Choice) (May 22<sup>nd</sup> ,2020)**

VIC offers a Rental- Subscription service on a range of responsible and sustainable brands. It's a selector and collector of garments coming from responsible brand made in Italy. Its formula enables customers to deepen their knowledge of sustainable alternatives and incentivizes them to try new products without having to purchase them.

**1- Adopting collaborative consumption schemes, the product life cycle becomes longer and the product value can be shared among multiple owners, but the environmental impact in the “customer-use” increases because the selected garment must be laundered, sanitized and transported each time a new customer rents it. What's the environmental benefit of choosing to rent a garments instead of purchasing it?**

Thinking that renting a garment has a higher environmental impact (due to logistics and laundering) compared to regular purchase is a misbelief. When we started VIC we have analysed this aspect deeply and we have done precise calculation to measure the environmental impact and benefits of our service. We calculated the impact of our service in terms of quality, LCA and energy emissions. In the following graph we represent our findings and in particular we compare the CO2 emissions of our “VIC Smart” service (Renting 3 garments for a one-month period) with purchasing 3 new garments at a fast fashion chain, and it emerges that using VIC results in an emissions saving of 5979 CO2 Kg .



The comparison was done with fast fashion items because at time of analysis they were the only category that disclosed data and calculations, but VIC offering does not belong to this category. Garments selected by VIC come from responsible supply chains and their production and logistics are less impactful than the one of fast fashion items. To carry out these calculations we assumed the fast fashion environmental impact at production stage and VIC service showed a relevant saving in energy emission, this because CO2 emissions related to the renting service (shipping, take back, washing/sanitizing practices) are significantly inferior if compared with production and lifecycle (shipping, disposal, private user care like washing and ironing) of owned garment. Moreover VIC has adopted in its logistic stage some green technologies that have a lower environmental impact than what private consumers usually have.

**2- When speaking about circular economy a very important stage is the post-customer-use phase, because it's the moment when garments are either recycled or disposed of. How is VIC managing clothing at the end of their life? Are selected brands willing to take back garments that you can no longer rent?**

End-of-life garments management is a pillar of our business model, circularity goes beyond the rental service. Today brands are not yet ready to take back their items, we as VIC, take full responsibility on garments. Our business activity is relatively new, therefore we haven't, yet, faced this challenge because all our items are very durable and none of them has reached the end-of-life phase. However we will provide a take back scheme program to foster on one side upcycling and garments redesign (collaborating with a design school) and where this is not possible due to loss in fiber quality we will choose to recycle and downcycle textiles.

**3- Effect of Covid-19 on Rental businesses: customers and brands.**

**Do you think Covid-19 pandemic negatively affected customer perception on garments for rent? In other words have you noticed in costumers a concern about clothing as possible vehicle for virus spreading and therefore hesitation in renting garments previously worn by someone else?**

No, people who choose to rent on VIC know that we offer a sanitizing service that can guarantee maximum hygiene level. Today there isn't any scientific proof that the virus can live and be transported on garments. Although worrying is legitimate, we believe

that renting garments with VIC can be preferable, due to our sanitizing procedure, than going to a retail store where clothes are tried on by many clients. VIC from the beginning of its activity chose to use a sanitizing technology used in hospitals against virus and bacteria, and recently due to Covid-19 some retail stores in specific Italian regions had to adopt the same technology to disinfect the environment for each new client.

**What about brands? Have you received any request by brands that wish to recover value of unsold stock through rental platforms?**

VIC is a selector and collector of sustainable brands, and many of them are emerging, their production schemes are very different from those producers that are dealing with unsold inventory due to Covid-19 outbreak. The majority of our brands doesn't have this problem, as their production quantities are contained.

**4- Today VIC is digital rental platform but have you planned to open a brick-and-mortar store or a showroom in order to add a physical presence?**

Yes, we highly value the physical presence and we are working on some opportunities to combine it with our digital presence. In 2019 we have opened a temporary store in Turin and before Covid-19 changed our plans we had some projects to support our digital presence with a physical one, using a temporary store or event format. The importance of these initiatives for VIC goes beyond fitting necessities, in fact due to our offering that mainly includes day-wear items out fitting process is easier if compared to platforms renting special occasion dresses (that require perfect fitting). A physical presence is important for VIC to have an educational impact, deepen the relationship with the public and spread awareness about sustainable fashion and its importance.

## **2- Tanguy Frécon , Lizee CEO (June 24<sup>th</sup>,2020)**

Fashion For Good webinar (The Role of Circular Business Models During COVID-19 & Beyond, June 9<sup>th</sup>,2020) follow-up questions:

**1- Based on your experience, which are the main obstacles and barriers that hinder brands to implement a rental channel? And how does Lizee help brands overcome these difficulties?**

We've been talking with many brands, almost 100 brands in the last 2 years and definitely they all want to implement circular business models but today there are way too many frictions to test them. The most relevant barriers are technological connected to e-commerce and logistics. Brands nowadays don't have the technology to customize their e-commerce for rental and the bigger they are the more difficult this process gets. For example in their warehouse they use smart management software, it's a software that allows brands to manage their inventory and deal with orders (merchandise picking, packing, sending) but they are not equipped to do reverse logistics to manage returns. When you offer a rental service you need to refurbish returns, and brands are simply not equipped with tools to handle refurbishing, knitting, and repairing activities.

Secondly today brands are focused on selling products, but with rental business models, the focus shifts from products to service, giving increased relevance to the experience connected to the product, often brands are not ready for this shift.

The goal of Lizee is to seamlessly help brands move from linear to circular by introducing a rental option on their products, taking care of all hustles of this transition for brands, providing them with a dedicated e-commerce solution, tailored made for rental. Through our service we store a selection of brand's inventory (items that they want to rent) in our distribution centre (located in the north of France) which is fully equipped to do rental. We handle picking, packing and shipping of orders placed on the brand's website in the rental section, and then when the product is returned, to the same warehouse, we do the quality check, cleaning and needed repair/ refurbish activities and restock items (as fast as possible) so that they are ready to be rented again. In this way brands don't have to deal with complexity, everything is handled by us, same for the logistics ,and basically in two months after signing the contract we can go live with any

brand, We apply a test and learn approach to help brands implementing new circular business models, as they usually don't want to make big investment upfront to test something that may not work, they rather choose companies like Lizee who help them try and scale after.

For example for our client Decathlon France, today we store a little fraction ( 2% ) of their inventory, only those items that on their website are for rent (because they answer customers a need: when you go hiking you don't need stuff that you use frequently so you might prefer to rent them) and it was a gradual process, we started with trekking gear and then included also fitness and camping items.

## **2- Should brands take covid-19 crisis as an opportunity to build up rental channels? Why?**

Definitely yes, it might sound easy to say but I truly mean it, there are 3 reasons why brands should today look carefully to second hand and rental, I'll focus on rental. First reason being the stock overload caused by lockdown, today brands have mountains of merchandise that hasn't been sold, which are trying to discount in their stores and online, but there are going to be items that will not be sold. In France now it's forbidden to destroy unsold goods, therefore brands will have to find ways to organize and destock this merchandise. Rental is an ideal solution because, not only, brands will not need to discount but they'll make additional value on these products, moreover they can target new clients, get data on customers and on the quality of products, increase margins, and improve social media presence, so definitely using this stock as an opportunity to build up a rental channel is a very good idea.

The second reason is the acceleration in consumer preference shift. Customers behaviour is shifting from garments ownership to use, it was already happening before covid-19; the priority is on wearing constantly new stuff but owning it is losing importance. This shift has been enhanced by Covid-19, people are looking to forms of consumption with a reduced environmental impact, at least in France preference shifted towards consuming local and helping the community, choosing local retailers.

The third reason is the economic recession, the economic crisis we are going to live, for this reason people and households will have to reduce their spending. Instead of buying poor quality stuff if they want good quality products they will have to choose second

hands and rental models, as these models make good quality products affordable. For example if you go hiking in the dolomites and you cannot afford a 1000 euro gear for a 4 days experience, but you have the possibility to rent it, you are going to do it, it's logical .

These are 3 main reasons why brand should definitely look at the crisis as an opportunity. Some brands are already choosing rental , since the end of lockdown, the conversion rate on our platform grew, we almost doubled the conversion rate, converting at more than 6% average on all our platforms. To give you an idea Amazon conversion rate is about 2% and they are one of the most converting online platforms in the world. The conversion rate is amazing, and this means that our formula is working and people are not afraid of renting, even after covid-19.

### **3- Which are additional advantages in implementing a rental business model rather than collaborating with independent rental platforms?**

Today there are a lot of direct to customers platforms , like Rent The Runway, the main one in the US; my colleague and co-founder of Lizee comes from a kids wear renting platform, based in Brussel. The main difficulty of those platforms is that they have a hard time bringing traffic on their website, it's a very cost effective action as renting is something completely new and renting from someone you don't know it's difficult. The reason behind this is the lack of trust in renting from a start-up. Renting directly from a brand official channel might be easier, as customers know products and quality, they trust the brand and therefore believe that it will take accurate care in cleaning and sanitizing items. Customers are able to pick the product in the store and get advised by sales assistant in the store, living an experience connected to the brand; it's harder to build this kind of trust when you are a start-up or an independent rental platform. Moreover I believe it's responsibility of the brand to convert customers to a more sustainable consumption model. It's much more profitable for a brand to do it directly rather than relying on an independent platform. So I think that brands are the best ambassador for a new consuming model and they can rely on trust , in 2020 people trust brands they choose while they have an hard time trusting start-ups.

When brands collaborate with independent rental platforms they don't handle data (product data, customer data) most of the time, data are owned by the platform, so brands are missing part of advantages deriving from the rental models. Data allow

brands to gather preference data and get new clients information, data are precious especially when brands collaborate with third parties. Customers need to see brands going forward, putting sustainability at the core of their business, implementing circular business model has an impact on brand image.

**4- Is Lizee a pioneer in Europe? Are there other players helping brands build a rental model in Europe? Are you planning on expanding your business in other countries?**

Yes we are pioneer in Europe and also worldwide, however there is one company we discovered after launching Lizee, that was launched six months earlier, it's an American company called Caastle, quite similar but working only on subscription-based fashion rental , they are like a white label Rent The Runway, to allow customers to rent daily closet with your favourite brand. We are different because we also allow customers to do date-to-date rental not only subscription-rental, and we offer this service also on sporting goods, accessories, kids wear etc, we have a wider scope due to the fact that the rental market in Europe is smaller and less mature, to focus exclusively on rental.

In Europe we were the first B2B, new players are starting to do what we are doing, but today we are the most advanced. However our goal is not to become a huge logistic player for rental rather it's to provide the software we are using to third parties brands and logistic partners, so that they can implement rental model themselves. This is what brands today are expecting, for example with Decathlon they use Lizee as a test and learn partner but in the future they will do it on their own ecommerce platform using their warehouse for logistics, so we will provide the technology to do it. Today we have our own warehouse but in the future we will be a technology and software provider for brands. Geographically we are serving Europe, but we'll open to expand with third parties logistics partners wherever the clients will take us. Currently we don't have any client from Italy.

**5- How would you explain the environmental benefit of choosing to rent garments instead of purchasing it? And how is Lizee managing the after-customer-use phase of a product?**

Retail is polluting and what we are trying to do is reducing the overall industry impact by implementing circular business models. Of course also the rental business model is



polluting but the phase which pollutes the most is production (ex: textile production is connected with land usage and chemical pollution of soil) combined to shipping. Of course the impact of the latter can be reduced for example by producing locally but our goal is to encourage brands to produce better, increase the gross margins on already produced items so at the end reducing production quantities. For example 1 tent is rented up to 10 times and with collected data on quality this number can increase to 15, decreasing production of 9 to 14 tents. The same with resale model, the end goal is reduce production, while constantly making profits on existing items. Moreover there are ways to reduce the impact connected with transportation and refurbishing activities, involved in rental models, that we have adopted to minimize our impact: for example ozone cleaning technology , killing 99% of bacteria without impacting the planet at all, or transportation costs optimization, but the big saving in terms of environmental impact is done at the production stage .

To answer the second part of the question about recycling schemes, all items that we manage are not owned by Lizee, they are property of brands. When a product starts being rented is new and after several rents it might not be suitable for renting anymore, it then becomes suitable for second hand market. Decathlon for example has its own second hand channel through which they sell items that were previously rented, if the quality is too poor for this, the materials enter their own recycling schemes.

### **3- Caterina Maestro , DressYouCan founder (July 9<sup>th</sup>,2020)**

**1- Dress You Can is one of the few Italian rental platforms, based on your experience which are peculiar characteristics of the Italian market and its adoption of rental services? Is the bricks-and-mortar store an important aspect?**

The rental market development in Italy is still at the beginning, but if we consider the point from where we started we can say that the market has accomplished important steps. Today our clients adopt rental services and understand its meaning and advantages, but when we started in 2014, it was a totally new concept in the fashion industry. The “Rental” concept was associated either to the automotive industry or to carnival outfits. Thanks to marketing activities of other market pioneers like Drexcode, today we can say that Italian customers understand the service we offer, but the obstacle to wider adoption is that rental is still very attached to the special occasions or events. While in other countries girls use this kind of service even every weekend, in Italy clients think about this option only when they have to attend ceremonies and events for which they need a new dress that might use only once. We are trying to move towards a different direction where the service is used also in other circumstances, for this reason we are planning to introduce menswear, kids-wear, technical clothing and fitness and sportive outfits.

For us the bricks -and-mortar store was a starting point, we have always been online oriented but when we founded Dress You Can we wanted to test the market demand and products. We decided to include in our offering, clothes from famous brands and garments from emerging designers focused on fitting characteristics, this to test our idea that a famous designer is not essential. In these years we received the validation of this idea and that’s what differentiates us from other players in the Italian market, that are more fashion-oriented, and focus on answering the need of accessing designer dresses at a fraction of the retail price. Therefore we use our physical store for fitting reasons, especially in bridal cases, even if it’s possible to order a dress just for a home trial many clients prefer to come to the store and live the experience with our specialized image and fashion consultant.

## **2- Which are the main advantages, for brands, collaborating with platforms like Dress You Can?**

Dress You Can decided to dedicate 1/3 of its offering to emerging designers, to offer them a distribution channel and the possibility to earn money while testing new products and product lines. It is a dynamic testing channel also for established brands, and a way for them to get new customer segments, as for example young women that cannot purchase their clothes, but can access it through rental (potential future customers). Brands can also reach a higher operational efficiency thanks to the data and metrics that we collect on consumption and consumer preference. Moreover it's a way to deal with problems like returned merchandise and unsold stock.

## **3- When speaking about circular economy a very important stage is the post-customer-use phase, because it's the moment when garments are either recycled or disposed of. How is Dress You Can managing clothing at the end of their life?**

The clothes that we manage are given to us by brands through a rental consignment (we rent their items in exchange of a varying fee), therefore after 5-8 times, that we have rented them out, we are supposed to give them back to brands or private renters. Some brands have agreed to participate to charity programs, therefore clothes, that cannot be rented anymore, are donated to the program "Salute allo specchio" and to San Raffaele hospital, in Milan. What we would like to achieve through partnership with realities like Progetto Quid is recycling schemes that allow us to recycle part of the fabrics and materials in alternative packaging, to substitute paper bags.

## **4- Based on your experience what was the impact of Covid-19 on the Rental market? What was customers' response? And what about brands? Are they considering rental as an alternative to traditional retail, for unsold items?**

After Covid-19 fast fashion is predicted (by international studies) to lose ground, as people will be likely to stick to already owned durable products. However the fast outfit swipe mindset, that has been here for the last ten years, is going to create a sense of frustration in segments with reduced spending power. Rental services allow customers to follow fashion trends while limiting their own spending and adopting a sustainable consumption model. For brands the rental service constitutes a solution to unsold stock disposal, avoiding devaluation of products connected with excessive discounts. The

partnership requests by designers and atelier has increased exponentially during March and April. This is probably connected with the exponential growth of e-commerce, deriving from the end of wholesale model; brands were not able to sell in physical retail stores, who had the possibility to sell online chose to implement e-commerce but someone saw in the rental option an alternative solution to avoid premature discounts. Brands are increasingly understanding the rental model potential, as a proof of this, the Italian brand Twinset in 2019 chose to introduce a rental service for some items. People during quarantine have realized how many clothes we own and that the majority of them is underutilized. Moreover in a pandemic scenario, small retail stores could use the rental logistics to get some value from their merchandise, which would otherwise remain unsold due to store closure.